

The Impact of Military Status on Maternal and Child Outcomes in a
Canadian Sample of Young Children

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A thesis submitted to the
Faculty of Graduate and Postdoctoral Studies
in partial fulfillment of the requirements
for the PhD in Clinical Psychology

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There Is No Life Like It!

Alex, thank you for introducing me to this life

Abstract

In the last decade, global instability has led to higher demands placed on military members and their families, especially in the area of deployment. Longer and more frequent deployments have had significant psychological consequences on soldiers who have been deployed. Deployment has also been shown to negatively impact child adjustment; however, the research in this area is limited, particularly within a Canadian military context. The purpose for the two current studies was to examine specific areas of child adjustment affected by military status, particularly deployment, and to explore potential pathways through which this impact occurs. Study 1 included an examination of the effect of military status on maternal depressive symptoms, parental stress, and marital satisfaction, as well as on the quality of the child's attachment to the parent at home. Further analyses were conducted to determine if maternal well-being mediated the effect of military status on attachment, and if there was a moderating role of social support on these associations. In Study 2, the unique role of military status in predicting reported behaviour problems over and above what was accounted for by child attachment and parental stress was explored. Findings from these studies revealed an association between deployment and higher levels of insecure attachment; and although deployment modestly predicted maternal depressive symptoms, there was no mediating effect found for maternal well-being. Furthermore, while insecure attachment and higher levels of parental stress were associated with elevated behaviour problems, deployment uniquely predicted conduct problems, internalizing problems, and total behaviour problems. Findings from the current studies add a valuable contribution to the limited available literature on how deployment affects young children in military families. Moreover these findings provide a basis in which to direct further research, and to also guide the development and implementation of interventions to support at-risk children in military families.

Acknowledgements

I would like to thank a number of important individuals who have played a significant role on the journey to my doctorate degree. First, I would like to express my deepest appreciation to my doctoral supervisor, Dr. Jean-Francois Bureau. There are no words to express my gratitude for the unfailing support and encouragement you have offered on countless occasions over the past seven years. Most notable was your response when I first approached you with my desire to conduct a military study. Even though it was an immense undertaking, you encouraged me to proceed and your faith that I could do it was absolute. Your support and guidance throughout the process has been invaluable, and for that I thank you. You truly have provided that Circle of Security, in encouraging exploration but providing a secure base to return to when necessary. I would also like to extend my heartfelt thanks to Dr. Diane St. Laurent for her support with this research project, from recruitment and conducting lab visits at the Valcartier base to coding; without her contribution, this study would not have been possible. I would also like to thank the members of my thesis committee, Drs. Julie Gosselin, Marie-France Lafontaine, and Alastair Younger for their time, feedback, and dedication to the thesis process. I would also like to extend a sincere thank you to Dr. Dwayne Schindler for his statistical expertise and guidance in analyzing the data for the current project.

In addition to my development as a researcher, I would like to extend my sincere thanks to a number of people who have played a significant role in my development as a clinician, particularly during my internship year. Thank you, Drs. Catherine Lee, Marilen Gerber, Elisa Romano, and Julie Desjardins for your knowledge, guidance and patience with me in the continued acquisition and development of my clinical skills and my growth as a therapist. The

knowledge and wisdom I have acquired in working with each of you, will forever impact who I am as a clinician.

Thank you to the volunteers who assisted me in the data collection for the current studies. Allison Kirkpatrick, Jad Siblini, Melisa Arias- Valenzuela, and Shaofan Bu your contribution to this study was invaluable; from the countless weekends that you sacrificed in order to accompany me on lab visits, to the many hours that you spent entering and verifying data, I will be forever grateful for your support. I would also like to extend my appreciation and thanks to the Director Military Family Services (DMFS), as well as the local Military Family Resource Centers who recognized the need for military family research and supported this study. Moreover, a very special thanks to the many military spouses who took the time from their busy schedules to participate in the current project. Without your participation this study would not have been possible.

Finally, I would like to thank my husband, Alex, and my children, Esther and Justin, for their unfailing support over the past seven years. Alex thank you for believing in me, from that first undergraduate Intro to Psych course to now, your faith in me has been unfailing and for that I thank you. Little did I know that when I first began this project, that up until the last year, what had only been theoretical and qualitative knowledge regarding the experience of having a spouse deployed, would in fact become a personal reality. It is only through having personally experienced that goodbye at the airport where you question if it is a final farewell, the fear and worry when not hearing from your partner when you thought you would, and the sadness of your children upon realization that this year dad won't be home for Christmas, that you truly gain insight into the reality of the impact that deployment can have on a military family.

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CHAPTER 1:
General Introduction

GENERAL INTRODUCTION

General Introduction

Demands Faced by Military Families

According to Segal (1986), "an institute is a set of interrelated norms and roles governing some area of social life" (p.9). Two social institutions common to most societies are the family and economics. Historically, in the economic sphere employers placed significant demands on both the working and non-working hours of their employees; however, with the advent of the modern trade union movement, employers are now legislatively limited in the demands that they can make on an individual's time and energy (Segal, 1986). Despite the advances that have been made in the overall economic sphere, one social institution that has been partially precluded from these legislatively directed limitations is the military. Segal (1986) describes the military as a "greedy institution" (p.9), in that it puts high expectations and demands on both military members and their families.

A reemphasis on the importance of national security resulting from the 9/11 terrorist attack on New York city, recent war efforts in Afghanistan and Libya, and ongoing threats of terrorism, have resulted in greater demands on military members and their families (Drummet, Coleman, & Cable, 2003; Dursun & Sudom, 2009). Most notably is the increasing number of soldiers being deployed more frequently to active combat zones, and for longer periods of time (Allen, Rhoades, Stanley, & Markman, 2011; Sheppard, Malatras, & Israel, 2010). Since the end of the Cold War, Canadian soldiers have been increasingly involved in humanitarian and peace-keeping missions, and more recently have been deployed to active war zones such as Afghanistan (Dursun & Sudom, 2009). Even more recently, Canadian soldiers have joined coalition-led airstrikes against the Islamic State in Iraq and Syria (ISIS). The demands of a military lifestyle, especially the increased danger associated with deployments to active combat

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zones, has significantly impacted soldiers and their families. Moreover the demands placed on military families, are qualitatively different from those experienced by most other civilian occupations.

Stressors associated with a military lifestyle. While military families deal with issues common to all families including childcare, elder care, education, parenting concerns, and financial pressures (Drummet et al., 2003), they also deal with stressors rarely experienced by civilian families. Unique demands placed on the military family include deployment of the military partner, stress for the spouse regarding the deployed partner's safety and resulting war related trauma such as post-traumatic stress disorder (PTSD), frequent relocations, geographic separations from extended family and friends, and frequent separations due to the military member's training obligations (Dursun & Sudom, 2009). Furthermore, military spouses are often required to assume sole responsibility for parenting when their partners are absent due to work related demands such as training and deployment.

Increased demand for deployments and resulting consequences. According to Creech, Hadley, and Borsari (2014), "deployment is defined as beginning when a service member departs for an overseas combat mission and ending at the service member's stateside return"(p.2). The increased number of deployments over the last 10-15 years has had a profound effect on the psychological health of military members. In the United States, there has been a significant increase in the number of reported cases of PTSD, and other mental health difficulties in soldiers who have been deployed in the last decade (Castro, 2014). In Canada, the levels of PTSD, depression, and anxiety disorders were found to be considerably higher in deployed soldiers, as compared to their non-deployed counterparts (Pearson, Zamorski & Janz, 2014).

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While research supports a clear association between deployment and negative outcomes on military members, the impact of a military lifestyle, particularly deployment, on children in military families is less clear. A recent meta-analysis of 16 studies found that overall there was a minimal association between deployment and negative outcomes in children; however, it is important to note that over half of the studies in this review were published prior to 9/11 (Card et al, 2011). In a more recent review, Creech and colleagues (2014) examined 42 studies (published after 9/11) that focused on the impact of deployment on children and parental outcomes, and of those studies, 28 focused specifically on children's and non-deployed parents' well-being during the actual deployment. Their findings suggest that deployment is related to increased emotional and behavioural difficulties in children and more stress associated with parenting for the non-deployed spouse. In addition to the studies cited in the review by Creech and colleagues (2014), other studies have also found increased levels of stress, as well as depressive symptoms in spouses who have a partner deployed (Burrell, Adams, Durand, & Castro, 2006; Drummet et al., 2003; Dursun & Sudom, 2009; Hoge, Castro, & Eaton, 2006; Warner, Appenzeller, Warner, & Grieger, 2009). While there appears to be some discrepancy within the literature regarding the association between deployment and child outcomes, the minimal association between deployment and child outcomes found in some studies may be related to limitations such as sample sizes, lack of a comparison sample, and the use of non-standardized measures (Card et al., 2011; Creech et al., 2014). Moreover, the elevated level of danger and the necessity of repeated deployments associated with combat missions since 9/11 may also be a contributing factor to the negative impact of deployment on child adjustment found in many studies conducted in the last decade (Creech et al., 2014). Although there is evidence to suggest deployment negatively affects child outcomes, the pathway through which this occurs is unclear.

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Does deployment itself directly impact child outcomes, or is it related to factors such as the non-deployed parents' emotional functioning during their spouses' deployment, which in turn affects the quality of the parent-child interactions resulting in less optimal outcomes?

Stress and parenting. Much of the research on the impact of stress and parenting has focused on major life changes; however, the everyday challenges and demands faced by parents can be just as stressful (Crnic & Low, 2002). Given the unique demands of a military lifestyle, non-military spouses experience increased levels of major life events and everyday hassles. For example, one could consider that moving to a new location or having a partner deployed to a war zone to be a significant major life event; however, managing the day to day household and child care responsibilities alone while having a partner deployed or on training could also result in considerable stress. There is a growing body of literature demonstrating the negative impact of stress on parenting in non-military families (Leinonen, Solantaus, & Punamaki, 2003; Lee, Lee & August, 2011; Moss, Cyr, & Dubois-Comtois, 2004). Stress affects one's ability to parent optimally and impacts the quality of the parent-child relationship. Given the nature of a military lifestyle, particularly when a partner is deployed, it is reasonable to assume that military spouses would experience higher levels of both major and everyday stressors, placing them at increased risk for parenting challenges. Lazarus and Folkman (1984) in their theory of cognitive appraisal, suggest that it is an individual's evaluation and perception of a stressor and one's resulting sense of competence to cope with the stressor that determines the experience of stress, rather than the actual stressor itself. Consistent with this theory, stress may impact the quality of parenting, but it is not necessarily the stressors themselves that determine parenting quality, but rather the parent's perception of their ability to cope with the stressors (Crnic & Low, 2002).

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Parent-child Relationship Quality

Attachment theory is one way to conceptualize the quality of the relationship between a parent and child. According to Bowlby (1969), attachment achieves the purpose of keeping a caregiver and child close and as a result, increases the child's chance of survival. Attachment theory views the primary caregiver as providing a secure base from which the child explores the environment (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969/1982/1988; Marvin, Hoffman, Cooper, & Powell, 2006). At times, exploration will result in the child encountering stimuli, which could be a cue to perceived danger (e.g. a dog barking, losing sight of the parent), creating fear or distress (Oosterman & Schuengel, 2007). Fear and perceived distress activate the attachment system, resulting in attempts by the child to re-establish contact with the parent through proximity seeking behaviours such as crying, moving toward or clinging to the parent (Solomon & George, 2008). According to the authors, these behaviours ensure that the child remains in proximity to the parent, and is protected from perceived danger and threat to physical or psychological safety. Following the re-establishment of proximity with the parent and having the attachment needs of safety and comfort fulfilled, the child is able to return to exploration.

The ability to provide safety and comfort to the child is dependent upon the caregiver's sensitivity to the child's distress. A parent's consistent sensitive response to the child's proximity seeking behaviours is thought to support the development of a secure attachment relationship between the parent and child (Main & Cassidy, 1988), whereas an insecure attachment between the parent and child may develop when a parent demonstrates insensitivity to the child's distress (DeWolff and van IJzendoorn, 1997). However, a parent's sensitive response can be impacted by his or her own emotional difficulties. A number of studies have found that depressed mothers are less sensitive and more intrusive toward their children (Broth, Goodman, Hall & Raynor, 2004; Lyons-Ruth, Lyubchik, Wolfe & Bronfman, 2002). Parents who report higher levels of parental

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stress have been found to have less engagement and increased hostile interactions with their children, leading to insecure attachment (Moss et al., 2004).

The quality of the parent-child relationship has also been shown to impact a child's emotional and social outcomes. Children with a secure attachment to their caregiver demonstrate more pro-social behaviours, including better peer relationships, a longer attention span, and greater ego resiliency (Thompson, 2008). Conversely, children with an insecure attachment are more likely to exhibit internalizing and externalizing behaviours (Bureau & Moss, 2010; Greenberg, Speltz, Deklyen, & Endriga, 1991; Moss et al., 2004; Shaw & Vondra, 1991).

Prior literature suggests that military spouses with a deployed partner have elevated levels of depressive symptoms and parental stress (Burrell et al., 2006; Drummet et al., 2003; Dursun & Sudom, 2009; Hoge et al., 2006; Warner et al., 2009). It is well established within non-military populations that these maternal variables are associated with higher levels of child attachment insecurity and behaviour problems (Campbell, Brownell, Hungerford, Spieker, Mohan, & Blessing, 2004; Atkinson, Paglia, Coolbear, Nicols, Parker, & Guger, 2000; Moss et al., 2004). Therefore, it would appear that military children with a parent deployed are potentially at an increased risk for insecure attachment to the parent at home, as well as elevated levels of behaviour problems.

Temporarily single military parents vs. non-military single parents. One key feature related to deployment that in all likelihood could affect the non-deployed spouse's emotional well-being and indirectly affect child adjustment, is the necessity for the spouse to temporarily assume the role of a single-parent. In non-military single parent studies, higher levels of depression and parental stress increase the risk for higher levels of emotional and behaviour problems in their children compared to children in dual-parent homes (Weihrauch, Schafer &

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Franz, 2014). While both single parents and temporarily single military parents may deal with specific parenting related stressors such as managing a home, and the everyday responsibilities of parenting, other factors impacting their emotional well-being may be qualitatively different. For non-military samples, the assumption of single parenting may be related to factors specific to the family dynamics within their environment such as a conflictual break down of the couple relationship, the incarceration of a partner, domestic violence, financial and employment uncertainty, and ongoing conflict related to custody issues, just to name a few. Conversely, military spouses with a deployed partner assume the role of single parenting through factors external to the family dynamics. The military couple may have a healthy marital relationship and a certain level of economic stability, and increased levels of stress experienced during deployment may result from the everyday responsibilities related to parenting alone. Furthermore, other stressors such as concern about the spouse's safety, as well as their children's reaction to the deployment may impact the non-deployed spouse. Given the limited research on military families, it is unclear if the higher levels of depressive symptoms and parental stress experienced by military spouses with a partner deployed impact child outcomes through the same pathways, as found in other higher risk samples such as single parents.

Canadian context. The literature examining the impact of deployment on young children under six years old is quite limited. In a Canadian military context there do not appear to be any studies, based on an extensive literature review, that have specifically examined the impact of deployment on young children using standardized assessment measures. For the most part, the research examining the impact of deployment on military family outcomes, particularly young children, has been based on American studies. Therefore it is unclear if these findings can be generalized to Canadian military populations, as Canada and the United States are distinctly

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different in terms of a number of demographic factors. Less than 5 % of the Canadian military are minorities (Park, 2008), as compared to the American military in which 30.2% of active duty members identify as a visible minority (US Department of Defence, 2012). Moreover, 87% of the American military minority population are enlisted members, increasing the likelihood for service in combat roles leading to a higher probability of deployment (US Department of Defence, 2012). Furthermore, there is a greater likelihood that individuals from poor and disadvantaged environments join the American military (Lutz, 2008). Finally American soldiers tend to deploy for longer periods, 12 -18 months (Flake, Davis, Johnson, & Middleton, 2009), as compared to Canadian soldiers who are deployed on average from 6-9 months. The distinct demographic differences found in American military populations, as compared to Canadian military population may lead to pre-existing vulnerabilities that may result in deployment having a different impact on the two populations. Therefore, examination of the impact of deployment on military families within a Canadian context is necessary.

Current Studies

Building upon prior research that has found an association between deployment and parental and child outcomes, we sought to extend previous findings by exploring specific factors associated with a military lifestyle, particularly deployment, that could potentially lead to negative outcomes in young Canadian children with a military parent, ages one to six years old. Participants were recruited from several Canadian military bases between the periods of September 2010 and August of 2012. In Study 1, we examined the direct effect of military status, particularly deployment, on the attachment relationship between the military child and non-deployed parent. We then explored if military status would predict maternal depressive symptoms, parental stress, and marital satisfaction, and if the relationship between military status and child attachment was mediated through these variables. Finally, the moderating role of social

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support on the relationship between military status and child attachment, as well as military status and the maternal variables was explored.

In Study 2, we compared child behaviour problems across a military deployed group, a military non-deployed group, and a control group. We then looked at the association between child attachment and parental stress on behaviour problems, to determine if these variables directly predicted behaviour problems. While previous studies have found higher levels of behaviour problems in children with a parent deployed, we wanted to determine if military status would uniquely predict behaviour problems above that offered by child attachment and parental stress.

Study 1:

Does Military Status Directly Impact Child Attachment to the Mother,
or Indirectly Through Maternal Well-Being?

IMPACT OF DEPLOYMENT ON ATTACHMENT

Abstract

Research in the general population has shown an association between maternal depressive symptoms, parental stress, marital conflict and child attachment security. Moreover, literature suggests that there is a buffering effect of social support upon these associations. However, little is known about this association in military populations, particularly in families with a parent deployed. Drawing from previous studies that have found higher levels of depressive symptoms, parental stress, and in some samples, lower levels of marital satisfaction in families with a parent deployed, the current study explored if these results would be replicated in a sample of 68 Canadian military families. In addition, the impact of military status on child attachment to the parent at home, as well as the mediating effect of the maternal variables on the relationship between military status, particularly deployment, and attachment was also explored. Finally the moderating effect of social support on the relationship between military status and child attachment, as well as on military status and the maternal variables was examined. Findings from the study revealed a significant impact of deployment on child attachment to the non-deployed parent, as well as on maternal depressive symptoms. The impact of deployment on attachment was not mediated through the maternal variables, and while there was a main effect of social support on the maternal variables there was no moderating effect. Thus, the impact of military status, particularly deployment, on child attachment appears to be associated with a different pathway than typically found in the general population. As such, future research efforts should focus on understanding the unique associations between military deployment and child attachment.

IMPACT OF MILITARY STATUS ON ATTACHMENT

Does Military Status Directly Impact Child Attachment to the Mother, or Indirectly Through Maternal Well-Being?

Ainsworth, Blehar, Waters, and Wall (1978), conceptualized attachment security as the state of being secure or untroubled about the availability of the attachment figure. Child attachment behaviours were classified by Ainsworth et al. (1978) into two general categories, secure vs. insecure, with the insecure category encompassing two sub-categories; insecure-avoidant and insecure-ambivalent. The caregiver's response to the child's proximity seeking behaviours during anxiety-activating situations is thought to determine the child's attachment classification (van IJzendoorn, Schuengel & Bakermans-Kranenburg, 1999).

Attachment Strategies

The categories of attachment can be viewed in terms of coherent strategies. The strategy is the means the child uses to organize behaviour relevant to attachment (Main & Weston, 1981; Main & Weston, 1982). *Secure attachment*. Secure children maintain a strategy that uses the attachment figure as a secure base, and alternate between proximity seeking and exploration. During situations that trigger fear and anxiety, the child exhibits proximity seeking behaviours such as crying and seeking contact (e.g. wanting to be held). Once the anxiety has been eliminated through receiving comfort from the caregiver, the child is then able to re-engage in exploration of the environment (Weinfield, Sroufe, Egeland & Carlson, 2008). *Insecure-avoidant attachment*. With respect to insecure attachment, children who experience consistent coldness and rejection when seeking proximity to the parent develop an insecure-avoidant attachment bond. For these children, repeated experiences of parental rejection in stressful circumstances, result in avoidance of the caregiver in order to minimize anticipated conflict or rejection (Kobak

IMPACT OF MILITARY STATUS ON ATTACHMENT

& Madsen, 2008). In situations of distress, these children are more likely to focus their attention away from the caregiver and increase exploration of the environment by focusing on inanimate objects such as toys. *Insecure-ambivalent attachment*. An insecure-ambivalent attachment is the result of inconsistent availability on the part of the caregiver. The child is unable to predict the parent's availability to meet the attachment needs, as the parent is sometimes overprotective and discourages exploration (Cassidy & Marvin, 1992), whereas at other times is unavailable (van IJzendoorn et al., 1999; Cassidy & Marvin, 1992). For these children, the inability to depend on the caregiver as a secure base leads the child to exhibit both proximity seeking and resistant angry behaviours in distressing situations. As a result, these children are unable to derive comfort from the caregiver even when offered (Lyons-Ruth & Jacobvitz, 2008). *Insecure-disorganized attachment*. An additional attachment category was postulated by Main and Solomon (1986) to describe those children who do not appear to fit the three previously described categories. Children in this attachment category are thought to be placed in the paradoxical situation of perceiving the caregiver as either frightened or frightening, but also needing that parent to be a haven of safety. These children do not display an organized strategy of behaviours when distressed, but rather contradictory intentions (e.g. approaching the parent with head averted) or behaviours showing apprehension, such as fearful facial expressions (Lyons-Ruth & Jacobvitz, 2008).

Purpose of current study. It is evident from the description of these categories that attachment security is dependent upon the caregiver's availability and ability to recognize and respond to the child's attachment needs. The primary aim of this study was to explore the impact of military status, particularly deployment, on the attachment relationship between the non-deployed military spouse and child. Given that we lacked power to detect differences across the

IMPACT OF MILITARY STATUS ON ATTACHMENT

insecure groups (due to our sample size), and the literature shows the biggest differences are found between the secure vs. insecure categories (Solomon & George, 2008), the decision was made to focus on these two general categories of child attachment. Moreover, given that maternal depressive symptoms, parental stress, and marital satisfaction have been shown to impact child attachment, the association of these variables with military status, particularly deployment, and child attachment was also explored.

Impact of a Military Lifestyle on Parenting

There are numerous factors that may impact a caregiver's ability to respond optimally to a child's attachment needs; however, this study focused on those most relevant to a military lifestyle. It is well documented that a military lifestyle encompasses numerous stressors including deployments, frequent relocations, frequent absences of the military member due to training and job responsibilities, career limitations for the non-military spouse, as well as potential challenges in establishing strong social networks (Burrell, Adams, Durand, & Castro; 2006; Drummet, Coleman, & Cable, 2003).

Depressive symptoms. One factor known to impact a caregiver's ability to provide optimal parental care is depression. Mothers who exhibit depressive symptoms display a higher level of negative parenting behaviours, including physical and emotional withdrawal, lack of warmth and responsiveness, hostility, negative attributions of their child's behaviour, and display more negative affect (Elgar, Mills, McGrath, Waschbusch & Brownridge, 2007; Jacob & Johnson, 2001; Middleton, Scott, & Renk, 2009). Compared to non-depressed mothers, depressed mothers are more intrusive (Campbell, Brownell, Hungerford, Spieker, Mohan, & Blessing, 2004; Middleton et al., 2009), demonstrate a higher level of anger and hostility toward the child, and are more likely to describe their children as being particularly difficult (Broth, Goodman, Hall, & Raynor, 2004).

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Effect of a military lifestyle on depressive symptoms. Within a military context, deployment has been shown to impact the emotional functioning of military spouses. Literature from American military samples has found elevated levels of depressive symptoms in military spouses who have a partner deployed (Eaton et al., 2008; Hoge, Castro, & Eaton, 2006; Rosen, Teitelbaum, & Westhuis, 1993; Rosen, 1996; Warner, Appenzeller, Warner, & Grieger, 2009). These studies cite that depressive symptoms in spouses with a partner deployed range anywhere from 8 % in one study sample to as high as 70% in another study sample (Eaton et al., 2008; Hoge et al., 2006; Rosen, 1996; Warner et al., 2009). While the literature on Canadian military families is limited, the few available studies suggest that Canadian military spouses also experience higher levels of depressive symptoms when their partner is deployed (Dursun & Sudom, 2009; Skomorovsky, 2014).

Impact of depression on attachment. It is well documented that maternal depression during infancy and early childhood increases the risk of an insecure attachment relationship between a parent and child (Campbell et al., 2004; Eiden, Colder, Edward, & Leanard, 2009; Gravener et al., 2012). Maternal depressive symptoms interfere with parents' ability to accurately perceive their children's needs and to respond appropriately (Trapolini, Ungerer, & McMahon, 2007). Compared to non-depressed parents, depressed parents are less sensitive and responsive to their children's cues (Letourneau et al., 2006; Middleton, et al, 2009). Parents who are unable to accurately perceive and respond to their children's attachment needs, may heighten the risk for the development of an insecure attachment.

Parental stress. Parental stress is another key factor that significantly impacts a parent's ability to provide optimal parental care. Major life events and everyday challenges can be stressful for parents, and higher levels of stress for parents are associated with poorer outcomes

IMPACT OF MILITARY STATUS ON ATTACHMENT

in children (Moss, Bureau, Cyr, Mongeau & St- Laurent, 2004). Crnic and Low (2002), describe the events that characterize the everyday interactions that parents have with their children as "daily hassles". These daily hassles include typical challenging behaviours children display, as well as the normative tasks associated with parenting (e.g. medical appointments, preparing lunches, helping with homework, transporting to activities). The parent's perception of these everyday hassles as stressful depends on the parent's interpretation of the behaviours, as well as other factors outside the family system (e.g. job difficulties, responsibilities for extended family members) that indirectly affect the degree to which parents are stressed. The authors found that mothers reporting increased daily hassles responded with more negative affect toward their children, whereas the fathers reporting higher levels of daily hassles tended to show little response to their children (Crnic & Low, 2002). Parents who experience higher levels of stress exhibit less patience, sensitivity, and responsiveness to other family members (Repetti & Wood, 1997; Windle & Dumenci, 1997). Higher levels of stress are also linked to more rejecting and punitive parenting behaviours (Leinonen, Solantaus & Punamaki, 2003). It is evident, that in a non-military population, the stress associated with daily hassles negatively impacts a parent's response to their child. Thus, the stressors associated with a military lifestyle could potentially lead military spouses to experience higher levels of stress than non-military populations, which in turn could affect the manner in which they respond to their children.

Impact of a military lifestyle on stress. In both Canada and the United States, one of the most significant stressors impacting military families are prolonged separations in the form of deployments (Drummett et al., 2003; Harrison and Laliberte, 2008; Harrison, Robson, Alabanese, Sanders, and Newburn-Cook, 2011). The research on military families repeatedly demonstrates that deployment of the military member is a significant source of stress for military

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families (Burrell et al., 2006; Dimiceli, Steinhardt, & Smith, 2010). Padden, Connors and Agazio (2011) found in their American sample of military families that deployment was associated with higher levels of stress than in a normative sample. Another study of American military spouses with a partner deployed, also found stress to be much higher than a normative sample (Warner et al., 2009). While deployment may be considered a major life stressor, it also increases the number of daily hassles experienced by military spouses including duties associated with managing total care of the home, assuming complete responsibility for parenting and child care tasks, managing work, finances, and personal physical health concerns (Warner et al., 2009). Although military spouses experience these stressors while their partners are deployed, the pre-deployment, as well as the post deployment periods have also been documented as stressful. Before deployment, military members are physically present, but can appear psychologically absent as they spend long hours focused on preparations and training for the upcoming mission (Booth, Segal, and Bell, 2007; Verdeli et al., 2011). Lack of knowledge regarding a finite departure date has also been cited as being stressful, as it is difficult for the military spouse to make plans and maintain a normal routine, particularly with children (Booth et al., 2007). Uncertainty about the return date of the military mission also adds considerable stress to military spouses, as they may have planned for their spouses' return only to have the mission extended and the reunion delayed. The post-deployment phase has also been found to be difficult for military families, particularly if the military member has suffered physical or psychological injury while deployed. Roles and responsibilities must be renegotiated as both partners may have changed during the separation (Booth et al., 2007). It is evident that experiencing a deployment of the military member, may lead to increased stress for the non-deployed spouse which consequently could affect parenting behaviours.

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Impact of parental stress on attachment. The attachment literature reveals a significant association between higher levels of parental stress and insecure child attachment (Atkinson, Paglia, Coolbear, Nicols, Parker, & Guger, 2000; Moss et al., 2004). The development of a secure attachment is dependent upon a caregiver's ability to respond to the child's attachment cues in a warm and sensitive manner. However, as previously discussed, increased stress results in less parental patience, sensitivity and responsiveness, as well as increased punitive and rejecting parental behaviours. In the context of a stressful environment, there is a higher probability that the parent will exhibit insensitive responses to the child's attachment cues, increasing the risk of an insecure attachment. Given the significant stressors experienced by the military spouses during deployment, particularly if they feel unable to cope, may make it challenging for these parents to accurately perceive and respond to their children's attachment needs. As a result, children of deployed military members may be at an increased risk of developing an insecure attachment to the remaining parent.

Marital satisfaction. The quality of the relationship between parents is affected by various factors including financial pressures (Conger, Ge, Elder, Lorenz & Simons, 1994; Kinnunen & Pulkkinen, 1998), the couple's psychological well-being (Cummings, Keller & Davies, 2005), dyadic empathy and coping (Levesque, Lafontaine, Caron, Flesch, & Bojornson, 2014) and perceptions of spousal support (Greenberger & O'Neil, 1993) to name a few. The literature repeatedly demonstrates an association between marital satisfaction and positive parenting behaviours (Carlson & McLanahan, 2006; Erel & Burman, 1995). Parents who report healthy relationships with each other are more likely to exhibit warmth, engagement and responsiveness toward their children, whereas parents who report distressed relationships are

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more likely to exhibit harsh, hostile and punitive behaviours (Conger et al., 1994; Krishnakumar & Buehler, 2000).

Impact of a military lifestyle on marital satisfaction. The demands associated with a military lifestyle can impact the quality of the relationship between military parents. Deployment is one factor that poses unique challenges to the marital relationship. The literature examining the impact of deployment on marital satisfaction is mixed, with a number of studies citing a negative relationship between deployment and marital satisfaction (Booth et al., 2007; Burrell et al., 2006; Sahlstein, McGuire, & Timmerman, 2009; Wadsworth and Southwall, 2011), and other studies finding no such relationship (see Karney & Crown, 2007 for review).

Factors associated with preparation for the deployment, may result in a breakdown in communication and increased resentment from the military spouse which could lead to decreased marital satisfaction, as the military member is immersed in preparation and training for the mission (Booth et al., 2007; Sahlstein et al., 2009). During the actual deployment, the military spouse may experience feelings of anger, abandonment and loneliness, which may impact the quality of the relationship (Sahlstein et al., 2009). While there are unique challenges during the actual deployment phase that could potentially affect the marital relationship, the period after the military member returns home often continues to be difficult (Sahlstein et al., 2009). The post deployment period is characterized by ambivalence (Chandra, Burns, Tanielian, Jaycox & Scott, 2008), as there is relief and excitement to have the military member home safely, but apprehension on how family roles and responsibilities must now be renegotiated (Chandra et al., 2008; Wadsworth & Southwell, 2011).

This renegotiation process may create conflict within the relationship, as it can be difficult for the military spouse, who has been accustomed to assuming total responsibility, to

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relinquish that control (Sayers, 2011). Moreover, military members may find it difficult to rediscover their role within the family, and often cite that they feel like a guest in their own home (Sayers, Farrow, Ross & Oslin, 2009). These challenges are exacerbated if the returning military member has been exposed to war-related trauma. Goff, Crow, Reisbig, and Hamilton (2009), report that 70% of military veterans with PTSD report significant marital distress upon return. Veterans suffering from PTSD also exhibit increased rates of spousal abuse and substance abuse further contributing to marital distress (Hoge et al., 2006; Makin-Byrd, Gifford, McCutcheon & Glynn, 2011). In one study, partners report decreased marital satisfaction and an increased intention to divorce during the post-deployment phase (Hoge et al, 2006).

Despite the numerous studies citing the negative impact of deployment on marriages, other studies have not found such an effect. Karney and Crown (2007) conducted an extensive review of military marriages, and contrary to other studies (Hoge et al., 2006) , the exception being the Air Force, they found that longer military deployments were in fact associated with reduced divorced rates. However, they acknowledge that lower divorce rates are not necessarily indicative of marital satisfaction, and that these couples may choose to remain married because the benefits outweigh the costs. The authors suggest that factors independent of deployment, such as ethnicity, education, and predisposing psychopathology may account for lower levels of marital satisfaction found in some studies. Factors associated with deployment such as the military member's sense of purpose regarding the mission, increased chances for promotion, additional pay and allowances, may buffer the effects of deployment and lead to increased marital satisfaction (Karney & Crow, 2007).

Impact of marital satisfaction on attachment. Davies and Cummings (1994) assert that marital conflict influences the felt emotional security of children, which in turn influences the

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attachment relationship. Attachment security is dependent upon the parent's availability and sensitive response to the child's distress. In the context of marital conflict, parents are more likely to be emotionally rejecting and demonstrate increased hostility to their child's distress, and as a result, the child will be unable to rely on the parent for comfort (Davies & Cummings, 1994). Furthermore, continual exposure to intense marital conflict may lead a child to experience the parents as frightening or frightened (Owen & Cox, 1998), placing the child at a higher risk of developing an insecure attachment of a disorganized nature. Given that some studies report higher rates of marital dissatisfaction between military spouses and their deployed partners, coupled with increased rates of spousal abuse among recently deployed members, children in these families may be at risk of developing an insecure attachment.

Social support. One factor impacting parental emotional functioning is social support (Belsky, 1984). Cohen and Willis (1985) found that social support is not only beneficial to overall well-being, but it also has the ability to buffer against the impact of stressors within an individual's life. Indeed, social support can act as a buffer against depressive symptoms, parental stress and marital dissatisfaction leading to higher psychological functioning in parents who are struggling with such difficulties (Manuel, Martinson, Bledsoe-Mansori, & Bellamy, 2012; Pederson & Minnotte, 2012). Leinonen et al., (2003) assert that social support is one of the most important resources to compensate for the damaging effect of parental stress. The literature suggests that parents who have strong social support networks demonstrate more warmth and responsiveness toward their children (Lee, Lee, & August, 2011) and have more positive parent-child interactions (Belsky, 1993). Parents who receive little social support are restrictive and tend to be more punitive toward their children (Belsky, 1984).

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Impact of a military lifestyle on social support. Higher levels of social support from both the community and one's military unit have been associated with increased ability of military spouses to cope with the demands of a military lifestyle, as well as deployment related stressors (Spera, 2009). Rosen and Moghadam (1990) found the impact of the military member's absence, due to military related activities, on the spouse's well-being, was buffered by the perceived level of support from other spouses within the military unit. Military wives who have high levels of support from family and friends report greater satisfaction with a military lifestyle (Klein, Tatone, & Linsay, 1989). Westhous, Fafara, and Quellette (2006) found that the ability to cope with military deployments was strongly associated with the military spouse's connection to the community.

As discussed in the preceding section, social support helps to mitigate the demands of a military lifestyle; however, factors such as the frequent relocations inherent to a military lifestyle could potentially affect the development of strong support networks. Military spouses often experience social isolation due to geographical separation from family and close friends (Drummet et al., 2003; Flake, Davis, Johnson, & Middleton, 2009). The period following a military move is particularly difficult for all members of the family as they have left their previous social networks and may not have had the opportunity to establish new ones (Drummet et al., 2003). The establishment of new social networks for the military spouse after relocating to a new community can be challenging, as the military spouses' efforts are usually focused on the needs of the family (Harrison and Laliberte, 2008). As a result, military spouses may experience less support in coping with the demands of a military lifestyle, which could potentially affect the quality of the relationship with their children.

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Conversely, all military bases in Canada have family resource centres, which provide services and programs with the aim of supporting military families. Moreover, a number of bases provide housing, in which all of the residents in the community are military families.

Consequently, families who use the military resource centres and are surrounded by other military families might find it easier to develop strong social networks, which could buffer against the stressors associated with a military lifestyle.

Impact of social support on attachment. The research literature is limited as to the direct association between social support and attachment in a military context; however, Atkinson et al., (2000), in their meta-analysis, found a significant association between social support and attachment security. Perceived lack of social support impacts ones' ability to parent effectively. In situations where a military parent has little social support to buffer against the stressors resulting from a military lifestyle, it may be more challenging to respond to the child in a sensitive manner. A parent who is overwhelmed by the demands of parenting and has no one to offer even practical support (e.g. caring for the child and allowing the parent to have some time alone), may find it more challenging to perceive and respond sensitively to the child's attachment need. As a result, the child will be at an increased risk to develop an insecure attachment relationship with the parent.

Previous Research on Military Status and Attachment

Much of the research presented in this review is based on American military families, as the literature on Canadian military families is limited. The purpose of this study was to examine the impact of Canadian military status, specifically deployment, upon the attachment relationship between the child and the non-military spouse. To date, an in-depth literature review did not reveal published studies in either Canada or the United States that have examined the attachment relationship between spouse and child dyads of military members, using observational data.

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However, one American study was found that examined the attachment relationship between 172 military spouses and their children using non-observational data (Posada, Longoria, Cocker and Lu, 2011). The authors assessed mother-child attachment through telephone interviews with the mother using items derived from the Maternal Behaviour Q-set for preschoolers and the Attachment Q-set. Their results showed that there was an association between the mother's sensitive response and the child's use of the mother as a secure base, and that the more chaotic the home environment, the less able the mother was to respond in a sensitive manner. However, although the authors reported that each of the participant's husbands had been deployed at least once, no information was provided on the status of the military member at the time of the study (e.g. deployed, away, home).

The focus of the current study was on children and spouses of Canadian military members. In acknowledgment of the fact that an increasing number of women are active military members, recruitment for this study was extended to fathers whose wife was a military member; however, no fathers participated. In situations where both parents were military members, the focus was on the primary caregiver, as defined by the selection criteria in the method section. This study used both questionnaire and observational data and focused on military spouses from three sample groups; those who had a partner deployed, those who had a partner away or on training but not deployed, and those who had a partner working at the home base.

Study Hypotheses and Objectives

Objectives and Hypotheses

The specific objectives of this study were to assess factors, based on prior research with the general population that could potentially impact the attachment relationship between children and military spouses within a Canadian military context.

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Objective 1. The first objective was to examine the impact of military status on the attachment relationship between the non- military spouse and child. It was expected that the highest level of insecure attachment to the non-military parent would be found in children with a military parent deployed. Moreover, higher levels of insecure attachment to the non-military parent were expected in children with a military parent away, as compared to those with a military parent stationed at the home base.

Objective 2. The second objective was to examine the impact of military status on maternal depressive symptoms, parental stress, and marital satisfaction. Based on limited prior literature it was expected that the highest levels of depressive symptoms and parental stress would be found in mothers whose partner was deployed. Moreover, higher levels of depressive symptoms and parental stress were expected in mothers whose partners were away as compared to those whose partners were home. Given that some studies have shown decreased marital satisfaction and some studies have shown increased marital satisfaction, particularly when a partner is deployed, this objective was exploratory and it was expected that military status could show either increased or decreased levels of marital satisfaction.

Objective 3. The third objective explored whether the relationship between military status and attachment was mediated through the maternal variables of depressive symptoms, parental stress, and marital satisfaction. One plausible hypothesis was, if there was an effect of military status upon child attachment security, that the effect might be mediated through these two parental variables. Given the exploratory nature of the impact of military status on marital satisfaction, it was hypothesized that if military status predicted lower marital satisfaction, it might serve as a mediator between the military status and child attachment.

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Objective 4. The final objective was to determine if social support moderated the relationship between military status, particularly deployment, and child attachment, and the relationship between military status and depressive symptoms, parental stress, and marital satisfaction. Given that social support is thought to act as a buffer against depressive symptoms, parental stress and marital satisfaction and to result in higher psychological functioning in parents, it was hypothesized that military status would have a greater negative impact on child attachment and maternal well-being if mother reported low satisfaction with social support.

Method

Participants

The participants for the current study were comprised of three military child-parent dyad groups. To participate in this study, the parent was required to be the partner of a Canadian Forces military member. In situations where both parents were military members, the primary caregiver for the child participated, with the primary caregiver defined as the parent who provided the majority of the childcare. In situations where each parent provided childcare equally, the family was provided with the opportunity to decide which parent would participate. The child participants ranged from 12 months to 6 years old, and only one child per family was selected. In circumstances where there was more than one qualifying child, the child closest to the mean of three years old was chosen. The rationale for selecting the child closest to the mean was to avoid outliers; since it was likely, that one child would be closer to the lower or upper tail of the sample. See Table 1.1 for descriptives of the sample. Participants were assigned to one of three groups, categorized according to the military members' status. Group 1 included those parent-child dyads in which the military partner was deployed, Group 2 included those parent-child dyads in which the military partner was away (e.g. training, imposed restriction) but not deployed, and Group 3 consisted of the parent-child dyads in which the military member was

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working from his or her home unit. Due to the nature of the study, random sampling was not appropriate as the status of the participants' partner determined the sample group of the participant. Participants were recruited from several Canadian Forces Bases across Canada including Ottawa, ON, Petawawa, ON, and Valcartier, PQ. Petawawa and Valcartier are army bases, whereas Ottawa has a strong Air Force component, as well as Army and Navy components. The rationale for recruiting from a variety of locations was to gain a representative sample of the Canadian military. Given the strong Army element, a higher number of participants with deployed partners participated from Petawawa and Valcartier, although there were participants with deployed partners from the Ottawa base. Each of the three bases also had partners who were not deployed or who were away on training. Steps taken to minimize the risk of potential biases due to non-randomized assignment are further discussed in the analyses section. Participants were not compensated individually, but were given the opportunity to enter their name in a draw to win a gift certificate to a local restaurant. Three winners, one from each base, were selected and given a \$100 gift certificate. Child participants were given the opportunity to select an age appropriate toy from a toy chest when attending the lab visit. The University of Ottawa's ethics board, as well as the Canadian Forces ethics board, referred to as the Social Sciences Review Board, approved this study. See Appendix A for approval forms.

Recruitment Process

The Director of the Military Family Services (DMFS) agreed to sponsor this research study and assisted with recruitment of participants. Potential participants were recruited through local Military Family Resource Centres (MFRC). Director Military Family Services (DMFS) distributed an administrative order to selected MFRC's in Ottawa, Petawawa, and Valcartier, PQ, as well as two additional bases that did not participate. This administrative order provided details relating to the purpose of the research, the sample selection strategy, how the research was to be

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conducted and for whom, the schedule of events, and the researchers' background and contact information. Local MFRCs then distributed a Request for Research Participation notice, based on the above information to its clients and members via newsletters, websites, posters and flyers. MFRC employees and volunteers also directed visitors' attention to the notice, and provided more details when requested (see Appendix B). Potential participants self-selected by initiating contact with the researchers directly or authorizing the MFRC to share their contact information with the researchers. A total of 68 parent-child lab visits were completed.

In working with the military population, researchers are expected to adhere to the Privacy Code for Military Family Services Program. This code, developed by Director Military Family Services (DMFS), is a tailored version of the Canadian Standards Association Model Code for the Protection of Personal Information - CAN/CSA-Q830-96 (see Appendix C). The code assists MFRCs in protecting the personal information of Canadian Forces (CF) members and their families that is provided to or collected by MFRCs located within Canada. In addition, all researchers and research assistants were required to obtain a "vulnerable persons" police check before conducting research procedures with parent-child dyads.

The researchers were contacted directly by potential participants, or the local MFRC provided the researchers with the contact information of interested individuals. Additional information was provided to interested parties with further details related to the study, including the procedures to be used, the risks and benefits of the study, as well as limits to confidentiality and the right to withdraw at any time. Once individuals agreed to participate in the study and met eligibility criteria, the procedures cited below were followed.

Procedure

The parent-child dyads who met eligibility criteria and who agreed to be in the study were first contacted by the researcher or a research assistant. The initial contact enabled the

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researcher to determine the target child's suitability for the study. In families in which both parents were military members, the primary caregiver was selected according to the criteria mentioned previously. The research assistant then scheduled a time for the dyad to come to the lab visit which lasted approximately 30-40 minutes. Prior to the first lab visit, a questionnaire package was mailed to the participating parent. In addition to a socio-demographic form, the package contained a series of surveys assessing the primary caregiver's current level of depressive symptoms, parental stress, and marital satisfaction. The caregiver's satisfaction with their social support was also assessed. The questionnaire package took approximately 30 - 35 minutes to complete. Participants were asked to bring the completed questionnaires to the lab visit and clarification or questions regarding the forms were addressed. The researcher obtained informed consent from the caregiver before collecting the questionnaires. Informed consent was also given by the parent to allow the child to participate in the study, as well as verbal assent from the child, if appropriate. Children three-years old and over had the study procedures explained to them, and were given the opportunity to either agree or refuse to participate in the study.

A research lab was set-up at each of the participating MFRCs. The lab consisted of two rooms in close proximity. The research procedure was conducted in one room and included the camera, toys, small table and chairs. A research assistant remained in the testing room and filmed the procedure. One research assistant remained outside the testing room to conduct the procedure (e.g. knock on the door to signal the parent to leave and to ensure the child does not leave the testing room). Another research assistant remained in the non-testing room to review the questionnaires and ensure that they were accurately completed, and to interact with the parent during the separation phase of the procedure.

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The separation-reunion procedure. The Ainsworth's Strange Situation procedure (Ainsworth et al, 1978) is used for children 12 months to 30 months. The parent is given detailed instructions on the procedure, and then the observer brings the parent and child to the experimental room and leaves after 30 seconds. The parent sits on the chair and allows the child to explore for about two minutes, and then the parent stimulates play for about one minute. A stranger (research assistant) enters, but says nothing for one minute. The stranger talks to the parent during the second minute, and approaches the child during the third minute. The parent leaves discreetly, and the stranger directs attention to the child for three minutes. After three minutes the parent returns. The parent stays with the child for another three minutes, and then leaves. After two minutes, the stranger enters and focuses attention on the child for another three minutes. The parent returns, greets the child, and then picks the child up. Meanwhile the stranger leaves unobtrusively. The parent remains with the child for another three minutes. If at any point during the procedures the child becomes unduly distressed, the procedure ends immediately.

The reliability and validity of the Strange Situation procedure has been demonstrated in Ainsworth's original study (1978) and repeated in numerous studies. Ainsworth's Strange Situation procedure shows consistency with the Attachment Q-Set, which is a measure of an infant's secure based behaviour in the home setting. In her original home observations, Ainsworth found that sensitivity, acceptance, cooperation, and psychological accessibility were variables that differentiated mothers of secure, avoidant and ambivalent infants (Ainsworth et al., 1978). DeWolff and van IJzendoorn (1997), conducted a meta-analysis to examine the association between attachment security, as classified by the Strange Situation, and parental sensitivity. Results of this meta-analysis demonstrated that there is a significant association between parental sensitivity and attachment security with $r (N=1664) = .22$. van IJzendoorn and

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Krooneberg (1988) found in their cross cultural meta-analysis of the Strange Situation, that overall secure attachment classifications were similar across cultures.

The separation-reunion procedure for children three-years-old and over is based on a modified version of Ainsworth's Strange Situation (Cassidy & Marvin, 1992), and although similar to the infant procedure, the child is not introduced to a stranger. Before beginning, details regarding the procedure are given to the parent including the instruction to leave the room when they hear a knock, but to not allow the child to leave with them. The dyad is then taken to the testing room, which is furnished with age appropriate toys. The parent remains in the experimental room with the child for three minutes and then leaves for three minutes. The parent returns and stays for another three minutes, and then leaves for six minutes and then returns for an additional five minutes. For each of the separations, parents are permitted to end the procedure if they feel the child is experiencing excessive discomfort. The Preschool Attachment procedure has demonstrated considerable reliability and validity over numerous studies. Moss et al., (2004), found that secure versus insecure preschool children coded using the Preschool Attachment procedure differed in predicted directions on several outcome variables. These variables included mother-child interactive patterns, maternal psychosocial functioning, and child socio-emotional functioning, each of which is a key element of attachment theory. Previous studies, using the NICHD sample ($n > 1,000$ children), have found that children coded as secure using the Preschool Attachment procedure were more positive in interactions with their mothers, had fewer reported behaviour problems, and had mothers who were more sensitive and psychologically healthy, as compared to children classified as insecure (NICHD, Early Child Care Research Network, 2001; O'Connor et al., 2011).

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The Ainsworth Strange Situation and the Preschool Attachment Coding System are similar as they both classify the infants' or child's behaviour according to the manner in which the parent is used as a secure base. As a child moves into early childhood, secure based behaviour will more likely be transformed from non-verbal proximity seeking to verbal exchanges that involve a co-constructive experience (Moss et al., 2004). Although the behavioural manifestations may be different between infants and preschoolers, attachment classification is still based on the manner in which the child uses the parent as a secure base.

Measures

This study involved a quantitative research approach using both questionnaires and observational methods. The questionnaires were provided in both French and English.

Social demographic questionnaire. The social demographic questionnaire included questions relating to the age and number of individuals living in the home, including the child participating in the study. The rank and classification of the military member, the current status of the military member (e.g. deployed, training, home), the education and occupation of the participating parent, as well as the military spouses' current employment status were also obtained. Questions regarding the previous number of relocations, the frequency and number of community supports accessed (e.g. health professionals, friends etc) were also recorded.

Attachment. The classic Infant Strange Situation (Ainsworth, et al., 1978) and the Preschool Separation-Reunion procedure (Cassidy & Marvin, 1992), described in detail below, was used to assess attachment security in the child sample. The Infant Strange Situation was used for children under two and a half years old, and the Cassidy and Marvin's (1992) Preschool Separation-Reunion was used for children two and a half years old and over. These procedures were based on the theoretical perspective of attachment theory discussed earlier, that views a child's separation from the primary caretaker as a cue to danger, and activates the attachment

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system. According to Bowlby (1969/1988), activation of the child's attachment system will result in behavioural changes that should terminate when contact with the caregiver is re-established. The degree of these behavioural reactions will vary depending on the child's security classification (Oostermann & Schuengel, 2007).

Ainsworth's Strange Situation (Ainsworth, et al., 1978) is a widely used procedure for children under three years old. The child's attachment classification was given based on the behaviour during reunions with the caregiver. The child's proximity, contact seeking, avoidance and resistance to contact, and interaction behaviours provide a basis for categorizing behaviour into one of the four attachment classifications (Ainsworth et al., 1978, Main & Solomon, 1990, Solomon & George, 2008) discussed earlier in the introduction section. The secure (B) pattern is characterized by signs of the child missing the parent during separation, but upon reunion greets the parent and seeks contact before returning to exploration. The avoidant (A) pattern is demonstrated when the child shows little distress on separation and looks away from and actively avoids the parent on reunion. A child classified as ambivalent (C) shows significant distress during separation and halts exploration, and during reunion displays both contact and resistance behaviours. The disorganized (D) category of attachment involves behaviours during separation and reunion that have a lack of intent or explanation and often indicative of fear and anxiety. An example would include a child that approaches the parent, but then freezes, or walks backwards toward the parent, or appears to dissociate for several seconds.

Cassidy and Marvin's (1992) procedure is designed for preschool children and consists of several separation-reunion episodes discussed earlier. The child's attachment classification was based on behavior observed during both reunions using criteria from the MacArthur Preschool Attachment Coding System (Cassidy & Marvin, 1992). The secure (B) pattern was categorized

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by relaxed, mutually enjoyable parent-child interaction. The insecure avoidant (A) pattern was characterized by the child's physical and affective avoidance of the parent. Children classified insecure ambivalent/dependent (C) alternatively show resistance and conflictual behaviour patterns, or passive or dependent behaviours. Children are classified insecure behaviourally disorganized (D) if they appear unable to use the caregiver as a secure base for exploration but do not clearly show the A or C pattern. Children may also display incomplete or undirected sequencing of movements, or apprehension. The child classified as insecure-controlling attempts to control the parent's behaviour, often in a caregiving or punitive manner. Caregiving behaviour is manifest when the child is focused on helpfully guiding or cheering up the parent. A punitive child uses directive behaviour with the caregiver that may include harsh commands (Main & Solomon, 1990).

The child's attachment classification was assigned based on the data obtained from the video recordings of the research procedure. Reliable coders trained in assessing child attachment coded the data. Inter-rater reliability was calculated on 30% of the sample, and coders were blind to additional information on the dyads. Dr. Bureau and Dr. St Laurent, the two primary researchers involved in this study, are each trained in these classification measures. Dr. Bureau is trained to code the Preschool procedure, and Dr. St. Laurent is trained to code the Ainsworth procedure. Dr. Bureau and Dr. St. Laurent were the primary coders for this study; however, additional coders from the attachment field who have been trained in the coding measures did reliability coding. For both coding systems, inter-rater agreement was over 80% and consensus was reached through discussion in case of original disagreement between coders.

Maternal depressive symptoms. Parental depressive symptoms were assessed using the Patient Health Questionnaire (PHQ-9). The PHQ-9 is a self-administered short 9-item depression

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module taken from the full Patient Health questionnaire. This instrument assesses depressive symptom severity over the prior two week period based on the nine DSM-IV criteria. Items are rated on a 4 point Likert type scales (0= never to 3 = nearly every day). Scores from each item are summed to yield a total score of depressive symptom severity. Higher scores are indicative of higher levels of depressive symptoms. This depression measure has demonstrated good internal reliability with an $\alpha = .89$ (Kroenke, Spitzer, & Williams, 2001). This measure has also demonstrated good reliability and validity across several other studies including a Canadian military sample (Adewuya, Ola, & Afolabi, 2006; Lee, J. E. C., 2006; Martin, Rief, Klaiberg, & Braehler, 2006), and has been used frequently as a research tool with American and Canadian military populations (Hoge et al., 2006; Kline et al., 2010; Warner et al., 2009). The French version of the PHQ-9 has been found to be valid and adequate as a screening tool (Carballeira et al., 2007). The alpha coefficient for the current study was .86.

Parental stress. The Parental Stress Inventory (PSI) was used to assess the degree of stress that participants were experiencing in their role as primary caregiver to their child. The PSI focuses on sources of perceived stress related to the parental role (Abidin, 1995). In addition to an overall score, the instrument generates subscale scores in the parental and child domains. The parental domain taps seven dimensions; depression, feelings of competence, attachment to child, couple relations, social isolation, health, and sense of role restriction. The child domain taps maternal perceptions of six child characteristics; adaptability, demandingness, mood, hyperactivity, acceptability, and reinforcing. The PSI is a widely used measure and demonstrates good internal consistency with an $\alpha = .90$ or above on the total scale, as well as high test-retest reliability. Items are rated on a 5 point Likert type scales (1= strongly agree to 5 = strongly disagree). Items are totalled (with some items reverse scored) to yield a total raw score for

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parental stress. Higher scores are indicative of higher levels of parental stress. Acceptable discriminant, and construct validity have also been reported (Abidin, 1995). The PSI also showed similar psychometric properties when used in a French sample (Bigras, LaFreniere, & Dumas, 1996). The alpha coefficient for the current study was .95.

Quality of the couple relationship. The Abbreviated Dyadic Adjustment scale (ADAS), a seven-item questionnaire, was used to assess relationship satisfaction between the primary caregiver and the military partner. The ADAS was adapted from the original 32-item Dyadic Adjustment Scale (Spanier, 1976), and is an adequate tool for screening marital satisfaction (Sharpely & Rogers, 1984). Items are based on a 6 point Likert type scale with responses ranging from 0=always disagree to 5=always agree, and 0= never to 5=more often. Scores from each item are added to generate a total score with higher scores indicative of higher levels of marital satisfaction. The ADAS has demonstrated adequate psychometric properties, with apparent strong validity and an average internal consistency value of $\alpha=.80$ across several studies (Hunsley, Best, Lefebvre, & Vito 2001; Sharpley & Rogers, 1984). The French form of the ADAS has also been found to demonstrate good reliability, $\alpha=.91$ and good predictive validity of couple dissolution (Sabourin, Valois & Lussier, 2005). The alpha coefficient for the current study was .85.

Satisfaction with social support. Social support was measured using the Short Form Social Support Questionnaire (SSQ6), which assesses two dimensions of social support: the total number of individuals to provide support, and one's satisfaction with their perceived level of support. Part A includes six items asking respondents to identify the total number of individuals they have to provide support (e.g. who can you count on to help you; who accepts you totally, etc). Part B, the satisfaction with social support dimension, includes six items based on one's

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satisfaction with their perceived social support in these areas. Items are based on a 6 point Likert type scale with responses ranging from 1=very dissatisfied to 6=very satisfied. (Sarason, Sarason, Sheerin, & Pierce, 1987). Items are totalled and divided by 6 to yield a total score for both total number and satisfaction with social support, with higher scores indicative of larger support networks and higher levels of satisfaction with one's social support. The SSQ6 correlates very highly with the regular Social Support Questionnaire (SSQ), and is psychometrically sound with internal reliability ranging from $\alpha = 0.90 - 0.93$ (Sarason et al., 1987). The SSQ6 has been correlated with measures of depression, social anxiety, and a measure of perceived social support, as well as the long form of the SSQ. A recent study by Rascle, Bruchon-Scheitzer, and Sarason (2005) has demonstrated the reliability and validity of the SSQ6 within two French samples; a group of students and a group of unemployed men.

In an effort to reduce the number of variables used in the analyses to account for sample size, it was decided that only the satisfaction with social support dimension would be maintained in the data analyses. Given that some researchers suggest that it is one's perception of social support, rather than the total number of people offering support that leads to increased psychological well-being, it was felt that maintaining this variable would be appropriate (Sarason, Shearin, Pierce & Sarason, 1987). The alpha coefficient for the current study was .91.

Results

Preliminary Analyses

A series of preliminary analyses was conducted to examine the data for missing values, and to ensure that the assumptions of normality were fulfilled. In addition, the association between the study variables and a number of demographic variables (e.g. language, military base, military rank, child age and gender, maternal education, and income) was examined to

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determine if there were significant variables that needed to be controlled for. A final set of preliminary analyses explored the descriptives of the study variables as compared to a normative population. A power analysis, using an F-test for linear multiple regression (fixed model, R^2 deviation from zero), revealed that with a sample size of 68 mother-child dyads, with 3 predictors and 4 controls, we had power to detect an effect size of .30.

Missing values. The data were first examined for missing values. Overall the average rate of missing values was less than 1% with the income variable and parental stress variables having the highest rate of missing data at 2.9% and 2.1% respectively, the depressive symptom variable and military status variable with 1.5% missing, the social support variable with .1% missing, and the attachment, marital satisfaction, and remaining demographic variables (language, gender, age, base, and maternal education) having no missing values. The data was assessed, using Little's MCAR test (missing completely at random), to determine if the missing values followed a specific pattern or appeared to be missing completely at random. Results revealed that the data appeared to be missing completely at random: $\chi^2(1991), 956.53, p = 1.0$. The expected maximization method was used to replace missing values as this method is appropriate and sufficient when missing data is under 5% of the sample, and is considered a better option than simple listwise deletion (see Tabachnick & Fidell, 2007). For this method, a correlation matrix is formed by taking the shape of the distribution for the partially missing data, and basing inferences about the missing values from the likelihood of the distribution (Tabachnick & Fidell, 2007).

Normality of the sample. Next the study variables (depressive symptoms, parental stress, marital satisfaction, and social support) were examined to determine if there were outliers, and if the skewness and kurtosis values of the data met the assumptions of normality.

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Outliers. According to Tabachnick & Fidell (2007), a Z-score value of 3.3 (with 20 or more df for error) or greater may be indicative of an outlier. An examination of the key variables revealed two potential outliers, one on the depressive symptom variable (z-value of 3.73) and one on the satisfaction with social support (z-value of -3.53). Given that in 2012, 6.9 % of the US population suffered from a major depressive episode (National Institute of Mental Health, 2012), a higher score on the depressive symptom variable would not be uncommon. Moreover, given the population being studied, higher depressive scores were hypothesized, thus a decision was made to maintain this case within the sample. With respect to the outlier found on the satisfaction with social support variable, the nature of a military lifestyle was hypothesized to impact one's social support network, resulting in the potential for some individuals to experience high level of dissatisfaction with their level of social support. Thus a decision was made to maintain this case.

Skewness and Kurtosis. Total scores from three of the maternal variables, depressive symptoms, marital satisfaction, and satisfaction with social support did not meet assumptions for normality.

Depressive symptoms. The total score for the depressive symptom variable was positively skewed with a skewness z-score value of 4.70, and followed a leptokurtic distribution shape with a kurtosis z-score value of 3.90. After transformation, the total score from the depressive symptom variable met the assumption for normality with a skewness z-score value of -.36, and a kurtosis z-score value of .02.

Marital Satisfaction. The total score for the marital satisfaction variable was negatively skewed with a skewness z-score value of -3.59, and followed a leptokurtic distribution with kurtosis z-score value of 1.83. After transformation, the total score from the marital satisfaction

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variable met the assumption for normality with a skewness z-score value of -.46, and a kurtosis z-score value of .54.

Satisfaction with social support. The total score for the *satisfaction with social support* variable was negatively skewed with a skewness z-score value of -5.29, and followed a leptokurtic distribution with kurtosis z-score value of 4.48. After transformation, the total score for the *satisfaction with social support* variable met the assumption for normality with a skewness z-score value of -1.57, and a kurtosis z-score value of -.81.

Control variables. A series of initial analyses including chi-square, independent t-tests, one-way ANOVA's, and bivariate correlations, were conducted to examine the associations between five key variables (child attachment, depressive symptoms, parental stress, marital satisfaction, social support) and specific demographic variables including location of military base, military division, language, child age and gender, maternal education, and family income.

Attachment. Analyses revealed no significant relationship between child attachment and location of military base, $\chi^2(2, N= 68) = 1.99, p = .37$, military division, $\chi^2(2, N= 68) = .24, p = .89$, language, $\chi^2(1, N= 68) = 2.95, p = .09$, child gender, $\chi^2(1, N= 68) = .54, p = .46$, child age, $t(66) = -.76, p = .45$, caregiver education, $t(66) = .48, p = .64$, and family income, $t(64) = .85, p = .40$.

Depressive symptoms. Analyses revealed no significant relationship between maternal depressive symptoms and military base location, $F(2, 65) = .54, p = .59$, military division, $F(2, 65) = .85, p = .43$, child gender, $t(66) = -1.63, p = .11$, language, $t(66) = .91, p = .37$, child age, $r = -.07, N = 68, p = .57$, caregiver education, $r = -.19, N = 68, p = .13$, family income, $r = -.15, N = 68, p = .24$.

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Parental stress. Bivariate correlation analyses revealed significant differences between parental stress and caregiver education, $r = -.28$, $N = 68$, $p = .021$, as well as family income, $r = -.25$, $N = 68$, $p = .05$. There was no significant relationship between parental stress and child age, $r = -.11$, $N = 68$, $p = .36$. Further analyses revealed no significant differences between parental stress and military base location, $F(2, 65) = .62$, $p = .54$, military division, $F(2, 65) = .44$, $p = .65$, language, $t(66) = .91$, $p = .37$, child gender, $t(66) = -.34$, $p = .73$.

Marital satisfaction. Significant differences were found across military base location, $F(2, 65) = 3.50$, $p = .04$, and military division, $F(2, 65) = 3.69$, $p = .03$. As can be seen from Table 1.2 (means and standard deviations), participants from the Ottawa base reported less marital satisfaction compared to participants from the Valcartier base. Participants with a spouse in the Army reported the highest level of marital satisfaction and those with a partner in the Air Force reported the lowest level of marital satisfaction. No differences were found between marital satisfaction and language, $t(66) = -1.63$, $p = .11$, child gender, $t(66) = 1.51$, $p = .14$, child age, $r = .19$, $N = 68$, $p = .13$, caregiver education, $r = .10$, $N = 68$, $p = .40$, and family income, $r = -.14$, $N = 68$, $p = .26$.

Social support. Significant differences were found with regard to participants' satisfaction with social support. As can be seen from Table 1.2 (means and standard deviations), significant differences were found across military base, $F(2, 65) = 3.60$, $p = .03$, and military division, $F(2, 65) = 4.11$, $p = .02$, with respect to participants' satisfaction with the social support they were receiving. Participants based in Ottawa reported significantly lower satisfaction with the social support they were receiving compared to participants from the Petawawa and Valcartier military bases. With respect to military division, the Army group reported significantly higher satisfaction with their received social support than both the Air Force and

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Navy. No significant differences were found for participants' satisfaction with their social support and with language, $t(66) = -.42, p = .68$, child gender, $t(66) = -.95, p = .35$, child age, $r = .12, N = 68, p = .34$, caregiver education, $r = .01, N = 68, p = .93$, and family income, $r = .12, N = 68, p = .36$.

Differences compared with population- A final set of preliminary analyses were conducted on the study variables to assess if there were differences between the descriptive statistics obtained in the military sample and those found in the general population.

Attachment. Within the general population, approximately 65% of children are classified as secure, with the remaining 35% classified as insecure (van IJzendoorn & Kroonenberg, 1988). A series of one-sample nonparametric chi-square analyses were conducted to explore if there were differences between the military sample and general population in terms of the ratio of secure vs. insecure attachment. Results showed that there was no difference, between the overall military sample and the normative population, $p = .21$, with 57% (39) of the sample being secure, and 43% (29) of the sample being insecure. However, further analyses revealed significantly more insecure attachment in the deployed group as compared to the general population, $p = .001$, with only 27% (4) of this group classified as secure, and 73% (11) classified as insecure (3 Avoidant, 4 Ambivalent, and 4 Controlling/Disorganized).

Depressive symptoms. A recent German study, using the PHQ-9 to assess depressive symptoms in a general population sample found that of 2692 female participants between the ages of 25-34, the overall mean for depressive symptoms was 2.51 with a standard deviation of 3.01 (Kocalevent, Hinz, & Brahler, 2013). Considering the lack of a meta-analysis on the PHQ-9, this general population sample was used as a baseline to compare our sample to. A one-sample nonparametric Kolmogorov-Smirnov test was conducted, using the total depressive symptom

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score before transformation, to determine if there were differences between the military sample and this general population sample. Results revealed significantly higher depressive symptoms in the military sample as compared to the general population sample, $p < .001$. See Table 1.3 for means and standard deviations. An additional one-sample nonparametric Kolmogorov-Smirnov test revealed significantly higher depressive symptoms in the deployed and home groups, as compared to the general population sample, $p < .001$, and $p < .01$ respectively. See Table 1.3 for means and standard deviations of the military sample as compared to the normative sample group. The PHQ-9 classifies depressive symptom scores as in the mild (> 5), moderate (> 10), and severe (> 15) range. See Table 1.4 for a proportion of depressive symptoms severity in the general population sample as compared to the military sample.

Parental stress. The mean for the total parental stress score from validation studies in the general population has been found to be 222.8 with a standard deviation of 6.2 (Abidin, 1995). Within the military sample, the overall mean was 221.8 with a standard deviation of 42.61. A one-sample non-parametric Kolmogorov-Smirnov test found a statistically significant difference between the military sample and the general population, $p < .001$. An additional Kolmogorov-Smirnov analysis revealed significant differences between the deployed group, $p < .02$, and home group, $p < .001$, as compared to a normative population. See Table 1.3 for means and standard deviations of the military sample as compared to the normative sample group.

Marital satisfaction. Hunsley and Best (2001) in their validation study of the Abbreviated Dyadic Adjustment scale, found mean marital satisfaction scores of 26.4 ($SD = 4.7$) and of 21 ($SD = 4.3$) in two independent samples of Canadian females, mean age of 35.9 years ($SD = 11.8$ years) and 33.9 years ($SD = 8.1$ years) respectively. Using a mean score derived from these two scores, 23.6 ($SD = 4.5$), a Kolmogorov-Smirnov test was conducted on the military

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sample, using the total marital satisfaction score before transformation, to determine if there was a significant difference between the military sample and these community samples. Results revealed significant differences between the overall study sample and the community samples, $p < .001$. An additional Kolmogorov-Smirnov analysis revealed significant differences between the community samples and the deployed and home groups, with higher levels of marital satisfaction reported in the two military groups, as compared to the community samples, $p = .02$, and $p < .01$ respectively. See Table 1.3 for means and standard deviations of the military sample as compared to the community sample group.

Social support. After conducting an extensive review of the literature, in addition to contacting the author of the social support measure, it was determined that a comparative analysis would not be performed, due to a lack of empirical data with a comparable sample. Although the overall mean score on satisfaction with social support in our sample was similar to results from prior studies, most of these studies have been conducted with university population samples (Rasclie et al., 2005; Yeh & Inose, 2003).

In conclusion, the results from these preliminary analyses indicated a few significant differences between the study and demographic variables. A series of correlations showed significant associations between the parental stress variable and family income and maternal education. A series of univariate analyses revealed significant differences across military base and military division in terms of marital satisfaction, and satisfaction with social support. Thus, income, maternal education, military division, and military base were used as control variables when appropriate within the main analyses. Furthermore, the transformed maternal depressive, marital satisfaction, and satisfaction with social support variables were used in all of the analyses. A few differences were also found between the study variables and general population

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samples, with the most significant being in the area of child attachment and maternal depressive symptoms.

Principal Analyses

All analyses for this study were conducted using version 21 of the IBM SPSS statistical software package, which includes a computation which enables bootstrapping of the sample data. Bootstrapping is an analytic procedure that allows for reliable estimates of the standard errors and confidence intervals of a population by repeatedly re-sampling the original sample. Bootstrapping the sample data eliminates the outliers that weaken the accuracy of the analysis, and reduces the margin of error potentially resulting from smaller sample sizes (IBM, SPSS Bootstrapping 21, 2012). Bootstrapping is also becoming one of the more valid and powerful methods for testing intervening variable effects (Williams & MacKinnon, 2008). Given the relatively small sample size of this study, and also that several of the analyses involved exploration of mediating effects, the decision was made to use bootstrapping for each of the analyses.

Objective 1- Military status and child attachment. To determine if there was a main effect of military status on child attachment, a binary logistic regression analysis was performed with child attachment security as the outcome and military status as the predictor. Child attachment was classified as either secure or insecure.

Coding of predictors. Dummy codes were created to categorize the three military groups; deployed, away, and home, into a deployed condition or an away condition. For the deployed condition, mothers who had a partner deployed (e.g. Afghanistan) were compared to mothers with a partner away but not deployed (training, imposed restriction etc.) or who had a partner stationed at the home unit. For the away condition, mothers who had a partner away were compared with those mothers who had a partner deployed or at the home unit.

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Primary analysis. A test of the full model with the military status predictor against a constant-only model was statistically significant $\chi^2(2, N=68) = 9.4, p < .01$, indicating that the military status reliably distinguished secure from insecure child attachment.

In this study, a Nagelkerke value of .17 indicated that military status accounted for approximately 17% of the variance in child attachment security. In linear regression models, the R^2 value is used to account for the proportion of variance in the outcome variable associated with the predictors. However, computing a R^2 value in logistic regression is not possible, thus a number of pseudo- R -squared measures have been developed to address this issue. SPSS provides values for two of these measures; the Cox and Snell test and the Nagelkerke test. There is considerable debate in the literature regarding the Cox and Snell test, as this measure never reaches its theoretical maximum of 1 (Field, 2009). The Nagelkerke test is an adjusted version of the Cox and Snell test that amends the scale of the statistic to cover the full range from 0-1. Thus, the decision was made to report the Naglekerke values for each analysis.

Prediction success for the overall model was approximately 68% (89.7% for secure attachment and 37.9% for insecure attachment). According to the Wald statistic, only the deployment condition reliably predicted child attachment, $\chi^2(1, N=68) = 4.60, p = .032$. The away condition was not a significant predictor of child attachment, $\chi^2(1, N=68) = 1.75, p = .14$. An odd's ratio of 4.22 for the deployed condition, suggests that a child is over 4 times more likely to be classified with an insecure attachment when the partner is deployed. Table 1.5 shows regression coefficients, Wald statistics, odds ratios and 95% confidence intervals for odds ratios for the away and deployed conditions.

Recently-deployed and attachment. Given that the impact of deployment may continue after a military member returns home (Booth et al., 2007), the deployed variable was re-coded to

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also include those participants whose partner had returned from deployment within the last six months. Another logistic regression was conducted using the deployed-recently/deployed condition and the away condition as predictors of attachment. Results revealed a similar pattern compared to the analysis using the actively deployed group, with military status reliably distinguishing secure from insecure child attachment, $\chi^2 (2, N=68) = 10.86, p < .01$. Prediction success for this overall model was at 70.6% (82.1% for secure attachment and 55.2% for insecure attachment). A Nagelkerke R square value of .20 indicated that military status accounted for 20% of the variance when the recently deployed group was included in the deployed condition. Again, only the deployed/recently deployed condition reliably predicted child attachment, $p = .014$, 95 % CI (.25, 2.70). The away condition was not a significant predictor of child attachment, $p = .14$, 95 % CI (-20.79, .42). See Table 1.6, for regression coefficients, Wald statistics, odds ratios and 95% confidence intervals for odds ratios for the deployed/recently deployed and away conditions.

Objective 2- Military status and maternal variables. A series of regression analyses was conducted to determine the impact of military status on the maternal variables of depression, parental stress, and marital satisfaction. For these analyses, military status was coded, as in objective 1: deployed vs. home and away condition, and away vs. home and deployed condition.

Military status and depressive symptoms. Results of a hierarchical regression analysis revealed that military status explained approximately 6 % of the variance in maternal depressive symptoms, $R^2 = .057, F (2, 65) = 1.97, p = .15$. Military deployment was found to significantly predict maternal depressive symptoms, $p = .05$, 95% CI (.022, 1.22). However, this result should be interpreted with caution, as the overall model was not significant, and the away condition did

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not significantly predict maternal depressive symptoms, $p = .81$, 95 % CI (-.77.59). See Table 1.7 for R -squared change values, and regression coefficients.

Recently-deployed and depressive symptoms. A regression analysis examining the impact of deployment on maternal depressive symptoms was conducted, this time including the reclassified deployed group. Results revealed that deployment had no significant impact on maternal depressive symptoms when including those participants who had a partner recently return from deployment.

Military status and parental stress. A hierarchical regression analysis was conducted to determine whether military status significantly predicted maternal parental stress. The deployment and the away condition did not significantly predict parental stress. See Table 1.7 for R -squared change values, and regression coefficients.

Recently-deployed and parental stress. A regression analysis examining the impact of deployment on parental stress was again conducted using the deployed/recently deployed group. Results revealed similar results in that deployment had no significant impact on parental stress when including those participants who had a partner recently return from deployment.

Military status and marital satisfaction. A regression analysis was used to explore whether military status significantly predicted marital satisfaction. Neither, the deployed or away conditions significantly predicted marital satisfaction. See Table 1.7 for R -squared change values, and regression coefficients.

Recently-deployed and marital satisfaction. A regression analysis examining the impact of deployment on marital satisfaction was again conducted using the deployed/recently deployed and away conditions. Again, results revealed that deployment had no significant impact on

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marital satisfaction when including those participants whose partners recently return from deployment.

Objective 3 - Maternal variables as mediators on child attachment. Given the significant relationship between deployment and child attachment security, the next step was to determine if this relationship was mediated through maternal depressive symptoms, parental stress, and marital satisfaction. Historically, the causal steps approach popularized by Baron and Kenny have been used to determine if a variable serves as a mediator; however, this method has been criticized as being low in power, the existence of a mediating effect is inferred from the outcome of a set of hypothesis tests rather than quantification of the intervening effect. Preacher and Hayes (2004) have developed statistical approaches that allow one to conduct formal significance tests of the indirect effect in a mediation model, allowing for greater power to detect a significant effect. A series of bootstrapping mediation analyses, using the PROCESS syntax created for SPSS, was conducted to determine if maternal depressive symptoms, parental stress, and marital satisfaction mediated the impact of deployment on child attachment.

Maternal depressive symptoms. The results from the mediation analysis found a marginal effect of military deployment on maternal depressive symptoms, and a main effect of deployment on child attachment security. However, as can be seen from Table 1.8 (*p*-values and confidence intervals), the relationship between deployment and child attachment security was not mediated through maternal depressive symptoms. A Nagelkerke value of .17 indicated that together deployment and maternal depressive symptoms accounted for approximately 17% of the variance in child attachment security.

Parental stress. The results of the mediation analysis revealed that the relationship between deployment and child attachment was not mediated through parental stress. As can be

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seen from Table 1.8, there was no significant main effect of military status on parental stress, nor a main effect of parental stress on child attachment security. However, the effect of deployment on child attachment remained significant. A Nagelkerke value of .19 indicated that together with the control variables of maternal education and family income, deployment and parental stress accounted for approximately 19 % of the variance in child attachment security.

Marital satisfaction. The results of the final mediation analysis revealed that the relationship between deployment and child attachment was not mediated through marital satisfaction (see Table 1.8). As can be seen from Table 1.8, there was no significant main effect of deployment on marital satisfaction, nor a main effect of marital satisfaction on child attachment security. However, the effect of deployment on child attachment remained significant. A Nagelkerke value of .18 indicated that together with the control variables of military base location, military division, deployment and marital satisfaction accounted for approximately 18 % of the variance in child attachment security.

Impact of the recently-deployed group on attachment. Another series of mediation analyses were conducted using the three maternal mediators (depressive symptoms, parental stress, and marital satisfaction); however the deployed condition was re-classified to include those participants whose partner had returned from deployment within the past six months. As shown in Table 1.9, similar results to the initial mediation analysis were found, with a main effect of deployment (including those recently returned from deployment) on attachment. This main effect was not mediated through the maternal variables of depressive symptoms, parental stress, and marital satisfaction.

Objective 4 - Social support as a moderator. An analysis, using the PROCESS syntax created for SPSS, was conducted to determine if satisfaction with social support had a

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moderating effect on the relationship between deployment and child attachment. A series of moderation analyses were then conducted to determine if there was a moderating effect of social support on the relationship between deployment and maternal depressive symptoms, parental stress, and marital satisfaction. Given the differences across military base location and military division on satisfaction with social support, these variables were entered into each analysis as controls. The income and maternal education variables were added as controls when conducting the moderating analysis on satisfaction with social support and the relationship between military status and parental stress.

Social support and attachment. Results from the analysis revealed that satisfaction with social support did not moderate the relationship between deployment and attachment; $p = .19$, 95 % CI (-2.60, 13.46). Furthermore, there was no main effect of satisfaction with social support on child attachment, $p = .61$, 95% CI (-2.07, 3.51).

Social support and maternal variables. Results from a series of moderation analyses revealed that satisfaction with social support did not moderate the relationship between military status and depressive symptoms, parental stress, or marital satisfaction. However, a main effect of satisfaction with social support on each of these three variables was found, $p < .01$, $p < .01$, and $p < .01$ respectively. See Table 1.10 for β and t -values.

Social support and recently deployed group. Another series of moderation analyses were conducted using the re-classified deployed group. Results were similar to the initial analyses in that there was no moderating affect of satisfaction with social support on the relationship between military status and attachment, and military status and the maternal variables. A main effect of satisfaction with social support on maternal depressive symptoms, parental stress, and marital satisfaction was found.

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Discussion

John Bowlby and Mary Ainsworth, through their development of attachment theory, greatly enhanced the understanding of the dynamics that impact the quality of early child-parent relationships. Over the last number of decades, researchers have continued to refine and extend Bowlby's and Ainsworth's original theory, and there is now ample evidence within the general population demonstrating that depressive symptoms, parental stress, and marital satisfaction impact child attachment security. Extending findings from the general population, this study sought to determine whether these parental factors impact child attachment security in the same manner within a military population, or whether military deployment has a unique impact on child attachment.

Objective 1- Does Military Status Predict Child Attachment Security?

The findings supported the main hypothesis that military status, specifically deployment, significantly predicted child attachment. Not only was the proportion of insecure child attachment significantly higher in the deployed group as compared to the away and home conditions, but the deployed group also had a significantly higher proportion of insecure attachment as compared to the general population. To our knowledge, this is the first study examining the impact of military status on the attachment relationship between the child and non-military parent using observational assessment tools. Therefore, it is difficult to know if the results of this study are consistent with prior research within military samples. In order to understand why deployment would have an effect on attachment, we further explored the possible association with maternal variables such as depression, parental stress, and marital satisfaction. In the general population, research supports a link between child attachment security and such maternal factors (Middleton et al., 2009; Moss et al., 2004; Owen & Cox, 1998). We believed that these maternal variables would be especially relevant to parents with a partner

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deployed, given the dynamics associated with a deployment including the assumption of total parenting responsibilities during a period of increased stress (e.g. worries about partner's safety, managing the operation of a household).

Objective 2- Does Military Status Predict the Maternal Variables?

Depressive symptoms. As expected from our hypothesis, our study found a significant effect of military status, specifically deployment, on maternal depressive symptoms; however, this effect was modest and the overall model was not significant. This finding is somewhat consistent with prior studies that have reported higher levels of symptoms in spouses of deployed military members. It is important to note that most studies on military families have been conducted in the United States, and the few that have been conducted in Canada have collected survey data from large samples (Dursun & Sudom, 2009; Skomorovsky, 2014). Therefore, despite using statistical methods to account for a smaller sample size, the modest effect of deployment on depressive symptoms found in our study may relate to sample size and the methodology used. In comparison, Warner et al., (2009) assessed depressive symptoms in a large sample of spouses (864) with a deployed partner and found that over 43% exhibited moderate to severe depressive symptoms; however, no comparison was made to non-deployed and non-military samples. Dursun and Sudom (2009) found in their Canadian sample, that there were higher levels of depressive symptoms in spouses with a partner deployed then those whose partners were not deployed; however, no comparison was made to a general population sample. In the current study, the overall military sample reported higher depressive symptoms, as compared to a general population sample. An examination of both the mean scores and depressive-scale breakdown of the deployed group revealed higher levels of reported depressive symptoms, yet there was only a modest difference compared to the home and away group. The modest effect of deployment on depressive symptoms may relate to lack of power to locate a

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stronger effect, given that the overall sample reported a higher level of depressive symptoms as compared to a general population sample.

The higher mean of reported depressive symptoms found in our overall sample, as compared to a general population sample, suggests that characteristics inherent to a military lifestyle may increase the risk of depressive symptoms in military spouses (e.g. geographical separations). However, factors unique to having a partner deployed may further exacerbate this risk. A number of studies have found loneliness, and fear regarding their partners' safety to be the primary concerns reported by military spouses when their partners are deployed (Burrell et al., 2006; De Burgh, White, Fear, & Iverson, 2011; Drummet et al., 2003). Although these feelings would not necessarily be captured by maternal variables such as parental stress, they could be associated with feelings of depression..

Parental stress. Contrary to our expectations, we did not find support for our hypothesis regarding the impact of military status on parental stress. Previous studies (De Pedro et al., 2011; Flake et al., 2009; Lincoln & Sweeten, 2011) have cited a significant increase in parental stress when a partner is deployed, yet the results of the our study were inconsistent with these findings. Although the overall results indicate a statistical difference between a general population sample and the deployed and home groups, the clinical relevance is minimal, only a 4.47 (deployed) and 1.48 (home) point difference on a scale ranging from 142- 331. On the PSI, parental stress is considered clinically significant, and may have a negative effect on children when reported stress scores are above 252 (Abidin, 1990). Although, the highest mean score for the military sample was found in the deployed group (227.2), it was still significantly lower than the clinical cut-off score.

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The lack of an effect of military status, particularly deployment, on parental stress in our study may be associated with factors known to buffer against the effects of parental stress. Flake et al. (2009) found that younger military parents, with lower incomes and a shorter duration of marriage were more likely to report higher levels of parenting stress especially when a partner was deployed. Conversely, employed participants with higher education and income levels, and those who used military supports, reported significantly less parenting stress when their partner was deployed. In our study we found a negative association between parental stress, and income and education. However it is important to note that 94% of the sample had a household income of over 50,000 dollars and 79% had a college diploma or a higher education. A recent Canadian study with military spouses found similar results in terms of education and income (Dursun & Sudom, 2009). Park (2008) in a recent government report cited that over 63% of Canadian Forces members some form of secondary education and earned more than their civilian counterparts. The results from these studies, as well as the findings from our study, suggest that overall Canadian military families are reasonably well educated and maintain a household income comparable to the general population. Consequently, income and education may have had a buffering effect on parental stress in this study. Furthermore, participants were recruited through their local military family resource centers, suggesting that these mothers were accessing additional supports such as respite child care, deployment support groups, and child play groups. As discussed earlier in the general introduction, it may not be the stressors themselves that necessarily create stress, but rather one's perception of their coping abilities. Thus, the differences in parental stress of non-military spouses found in the current study compared to previous studies may in fact be related to variables that increases one's ability to cope and which are known to mitigate some of the detrimental aspects of parental stress, especially associated

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with deployment.

One further point to note is that the lack of an association between military status and parental stress we found, may relate to differences in the demographics found in our sample, as compared to samples on which other studies have been conducted. As previously discussed in the general introduction section, most studies examining the impact of deployment on parental stress have been based on an American military population which differs from a Canadian military population on a number of key demographic elements, particularly income and minority status (Mowat, 2011). Indeed, there is a greater likelihood that individuals from poor and disadvantaged environments join the American military (Lutz, 2008). Conversely, within a Canadian context these demographic factors do not predict military service (Mowat, 2011). Therefore, American military studies are based on samples that potentially have a greater proportion of vulnerable individuals and families at risk of elevated levels of parenting stress, particularly during deployment, due to predisposing factors. Thus, while the participants in our study were functioning well in terms of income and education, our results may have been different had we conducted our study with a higher risk sample.

Another contributing factor potentially impacting parental stress in American versus Canadian military families may relate to the length of deployments. American soldiers are typically deployed for 12 -18 months (Flake et al., 2009) whereas Canadian soldiers are deployed on average from 6-9 months. Parenting stress for the non-deployed spouse has been shown to increase the longer the soldier is deployed, with a number of studies showing that longer deployments are associated with poor adjustment for both children and non-deployed spouses (Chandra et al., 2009, DeBurgh et al., 2011).

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Marital satisfaction. Given the mixed results found in prior studies, we did not make a specific prediction regarding the impact of military status upon marital satisfaction. We found higher levels of reported marital satisfaction in both the deployed and home group, as compared to the community sample. It is important to note, that although there was a statistical difference, the results were not necessarily meaningful. Sharpley and Rogers (1984), in their validation study of the Abbreviated Dyadic Adjustment Scale, found that the reported means of separated and divorced individuals were 15.2 and 13.4 respectively. Similarly, Hunsley et al. (2001) reported a mean of 15.7 in a group of distressed couples. Thus when compared to distressed couples, both the community samples and overall military sample appear to be reasonably well adjusted with respect to marital satisfaction.

One explanation for the levels of reported marital satisfaction in the current study relates to dyadic support. A recent Canadian study found that for both military members and their spouses, support from each other is crucial for job performance and emotional well-being (Dursun & Sudom, 2009). Other studies have shown that spouses who are supportive of their partners' deployment and feel it is meaningful report higher levels of marital satisfaction (Bergmann, Renshaw & Allen, 2014). While the non-deployed spouses' level of support and feelings regarding their partners' deployment were not assessed in this study, a recent survey of Canadian military spouses found that 82% were supportive of their partners' career and over 60% would support him being deployed in the next 6 months (Dursun & Sudom, 2009). In the current study, it may be that the increased levels of marital satisfaction are related to the spouses' support of a military lifestyle and partners' career.

Another possible explanation for the higher levels of marital satisfaction in the deployed group, may relate to the military spouses' perception of the deployment experience. In our study,

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spouses with a partner deployed were asked to complete the marital satisfaction survey based on their relationship with their partner prior to deployment. Most of these partners were deployed to a war zone, in which there was a constant threat of injury or death, leading to the possibility that the spouses' perspective on the relationship were influenced by deployment related dynamics. It is quite possible that the legitimate threat of danger and the possibility that the partner might not return, may have led spouses to reflect and report on the positive aspects of the relationship rather than dwelling on past issues that may have led to conflict.

Objective 3- Do Maternal Variables Mediate the Impact of Military Status on Attachment?

Contrary to our expectations, the impact of military status, particularly deployment, on attachment was not mediated through maternal depressive symptoms, parental stress, and marital satisfaction. The lack of a mediating effect of these maternal variables, suggests that deployment impacts child attachment through a different pathway than commonly seen in the general population. One potential factor that may impact the effect of deployment on attachment is the child's and mother's anxiety, which will be later discussed in detail.

Objective 4- Does Social Support Moderate the Impact of Military Status on Attachment, and on Military Status and Maternal Variables?

Surprisingly, satisfaction with social support did not moderate the relationship between military status and child attachment, nor did it moderate the relationship between military status and the maternal variables of depressive symptoms, parental stress, and marital satisfaction. However, consistent with previous studies, results showed a negative relationship between satisfaction with social support and depressive symptoms and parental stress, and a positive relationship with marital satisfaction (Dimiceli et al., 2010; Verdeli et al., 2011). The lack of a moderating effect found for satisfaction with social support may relate to the homogeneity of the

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overall group, as there was little variance in satisfaction with social support across the three groups. While satisfaction with social support did not moderate the relationship between deployment and attachment, or the relationship between military status and the maternal variables, there was an overall effect of social support on the maternal variables. The negative relationship found between social support and the maternal variables, suggests that one's satisfaction with their level of social support impacts emotional well-being regardless of their partner's military status.

Recently Deployed versus Deployed Only

Previous literature (Booth et al., 2007) indicates that military spouses continue to experience increased maternal depressive symptoms and parental stress, and decreased marital satisfaction after their partners return from deployment. Contrary to findings from previous studies, we did not find increased depressive symptoms and parental stress, nor did we find decreased marital satisfaction when we included partners in the deployed group who had returned from deployment within the past six months. Overall we found a similar pattern of results compared to using only the actively deployed group, the only exception being that there was no effect of deployment on depressive symptoms. The lack of a deployment effect on depressive symptoms may in fact support our explanation that higher level of depressive symptoms were related to fear regarding the partner's safety, and loneliness at being separated from one's spouse. Thus, when the military partner returned home, the spouse's fear for his safety and the opportunity to reconnect may have improved depressive symptoms.

Given that the main effect of deployment on attachment remained when including the recently deployed group, despite no mediating effect found for the maternal variables on attachment, suggests that there may be unique factors related to deployment that continue to

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impact child attachment even after the parent returns, or it could also be that it takes some time to rebuild an attachment relationship that has been disrupted. Finally, a significant main effect of satisfaction with social support on the three maternal variables remained. Given the overall pattern of similar results found, with the exception of depressive symptoms, when including the recently deployed group in the deployed group suggests that overall this group is not significantly different than the deployed group.

Possible Explanation for the Overall Pattern of Results.

In the following section, we explore possible explanations for why maternal depressive symptoms, parental stress, and marital satisfaction did not impact the association between deployment and attachment in the same way found in prior research. Our results suggest that having a parent deployed impacts child attachment through a different pathway than that found in normative populations. It is important to keep in mind that this is the first study to specifically explore child attachment within a military context, and any explanations provided are speculative in nature due to the absence of empirical background to compare the current study with.

Anxiety. One possible explanation for the higher proportion of insecure children in the deployed group may relate to the emotional well-being of the children. Anxiety regarding the availability and responsiveness of the attachment figure leads to the development of insecure attachment in children (Colonnesi et al., 2011). Through the deployment experience, children experience the temporary loss of a parent, which may lead to anxiety about the other parent leaving. A recent survey of American military families, found that over 68% of respondents with a partner deployed, reported that their children demonstrated some form of anxiety including significant worry, crying, sleep difficulties, and fear of being left by the non-military parent (Military Family Lifestyle Survey, 2013). Other studies also cite anxiety as a significant issue for

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children of deployed parents (Barker & Berry, 2009; Flake et al., 2009; Lincoln & Sweeten, 2011). It is reasonable to assume that children, who have experienced the loss of a parent through deployment, though in most cases temporary, might develop increased worry and anxiety related to the availability of the remaining parent. As a result, these children may be at increased risk for developing an insecure attachment to the remaining parent. Furthermore, preschoolers are more likely to be exposed to knowledge regarding the potential dangers associated with the military mission, whether it is through viewing news media, overhearing conversations between the non-deployed parent and other adults, as well as gaining information from other children especially if the family resides on a military base. These factors could potentially increase the child's fear and worry related to the deployed parent.

In addition to the child, anxiety might lead parents to interact with their children in a manner that increases the risk of developing an insecure attachment. We have cited a number of studies reporting that military spouses experience increased levels of parental stress when their partners deploy; however, a specific focus related to the parent's anxiety is rarely included. While stress and anxiety are often used interchangeably, they are not identical constructs. Stress can be viewed as bodily or mental tension resulting from specific situations and stressors, whereas anxiety is related to worry and apprehension regarding unknown factors. It is possible that parents might cope well with deployment related stressors, yet also experience considerable anxiety regarding their partners' safety, potential changes in their spouse upon return, as well as the impact of the deployment on their children's emotional functioning. In fact, parental concern about long-term emotional-being of their children has been identified as a significant worry in a number of studies (Allen, Rhoades, Stanley, and Markman, 2011; Military Family Lifestyle Survey, 2013). While the non-deployed parent may cope with deployment related stressors

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adequately, the coping strategies she uses to address her own, as well as her child's anxiety could potentially impact the child's attachment security. Riggs and Riggs (2011) suggest that parents, who are insecure themselves, may function adequately under normal conditions; however, factors related to deployment may create vulnerability for increased maladaptive coping strategies.

Emotional availability. Another explanation regarding the higher proportion of insecure attachment found in the deployed group may relate to parental availability. It is well documented that secure attachment in children is dependent upon parental availability and responsiveness; however, factors associated with having a spouse deployed may inadvertently lead to less parental availability. Military spouses with a deployed partner are left to assume total responsibility for parenting, in addition to managing multiple tasks associated with operating a household (Burrell et al., 2006; Hoge et al., 2006). Assuming responsibility for these additional tasks would certainly impact the amount of time a mother would have available to engage and respond to her child's needs. In the current study, almost 60% of the mothers were engaged in some form of employment, with 32 % of the mothers employed full-time outside of the home. Managing a full-time job, in addition to increased responsibilities associated with deployment, might certainly impact the amount of time available to the child.

Limitations

The findings from this study revealed that deployment significantly impacts child attachment; however, there are a number of limitations to note. Given our sample size, we were statistically unable to conduct analyses on the insecure subtypes, which may have given us further insight into the dynamics impacting child attachment in the deployed group. Furthermore because this was not a longitudinal design, we were unaware of the child's attachment

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classification before deployment. Although using a longitudinal sample to study the impact of deployment on attachment would be ideal, in practice it would be very difficult. Recruiting military families to participate in studies using observational methods is challenging at best, given a military culture of privacy. Moreover, in order to assess child attachment before deployment, one would have to know beforehand which families were going to deploy, which would be difficult to determine.

Due to the scope of the current study, we did not assess maternal sensitivity or emotional availability, although it is possible that maternal insensitivity may account for some of the variance of the relationship between deployment and insecure attachment. It is recommended that future studies explore this association. The number and length of previous deployments, as well as the length of the current deployment, are additional areas that would be important to explore in future studies, as these variables may also impact child attachment. However, while we do not have specific information regarding the number of previous deployments the family had experienced, we do know that the majority of our participants had a partner deployed to Afghanistan, which is known as one of the most dangerous missions Canadian soldiers have embarked on in recent years.

A final limitation to note is the selection bias and demographic characteristics of the current sample. Overall this sample was reasonably well educated and economically stable. They were also recruited through local military family resource centers, suggesting they were using the supports available to military families. It is possible, that our findings may have been different, particularly in the area of depressive symptoms and parental stress if we had been able to recruit from a military population who were not connected to the military community. However, it is

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important to note, that even though our sample that was reasonably well educated and financially secure, deployment still impacted child attachment in a negative manner.

Conclusion and Implications for Intervention

In the current climate of global instability, it is unlikely that the number of military deployments will decrease. In fact, in the last decade there has been a significant increase in the number of deployments. Given that more deployed military members have children than previous conflicts (e.g. World Wars I & II, Vietnam), it is vital that parents, educators, and other professionals understand how deployment impacts military children, particularly in the area of child-parent attachment. In our study, we found that deployment significantly impacts the child's attachment relationship with the non-deployed spouse, and that this impact continues after the deployed parent's return. It is well known that children with an insecure attachment are at increased risk for emotional and social difficulties across the lifespan. Thus, it is imperative that we continue to focus research efforts on understanding the fundamental elements that impact child attachment when a parent is deployed. Based on our findings, we suggest that anxiety may be one pathway through which attachment is affected by deployment; therefore, focused research efforts in this area would be beneficial. Furthermore developing specific interventions addressing anxiety in both parent and child may counteract the negative impact of deployment on child attachment. As children learn to manage their anxiety with the support of the parent, they may also become increasingly secure in the attachment relationship.

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Table 1.1
Descriptives of Military Sample

Demographic Variables	Overall (N =68)		Deployed (N=15)		Away (N=15)		Home (N= 38)	
Child Age	<i>M (SD)</i> 45.21 (17.51)		<i>M (SD)</i> 48.3 (18.63)		<i>M (SD)</i> 47.73(15.61)		<i>M (SD)</i> 42.97(17.90)	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Mother's age								
18-25	2	2.9					2	5.3
26-30	23	33.8	6	40	4	26.7	13	34.2
31-40	40	58.8	9	60	11	73.3	20	52.6
41-50	3	4.4					3	7.9
Child Gender								
Male	34	50	11	73.3	6	40	17	44.7
Female	34	50	4	26.7	9	60	21	55.3
Maternal Language								
English	34	50	4	26.7	7	46.7	23	60.5
French	34	50	11	73.3	8	53.3	15	39.5
Maternal Education								
< High School	1	1.5					1	2.6
High School	3	4.4	1	6.7	1	6.7	1	2.6
Some college or university	10	14.7			2	13.3	8	21.1
College diploma	22	32.4	6	40	6	40.0	10	26.3
Undergraduate degree	21	30.9	5	33	4	26.7	12	31.6
Graduate Degree (Masters or PhD)	11	16.2	3	20	2	13.3	6	15.8
Family Income								
30, 000 -39,999	1	1.5	1	6.7				
40, 000- 49, 999	3	4.4					3	7.9
50, 000- 74, 999	22	32.4	5	33.3	5	33.3	12	31.6
75, 000- 99, 999	22	32.4	5	33.3	5	33.3	12	31.6
>100,000	20	29.4	4	26.7	5	33.3	11	28.9
Maternal Employment Status								
Employed full-time	22	32.4	6	40.0	5	33.3	11	28.9
Employed part-time	6	8.8	2	13.3	1	6.7	3	7.9
Employed within the home	10	14.7	4	26.7	2	13.3	4	10.5
Currently looking for work	5	7.4	1	6.7			4	10.5
Not-employed/other	25	36.8	2	13.3	7	46.6	16	42.1
Military Base								
Ottawa	20	29.4	1	6.7	6	40	13	34.2
Petawawa	19	27.9	3	20.0	2	13.3	14	36.8
Valcartier	29	42.6	11	73.3	7	46.7	11	28.9
Member's Military Division								
Army	53	77.9	14	93.3	10	66.7	29	76.3
Air Force	9	13.2	1	6.7	2	13.3	6	15.8
Navy	6	8.8			3	20.0	3	7.9

IMPACT OF MILITARY STATUS ON ATTACHMENT

Table 1.2

Means for Marital Satisfaction and Social Support across Military Division and Base

	Marital Satisfaction		Satisfaction with Social Support	
Military Division	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Army	3.21 (25.68)	.75 (4.43)	1.78 (5.19)	.19 (.85)
Air Force	2.42 (20.22)	1.05 (6.70)	1.63 (4.43)	.19 (1.23)
Navy	2.82 (22.50)	1.30 (7.4)	1.61 (4.22)	.25 (1.59)
Base Location	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Ottawa	2.71 (22.30)	.95 (5.90)	1.65 (4.46)	.23 (1.39)
Petawawa	3.03 (24.32)	.96 (6.24)	1.81 (5.30)	.19 (.84)
Valcartier	3.35 (26.55)	.67 (3.47)	1.71(5.19)	.17 (.72)

Note. Means (*M*) and standard deviations (*SD*) are based on transformed variables; (original *Ms* and *SDs* before transformation)

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Table 1.3.

Means and Standard Deviations for the Military Sample and Normative Sample for the Study Variables

	Military Overall	Deployed	Away	Home	Normative
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Depressive Symptoms	5.75 (4.90)	7.73 (5.93)	4.93 (4.74)	5.29 (4.42)	2.51 (3.01)
Parental Stress	221.81 (42.62)	227.27 (42.36)	217.60 (28.86)	221.32 (47.70)	222.80 (6.20)
Marital Satisfaction	24.68 (5.35)	26.27 (3.17)	23.13 (6.09)	24.66 (5.65)	23.60 (4.50)
Social Support	5.00 (1.04)	5.18 (.77)	4.98 (.63)	4.95 (1.25)	

IMPACT OF MILITARY STATUS ON ATTACHMENT

Table 1.4

Proportion of Depressive Symptoms of Military Sample Compared with Normative Sample

Depressive Symptoms	Military Overall	Deployed	Away	Home	Normative
None	40%	20%	33%	50%	75%
Mild	42%	53%	67%	29%	20%
Moderate	15%	13%		21%	4%
Severe	3%	13%			1%

Note. No moderate depressive symptoms were reported by the away group, and no severe depressive symptoms were reported by the away or home group.

IMPACT OF MILITARY STATUS ON ATTACHMENT

Table 1.5
Child Attachment as Predicted by Military Status

Predictor Variables	<i>B</i>	Wald	Odds Ratio	95% CI Odds Ratio	
				Lower	Upper
Deployed	1.44*	4.60*	4.22	1.13	15.73
Away	-.96	1.75	.38	.09	1.60
Constant	-.43	1.66	.65		

Note. CI = confidence interval.

* $p < .05$.

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Table 1.6

Child Attachment as Predicted by Military Status including the Recently-Deployed group

Predictor Variables	<i>B</i>	Wald	Odds Ratio	95% CI Odds Ratio	
				Lower	Upper
Deployed/Recent Deployed	1.32*	5.34*	3.73	1 .22	11.36
Away	-1.00	1.86	.38	.09	1.55
Constant	-.58	2.29	.56		

Note. CI = confidence interval.**p* < .05.

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Table 1.7

Deployment as a Predictor of Maternal Depressive Symptoms, Parental Stress, and Marital Satisfaction

Outcome Variables	ΔR^2	ΔF	<i>df</i>	β
Depressive Symptoms				
Step 1	.06	1.97	2(65)	
Deploy (1 vs. 2 & 3) ^a				.23*
Away (2 vs. 1 & 3) ^a				-.03
Parental Stress				
Step 1	.11	3.81*	2(65)	
Income				-.17
Maternal Education				-.22
Step 2				
Deploy (1 vs. 2 & 3) ^a	.11	.30	2(63)	.08
Away (2 vs. 1 & 3) ^a				-.03
Marital Satisfaction				
Step 1	.11	3.80*	2(65)	
Base Location				.25 ^t
Military Division				-.11
Step 2	.12	.52	2(63)	
Deploy (1 vs. 2 & 3) ^a				-.01
Away (2 vs. 1 & 3) ^a				-.13

Note. *a* = Military status dummy coded (1=deployed, 2=away, 3=home).**p* < .05; ^t*p* < .10

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Table 1.8

Military Status and Mediating Effects of Maternal Variables on Child Attachment

Model Variables		P-Value	95 % CI	
			LL	UL
Mediator 1. Depressive Symptoms				
Military Status (X) on Depressive Symptoms (M)	Deployed	.07 ^t	-.06	1.27
	Away	.80	-.75	.58
Military Status (X) on Attachment (Y)	Deployed	.03*	.12	2.83
	Away	.18	-2.39	.46
Depressive Symptoms (M) on Attachment (Y)		.82	-.54	.43
Total Effect of X on Y		.03*	.12	2.76
Direct Effect of X on Y		.03*	.12	2.83
Indirect effect of X on Y			-.51	.28
Mediator 2. Parental Stress				
Military Status (X) on Parental Stress (M)	Deployed	.53	-17.37	33.54
	Away	.84	-27.37	22.73
Military Status (X) on Attachment (Y)	Deployed	.03*	.17	2.86
	Away	.19	-2.40	.48
Parental Stress (M) on Attachment (Y)		.81	-.01	.01
Total Effect of X on Y		.03*	.16	2.84
Direct Effect of X on Y		.03*	.17	2.86
Indirect effect of X on Y			-.40	.16
Mediator 3. Marital Satisfaction				
Military Status (X) on Marital Satisfaction (M)	Deployed	.95	-.57	.53
	Away	.33	-.79	.27
Military Status (X) on Attachment (Y)	Deployed	.05*	.02	2.80
	Away	.16	-2.52	.42
Marital Satisfaction (M) on Attachment (Y)		.90	-.67	.59
Total Effect of X on Y		.05*	.02	2.81
Direct Effect of X on Y		.05*	.02	2.81
Indirect effect of X on Y			-.17	.20

Note. CI= Confidence Interval; LL= lower limit; UL = upper limit; * $p < .05$; ^t $p < .10$

IMPACT OF MILITARY STATUS ON ATTACHMENT

Table 1.9

Military Status (Including Recently Deployed/Deployed Group) and Mediating Effects of Maternal Variables on Child Attachment

Model Variables		P-Value	95 % CI	
			LL	UL
Mediator 1. Depressive Symptoms				
Military Status (X) on Depressive Symptoms (M)	Rec-Deployed	.29	-.28	.92
	Away	.81	-.75	.59
Military Status (X) on Attachment (Y)	Rec-Deployed	.02*	.19	2.44
	Away	.18	-2.44	.46
Depressive Symptoms (M) on Attachment (Y)		.82	-.48	.48
Total Effect of X on Y		.02*	.20	2.43
Direct Effect of X on Y		.02*	.19	2.44
Indirect effect of X on Y			-.28	.26
Mediator 2. Parental Stress				
Military Status (X) on Parental Stress (M)	Rec-Deployed	.99	-22.74	22.45
	Away	.92	-26.57	24.09
Military Status (X) on Attachment (Y)	Rec-Deployed	.02*	.24	2.54
	Away	.19	-2.42	.48
Parental Stress (M) on Attachment (Y)		.97	-.01	.01
Total Effect of X on Y		.02*	.24	2.54
Direct Effect of X on Y		.02*	.24	2.54
Indirect effect of X on Y			-.19	.22
Mediator 3. Marital Satisfaction				
Military Status (X) on Marital Satisfaction (M)	Rec-Deployed	.64	-.58	.36
	Away	.31	-.78	.25
Military Status (X) on Attachment (Y)	Rec-Deployed	.02*	.21	2.55
	Away	.16	-2.51	.41
Marital Satisfaction (M) on Attachment (Y)		.97	-.63	.65
Total Effect of X on Y		.02*	.21	2.54
Direct Effect of X on Y		.02*	.21	2.55
Indirect effect of X on Y			-.23	.15

Note. CI= Confidence Interval; LL= lower limit; UL = upper limit; * $p < .05$; [†] $p < 1$

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Table 1.10

Satisfaction with Social Support as a Predictor of Maternal Depressive Symptoms, Parental Stress, and Marital Satisfaction

Outcome Variables	<i>t value</i>	<i>df</i>	β	95 % <i>CI</i>	
				<i>LL</i>	<i>UL</i>
Depressive Symptoms	-2.66	6 (61)	-1.52*	-3.28	-.35
Parental Stress	-3.25	8 (59)	-88.48*	-142.89	-34.08
Marital Satisfaction	2.75	6 (61)	1.58*	.43	2.73

* $p < .05$

Study 2:

The Unique Role of Military Status in Predicting Child Behaviour Problems above that
Accounted for by Child Attachment and Parental Stress

Abstract

There is a wealth of literature within general population samples demonstrating the impact of child attachment security and parental stress on child adjustment, specifically in the area of child behaviour problems. Although the association between attachment and behaviour problems in military samples is relatively unknown, a number of studies have found a link between parental stress and behaviour problems, particularly when a parent is deployed. However, it is unclear if military deployment itself makes a unique contribution to the prediction of behaviour problems after accounting for child attachment and parental stress. In the current study, the association between child attachment, parental stress and behaviour problems was examined in a military deployed, a military non-deployed and a non-military group of preschoolers. After accounting for child attachment and parental stress, the unique contribution of military status to child behaviour problems was explored. Results showed that both child attachment security and parental stress were associated with elevated levels of internalizing and total behaviour problems; however, only parental stress was associated with conduct behaviour problems. Furthermore, while deployment uniquely predicted elevated levels of internalizing, conduct and total behaviour problems, there was also a significant effect of the military non-deployed group on internalizing problems. These findings suggest that factors associated with a military lifestyle place children at greater risk for internalizing problems, but having a parent deployed to a war zone makes an additive and independent contribution to not only internalizing problems, but also to conduct and total behaviour problems.

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Introduction

The development of a secure attachment toward parents is considered essential to an individual's social and emotional health across the lifespan (Bowlby, 1969). Attachment relationships provide the foundation for the development of an individual's sense of self, guiding emotional and behavioural reactions and fostering interpersonal competence. Children who develop secure attachments with their caregivers in early childhood exhibit healthy family and peer relationships, and demonstrate greater autonomy and self-esteem throughout childhood and into adulthood (Bowlby, 1988, Thompson, 2008). Conversely, children who develop insecure attachment relationships with their caregivers are at a higher risk for developing behaviour problems during childhood, along with mental health and social difficulties throughout life (Brumariu & Kerns, 2010; Campbell, Matestic, von Stauffenberg, Mohan, & Kirchner, 2007; Mills-Koonce, Sutton, & Cox, 2008; Miner & Clarke-Stewart, 2008, van IJzendoorn, Schuengel & Bakermans-Kranenburg, 1999). In Study 1, the role of military status on attachment, as well as on maternal depressive symptoms, parental stress, and marital satisfaction was examined. In the current study, we explored if attachment and parental stress predicted behaviour problems in a military sample of preschoolers and a control group of non- military preschoolers. We then explored the impact of military status on reported behaviour problems, in order to determine if there was an additive component above and beyond what was explained by attachment and parental stress.

Overview of Behaviour Problems

Childhood behaviour problems are typically conceptualized within two broad domains, those behaviours that are manifested externally and those manifested internally. Externalizing

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patterns are characterized by behaviours such as over reactivity, noncompliance, poor impulse control, tantrums, and aggression towards peers (Campbell, 1995; Kolko, Baumann, Bukstein & Brown, 2007), whereas internalizing behaviours include anxiety, fearfulness, somatic complaints, sadness, and social withdrawal (Campbell, 1995; Olsen & Rosenblum, 1998). Although behaviour problems develop early in childhood, the impact is manifested across the lifespan.

Developmental Risk

The literature delineates a clear association between childhood externalizing and internalizing behaviours and detrimental outcomes across the lifespan (Bayer et al., 2011; Duchesne, LaRose, Vitaro, & Tremblay, 2010; Fergusson, Boden, & Horwood, 2014; Hofstra, van der Ende, & Verhulst, 2001). Childhood externalizing behaviours are often more salient as they create immediate difficulties in both home and school environments due to their overt nature (e.g. disruptive classroom behaviours, aggression, tantrums etc), whereas, internalizing behaviours, due to their covert nature, may not be as easily detected. Consequently, externalizing behaviours, until recently, have received more research attention. A number of studies have shown that children exhibiting externalizing behaviours are less engaged in school, exhibit low academic performance, are more frequently rejected by peers, have poor attendance, and are at increased risk to drop out of school during adolescence (O'Connor, Dearing, & Collins, 2011; Stefan & Miclea, 2010). Moreover, childhood externalizing behaviours are associated with later adult criminal offences, substance use, internalizing disorders, disruptive and anti-social behaviours (Fergusson et al., 2014; Reef, Diamantopoulou, van Meurs, Verhulst, & van der Ende, 2011).

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Historically, there has been a paucity of literature examining the link between internalizing behaviours in childhood and developmental outcomes. However, over the last number of years there has been a significant increase in research related to internalizing problems, and children as young as three years old have been shown to exhibit anxiety and depressive symptoms (Duchesne et al., 2010; Luby, 2013). In fact, anxiety disorders are the most common form of psychological distress in children, with prevalence rates ranging anywhere from 2.6% to 23.9% (Bayer, et al., 2011; Duchesne et al., 2010). Internalizing behaviour problems are often associated with outcomes such as academic under-achievement, poor peer and social skills, and lower peer acceptance (O'Connor et al., 2011; Olsen & Rosenblum, 1998). Moreover, there is increasing evidence that internalizing problems, particularly anxiety, are associated with externalizing problems (Becker, Luebbe, & Langberg, 2012; Kolko et al., 2007). It is well established that internalizing problems in early childhood often remain stable into adolescence and adulthood, increasing the risk for subsequent anxiety and mood disorders, difficulties in relationships, and negatively impact employment opportunities (Bayer et al., 2011; Stefan & Micla, 2010). Given that both childhood externalizing and internalizing behaviour problems affect social and mental well-being across the lifespan; it is necessary to examine the factors that contribute to the development of these problems.

Attachment and Behaviour Problems

One area that has been associated with the development of behaviour problems in childhood is that of the attachment relationship between children and their parents. There is a significant association between an insecure attachment relationship in infancy and later behaviour problems in the preschool and early school years. Studies, using both normative and high-risk samples, found that children classified with an insecure attachment during infancy were

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more likely to exhibit aggressive and externalizing behaviours during preschool and early school years (Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; van IJzendoorn et al., 1999). A recent meta-analysis of 46 studies found a significant association between insecure attachment in childhood and child anxiety (Colonnesi et al., 2011). A number of other studies have also found a link between an insecure attachment and behaviour problems in preschool and school age children (Bureau & Moss, 2010; Moss, Bureau, Cyr, Mongeau & St. Laurent, 2004; O'Connor, Bureau, McCartney, & Lyons-Ruth, 2011). The NICHD Study of Early Child Care, the most comprehensive child care study conducted to date, found that children who were classified as insecure at three years old had higher levels of reported internalizing and externalizing behaviours as compared to those with a secure attachment history (O'Connor et al., 2011; McCartney, Owen, Booth, Clarke-Stewart & Vandell, 2004). The association between attachment security and behaviour problems appears linked to, at least two specific factors; emotional regulation and internal working models.

Emotional regulation. During the first 12 to 18 months of life, a child moves from a state of complete dependence upon the caregiver to one of greater autonomy (e.g. being fed to learning to feed oneself). Infants and young children do not have the capacity to control emotions such as distress, fear and anger; however, a secure attachment to parents helps children to develop the ability to self-regulate their emotions. According to Glaser (2000), a caregivers' consistent and sensitive response to the child's overwhelming emotion enables the child to return to a state of emotional equilibrium, whereas, children who are insecurely attached to parents do not experience the consistent parental attunement necessary to develop their own self-regulation skills. As a result, children who have an insecure attachment toward their parents accumulate frustration and dysregulation, which may result in intense anger and anxiety (Weinfield, Sroufe,

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Egeland & Carlson, 2008). Children who are unable to manage these intense emotions are more likely to develop externalizing behaviours, such as aggression, and internalizing forms of behaviour, such as anxiety that may lead to anxiety disorders (Deklyen & Greenberg, 2008; Stefan & Miclea, 2009).

Internal working models. Bowlby (1969/1982) suggested that the early attachment relationship is a model from which children develop expectations of the world and other people. Children who have been treated in a consistent responsive manner view the world as good and themselves as lovable (Liotti, 2004). However, children with an insecure avoidant attachment develop a working model of the self as unworthy and others as rejecting, and children with an insecure ambivalent attachment may view themselves as incompetent and others as unpredictable (McElwain, Cox, Burchinal & Macfie, 2003). The working models resulting from an insecure attachment to the parent guide a child's expectations and behaviour in relationships and leads to both externalizing and internalizing behaviour problems. Children with insecure attachment are more likely to act in accordance with their internal working models and express negative affect, show less empathy, and to be perceived by teachers as more hostile (McElwain et al., 2003). In one study, preschool children with insecure avoidant attachment histories were more likely to victimize their partners, and children with an insecure-ambivalent attachment were more likely to be victims if they were paired with insecure avoidant children (Weinfield et al, 2008). Children with an insecure-ambivalent attachment toward parents are also more likely to act according to an internal model of helplessness, by exhibiting less assertiveness and more dependence in their peer relationships (Berlin, Cassidy & Appleyard, 2008).

Attachment in a military context. The research exploring child attachment to parents in a military context is limited, and to date it appears only one study looking at child attachment in

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a military context has been published (Posada, Longoria, Cocker and Lu, 2011). This study did not assess child attachment through direct observation between the parent and child, nor did it specifically examine the association between child attachment and reported internalizing and externalizing behaviours. However, our results from Study 1 showed that children with a parent deployed have a higher proportion of insecure attachment to the non-deployed mother, as compared to those children whose parent is not deployed. Consequently, these children may be at risk for developing and exhibiting elevated levels of behaviour problems.

Parental Stress and Behaviour Problems

Parenting stress is defined as the "stress that arises from being a parent" (Anthony, Anthony, Glanville, Waanders, & Shaffer, 2005). While factors directly relating to parenting, such as a child's disability or illness impact stress levels, other environmental factors such as economic strain, marital quality, work difficulties, and the daily responsibilities of managing a home and parenting have also been shown to significantly impact parental stress (Crnic & Low, 2002; Neece, Green & Baker, 2012; Pereira, Negrao, Soares, & Mesman, 2014; Weiland and Baker, 2010). Parents who report higher levels of stress are more likely to exhibit authoritarian and harsh parenting behaviours, exhibit less warmth toward their children, and are less likely to be involved with their children (Deater-Deckard, 1998; Repetti & Wood, 1997; Windle & Dumenci, 1997). Consequently, children may internalize maladaptive strategies for negotiating peer and social interactions, which may lead to the development of behaviour problems. In fact, there is a wealth of literature demonstrating the link between increased levels of parental stress and behaviour problems in children (Conger, Patterson & Ge, 1995; Deater-Deckard, 1998; Haskett, Ahern Ward, & Allaire, 2006; Neece et al., 2012).

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Parental stress in a military context. Military families experience additional stressors resulting from the military lifestyle, particularly when the military member is deployed. A number of American studies have found increased levels of parental stress for the non-deployed spouse, and behaviour problems (both internalizing and externalizing) in children when a parent is deployed; however, we were unable to find any Canadian military studies that specifically assessed parental stress using standardized measures (Allen, Rhoades, Stanley, & Markman, 2011; Barker & Berry, 2009; Flake, Davis, Johnson & Middleton, 2009).

Gender and Behaviour Problems

It is well documented that there is an association between behaviour problems and gender. Externalizing behaviour patterns specifically conduct disorder and attention deficit hyperactive disorder; appear to be more common in boys (Carter et al., 2010; Lavigne, LeBailly, Hopkins, Gouze, & Binns, 2009). With regard to internalizing behaviours, researchers have found that young boys and girls show equal rates of anxious and depressive symptoms (Olson & Rosenblum, 1998). Within a military context, there is some evidence to suggest that boys (adolescent sample) have more behavioural difficulties during deployment, and girls have more difficulties after the deployment (Chandra, Burns, Tanielian, Jaycox & Scott, 2008; Mmari, Roche, Sudhinaraset, & Blum, 2009). Given this association, gender was used as a potential covariate in this study.

Military Status and Behaviour Problems

There is a dearth of Canadian literature examining the relationship between young children and behaviour problems in a military context, and relatively few American studies have examined this association. Of the studies that have been conducted, the focus is most often on the association between deployment and behaviour problems. Chartrand, Frank, White, and Shope

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(2008) found higher externalizing and internalizing behaviours in children aged three-to-five who had a deployed parent compared to children without a deployed parent. Another study found, in a sample of children aged 5-12 with a deployed parent, that 39% were at risk for internalizing symptoms, and 29% were at risk for externalizing problems (Flake et al., 2009). Gorman, Eide, and Hisle-Gorman (2010), in a retrospective examination of medical records, found that outpatient and medical visits to address behavioural and stress disorders in young children increased by 10% during deployment.

From the limited data available, deployment appears to result in more behaviour problems for military children. However, what is unclear from the literature on military status, particularly deployment, and behaviour problems, is if deployment independently predicts behaviour problems after accounting for attachment and parental stress. It may be that factors specific to the deployment of the parent results in increased behaviour problems, regardless of the non-deployed parent's emotional functioning. For example, while preschool children are old enough to perceive their parents' absence, they may lack the necessary verbal skills to express their emotions about the parents' deployment. As a result, they may exhibit their feelings through increased behaviour problems. Moreover, children who are exposed to information from other children, particularly if they live on military bases, as well as media reports about the military mission, may experience increased worry and fear about the deployed parent leading them to express their feelings in the form of problematic behaviours. Furthermore, a father's presence during the preschool years is thought to be crucial in enabling children to regulate excitement and high arousal, therefore helping with socialization with peers (Paquette, 2014). Empirical results have shown that a father's absence from the home is associated with increased behaviour problems (Park et al., 2002). Finally children, may perceive their mother to be worried about the

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deployed parent, thus in an effort to protect the parent may suppress their own feelings leading to the development of behaviour problems.

Study Hypotheses and Objectives

The theoretical tenets known to impact maternal well being (e.g. depressive symptoms, parental stress, dyadic relationship etc), which indirectly affect behaviour problems, were discussed in detail in Study 1. In the current study, the manner in which child attachment and stress were associated with behaviour problems in a preschool sample of military versus non-military children aged three to six years old was explored. We then examined if military status independently predicted behaviour problems above and beyond that accounted for by attachment and parental stress.

Objective 1. The first objective was to determine if there were variations in reported behaviour problems across the 3 groups: a non-military control group, a military-non-deployed group, and a military-deployed group. Based on the potential stressors associated with a military lifestyle, particularly deployment, and prior literature, higher levels of reported behaviour problems were expected in the deployed vs. non-deployed group, and in the military vs. non-military group.

Objective 2. The second objective was to determine if attachment and parental stress predicted total, internalizing, and externalizing problems, and then to examine if military status offered a unique contribution above and beyond these two variables. It was expected that attachment and behaviour problems would predict total, internalizing, and externalizing problems, but that military status would offer a unique contribution above what was accounted for by attachment and parental stress.

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Method

Participants

The participants for this study were comprised of two military child-parent dyad groups, and a non-military control group. To be eligible for the military group, the parent had to be the partner of a Canadian Forces military member and the child was required to be a preschooler between three and six years old. For this study, a sub sample of children ages three-to-six years old was selected from a military sample of children aged one to six years old. A detailed description of the selection procedures for the military groups is provided in Study 1. The control group for the current study was comprised of participants randomly selected from an urban community sample of preschoolers with similar characteristics in terms of age, language, and gender. Mothers of the preschoolers in this group were designated to be the participating parent in order to maintain homogeneity, as there were only mothers in the military sample. Parents who participated in the control group were compensated \$20, and the child was given the opportunity to choose an age appropriate toy from a toy chest. The control sample also received ethics approval from the University of Ottawa. The final sample comprised of 51 military preschoolers, $M_{age} = 52$ months, $SD = 14.73$ months, and 34 control preschoolers, $M_{age} = 47$ months, $SD = 8.24$ months. See Table 2.1 for descriptive statistics of the sample.

Recruitment Process

Military group. The Director of the Military Family Services (DMFS) agreed to sponsor this research study and assisted with recruitment of participants. Potential participants were recruited through local Military Family Resource Centres (MFRC). Director Military Family Services (DMFS) distributed an administrative order to selected MFRC's in Ottawa, Petawawa, and Valcartier, PQ, as well as two additional bases that did not participate. This administrative order provided details relating to the purpose of the research, the sample selection strategy, how

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the research was to be conducted and for whom, the schedule of events, and the researchers' background and contact information. Local MFRCs then distributed a Request for Research Participation notice, based on the above information to its clients and members via newsletters, websites, posters and flyers. MFRC employees and volunteers also directed visitors' attention to the notice, and provided more details when requested (see Appendix B). Potential participants self-selected by initiating contact with the researchers directly or authorizing the MFRC to share their contact information with the researchers. A total of 68 parent-child lab visits were completed.

In working with the military population, researchers are expected to adhere to the Privacy Code for Military Family Services Program. This code, developed by Director Military Family Services (DMFS), is a tailored version of the Canadian Standards Association Model Code for the Protection of Personal Information - CAN/CSA-Q830-96 (see Appendix C). The code assists MFRCs in protecting the personal information of Canadian Forces (CF) members and their families that is provided to or collected by MFRCs located within Canada. In addition, all researchers and research assistants were required to obtain a "vulnerable persons" police check before conducting research procedures with parent-child dyads.

The researchers were contacted directly by potential participants, or the local MFRC provided the researchers with the contact information of interested individuals. Additional information was provided to interested parties with further details related to the study, including the procedures to be used, the risks and benefits of the study, as well as limits to confidentiality and the right to withdraw at any time. Once individuals agreed to participate in the study and met eligibility criteria, the procedures cited below were followed.

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Control group. Recruitment for the control group was conducted through newspaper and magazine ads, posters, the university's website, and radio ads. The researchers, after being contacted by potential participants or having obtained the participants' contact information, provided additional information directly to the participants. This included the procedures to be used, the risks and benefits of the study, as well as limits to confidentiality and the right to withdraw at any time. Potential participants, who agreed to participate in the study and met the eligibility criteria, followed the procedures outlined below.

Procedure

Military group. The parent-child dyads that met eligibility criteria and agreed to be in the study were first contacted by either the researcher or research assistant. This initial contact enabled the researcher or research assistant to determine the target child for the study. In families in which both parents were military members, the primary caregiver was selected according to the criteria mentioned in study one. The research assistant then scheduled a time for the dyad to come to the lab for one visit, which lasted approximately 30 to 40 minutes. Before the first lab visit, a questionnaire package was mailed to the participating parent. The package contained several surveys that were used to assess the current level of parenting stress, and child behaviour problems. The primary caregiver was also asked to complete a socio-demographic form. The questionnaire package took approximately 30 - 35 minutes to complete. Participants were asked to bring the completed questionnaires to the lab visit and any questions regarding the forms were addressed. The researcher or research assistant obtained informed consent from the caregiver before the questionnaires were returned and the research procedure began. In addition, informed consent was obtained from the parent to allow the child to participate in the study. Children had a simplified version of the study procedures explained to them, and were given the opportunity to either agree or disagree to participate.

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A research lab was set up at each of the participating Military Family Research Centres. The lab consisted of two rooms in close proximity to each other. The research procedure was conducted in one room and included the camera, toys, small table and chairs. A research assistant remained in the testing room and filmed the procedure. One research assistant remained outside the testing room to conduct the procedure (e.g. knock on the door to signal the parent to leave and to ensure the child did not leave the testing room). Another research assistant remained in the non-testing room to review the questionnaire package and ensure that it has been completed accurately, and to interact with the parent during the separation.

Control group. The parent-child dyads that met eligibility criteria and agreed to be in the study were first contacted by either the researcher or research assistant. This initial contact enabled the researcher or research assistant to determine the target child for the study. The research assistant then scheduled a time for the dyad to come to the lab for the separation-reunion procedure, which lasted approximately 30-40 minutes. The research assistant obtained informed consent from the caregiver as well as verbal assent from the child. Children had the study procedures explained to them, and were given the opportunity to either agree or disagree to participate.

The research lab was located at the University of Ottawa, and consisted of two rooms in close proximity to each other. The research procedure was conducted in one room and included a built-in camera, toys, a small table and chairs. A research assistant filmed the procedure from another room. One research assistant remained outside the testing room to conduct the procedure (e.g. knock on the door to signal the parent to leave and to ensure the child did not leave the testing room). The parent was asked to complete several questionnaires which assessed the current level of parenting stress, child behaviour problems, and a number of socio-demographic

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questions that took approximately 30-35 minutes to complete. A research assistant reviewed the questionnaires to ensure accuracy.

Measures

This study involved a research approach using both questionnaires and observational data. The questionnaires were available in French and English.

Social demographic questionnaire. The social demographic questionnaire for the military groups included questions relating to the age and number of individuals living in the home, including the child participating in the study. The rank and classification of the military member, the current status of the military member (e.g. deployed, non-deployed), the education of the participating parent, as well as the non- military parent's current employment status were also surveyed. Questions regarding the previous number of relocations, the frequency and number of community supports accessed (e.g. health professionals, friends etc.) were also asked.

The social demographic questionnaire for the control group consisted of similar questions including the age and number of individuals living in the home, the education and employment status of the participating parent, the frequency and number of community supports accessed (e.g. health professionals, friends etc).

Attachment. The Preschool Separation-Reunion procedure (Cassidy & Marvin, 1992), described in detail in Study 1 was used to assess attachment security in the military and control group. Cassidy and Marvin's (1992) procedure is designed for preschool children and consists of several separation-reunion episodes discussed in Study 1. The child's attachment classification was based on behavior observed during both reunions using criteria from the MacArthur Preschool Attachment Coding System (Cassidy & Marvin, 1992). The secure (B) pattern was categorized by relaxed, mutually enjoyable parent-child interaction. The insecure avoidant (A)

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pattern was characterized by the child's physical and affective avoidance of the parent. Children classified insecure ambivalent/dependent (C) alternatively showed resistance and conflictual behaviour patterns, or passive or dependent behaviours. Children were classified insecure behaviourally disorganized (D) if they appeared unable to use the caregiver as a secure base for exploration, but did not clearly show the A or C pattern. Children classified as insecure controlling attempted to control the parent's behaviour, often in a caregiving or punitive manner. Caregiving behaviour is manifest when the child is focused on helpfully guiding or cheering up the parent. A punitive child uses directive behaviour with the caregiver that may include harsh commands (Main & Solomon, 1990).

The child's attachment classification was assigned based on the data obtained from the video recordings of the research procedure. Reliable coders trained in assessing child attachment coded the data. Inter-rater reliability was calculated on 30% of the sample, and coders were blind to additional information on the dyads. Dr. Bureau was the primary coder for this study; however, additional coders from the attachment field who have been trained in the coding measures did reliability coding. For the coding system, inter-rater agreement was over 80% and consensus was reached through discussion in case of original disagreement between coders.

Parental stress. The Parental Stress Inventory (PSI) was used to assess the degree of stress that participants were experiencing in their role as primary caregiver to their child. The PSI focuses on sources of perceived stress related to the parental role (Abidin, 1995). In addition to an overall score, the instrument generates subscale scores in the parental and child domains. The parental domain taps seven dimensions; depression, feelings of competence, attachment to child, couple relations, social isolation, health, and sense of role restriction. The child domain taps maternal perceptions of six child characteristics; adaptability, demandingness, mood,

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hyperactivity, acceptability, and reinforcing. The PSI is a widely used measure and demonstrates good internal consistency with an $\alpha = .90$ or above on the total scale, as well as high test-retest reliability. Items are rated on a 5 point Likert type scales (1= strongly agree to 5 = strongly disagree). Items are totalled (with some items reverse scored) to yield a total raw score for parental stress. Higher scores are indicative of higher levels of parental stress. Acceptable discriminant, and construct validity have also been reported (Abidin, 1995). The PSI also showed similar psychometric properties when used in a French sample (Bigras, LaFreniere, & Dumas, 1996). The alpha coefficient for the current study was .95.

Parent-reported behaviour problems. The Strengths and Difficulties Questionnaire (SDQ) was completed by the primary caregiver. This measure was used to assess the child's social development, specifically in the domain of behaviour problems. The SDQ is a brief measure of psychological adjustment for children aged three to sixteen years old, and can be completed by parents or teachers in less than five minutes (Goodman, 1997). The SDQ uses a 3-point Likert-type scale (0= not true to 2=certainly true) to ask how each of 25 attributes, both positive and negative, apply to the target child. The 25 items yield five sub-scales including emotional symptoms, conduct problems, inattention-hyperactivity, peer problems, and prosocial behaviour. Four of the five sub-scales (prosocial not included) are added together to yield a total behaviour score. Scores from the conduct and inattention-hyperactivity scales can be added together to generate a broader externalizing score, and scores from the emotion and peer problems subscales can be added to generate a broader internalizing score. Higher scores are indicative of elevated levels of behaviour problems. The SDQ has been found to have satisfactory psychometric properties, with an $\alpha = .73$ on internal consistency (Goodman, 2001), and Goodman and Scott (1999) finding a high correlation of .87 between the SDQ and equivalent

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Child Behaviour Checklist (Achenbach, 1990) scales. The SDQ has also been found to be a valid predictor of psychological maladjustment in children, and not only is useful to researchers due to its brevity, but it is also available free of cost. The SDQ has also been validated with a French sample, and internal consistency was found to be satisfactory with overall $\alpha = .70$, and adequate reliability on the subscales (Shojaei, Wazana, Pitrou, & Kovess, 2009). For the current study, behaviour problems were explored in the context of total behaviour, internalizing, and conduct difficulties. Given the inability to transform scores from the hyperactive subscale to meet the assumptions of normality, a broader externalizing score was not generated. The alpha coefficients for the current study were .67 for internalizing, .68 for conduct, and .74 for total behaviour problems.

Results

Preliminary Analyses

Preliminary analyses were conducted to screen the data for missing values and to ensure that the assumptions of normality were fulfilled before commencing with the main analyses. In addition, the associations between the key study variables (attachment, parental stress, group status, and behaviour problems) and a number of demographic variables were explored for potential covariates. A power analysis, using an F-test for linear multiple regression (fixed model, R^2 deviation from zero), revealed that with a sample size of 85 mother-child dyads, with 3 predictors and 2 controls, we had power to detect an effect size of .21.

Missing values. The data sets from both the military and control samples were examined for missing values. Overall, the average rate of missing data for the military sample was less than 1% with the income variable and parental stress variables having the highest rate of missing data at 3.9% and 2.6% respectively, and the remaining variables including attachment, group status,

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behaviour problems, language, gender, age, and maternal education having no missing values.

Little's MCAR test revealed that the data appeared to be missing completely at random:

$\chi^2(1284), 521.77, p = 1.0$. Overall the average rate of missing data for the control group was also

less than 1%, with the parental stress variable missing .14% of the data, and the behaviour

problems' variable missing .12% of the data. The remaining variables including attachment,

group status, language, gender, age, income, and maternal education had no missing values.

Again, Little's MCAR test revealed that the data appeared to be missing completely at random:

$\chi^2(381), 381, p = 1.0$. The expected maximization method was used to replace missing values as

this method is appropriate and sufficient when missing data is under 5% of the sample, (see

Tabachnick & Fidell, 2007).

Normality of the sample. Scores from the parental stress, the total behaviour problems, and subscales of the behaviour problems' variables were examined to determine if there were outliers, and if the skewness and kurtosis values of the data met the assumptions of normality.

Scores from the attachment and group variables were categorical; therefore, it was not necessary to determine if the assumptions of normality were met.

Outliers. Overall scores from the parental stress, total behaviour problems, and behaviour subscales did not show values beyond the 3.29 standardized score that Tabachnick & Fidell (2007) suggest may be indicative of an outlier.

Skewness and kurtosis. According to Field (2009), a z score greater than 1.96 is indicative of non-normality in smaller samples (p. 139). Using Field's criteria, total scores from the parental stress and the behaviour problem subscales, as well as the overall behaviour problems' variables were significantly skewed.

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Parental stress. The total score for the parental stress variable was positively skewed with a skewness z-score value of 2.52; however, the kurtosis z-score value of .16 was within the limits of normality. After transformation, the total score for the parental stress variable met the assumption for normality with a skewness z-score value of -1.65 and a kurtosis z-score value of -.40.

Behaviour subscales. In addition to a total behaviour score, the Strength and Difficulties Questionnaire also provides scores on four subscales: emotion, peer, conduct, and hyper which are totalled to generate the total behaviour score, or two broader scales which categorize behaviours as either internalizing (emotion and peer) and externalizing (conduct and hyper). The total scores from the emotion, peer, conduct, and hyper variables were positively skewed with skewness z-score values of 5.70, 3.40, 3.70, and 1.98 respectively. With the exception of the emotion subscale (kurtosis z-score of 3.61), the kurtosis z-score values for the remaining subscales, .71, .43, and -1.14 respectively, were within satisfactory limits. After transformation, the z-scores of the skewness values on the emotion (.46), peer (-1.30), and conduct (-.49) variables were within normal limits. However, the hyper variable remained skewed after a square root transformation was applied, with a z-score value of 2.10. Applying a log 10 transformation to the untransformed hyper score resulted in the values becoming increasingly skewed with a z-score of 2.26. The decision was made to eliminate this variable from the analyses as it did not meet the assumption of a normal distribution.

The untransformed emotion and peer variables were totalled to create an internalizing behaviour variable, which was significantly skewed with a z-score value of 5.09 and followed a leptokurtic distribution with a z-score value of 4.64. After transformation, the internalizing behaviour variable fell well within the limits of normality with a skewness z-score value of .16

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and a kurtosis z-score value of .49. Given the failure of the hyper variable to meet assumptions of normality, the transformed conduct variable was used in the analyses as a measure of externalizing behaviours.

Total behaviour problems. The score for the total behaviour problems variable is typically comprised of a sum of the four behaviour subscales; however, because of the difficulties with the hyper variable, only the untransformed emotion, peer problems, and conduct variables were used to generate the total behaviour score. This score was positively skewed with a skewness z-score value of 4.06, and followed a leptokurtic distribution shape with a kurtosis z-score value of 1.74. After transformation, the score for the total behaviour problems variable met the assumption for normality with a skewness z-score value of .27, and a kurtosis z-score value of .03.

Control variables. Language, child age, child gender, maternal education and family income were considered as possible control variables. Appropriate analyses were conducted to examine the association between these potential covariates and child attachment, parental stress, group status, total behaviour problems, internalizing and conduct behaviour problems.

Attachment. Analyses revealed no significant relationship between child attachment and language, $\chi^2(1, N= 85) = .35, p = .56$, child gender, $\chi^2(1, N= 85) = .01, p = .93$, child age, $t(83) = -.55, p = .58$, maternal education, $t(83) = .82, p = .41$, and family income, $t(83) = .25, p = .80$.

Parental stress. A negative association was found between parental stress and family income, $r(83) = -.38, p < .001$. Further analyses revealed no significant differences between parental stress and language, $t(83) = -.91, p = .37$, child gender, $t(83) = .48, p = .63$, child age, $r(83) = .01, p = .90$, and maternal education, $F(2, 82) = 1.17, p = .31$.

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Total behaviour. Analyses revealed a significant relationship between total behaviour problems and language, $t(83) = -2.56, p = .012$, with French speaking participants having higher levels of total behaviour problems ($M = 2.45, SD = .72$), as compared to English speaking participants, ($M = 1.97, SD = .82$). No significant differences were found for child gender, $t(83) = .49, p = .63$, child age, $r(83) = .08, p = .49$, maternal education, $F(2, 82) = 1.98, p = .15$, and family income, $r(83) = -.18, p = .09$.

Internalizing problems. A significant association was found between internalizing problems and language, $t(83) = -2.74, p = .008$, with French speaking participants having higher levels of internalizing problems ($M = 2.01, SD = .72$), as compared to the English speaking participants ($M = 1.56, SD = .81$). A negative relationship was found between income and internalizing problems, $r(83) = -.26, p = .016$. The analyses revealed no significant differences between internalizing behaviours and child gender, $t(83) = .36, p = .72$, child age, $r(83) = .04, p = .72$ and maternal education, $F(2, 82) = 2.75, p = .07$.

Conduct problems. Analyses revealed no significant association between conduct problems and language, $t(83) = -.34, p = .73$, child gender, $t(83) = .51, p = .61$, child age, $r(83) = .06, p = .58$, maternal education, $F(2, 82) = .72, p = .49$, and family income, $r(83) = -.08, p = .45$.

Group status. Analyses revealed no significant relationship between group status and language, $\chi^2(2, N = 85) = 3.66, p = .16$, child gender, $\chi^2(2, N = 85) = 2.67, p = .26$, child age, $F(2, 82) = 2.70, p = .073$, maternal education, $\chi^2(4, N = 85) = 2.32, p = .68$, and family income, $F(2, 82) = 2.05, p = .14$.

In conclusion, the results from these preliminary analyses indicated that the parental stress and behaviour problem variables required transformation due to significant skewness of

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the scores. Findings revealed two covariates: the language and income variables, which were used when appropriate in the main analyses.

Main Analyses

All analyses for this study were conducted using version 21 of the IBM SPSS statistical software package. The transformed variables were used in each of the main analyses. Language and family income were used as covariates in the regression analyses in which internalizing behaviour was the outcome variable, and in analyses using the total behaviour problems' variable, language was used as covariate.

Objective 1- Differences in behaviour problems across groups. In order to test the hypothesis that there would be differences in reported behaviour problems across the control, non-deployed, and deployed groups, a series of univariate analyses of variance (ANOVA) and univariate analyses of covariance (ANCOVA) were conducted. In cases where the univariate analyses showed significant differences, post hoc analyses (pairwise Bonferroni comparisons) were performed to identify where the groups differed.

Internalizing problems. Results from the analysis for internalizing problems, after controlling for language and income, showed a significant omnibus effect of group status on internalizing behaviour problems, $F(2, 82) = 10.18, p = .001$. A post-hoc analysis showed that the deployed group had a significantly higher level of reported internalizing problems as compared to the control group $p = .001$, and marginally higher reported internalizing problems than the non-deployed group, $p = .055$. There was no difference between the non-deployed and control group. See Table 2.2 for group means and standard deviations.

Conduct problems. Results from the analysis for conduct problems showed a significant omnibus effect of group status, $F(2, 82) = 4.15, p = .019$. A post-hoc analysis revealed that the deployed group had a significantly higher level of reported conduct problems as compared to

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both the non-deployed and the control group $p = .039$, and $p = .018$ respectively. There was no difference between the non-deployed and control group. See Table 2.2 for group means and standard deviations

Total behaviour. Results from the analysis showed that after controlling for language there was a significant difference across the study groups on total behaviour problems, $F(2, 81) = 8.68$, $p < .001$. The post-hoc analysis revealed that the deployed group had a significant higher level of overall behaviour problems than both the non-deployed group, $p = .017$, and the control group, $p < .001$. There was no significant difference in the level of overall behaviour problems between the non-deployed group and the control group, $p = .15$. See Table 2.2 for group means and standard deviations.

Recently-deployed and behaviour problems. As discussed in Study 1, the impact of deployment may continue after a military member returns home (Booth, Segal, and Bell, 2007), thus the deployed variable was re-coded to include those participants whose partner had returned from deployment within the last six months. A series of univariate analyses of variance (ANOVA) and univariate analyses of covariance (ANCOVA). were conducted using the deployed-recently/deployed group instead of the actively deployed group to explore the differences in total behaviour problems, internalizing and conduct behaviours across the three groups. Similar results were found, revealing a significant omnibus effect of group on total behaviour problems, $F(2, 82) = 4.72$, $p = .011$, with a post hoc analysis showing a significant difference between the deployed/recently deployed and the control group, $p = .016$. Results from the ANCOVA analysis for internalizing problems, showed a significant omnibus group effect on internalizing problems, $F(2, 82) = 4.40$, $p = .015$, with a post hoc analysis showing that the control group had a significantly lower level of internalizing behaviour problems than both the

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non-deployed and recently deployed/deployed groups, $p = .045$, $p = .042$ respectively. There was no significant group difference found for conduct problems. See Table 2.3 for group means and standard deviations.

Objective 2- Relative contribution of maternal variables and military status. Based on prior literature, it was expected that child attachment and parental stress would make a significant and cumulative contribution to reported behaviour problems. However, it was hypothesized that military status, particularly unique factors (e.g. child worry and fear, father absence) associated with military deployment, would result in an additional contribution beyond that predicted by child attachment and parental stress. A series of hierarchical regression analyses were conducted to test this hypothesis on internalizing, conduct and total behaviour problems. Language and family income were used as control variables when appropriate. Before commencing with the regression analyses, the deployed, non-deployed and control groups were dummy-coded into either a deployed condition or a non-deployed condition. For the deployed condition, mothers whose partner was deployed (e.g. Afghanistan) were compared to mothers whose partner was not deployed, and mothers in the control group. For the non-deployed condition, mothers whose partner was not deployed were compared to mothers whose partner was deployed and to mothers in the control group.

Internalizing problems. A hierarchical regression was conducted, using language and family income as control variables, to determine the impact of child attachment, parental stress, and military status on internalizing problems. The covariates were entered into step one, child attachment and parental stress into step two, and the dummy coded group status variables were entered into step three. Results revealed that after controlling for language and income, child attachment and parental stress accounted for 18% of the variance of internalizing problems, R^2

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$=.18$, $F(2, 80) = 10.56$, $p < .001$. Adding military status to the model accounted for an additional 8 % of the variance, $R^2 = .41$, $F(2, 78) = 5.39$, $p = .006$. Child attachment and parental stress significantly predicted higher levels of internalizing problems, $p = .016$, 95% CI (.07, .67), and $p = .001$, 95% CI (.09, .31) respectively. Both the deployed and non-deployed conditions further predicted higher levels of internalizing problems, $p = .002$, 95% CI (.26, 1.15), and $p = .049$, 95% CI (.001, .60), respectively. See Table 2.5, for R -squared change values, and regression coefficients.

Conduct problems. A hierarchical regression examined the impact of child attachment, parental stress, and military status on conduct problems; with attachment and parental stress entered into step one and the dummy coded group variables entered into step two. Results revealed that child attachment and parental stress explained approximately 11% of the variance in conduct problems, $R^2 = .11$, $F(2, 82) = 5.30$, $p = .007$. Adding military status to the model accounted for an additional 6 % of the variance, $R^2 = .06$, $F(2, 80) = 2.70$, $p = .07$. Parental stress significantly predicted higher levels of conduct problems, $p = .006$, 95% CI (.05, .28). Deployment further predicted elevated levels of conduct problems, $p = .033$, 95% CI (.04, 1.07). See Table 2.5, for R -squared change values, and regression coefficients.

Total behaviour. A hierarchical regression examined the impact of child attachment, parental stress, and military status on total behaviour problems. Language was entered as step one, child attachment and parental stress were entered into step two and the dummy coded group variables were entered into step three. Results revealed that child attachment and parental stress explained approximately 23 % of the variance in total behaviour problems, $R^2 = .23$, $F(2, 82) = 13.72$, $p < .001$. Adding military status to the model accounted for an additional 9 % of the variance, $R^2 = .90$, $F(2, 80) = 5.67$, $p = .005$. Child attachment and parental stress significantly

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predicted higher levels of total behaviour problems, $p = .017$, 95% CI (.08, .74), and $p < .001$, 95% CI (.13, .36) respectively. Military deployment further predicted elevated levels of total behaviour problems, $p = .001$, 95% CI (.34, 1.31). See Table 2.5, for R -squared change values, and regression coefficients.

Study predictors including recently-deployed group and behaviour problems. A number of hierarchical regression analyses were conducted in which the dummy-coded deployed variable was replaced with a dummy-coded variable that included military members who had recently returned from deployment, as well as the non-deployed variable. In order to determine the impact of recent deployment on behaviour problems, above and beyond that accounted for by attachment and parental stress, covariates were entered into step one of the analysis when appropriate, followed by the attachment and parental stress variables in step two, and the dummy coded variables in step three. Results showed that child attachment and parental stress predicted significantly elevated levels of internalizing problems, $p = .016$, 95% CI (.07, .67), and $p = .001$, 95% CI (.09, .31), respectively. The deployed/recently deployed condition further predicted elevated levels of internalizing problems, $p = .048$, 95% CI (.004, .75). Results from these analyses revealed that child attachment and parental stress also predicted significantly higher levels of total behaviour problems, $p < .017$, 95% CI (.08, .74), and $p < .001$, 95% CI (.13, .36), respectively. The deployed/recently deployed condition further predicted elevated levels of total behaviour problems, $p = .021$, 95% CI (.08, .89). Parental stress was the only variable that significantly predicted conduct problems, $p = .002$, 95% CI (.06, .29). See Table 2.6, for R -squared change values, and regression coefficient.

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Discussion

Behaviour problems in young children are a significant predictor of a child's emotional and social trajectory across the lifespan, placing young children at significant risk for negative future outcomes (Waliski, Bokony, Edlund & Kirchner, 2012). In the general population, there is a considerable body of literature documenting the association between child attachment and behaviour problems. Moreover, the literature has also found an association between parental stress and behaviour problems. In military samples, a number of studies have also found an association between parental stress and behaviour problems; however, to our knowledge there have been no studies that examined the specific association between child attachment and reported behaviour problems. Extending findings from the general population, we explored if the same association between attachment and behaviour problems would be found in a Canadian military sample of preschool children. We also endeavoured to replicate prior research which has found a positive relationship between parental stress and elevated levels of behaviour problems in children. Finally we explored whether deployment makes a unique and significant contribution to behaviour problems beyond what is explained by attachment and stress.

Objective 1- Differences in behaviour problems across groups.

Our first objective was to determine if the level of reported behaviour problems would differ between groups. Consistent with expectations, our results fully supported this hypothesis with children in the deployed group showing significantly higher levels of internalizing problems compared to the control group, and a marginal higher level of reported internalizing problems than the non-deployed group.

As previously discussed in the results section, the Strength and Difficulties Questionnaire (Goodman, 1997) combines both the hyper and conduct variables to assess externalizing

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behaviours; however, we were unable to transform the hyper variable to meet the assumption of normality. Therefore, to assess externalizing behaviours, we used the conduct variable which encompasses behaviours such as aggression, lying, stealing, temper tantrums and obedience. It is important to note, that prior military studies have defined externalizing problems to include behaviours such as temper tantrums, defiance, aggression, lying and stealing (Waliski et al., 2012). Behaviours encompassed by the hyper variable include distractibility, restlessness, and attentiveness, which in other military studies are conceptualized as attention problems rather than externalizing behaviours (Waliski et al., 2012). Thus, assessing conduct behaviours independently may in fact be consistent with other studies that have looked at the impact of deployment on externalizing problems. Consistent with prior research, we found elevated levels of conduct problems in the deployed group, as compared to the other two groups. Moreover, we also found higher levels of total behaviour problems in the deployed group as compared to the other two groups. Overall our findings are consistent with other studies that have found elevated levels of reported behaviour problems in children with a parent deployed (Barker & Berry, 2009; Chartrand et al., 2008; Gorman et al., 2010; Flake et al., 2009).

Objective 2- Relative contribution of maternal variables and military status.

Our second objective involved exploration of the hypothesis that child attachment and parental stress would significantly predict internalizing, conduct, and total behaviour problems, but that military status would offer an independent contribution above that accounted for by child attachment and parental stress. Our results supported the hypothesis that attachment would significantly predict internalizing and total behaviour problems. Attachment did not predict conduct problems; although higher levels of insecure attachment were found in the deployed group (see Table 2.4), which was surprising, given that prior studies have found this association

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(Lyons-Ruth, Easterbrooks & Cibelli, 1997; Pasalich, Dadds, Hawes, & Brennan, 2012).

Although higher levels of both insecure attachment and conduct problems were found in the deployed group, the lack of an association between these two variables might be explained by the fact that even children classified as secure, demonstrate more conduct problems when a parent is deployed. Thus, if secure children in a deployed context demonstrate conduct behaviours in reaction to the military parent's absence, the impact of attachment on these difficulties may be confounded and more difficult to identify, especially given our sample size.

We also found that parental stress significantly predicted internalizing, conduct, and total behaviour problems. It may be that parents who experience increased levels of parental stress, respond to their children more insensitively, leading to increased behaviour difficulties. In the current study we did not assess maternal sensitivity or parenting practices, both of which have been shown to lead to increases in child behaviour problems (Bradley & Corwyn, 2007). Thus the association between parental stress and behaviour problems might be mediated by these factors. Furthermore, mothers who are stressed may have a lower tolerance for their children's behaviour, and may have a biased perception of the child's behaviours. While we found support for our hypothesis that child attachment and parental stress would significantly predict behaviour, we also found support for our hypothesis that military status would offer a unique contribution above and beyond these maternal variables. Our results showed that while deployment significantly predicted internalizing problems, the military non-deployed condition also predicted internalizing difficulties. As expected, military status, specifically deployment, uniquely predicted conduct problems and total behaviour problems, beyond what was accounted for by parental stress.

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To our knowledge, there have been no studies that have looked at military status as an independent predictor of behaviour problems, after specifically accounting for attachment and stress. We found that deployment, independently predicted conduct, and total behaviour problems. Moreover, we found that although deployment uniquely predicted internalizing problems, military children in our sample whose parent was not deployed are also at risk for higher levels of internalizing problems compared to their non-military peers. The internalizing behaviour problem variable captures emotional difficulties such as worries, fears, and somatic complaints, and peer difficulties, such as being bullied by others, number of friends, and time spend alone. Even when a parent is not deployed, elements relevant to a military lifestyle, particularly geographic mobility, may increase the risk of internalizing problems. For example, upon relocating to a new community, young children may experience sadness and loneliness at leaving friends and extended family (e.g. grandparents), worries about starting a new school or daycare, and difficulties establishing new friendships. Furthermore, during the preschool and early kindergarten years, children are highly dependent on their caregivers to facilitate social interactions with other children, such as arranging play-dates and involving them in extra-curricular activities. Thus, if the mother herself is adjusting to aspects of relocation (e.g. settling in a new home, searching for employment) it might be challenging for her to also facilitate social interactions for the children. While there is evidence to suggest that the overall number of moves does not appear to effect psychological adjustment in children, the length of time children reside at a location and the quality of the parent-child relationship are predictors of child adjustment (Finkel, Kelley & Ashby, 2003). Although we asked participants the number of moves they had undergone and length of time at each location, we did not ask if there had been a recent move. In

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future studies it will be important to obtain this information, in order to determine if there is a direct association between increased internalizing problems and a recent relocation.

While the experience of a military lifestyle itself may increase the risk for internalizing problems in young children, our findings suggest that having a parent deployed further exacerbates the risk, not only for internalizing problems, but also for conduct and overall behaviour problems. One possible explanation for this finding may relate to factors directly related to deployment. In our study, internalizing problems included worries, fears, and peer difficulties that intuitively may increase for the child upon the deployment of a parent. The children in our sample were old enough to comprehend the absence of the parent and the resulting potential risk of danger. Consequently, these children might experience sadness at the parents' absence, particularly if the deployed parent was normally involved in the child's daily routine (e.g. playing with the child, reading a bed-time story). Moreover they might also experience increased fear and worry about the parent's safety. Given technological advances in the last decade, young children are increasingly exposed to various forms of media, including coverage of news events that often cover military conflicts. As a result, children may view graphic content that could further increase their level of fear and worry about their parents' safety. Moreover, such fear might be further exacerbated if the child has regular contact with military peers, especially if they know of a peer who may have lost a parent during deployment. In a recent study which included a qualitative element, Barker and Berry (2009) found that children with a deployed parent expressed significant concerns about the absent parent. The non-deployed parents identified their children as having questions about the whereabouts of the deployed parent (where is daddy, will he come home? I want daddy!), missing the deployed

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parent, particularly at bedtime and special occasions, and experiencing taunts from peers, such as "your daddy is going to get killed" (Barker & Berry, 2009).

In our study, children were not yet at a developmental stage in which they were necessarily competent at identifying and verbalizing emotions in a socially appropriate manner. Thus the worries and fears associated with having a parent deployed may be expressed through tears, clinginess, and somatic complaints or through noncompliance and aggression toward other children. Conflictual situations with others (e.g. taunts and teasing) may lead these children to either exhibit increased aggressive behaviours (e.g. hitting, name calling) or to cry and withdraw from social situations, both of which would impact peer relationships, and lead to further internalizing or conduct problems. It is also possible, particularly if children perceive the mother to be worried about the deployed parent, that they would internalize their feelings in an effort to avoid further upsetting the remaining parent.

We suggest that the elevated levels of behaviour, internalizing and conduct problems found in the deployed group are related to the child's worry and anxiety about the parent. Another possible explanation for the association between deployment and elevated behaviour problems, might relate specifically to the absence of the father in the home. There is a growing body of evidence showing that father involvement plays a crucial role in child development. Fathers, more than mothers, tend to engage in rough and tumble forms of play; which may enable children to learn to regulate their emotions and manage aggressive tendencies (Fletcher, St George, & Freeman, 2013; Paquette, 2004). Furthermore, fathers are more likely than mothers to encourage independence in their children, and push them to take risks. It is thought that a fathers' challenging parenting style, in a supportive environment, buffers against the development of child anxiety. Children who have involved positive fathers have been shown to

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have lower levels of externalizing and internalizing behaviour problems, less bullying behaviour, and higher levels of academic success whereas children with non-involved parents are at increased risk for externalizing and internalizing problems, as well as low academic performance (Flouri & Buchanan, 2002; King & Sobeloweski, 2006). These findings are consistent with our results, which showed that children with a parent deployed exhibit higher levels of overall behaviour, internalizing and conduct problems.

Recently Deployed versus Deployed Only

While deployment has been associated with decreased adjustment in both children and the non-deployed parent, studies show that the period following a deployment remains stressful (Booth et al., 2007; Creech, Hadley & Borsari, 2014). Overall we found a similar pattern of results as compared to using only the actively deployed group, the only exception being that we found only a marginal effect of recent deployment on conduct problems. These results suggest that even after a parent returns from deployment the child continues to experience emotional difficulties that are exhibited through internalizing problems. It may be that the child is worried that the recently-deployed parent will leave again. Furthermore, the parent may have changed during the deployment, particularly if there has been war-related trauma, which could be worrisome for the child and lead to the maintenance of internalizing problems. Given the overall pattern of similar results found when including the recently deployed group in the deployed group suggests that overall this group is not significantly different than the deployed group.

Limitations

The first limitation of this study relates to the relatively low sample size, which impacted the type of analyses performed. For example we were unable to perform analyses on the specific

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subtypes of attachment that may have given us insight into the association between particular attachment styles and resulting types of behaviour (e.g. disorganization and conduct problems).

Another limitation is that both parenting stress and behaviour problems were assessed based on mother-reports. It is possible that the mothers' reports of child behaviors were biased by their own stress, thus leading them to maintain a distorted perception of the impact of deployment on their children. However, it is important to note that the mothers' assessment of their children's difficulties is consistent with our finding that insecure attachment predicted internalizing problems. Nonetheless, to improve validity of results, future studies should include cross-informant data.

A further limitation to our study is that we did not assess the time the partner had been deployed, the number of previous deployments, or how recently the parent had returned from deployment. There is evidence that the impact of deployment is cumulative, with longer deployments and prior number of deployments associated with increased difficulty for both the parent and child (Barker & Berry, 2009).

Similar to Study 1, a final limitation to note is the selection bias and demographic characteristics of the current sample. Overall this sample was well educated and economically stable, factors that are associated with improved child adjustment. However, even though our sample was reasonably well educated and financially secure, deployment predicted conduct problems, and both deployment and being in the military predicted elevated levels of internalizing problems, as compared to the control group.

Conclusion and Implications for Intervention

In light of our results, it is important that future research efforts focus on identifying specific factors related to a military lifestyle, including deployment, that increase the risk of child

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internalizing problems. We suggest that a recent relocation might account for the elevated levels of internalizing problems found in the non-deployed group; however, further research is necessary to explore this hypothesis and to also determine if these difficulties decrease over time. We propose that the increase in internalizing problems when a parent is deployed may be related to worry and anxiety about the parent's safety. Future research is necessary to assess anxiety as a specific construct, rather than the general construct of internalizing problems. Although our findings identify areas of further research, there are also relevant clinical implications, as deployments will continue to be a reality for military families due to the current state of global instability. Given the negative impact on child behaviour problems found in our study, it is essential to develop therapeutic interventions for military children that will equip them with the necessary skills to cope with stressors related to a military lifestyle, particularly deployment.

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Tables 2.1

Descriptives of Overall Sample and Breakdown by Group

Demographic Variables	Overall (N =85)		Deployed (N=11)		Non-Deployed (N=40)		Control (N= 34)	
Child Age	<i>M (SD)</i>		<i>M (SD)</i>		<i>M (SD)</i>		<i>M (SD)</i>	
	49.82 (12.76)		56.27 (14.83)		50.78(14.66)		46.62(8.24)	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Child Gender								
Male	43	51	8	72.7	18	45	17	50
Female	42	49	3	27.3	22	55	17	50
Maternal Language								
English	38	45	2	18.2	20	50	16	47.1
French	47	55	9	81.8	20	50	18	52.9
Maternal Education								
High School	6	7.1	1	9.1	3	7.5	2	5.9
College diploma	35	41.2	5	45.5	19	47.5	11	32.4
University	44	51.8	5	45.5	18	45.5	21	61.8
Family Income								
40, 000- 49, 999					1	2.5	1	2.9
50, 000- 74, 999	27	31.8	5	45.5	15	37.5	7	20.6
75, 000- 99, 999	25	29.4	3	27.3	13	32.5	9	26.5
>100,000	31	36.5	3	27.3	11	27.5	17	50.0

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Table 2.2
Group Means and Standard Deviations for Behaviour Problems

Group Status	Deployed (n=11)	Non-Deployed (n=40)	Control (n=34)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Total Behaviour	3.14 (.82)	2.26 (.76)	1.91 (.82))
Internalizing	2.57 (.75)	1.88 (.62)	1.47 (.80)
Conduct	1.73(.65)	1.07 (.80)	.98 (.74)

Note. Means are based on transformed scores.

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Table 2.3

Means and Standard Deviations for Behaviour Problems with Inclusion of Recently-Deployed Group

Group Status	Deployed/Recently Deployed (n=20)	Non-Deployed (n=31)	Control (n=34)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Total Behaviour	2.66(.98)	2.31(.73)	1.91 (.82))
Internalizing	2.13 (.83)	1.96 (.60)	1.47 (.80)
Conduct	1.46(.85)	1.06 (.76)	.98 (.74)

Note. Means are based on transformed scores.

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Table 2.4

Attachment Classification by Group

Attachment Subtype	Deployed	Recently- Deployed	Non- Deployed	Control
	<i>N (%)</i>	<i>N (%)</i>	<i>N (%)</i>	<i>N (%)</i>
Secure	3(27)	8(40)	26 (65)	24 (71)
Insecure	8 (73)	12(60)	14 (35)	10 (30)

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Table 2.5

Relative Contribution of Attachment, Stress, and Deployment in Predicting Behaviour Problems

Outcome Variables	ΔR^2	ΔF	df	β
Total Behaviour				
Step 1 Language	.07	6.57**	1 (83)	.27*
Step 2 Attachment Parental Stress	.23	13.72***	2 (81)	.23** .41***
Step 3 Deployed (1 vs. 2 & 3) ^a Non-deployed (2 vs. 1 & 3) ^a	.09	5.68**	2 (79)	.33** .14
Internalizing				
Step 1 Language Income	.14	6.86**	2(82)	.28** -.25**
Step 2 Attachment Parental Stress	.18	10.56***	2(80)	.23** .36***
Step 3 Deployed (1 vs. 2 & 3) ^a Non-deployed (2 vs. 1 & 3) ^a	.08	5.39**	2 (78)	.32** .19*
Conduct				
Step 1 Attachment Parental Stress	.12	5.30**	2(82)	.08 .27**
Step 2 Deployed(1 vs. 2 & 3) ^a Non-deployed (2 vs. 1 & 3) ^a	.06	2.70 ^t	2(80)	.25* .002

Note. a = Group status dummy coded (1=deployed, 2=non-deployed, 3=control).

^tp<.10; *p<.05; **p<.01; ***p≤.000

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Table 2.6

Relative Contribution of Attachment, Stress, and Recent Deployment in Predicting Behaviour Problems

Outcome Variables	ΔR^2	ΔF	df	β
Total Behaviour				
Step 1	.07	6.57**	1 (83)	.27*
Language				
Step 2	.23	13.72***	2 (81)	.23**
Attachment				.41***
Parental Stress				
Step 3	.05	2.80 ^t	2 (79)	
Recently Deployed (1 vs. 2 & 3) ^a				.24*
Non-Deployed (2 vs. 1 & 3) ^a				.07
Internalizing				
Step 1				
Language	.14	6.86**	2(82)	.28**
Income				-.25**
Step 2	.18	10.56***	2(80)	
Attachment				.23**
Parental Stress				.36***
Step 3	.04	2.59 ^t	2 (78)	
Recently Deployed (1 vs. 2 & 3) ^a				.20*
Non-Deployed (2 vs. 1 & 3) ^a				.16
Conduct				
Step 1	.11	5.30**	2(82)	
Attachment				.13
Parental Stress				.30**
Step 2	.06	2.70 ^t	2(80)	
Recently Deployed (1 vs. 2 & 3) ^a				.21 ^t
Non-Deployed (2 vs. 1 & 3) ^a				-.09

Note. a = Group status dummy coded (1=deployed, 2=non-deployed, 3=control).

^t $p < .10$; * $p < .05$; ** $p < .01$; *** $p \leq .001$

CHAPTER 4:
General Discussion

General Discussion

Summary of Key Objectives

A recent meta-analysis has shown a negative impact of deployment on children; however, in general the research on military families, particularly young children, is quite limited (Creech, Hadley, & Borsari, 2014). As a result of this paucity of literature, we explored the manner in which military status, particularly deployment, affects child attachment within a Canadian context. We also examined the unique role of military status in predicting behaviour problems above and beyond what was accounted for by child attachment and parental stress.

Key Findings and Concordance between Studies

The overall theme emerging from our two studies was the significant impact of deployment upon the psychological adjustment of young children with a parent serving in the Canadian military. While distinct aspects of child adjustment were examined in each of the two studies, the findings from each study were complementary in providing an overall perspective in understanding the manner in which deployment is thought to impact child adjustment. With respect to child attachment, deployment has an independent impact that is not mediated through the maternal variables examined. Furthermore, while child attachment and parental stress explain a proportion of the variance in child behaviour problems, military status, especially deployment, accounts for distinct variance in child behaviour problems. Therefore, in response to our original question on whether military status indirectly affects child adjustment through maternal variables or has a direct effect, our findings suggest that military status, primarily deployment, has a distinct effect on child outcomes.

Deployment-related factors impacting child adjustment. While results from both studies provide an answer to the general question of whether military status uniquely impacts child adjustment, the question remains as to what specific factors, especially those related to

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deployment, contribute to this effect. In our discussion for both Study 1 and Study 2, we suggested that deployment-related anxiety may be one underlying factor impacting child attachment and leading to elevated child behaviour problems.

Anxiety due to loss of a parent. As previously considered in the discussion for Study 1, the most fundamental aspect of deployment, although in most cases temporary, is the loss of parent, which according to Bowlby (1973) leads to anxiety. Children in other environments may experience the temporary loss of a parent from the home through factors, such as incarceration, domestic violence or substance abuse; however, the context is different in that pre-existing risk factors in such environments may contribute to child maladjustment. In a military environment, there is a higher probability that prior to deployment, fathers have functioned, in addition to the mother, as important attachment figures and maintained active involvement in their children's lives. Within a military environment, soldiers often deploy suddenly without much notice, and on other occasions wait weeks for a departure date and then are required to leave suddenly. The sudden departure of a parent without much warning, in all probability would be particularly anxiety-provoking for young children, especially for those who are old enough to be aware that the parent is deployed, but not fully comprehend the meaning of the parent's absence.

Anxiety related to the availability of the remaining parent. Experiencing the temporary loss of a parent through deployment, even in the context of a prior secure attachment to the non-deployed spouse, in all likelihood leads to increased anxiety and fear on the part of the child regarding the availability of the remaining parent. Secure child attachment is dependent upon the ability of the child to use the parent as a secure base in situations that create fear and anxiety. Through the parent's consistent availability and sensitive response, the child's distress is reduced (Brumariu & Kerns, 2010). As previously cited in the discussion for Study 1, having a parent

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deployed could result in the non-deployed parent being less emotionally available to the child, due to additional tasks and responsibilities. As a result, the child's distress related to the unavailability of the deployed parent, and the perceived unavailability of the non-deployed parent could further increase the child's anxiety resulting in an insecure attachment. This is one plausible explanation for the increased proportion of insecure attachment found in the deployed groups in our study; however, the opposite might also be true in that the non-deployed parent might exert greater efforts to ensure they are more available to the child. In fact, in a recent Canadian study military spouses provided qualitative data about their experiences during deployment, and cited that concern about their children's adjustment caused them to feel pressure to be more present and available for their children, even to the detriment of their own leisure (Werner & Shannon, 2013). However, such concern may lead the non-deployed parent to be overprotective and intrusive when interacting with their children. In such a context the child may perceive the parent's actions as an indicator of danger, resulting in increased anxiety for the child.

Parental response to the child's anxiety. In addition to anxiety related to the deployed parents' absence, children, particularly those who are old enough to understand potential dangers related to the military mission, may experience increased fear and worry related to their parent's safety. Within the framework of a secure attachment, a parent's sensitive response assists a child in regulating their emotions; however, aspects related to the deployment might impact a caregiver's ability to respond appropriately. First, the non-deployed parent can not necessarily eradicate the child's worries and fears regarding the deployed parent, nor reassure the child of the parent's safe return. Therefore, due to the context of the situation, the child may be unable to derive comfort from the parent. Secondly, the non-deployed parent in all probability is

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experiencing similar worries and fears, and concerns related to the child's anxiety would presumably heighten their own anxiety. As a result, the mother's response to the child's worries would be influenced by her own anxiety. In a recent study, spouses of deployed soldiers expressed worry and fear about their partners' safety; however, when their children would ask difficult questions such as "will daddy come home from Afghanistan because some daddies don't and they go to heaven" they reported that their anxiety intensified (Werner & Shannon, 2013). Consequently, mothers who cope with their anxiety related to the deployed partner, as well their children, by becoming either overly protective and involved, or dismissive of emotions and feelings will be unable to provide the comfort and security necessary to help the child regulate their worries and fears. Thus, the child's lack of a secure base will not only lead them to remain in a state of emotional dysregulation that will be exhibited through symptoms of anxiety, but will also undoubtedly lead the child to develop an insecure attachment to the non-deployed parent.

Association between mother's well-being and child's internalizing symptoms.

Brumariu and Kerns (2010) conceptualize internalizing problems as covert, inner-directed symptoms that are exhibited as symptoms or diagnoses (e.g. anxiety and depression) with the most common elements of anxiety disorders being intense fear and worry, and of depressive disorders being diminished energy, sadness, and appetite changes. In Study 2, the internalizing variable captured symptoms indicative of depression such as tearfulness and of anxiety such as worry and fear. Given the marginal effect of deployment on maternal depressive symptoms found in Study 1, and the higher level of internalizing problems reported by mothers of children in the deployed group for Study 2, may in fact relate to the mother's emotional state. Mothers who experience sadness and loneliness related to their partners' absence, may expect their children to experience the same emotions. Thus the expectation for the child to experience

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similar emotions as the mother may become a self-fulfilling prophecy, in which children actually develop internalizing symptoms.

Sub-categories of attachment and internalizing symptoms. A number of studies have found an association between insecure child attachment and increased risk for depressive and anxiety disorders (Brumariu & Kerns, 2010a; Colonnese et al., 2011; Groh, Roisman, van IJzendoorn, Bakersman-Kranenburg, & Fearon, 2012; Madigan, Atkinson, Laurin, & Benoit, 2013). Furthermore, it has been suggested that specific sub-types of attachment are related to specific types internalizing symptoms (Brumariu & Kerns, 2010a; Colonnese et al., 2013; Kerns & Brumariu, 2013; Moss, Smolla, Cyr, Dubois-Comtois, Mazzarello & Bethiaume, 2006; O'Connor, Bureau, McCartney, Lyons-Ruth, 2011; Rubin, Mills, & Rose-Krasnor, 1991). Unfortunately, given our sample size, we lacked the statistical power necessary to conduct specific analyses to determine if the association between higher level of insecure attachment and internalizing symptoms found in our sample was related to specific sub-types of attachment.

Recently-Deployed Group

The higher levels of insecure child attachment, as well as internalizing symptoms found when including children whose parent had recently returned from deployment as part of the deployed group, suggests that the impact on child adjustment continues after the parents' return. In the preceding discussion, we proposed the mother's expectation for the child to experience similar internalizing symptoms as herself may have resulted in a self-fulfilling prophecy in which the child actually exhibited internalizing symptoms. We also proposed anxiety to be one underlying pathway impacting child adjustment in the context of parental deployment, and that this anxiety is manifested through elevated levels of internalizing symptoms. Through the deployment experience, the child's internal working model related to the availability of key

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attachment figures may have been negatively altered by specific factors addressed in the preceding discussion. As a result, these children, even those who had a secure attachment to the non-deployed parent prior to deployment, may be at increased risk of developing long-standing internalizing difficulties.

Clinical Implications

In all probability, the existing level of global instability for the foreseeable future will necessitate continued deployments of military personnel. Consequently, the findings from the current two studies offer a valuable contribution to the existing literature regarding the manner in which deployment impacts young military children. Not only do our findings provide important theoretical implications necessary for continued research, but they also provide a number of clinical implications relevant to military parents, military family resource centers, medical professionals, and policy makers. Results showing the negative impact of deployment on child attachment and internalizing problems are even more meaningful, when one considers that the mothers in our sample, with the exception of depressive symptoms, were reasonably well functioning in terms of their emotional well-being, and appeared to be adequately coping with the deployment of their spouse. Furthermore, the fact that they participated in our study through their local Military Family Resource center (MFRC) suggests that they were using the services offered by these centers. Despite the aforementioned factors, the children in our studies were negatively impacted by parental deployment. As discussed earlier in the introduction for Study 1, insecure attachment can negatively affect a child's emotional and social trajectory across the lifespan (Bureau & Moss, 2010; Greenberg, Speltz, Deklyen, & Endriga, 1991; Moss et al., 2004; Shaw & Vondra, 1991). Moreover, it is well established that internalizing difficulties, particularly anxiety and depression, often develop in early childhood, and without intervention

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there is increased risk of developing full-scale disorders that persist into adolescence and adulthood. Given the higher levels of insecure attachment and internalizing problems we found in children with a parent deployed, highlights the importance of conducting longitudinal studies on the impact of deployment on children. Such studies are necessary to determine if the effects of deployment on attachment and behaviour problems are temporary or if there are long-term consequences. Moreover, given our results showing that military children without a deployed parent were also at risk for elevated levels of internalizing problems, suggests that research related to the general impact of a military lifestyle on children is also relevant.

Due to recent trends, both Canadian and American militaries are comprised of a higher percentage of married military members with children. According to a recent Vanier Institute of the Family report (2012), 68% of Canadian military members are married, and in Canada there are 64,262 children under the age of 18 years old who have a military parent. In the United States, 58% of American military members have family responsibilities and over 2 million children, with 40% under the age of 5, have been affected by deployment in the last decade (Flake, Davis, Johnson, & Middleton, 2009). While we were unable to locate the exact number of Canadian military children who have been affected by deployment, a recent Canadian military study found that over two-thirds of the families had experienced at least one deployment (Sudom, 2010). Consequently, not only do our results hold important clinical ramifications for our sample, but for the broader population of Canadian military children. Furthermore, the impact of deployment may be even more significant in higher risk contexts (e.g. parental stress, less education and economic difficulties).

These findings not only highlight the need for ongoing research with military families, but in order to mitigate the increased risk of psychological difficulties for children with a

GENERAL DISCUSSION

deployed or recently deployed parent, it is essential that evidenced-based attachment and anxiety interventions specifically tailored to the unique needs of military families be developed and implemented. The Circle of Security intervention is an attachment intervention program that has been shown to significantly reduce insecure attachment in both normal and high-risk samples (Cassidy et al., 2010; Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011; Hoffman, Marvin, Cooper, & Powell, 2006). While such an intervention might assist parents to identify their child's deployment related distress, interventions directed specifically toward children in military families are crucial. Considering that the temporary loss of a parent through deployment may be traumatic for children, interventions such as Cohen's (2004) Trauma-Focused Cognitive Behaviour Therapy might be appropriate. This type of intervention would enable children to identify and process their feelings, and also teach effective coping to manage their feelings through breathing and relaxation techniques. Such a program would also provide parents with psycho-education on their child's experience, particularly how children manifest internalizing symptoms and appropriate strategies respond to their child's experiences. Ameliorating the attachment relationship between the non-deployed parent and child, as well as providing strategies to address deployment related internalizing symptoms may help to mitigate potential long-term behavioural and social risks for children with a parent deployed.

A number of prior studies, both Canadian and American, have conveyed the need for evidence-based research related to military families (Flake et al., 2009). The findings from such studies will not only guide further research, but will also provide data on practical measures to support military families. In order to implement interventions for military families such as discussed in the preceding sections, it is important that our findings be transferred to key policy

GENERAL DISCUSSION

makers, who will then be able to implement policies and programs that will best support military families in the areas of need identified.

While it is essential that military families be provided with evidenced based interventions to assist in reducing the negative impact of deployment on child adjustment, it is important that there be an ongoing transfer of research findings to professional practice, particularly those individuals who work most closely with military children. In young children, anxiety is often manifested through somatic complaints, such as headaches or stomach pain. Therefore it is essential that medical staff, particularly family physicians and pediatricians, is made aware of the impact of deployment on young children. Understanding this impact on young children will allow medical professionals to correctly identify anxiety-based somatic complaints. Moreover, it is a reality that many military spouses are employed outside the home; therefore, their children spend time in the care of others such as daycare providers and preschool teachers. Thus, it is necessary that these professionals also be instructed on the effect of deployment on young children, and develop appropriate strategies to respond to deployment related behaviour problems exhibited in these children.

Directions for Future Research

The current studies provide an important contribution to the existing literature on the impact of deployment within a Canadian military context. This contribution is particularly significant given that the literature regarding the impact of military deployment on child adjustment is limited, especially within a Canadian context. While our findings reveal that deployment leads to higher levels of insecure attachment and behaviour problems in young Canadian military children, they also draw attention to the need for further research to replicate our findings and to determine the specific pathways leading to these outcomes.

GENERAL DISCUSSION

While additional research is necessary to replicate our findings, one potential challenge in conducting further studies relates to the recruitment of military families within a Canadian context. The Canadian Forces (CF) in an effort to protect the privacy of its members and their families and to ensure they are not exposed to unethical forms of research, enforces specific guidelines for researchers and cautions military members against participation in studies that have not received CF approval. As a result, potential participants may be hesitant to engage in military family research, even when such studies have been approved. Second, given that recruitment for families is often done through local MFRCs, only participants who are accessing services and supports from these centers are aware of ongoing research studies. Thus, families who are isolated and not accessing these supports and resources, but who may in fact be more vulnerable, are inadvertently excluded. Moreover, studies such as ours that involve video-taped procedures also may be a deterrent, especially given the military's code of privacy with respect to family functioning (Harrison & Laliberte, 2008). Military spouses, out of fear that confidentiality might be compromised and result in negative reprisal on their spouse's career, in all probability would hesitate to participate in such studies. In this context, recruiting adequate sample sizes to statistically validate findings is challenging. Therefore, future research efforts require both researchers and policy makers to work in collaboration in order to develop recruitment strategies that will effectively target larger proportions of the general military population.

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Appendix A

Ethics Approval Forms

File Number: 12-09-05

Date (mm/dd/yyyy): 07/06/2010



Université d'Ottawa **University of Ottawa**
 Service de subventions de recherche et d'éthologie Research Grants and Ethics Services

Ethics Approval Notice

Social Science and Humanities REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Jean-François	Bureau	Social Sciences / Psychology	Supervisor
Diane	St. Laurent	Social Sciences / Psychology	Co-investigator
Rachel	Tupper	Social Sciences / Psychology	Co-investigator

File Number: 12-09-05

Type of Project: Professor

Title: The Development of Early Childhood Social Relationships within a Military Context

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
07/06/2010	07/05/2011	Ia

(Ia: Approval, Ib: Approval for initial stage only)

 Special Conditions / Comments:
 N/A

SOCIAL SCIENCE RESEARCH REVIEW BOARD DECISION

Date: 20 July 2010

Authorization number: **808/10**

Title: The Development of Early Childhood Social Relationships within a Military Context

Researcher: Rachel Tupper

Organization: University of Ottawa

Review and Discussion:

1. Your research proposal has been reviewed and SSRRB approval is granted to proceed. Your project is assigned the following authorization number 808/10.
2. This approval is valid for approximately 90 military dependents located across Canada. This approval is granted for the period of 20 July 2010 to 5 July 2011. Distribution must be complete by this date; otherwise, the protocol will require further review. In order to ensure that participants' language rights are respected, these surveys must be distributed in bilingual format.
3. The following text shall be displayed on the front page of your surveys and consent form(s):

"Director General Military Personnel Research and Analysis authorizes the administration of this survey within DND/CF in accordance with CANFORGEN 198/08 CMP 084/08 271214Z Oct 08. Authorization number 808/10"

4. You are reminded that any changes to the approved protocol or any untoward incidents or injuries arising as a result of any subject's participation in the study shall be brought to the attention of the Social Science Research Review Board Coordinator, Louise Soucy.
5. Please forward the following documentation upon completion of the research and prior to publication:
 - a. an electronic copy of any research reports arising out of this request/project, and
 - b. electronic copies of data used to produce the reported results.
6. Please accept our acknowledgements for your contribution to research within the Canadian Forces and the Department of National Defence.

Appendix B
Recruitment Posters



ATTENTION PARENTS WITH A CANADIAN FORCES PARTNER



You and your child are invited to take part in a DGMPRA approved study being conducted by the University of Ottawa & the Université du Québec à Trois-Rivières.

We are currently conducting a study "*The Development of Early Childhood Social Relationships within a Military Context*". This study examines the role of a military lifestyle on the development of early social relationships between children (ages 1-6 yrs), and their primary caregivers. The goal of this study is to provide evidence-based data in order to advocate for the implementation of programs that will further support military families.

The study will require approximately 1.5 hours of your time and entails two parts: a questionnaire and a one-time lab visit. The lab visit is scheduled according to the parent's convenience and involves a video-taped play session between the parent and child at the local MFRC or the university lab (which ever is more convenient for the parent). After the lab visit, the child is given an opportunity to choose a toy from the toy chest, and the parent's file number will be entered into a draw to win a gift certificate to a local restaurant. All individual participant data will be kept strictly confidential and shared results will be based only on group analysis of the data.

Director General Military Personnel Research and Analysis authorizes the administration of this survey within DND/CF in accordance with CANFORGEN 198/08 CMP 084/08 271214Z Oct 08.

Authorization number 808/10

"The opinions expressed in this document are those of the author and are not necessarily those of the Department of National Defence or the Canadian Forces"

ATTENTION: PARENTS AVEC CONJOINT/CONJOINTE MILITAIRE

Vous et votre enfant êtes invités à participer à une étude a
l'Université d'Ottawa et l'Université du Québec à Trois-Rivières.

Nous menons présentement une étude intitulée "Le développement des relations sociales durant la petite enfance dans un contexte militaire". Cette étude examine l'impact de la vie militaire sur le développement des relations sociales entre les parents et leurs enfants pendant la période de la petite enfance (1 à 6 ans). Le but de cette étude est de recueillir des données réelles permettant de recommander la mise en place de programmes supportant davantage les familles de militaires.

Votre participation à l'étude requiert que vous soyez disponible pendant environ une heure et demie, et elle comporte deux parties : un questionnaire et une visite au laboratoire. Cette dernière a lieu sur rendez-vous et elle peut se dérouler au Centre de ressources des familles de militaires. Elle consiste en une session de jeu filmée sur vidéo entre le parent et son enfant. À la fin de cette visite, l'enfant peut choisir un jouet dans le coffre à jouets et le numéro de dossier du parent sera inscrit à un concours permettant de gagner un certificat-cadeau offert par un restaurant local. Toutes les données personnelles des participants seront strictement confidentielles et les résultats qui seront partagés proviendront uniquement d'analyses de groupe.

La Direction générale – Recherche et Analyse (personnel militaire) autorise l'administration de ce sondage dans DND/CF en conformité avec CANFORGENH 198/08 CMP 084/08 271214Z Oct 08.
Numéro d'autorisation 808/10

Les idées exprimées dans ce document sont celles de l'auteur et elles ne sont pas nécessairement celles du Département de la défense nationale ou des Forces canadiennes

Appendix C
Military Family Services Privacy Code

Privacy Code for Military Family Services Program

Introduction

In August 2000, the Director Military Family Services (DMFS) developed the *Privacy Code for Military Family Services Program* (the Code) to assist Military Family Resource Centres (MFRCs) in protecting the personal information of Canadian Forces (CF) members and their families that is provided to or collected by MFRCs located within Canada.

The Code establishes the standard under which MFRCs within Canada collect and use personal information about Canadian Forces (CF) members and their families. Use of personal information, including nominal roll information provided directly by the CF when a member is posted or deployed is necessary for the provision of mandated services to members and their families. Personal information is also collected from MFRC employees, volunteers and third parties who provide services such as child care and will be similarly protected.

The *Privacy Code for Military Family Services Program* is a tailored version of the *Canadian Standards Association Model Code for the Protection of Personal Information - CAN/CSA-Q830-96*. The CSA Code became a National Standard of Canada in 1996. The 10 principles contained within the CSA Code reflect universal fair information practices that combine individual privacy rights with strong obligations to protect personal information collected and used by organizations. For more information on the *Privacy Code for Military Family Services Program* and its application, please contact:

Director Military Family Services
Canadian Forces Personnel Support Agency
1600 Star Top Road
Ottawa ON, K1A 0K2

Definitions

Collection – the act of gathering, acquiring, or obtaining personal information from any source, including third parties, by any means.

Consent – voluntary agreement with what is being done or proposed. Consent can be either express or implied. Express consent is given explicitly, either orally or in writing. Express consent is unequivocal and does not require any inference on the part of the MFRC. Implied consent arises where consent may reasonably be inferred from the action or inaction of the individual.

Deployment – the relocation of forces or individuals to desired areas of operations, exclusive of normal training or exercises.

Director – refers to the Executive Director of a Military Family Resource Centre (MFRC) located within Canada.

Director Military Family Services (DMFS) – the Directorate within DND/CF that has an oversight role with respect to an MFRC's compliance with this Code.

Disclosure – making personal information available to others outside the MFRC.

Member/family – is a member of the CF, or the spouse, parent or child, or those in a dependency relationship with the member.

Military Family Resource Centre (MFRC) – includes, for the purposes of this Code, only MFRCs located within Canada. Any personal information concerning members/families collected, used, or disclosed by Canadian Military Family Resource Centres (CMFRCs) located outside of Canada is subject to the federal *Privacy Act*.

MFRC staff - for the purposes of this Code, MFRC staff includes both paid employees and volunteers.

Nominal roll information – information about a member of the CF that includes a member's name, home address and home telephone number by base/unit. This information is provided by the CF to an MFRC when a member is posted or deployed.

Personal information – information about an identifiable individual (e.g. CF member/family, MFRC staff or a third party) that is recorded in any form.

Use – refers to the treatment and handling of personal information within an MFRC

Principles in Summary

Principle 1 - Accountability

MFRCs are responsible for personal information under their control. The Director of an MFRC shall be accountable for the MFRC's compliance with the following principles.

Principle 2 - Identifying Purposes

The MFRC shall identify the purposes for which personal information is collected at or before the time the information is collected.

Principle 3 - Consent

The knowledge and consent of the individual are required for the collection, use, or disclosure of personal information, except where inappropriate.

Principle 4 - Limiting Collection

The collection of personal information shall be limited to that which is necessary for the purposes identified by the MFRC. Information shall be collected by fair and lawful means.

Principle 5 - Limiting Use, Disclosure, and Retention

Personal information shall not be used or disclosed for purposes other than those for which it was collected, except with the consent of the individual or as required by law. Personal information shall be retained only as long as necessary for the fulfillment of those purposes.

Principle 6 – Accuracy

Personal information shall be as accurate, complete, and up-to-date as is necessary for the purposes for which it is to be used.

Principle 7 – Safeguards

Personal information shall be protected by security safeguards appropriate to the sensitivity of the information.

Principle 8 – Openness

MFRCs shall make readily available to individuals specific information about policies and procedures relating to the management of personal information.

Principle 9 - Individual Access

Upon request, a member/family, MFRC staff or third party shall be informed of the existence, use, and disclosure of his or her personal information and shall be given access to that information.

An individual shall be able to challenge the accuracy and completeness of the information and have it amended as appropriate.

Principle 10 - Challenging Compliance

A member/family, MFRC staff or third party shall be able to address a challenge concerning compliance with the above principles to the Director of an MFRC who is accountable for the MFRC's compliance.

For detailed descriptions on privacy principles contact the researcher