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The Human-Canine Bond: Levels of Stress Among Military Spouses During Deployments

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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Previous research has found that deployment may impact military spouses' emotional wellbeing and attachment with family members. There remains a critical gap in the literature regarding difference in stress levels between military spouses who own canines and those who do not. The theoretical foundations for this study were Bowlby's attachment theory and Bowen's family systems theory. Research questions included exploring the relationships between (a) pet canine ownership, deployment length of time, and military spouses' stress levels, and (b) pet canine owners' pet attachment and stress experienced, when their significant others are deployed. The sample comprised 82 spouses with deployed military members who either owned or did not own canines. Participants were selected using the purposive sampling technique. Data collection methods involved using the Pet Attachment Scale and Holmes and Rahe Stress Scale. Two- and one-way analyses of covariance tests were used to analyze data. There were no significant differences stress levels based on deployment, attachment levels, or stress during deployment. These findings were inconsistent with the previous literature involving significant associations between stress and pet attachment. These findings may reflect limitations of the study in that it was focused solely on spouses and canine pets. Further research could be beneficial if it included other family members and pets. Positive social change may be enhanced if strategies are used to support emotional wellbeing of spouses and pets following military deployment.

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Chapter 1: Introduction to the Study

This study on the human-canine bond (HCB) and stress levels among military spouses during long-term deployments involved examining if statistically significant differences existed in terms of stress levels between military spouses who own and do not own canine pets. I also focused on whether length of deployment is associated with stress levels. Moreover, the relationship between canine owners' stress levels and level of pet attachment was explored. I also reviewed if spouses who did not have canine pets differed in terms of stress levels compared with those who owned canines.

The study provides the opportunity to explore stress levels military spouses experience during deployments. Each spouse has unique experiences during deployments. Stress can be a part of these experiences. After identifying participants' stress levels, I analyzed between-group (dog owners and dog non-owners) differences in terms of stress levels.

The study may lead to social change among military spouses who experience increased stress during deployments. This study could lead to new areas of examination, including future studies that explore how individuals with canine pets experience lower stress. Additionally, future studies could identify how pets bond with humans, if these bonds improve human mood stability, and additional benefits pets offer in home settings.

Examining how canine pets decrease military spouses' stress levels can lead to observations about how spouses experience long-term separation. The study offers the opportunity for military spouses to adopt pets in shelters and encourage adoption of

shelter animals. This can lead to future studies about how military spouses are assisted during long-term separations or deployments.

Background of the Study

Extended periods of interaction create interdependence between humans and some species (Amiot & Bastien, 2014). According to Blazina and Shen-Miller (2011), this interdependent human-canine relationship has evolved beyond animals being viewed as useful tools for performing functional tasks and into companions. In some instances, companionship has resulted in animals becoming integral family members. Animals, specifically canines used in therapeutic interventions. have led to overall improvements in happiness and reduction in psychological distress (Halm, 2008). There is a scarcity of empirical studies involving efficacy of these interventions. Researchers have identified vital roles animals have in human lives.

As tensions rise worldwide, containing military spouses' stress levels during deployment could be pertinent. Military families experience stress during high-risk deployments (Brenda, 2008; Welsh, 2009). Some of the stress that affects families during deployment may increase stress levels experienced by spouses (Di Nola, 2008). Stressors involved with managing day-to-day households, employment, separation, and additional responsibilities without spouses lead to parental depression, parenting impairments, and substance abuse (Everson et al., 2011). Women have different coping mechanisms and more chronic stress occurrences than men (Matud, 1998). With minimal support for those whose spouses are deployed, increased distress within the military population may result (Gewirtz et al., 2011). Military deployment has many psychological impacts on spouses

left at home, including emotional destabilization and disorganization (Verdeli et al., 2011).

Problem Statement

There was a problem involving elevated levels of deployment stress experienced by military spouses left back home. Many studies have investigated psychological effects of military deployment on military service members (see Hoge et al., 2006; Warner et al., 2009). However, few studies address how the deployment of military service members affects their families. The deployment cycle involves four stages: Predeployment, deployment, reunion, and postdeployment (Verdeli et al., 2011). The predeployment phase is the time period before deployment and can result in anxiety for both individuals facing deployment and their spouses. The deployment phase involves service members' physical absence from families, which may bring about psychological distress for those left behind. The reunion phase is the point in time when families prepare for the return of service members and is associated with feelings of excitement and apprehension. The final phase of the deployment cycle is postdeployment, during which there may be exacerbated feelings of loneliness and confusion as families readjust to new roles.

According to Heber et al. (2009), evidence supports increased stress experienced by military spouses. Bartone (2006) acknowledged decreasing deployment-related stress among military families could increase morale. One possible cause of limited success of existing measures could be the inconsistent format of such programs. The short-term nature of such programs in terms of their social engagement leads to the possibility of low-level withdrawal symptoms upon disengaging from programs.

To date, minimal research exists involving effects of the HCB on decreasing stress among military spouses during short- or long-term deployments. Literature on pets focuses on pet or animal-assisted therapy (Furst, 2016). There is a need to explore further the possibility of harnessing the HCB to support deployment stress management among military spouses. This study includes information regarding relationships between humans and canines in terms of military spouse dynamics during prolonged and repeated deployments.

I focused on how bonds between canine pets and military spouses can decrease stress during long-term deployments. This research was focused on canine pets, military spouses, the HCB, and stress.

Purpose of the Study

Women generally report higher levels of chronic stress than men (Matud, 1998). As such, the purpose of this descriptive quantitative study was to determine the HCB and stress experienced by military spouses when their significant others are deployed and whether length of deployment is associated with any observed differences in stress levels. The key variables of interest were the HCB, stress levels experienced by nondeployed spouses of deployed personnel, and deployment length. Data were analyzed to find if significant differences existed between mean stress levels of military spouses who own canine pets and those who do not.

The study involved using a quantitative cross-sectional descriptive design. The cross-sectional design is appropriate for studies where data are collected at one point, with no followup period (Hulley et al., 2013). The cross-sectional design allows for

description of predictors and outcomes, including analysis of associations (Hulley et al., 2013). The quantitative approach allowed me to measure military spouses' stress levels and the HCB through surveys collected online.

I aimed to determine whether there were statistically significant between-group differences in terms of stress levels between military spouses who own canines and those who do not. Additionally, I explored if length of deployment is associated with stress levels. Another objective of this study was to determine whether canine owners' stress levels are associated with pet attachment levels.

The independent variables of interest are canine ownership and length of deployment. Canine ownership served as an independent variable and was measured in terms of differences in stress levels among those who owned canines based on their attachment levels. Participants were purposefully selected from family readiness group (FRG) units orchestrated by the U.S. military across multiple states.

The dependent variable in the study is stress levels. Statistical analytic software SPSS allowed me to engage in two- and one-way analysis of variance (ANCOVA) tests in order to determine if there were any statically significant differences between stress levels of military spouses who own canines versus those who did not own canines. The one-way ANCOVA involved using stress as the continuous dependent variable, while the independent variable was canine owner pet attachment. The two-way ANCOVA involved using continuous stress as the dependent variable and deployment length as the independent variable.

Military spouses can also experience distress related to loneliness, lack of control, and concern about loved ones who are deployed since there is a paucity of empirical evidence involving impacts of the HCB on humans' psychological wellbeing. Results of this study include preliminary information regarding how nature of deployments affects military spouses and how the HCB may decrease stress during separation.

This study involved analyzing responses from participants with and without canine pets who experienced their spouses' deployment. I sought to make an original contribution by filling a gap in literature regarding the HCB. I examined how to remedy psychological stress experienced by spouses during the postdeployment phase.

Research Questions and Hypotheses

To better understand stress levels experienced by military spouses while their significant others were deployed, I attempted to answer the following research questions:

RQ1: What is the relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouse significant others are deployed?

$H_0$1: There is no relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouses' significant others are deployed.

H_a1: There is a relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouses' significant others are deployed.

RQ2: What is the relationship between pet canine owners' pet attachment level and stress levels experienced when their significant others are deployed?

$H_0$2*:* There is no relationship between stress levels experienced by military spouses of deployed personnel and length of deployment of military spouses.

H_a2: There is a relationship between stress levels experienced by military spouses of deployed personnel and length of deployment of military spouses.

Theoretical Framework

I focused on establishing a theoretical foundation to explain human-canine relationships. Since there are no relevant theories regarding the human-canine bond, I used two distinctive theories involving family dynamics: Bowlby and Ainsworth's attachment theory and Bowen's family systems theory (FST).

Bowlby's and Ainsworth's attachment theory involves relationships and bonds between individuals, such as parents and children, as well as long- and short-term interpersonal relationships between humans (Bretherton, 1992). The theory is used to explain the complexity of interactions within family units while describing complex interactions and emotional connections between family members (Rothbaum et al., 2002). The FST was used to explore military spouses as emotional units..

Military families have endured separation throughout history (McCubbin et al., 1976). They have experienced stressors associated with responsibilities and altering everyday routines to accommodate absence. Altering of family responsibilities can lead to stress-causing additional concerns during separation (McCubbin et al., 1976; Sheppard et al., 2010). Therefore, identifying stressors and effects of stress can be used to explore how to adapt to future stressors caused by separations.

Although military spouses endure increased stress, other family members also exhibit increased stress levels (McCubbin et al., 1976; Sheppard et al., 2010). Long-term effects on family members and spouses have not yet been addressed in research.

Addressing long-term effects could be used to develop a new understanding of how separations can impact spouses and family members. The HCB has long-term effects, and bonds are stronger during and after stressful situations.

Nature of the Study

A quantitative cross-sectional design was chosen for the current study because data were collected at one point, with no followup period. Additionally, a cross-sectional approach to data collection allows for describing predictors and outcomes as well as analysis of associations (Hulley et al., 2013). This enabled me to measure military spouses' stress levels and the HCB through online surveys.

I focused on between-groups differences between canine owners non-owners in terms of stress. This information could be used to help identify whether pet presence can lead to decreased stress experienced by spouses who remain at home during their significant others' deployments.

Three independent variables were addressed in this study: Pet canine ownership, length of deployment, and pet canine ownership attachment level. The dependent variable was stress levels. There was a covariate as well in this study: Time of deployment. Since there may be differences in terms of participants' stress levels based on amount of time served to date in current deployment by significant others, there is a need to control for this factor by identifying it as a covariate. By using three independent variables, one dependent variable, and a covariate, I measured between-group differences in terms of stress. The study also offered an opportunity to explore the amount of stress military

spouses are under when separated over long distances. However, amount of stress differs from person to person (Rossetto, 2015).

Definitions

This research includes terms that require explanations to assist readers in understanding terminology.

Long-term separation: Period of separation between military members and spouses that is 6 months or longer.

Deployment: A Relocating military personnel and materials from a specific installation or base to another destination. Deployments can range from 90 days to 15 months ("Deployment: An overview," 2019). For military or service members, their families deal with additional preparations for deployment and personal needs before, during, and after ("Deployment: An overview," 2019).

Canine: A dog.

Human-canine bond (HCB): The American Veterinary Medical Association (AVMA, 2019) defined the HCB as a "mutually beneficial and dynamic relationship between people and animals that is influenced by behaviors that are essential to the health and well-being of both" (para. 1).

Military members: Also known as service members. For this research, the terms are used interchangeably. Military members are individuals serving in the armed forces. They have different branches, including the Army, Navy, Marine Corps, Air Force, National Guard, and Coast Guard.

Spouse: Life partner in holy matrimony, marriage, civil union, or domestic partnership (Wolfson & Melcher, 1996).

Stress: How the body reacts by releasing specific chemicals into the blood (Boswell et al., 2004; Butler, 1993). Chemicals produced in the body can cause either positive or negative feelings (Boswell et al., 2004; Butler, 1993).

Internal stress: When individuals worry without a known reason about uncontrollable situations, or even place themselves into situations that induce stress (Boswell et al., 2004; Butler, 1993).

Environmental stress: Stress caused by noises, crowds, and pressure from family, friends, or work (Boswell et al., 2004; Butler, 1993).

Fatigue and overworked stress: Individuals who take on too much in their lives can be stressed (Boswell et al., 2004; Butler, 1993). Stress can take a long time to build up and take a toll on individual bodies. Fatigue can be seen as unavoidable because military spouses have to work, attend school, raise families, and be separated from their spouses (Boswell et al., 2004; Butler, 1993).

Gender: Socially constructed characteristics of men and women. Gender involves norms, roles, and relationships between women and men but can differ in terms of social conventions. Social norms are used to enforce appropriate behaviors and norms according to gender. In the 21st century, gender norms, roles, and relations have adapted and changed (Croson & Gneeze, 2009; Pryzgoda & Chrisler, 2000). This can nfluence susceptibility to different health conditions and diseases and affect individual mental and

physical health (Courtenay et al., 2002; Croson & Gneeze, 2009; Pryzgoda & Chrisler, 2000).

Assumptions

In the study, I assumed military spouses experience increased stress during long-term separation or deployment. An additional assumption involved amount of stress before deployment. Added stressors before deployment can increase stress during long-term separation.

Although there are many reasons people can experience stress, it is essential to consider all possibilities associated with amount of stress families are experiencing. I did not assess stress before deployment, affecting the data's reliability and validity. At the time of the current study, I considered how the HCB only decreases stress during separation. The study's validity and reliability may alter data during separation and stress reporting.

Scope and Delimitations

For this study, I focused on military spouses. According to Military One Source (2017, p. 45), 52.6% (n = 680,759) of active duty members reported they were married, 42.5% (n = 549,926) reported they had never been married, 4.8% (n = 61, 836) of active duty members reported being divorced, and 0.2% reported as other (annulled, widowed, and unknown cases).

For the study, military spouses were chosen to identify how families are affected during deployment. Military families can travel to new locations, see the world, and experience new schools and cultures. However, being left in a foreign country alone with

or without children can increase military spouses' stress levels. For this study, children were excluded from research. A reason for exclusion of children is reliability concerns. Children can demonstrate difficulties expressing themselves during surveys, affecting reliability (Johnson & Foley, 1984). Another potential limitation involving working with children during this study is guardian's' influence on their answers.

Limitations

The study had many limitations. The first limitation was focusing only on canine pets. Future research offers the opportunity to explore how other species of animals and varieties of pets may decrease stress.

The study's second limitation involved spouses during separation and eliminating children, caregivers, and other family members. This decreases validity of the data by eliminating significant family members. I also focused on spouses and eliminated additional data identifying significant differences between those who had canine pets and no pets. Many military families have additional family members who assist in terms of raising children or live within households, which can lead to stress within families. I study did not look further into additional family members. A third limitation that may have affected the study was number of active participants. Increasing the number of participants in the study may have led to a higher return rate of questionnaires. Lack participants returning questionnaires could decrease the study's validity. Thus, margin errors increased as study results were received and inputted in SPSS. Although I could have increased the number of family readiness groups (FRGs) to reach out to, it was not

guaranteed that FRGs would distribute links to families of deployed members or even partake in research. I did not focus on one specific branch of the military.

Stressors involved with living on and off military installations can differ from person to person. Future research is required to evaluate if stress is affected by living on and off military installations.

Biases

I am affiliated with the military, which was a potential source of bias. As a past dependent of a U.S. soldier and having experienced multiple deployments, I was aware of how it feels to experience separation. Experiencing multiple separations provides a unique opportunity to identify stress associated with deployments and lack of communication between families and military members. . Minimizing bias within the study while remaining open-minded could decrease personal influences on presenting data.

I am a pet owner of multiple canines and additional animals. Through multiple deployments, I experienced the HCB with canines within the home. Owning canines offered positive experiences that presented the opportunity to decrease my stress. I felt canine pet ownership provided me with coping mechanisms needed through lengthy separations, and canine pets do offer the ability to decrease stressors associated with depression and anxiety due to long-term separations.

Significance of the Study

The study could increase awareness of how stress affects spouses in the military. The amount of stress families endure can impact the function of family systems during

long-term separations. Research may demonstrate how families are impacted while providing insights regarding increasing morale and support systems. Data could also assist in identifying how to decrease amount of stress during long-term separations. Although the military provides multiple programs that spouses and families can use, many families do not use them for unknown reasons.

This study will be used to identify how canine pets can decrease stress. Pets offer companionship, decrease medical problems, and enhance life expectancy (Gewirtz et al., 2011).

Summary

Active duty military members contribute enormously to society while sacrificing for their country. Military spouses also sacrifice by enduring stress due to long-term separations.

The chapter involved identifying the study's significance while providing background information on the HCB and stress levels military spouses endure during separation. Although studies have indicated psychological effects, they are limited in terms of addressing how deployment affects families. The study involves stress military spouses endure while their loved ones are deployed.

The chapter also includes definitions of terms that were used in the study. I also focus animal-assisted therapy, service animals, and canine pets. I also addressed the study's scope, limitations, scope and delimitations, and significance.

Chapter 2 includes information about the deployment cycle and potential effects on military members and their families. I focus on how deployment stress interweaves

itself into the family unit, manifesting in emotions and turmoil within families. I focus on prior literature involving animal-human bonds, information regarding the deployment cycle, and effects of deployment experienced by spouses, families, and military members. Chapter 2 also includes information about the descriptive correlational design as well as the methodology, setting, and participants, instrumentation and procedures, data process and analysis, and ethical considerations.

Chapter 2: Literature Review

Deployment stress is caused by separation of deployed military members from their loved ones. Emotional effects associated with deployment stress lead to decreased morale within the military (Bartone, 2006). Elevated stress levels are present throughout the predeployment, deployment, and postdeployment phases and may particularly affect military spouses. This quantitative descriptive correlational research study involved understanding better the degree to which relationships exist involving the HCB and postdeployment stress experienced by military spouses during deployment. This relationship was studied by considering the influence of canine companions on situations where deployment stress is present.

Minimal research has explored effects of the HCB from the perspective of military spouses. Researchers began exploring the general relationship between humans and animals in the 1980s, and the topic has since received more attention as society began recognizing the significance of the bond between humans and animals. Research on the HCB primarily involves allergies and immunity, Alzheimer's disease, autism spectrum disorders, cancer, cardiovascular health, depression, and PTSD (Walsh, 2009). However, in addition to assisting with these physical, mental, and psychological ailments, the presence of pets can provide additional benefits, such as alleviating loneliness and companionship (Walsh, 2009). Therefore, this study involved discovering whether the presence of canine companions can help reduce deployment stress related to anxiety. By expanding research to focus on the HCB for military spouses, this study may assist in

determining how to provide better care for those experiencing increased stress during deployment.

This chapter begins with a review of literature about deployment stress, associated effects, and the relationship between stress and predeployment, deployment, sustainment, reintegration, and postdeployment phases as experienced by military spouses. This chapter also includes a discussion of the role of deployment stress experienced by spouses, family units, including children, and military members. I then discuss the role of animal therapy, benefits of animal-assisted therapies and animal-assisted activities, and the relationship between e release of oxytocin and animals as companions. This quantitative study involved using include John Bowlby Mary Ainsworth's BAT and Murray Bowen's FST, which are thoroughly outlined. This chapter also includes literature search strategies used to locate sources.

Review of Literature and Key Themes

When military members undergo deployment, their loved ones experience stress due to their absence (Owen & Combs, 2017). Deployment stress is the stress associated with the process of deployment and a psychological phenomenon that may affect military members as well as their spouses and children, who are often left behind at home (Skomorovsky, 2014). For spouses at home, deployment stress can lead to psychological effects, including emotional instability, disorientation, depression, anxiety, and substance abuse (Verdeli et al., 2011), as well as physiological effects such as headaches, insomnia, and gastrointestinal difficulties (Owen & Combs, 2017). Common emotional manifestations associated with deployment stress may include irritability,

defenselessness, loneliness, desperation, anger, and desolation, while behavioral manifestations may include increased substance abuse, increased nicotine use, and lack of inhibitions (Jokovic et al., 2016). These symptoms are directly related to absence and at-home spouse needs to simultaneously address loneliness and reorganize responsibilities and concern for loved ones while managing households. Children may also suffer psychological effects resulting from coming and going of their parents, coupled with frequent absence and constant insecurity regarding their parents' safety (Owen & Combs, 2017). For deployed spouses, deployment stress may also affect morale of military members (Bartone, 2006). This may lead to inability to focus intently on current tasks, which may be dangerous and life-threatening (Owen & Combs, 2017).

Services are offered to military members, veterans, and their families to assist with predeployment, postdeployment, and reintegration phases. The U.S. Department of Veterans Affairs offers various services to military members and veterans focusing on mental health, posttraumatic stress disorder, public health, and crisis prevention, with options including short-term inpatient or outpatient care and rehabilitation in a designated center or residential recovery care. One of the particular therapy options involves enabling military members and veterans to develop relationships with animal companions or service animals. This therapy can help circumvent instances that trigger feelings of stress or other psychological effects and boost morale (Halm, 2008). Dogs are individually trained to accommodate specific physical and mental ailments to provide their owners with the most comfortable and convenient lives possible (Walsh, 2017). Though this research involved focusing on benefits that pet companionship can offer

spouses of deployed military members rather than benefits of service dogs, both roles entail the role of pets as cohorts. When military spouses and families experience interactions with animals, whether pets or service dogs, there are associated psychological and emotional benefits. While little research has examined how military service affects family members, no research was found on the impact of canine companions, families, and spouses of deployed military members. Since no previous researchers have studied the potential of the HCB for military families, this study involved determining whether this relationship can help spouses better cope with military member absence.

Literature Search Strategy

The literature search was conducted using Walden University databases and Google Scholar. The search was conducted using the following key search terms: *human-canine bond*, *military*, *military families*, *military spouses or military partners*, *deployment(s)*, *stress* and *canine*, *canine pets*, *pets*, *attachment theory*, *bonds between human and animal*, *family systems theory*, and *attachment theory*. Using these key search terms, articles were produced from the 1980s, but fewer articles were produced recently. This suggests that few studies have focused on this topic. Articles were focused primarily on military separations during past wars, including the Korean War, World War II, Dessert Storm, Operation Enduring Freedom, and Operation Iraqi Freedom. For the current study, articles were published between 2013 and 2023. This study includes seminal research that was published prior to 2013, however, to support the current study. As previously stated, I found limited articles due to the scope of terms required for the

study. Nonscholarly websites were used to locate additional articles that would offer valuable data for the research. This review contains 76 sources.

Theoretical Framework for the Study

Ainsworth and Bowlby's BAT and Bowen's FST were used for the present study. These theories involve relationships and bonds between individuals, such as parents and children, as well as long- and short-term interpersonal relationships between humans (Bretherton, 1992). These theories offer a valuable perspective on the human-canine bond and stress reduction within the individual and the family unit. Both Bowlby's and Bowen's theories align with the research by expanding resources of bonding between a canine pet and a military spouse, perhaps decreasing stress during deployment. Each theory contributes to the research by presenting data on how the animals, particularly canine companions, may reduce stress in spouses experiencing long-term separation due to deployment.

BAT

The basis of attachment theory is founded on the relationship between a child and his or her parent and guardian (Levy et al., 2015). This theory suggests, for example, that if an infant is properly cared for and nurtured by its caregiver, it consequentially perceives other people as trustworthy (Levy et al., 2015). On the contrary, if an infant is not adequately cared for by its caregiver, it develops feelings of insecurity and distress concerning other adults. This insecurity is recognized as "insecure infant attachment," which may manifest in later years as the inability to connect socially and emotionally, rely on others, or form romantic relationships (Levy et al., 2015, p. 92). Ultimately, BAT

describes the process of an infant's development of a sense of self that persists throughout adulthood. According to Sable (2012), animals and humans share similarities with BAT because humans and animals are biologically programmed to seek out and support physical contact. BAT supports the emotional connection to selective figures with individuals they become familiar with and rely on for physiological and physical protection (Sable, 2012). This relationship may reflect a human-to-human relationship, animal-to-animal relationship, or human-to-animal one.

The BAT theory followed the tradition of the psychoanalytic object relations theory (PORT). In order to understand this relationship, the psychoanalytic theory must first be explained. Sigmund Freud, whose research focused much on the unconscious mind and subliminal thought, developed the theory of psychoanalysis. Psychoanalysis considers the present moment and one's subconscious thoughts, feelings, and motivators that may influence the "unity between mind and feeling" (Ormay, 2013, p. 346). According to Blatt (1994), object relations are how humans communicate with others (Mullin et al., 2017). As object relations theory is derived from psychoanalysis, all perspectives surrounding relationships with others are based on one's understanding of said relationships. For example, according to Bowlby, attachment theory suggests that a child's expectation of his/her caregivers' availability reflects more on the child's opinion of self than the caregiver (Mullin et al., 2017). With this notion, the perspective is intrinsic and is not affected by the caregiver's actual behaviors but by the child's expectation of said behaviors. Therefore, in a similar vein, psychoanalytic object relations theory refers to the intrinsic need for humans and animals to experience physical

contact to form relationships. This intrinsic need, in turn, helps humans and animals establish ideas about the self.

In 1969, Bowlby added to the ethological principle of PORT to help explain how proximity-seeking behaviors are designed to assure the emotional accessibility of attachment figures during trying times (Sable, 2012). According to Bowlby (1969), these behaviors are considered part of a system of attachment that regulates how humans – and some animals – can maintain a companionship that provides both protection and security. According to this theory, humans are hardwired to seek closeness to their caregivers and loved ones to increase their chances of survival (Nielsen et al., 2017). His findings were discovered by studying the behaviors of children who had been separated from their mothers for long periods, monitoring their "subsequent distress, grief and gradual recovery" (Mercer, 2011, p. 27). Using this information, Bowlby developed a theory that entailed "behavioral, motivational, and cognitive components" (Mercer, 2011, p. 27). Sroufe (1979) further elaborated on these notions by presenting attachment theory as an indicator of childhood behavior and adult personality development (Mercer, 2011). This theory now offers a perspective on why infants bond with their parents, how attachment influences the coping process of grief and bereavement, and why adults seek certain types of partners (Buehler, 2017).

Taking Bowlby's BAT theory a step further, it is presumed that anxiety disorders are partially caused by the inability of a caregiver to provide emotional and physical attachments during times of need (Nielsen et al., 2017). Since the caregiver-to-child relationship sets the standard for consecutive adult relationships, including both

friendship and romantic, a negative experience can lead to an inability to control one's emotions as they relate to relationships (Nielsen et al., 2017). The inability to control emotions is the foundation of all anxiety disorders (Nielsen et al., 2017). According to BAT, when children do not receive the response their caregiver needs, they approach adulthood relationships in various patterns, including secure, anxious, dismissive, and avoidant patterns (Sandberg et al., 2017). Depending on the attachment style, these patterns include estrangement and anxious behaviors (Sandberg et al., 2017). The dismissive, avoidant, and anxious attachment styles can be perceived as defense mechanisms, as they protect an individual from loneliness, seclusion, loss, or rejection (Sandberg et al., 2017).

Bowen's FST

Bowen introduced family systems theory as an approach to focusing on human behavior and the familial unit (Rothbaum et al., 2002). The theory explains the complexity of interactions within the family unit while describing the emotional connection between family members (Rothbaum et al., 2002). From this perspective, family members are no longer acknowledged as individual components but, rather, entirely interdependent on one another (Huffman et al., 2017). For this reason, each member of the family is required in order for the family to function effectively as a unit (Huffman et al., 2017). When one family member disrupts the regularity of the unit, this causes often-unwarranted changes in the system (Huffman et al., 2017). This would suggest that the family unit entails strong individuals who maintain a "solid self," which is having the ability "to stand firm in his or her convictions, capable of hearing and

evaluating the views of others, listen without reacting, and communicate without antagonizing others" (Errington, 2017, p. 176). A solid sense of self enables individuals to assess the internal and external reactions to outside stressors, noting the stressor as a separate entity (Errington, 2007). With this perspective in mind, the conflict does not have the power to influence individual perceptions and behaviors unless the individual consciously decides so (Errington, 2007). However, this level of mindfulness is not always feasible by all family members that are part of an existing unit, which is why change often leads to disruption. Suppose this unwarranted change is not adjusted or fixed. In that case, the family unit lost its stability, which led to a system breakdown, according to Huffman et al. (2017).

This theory considers all elements of the family unit. If a single individual is at fault, the entire family is at fault. This is because if one individual causes the family to fail, the entire unit fails, regardless of who is at fault. However, according to Baker and Eichler (2016), the most effective family system exists when the parents form a system that differentiates from that of the children. In other words, the parents make decisions together regarding the child(ren) and have a relationship that is mutually satisfying, beneficial, and private from their children (Baker & Eichler, 2016). In a nuclear family unit, the parents must remain in a position of power above the children and for the parents to maintain a level of authority that coincides with respect (Baker & Eichler, 2016). This notion is demonstrated in the decision of school counselors to adopt a family systems theory when counseling their students through a problem (Martin, 2017). Using family systems theory, the counselor works with the student and the family to understand

the full range of information and assist both parties with behavioral and situational changes needed for success (Martin, 2017). When counselors make use of family systems theory, they can provide help for children at school and at home – significant influencers of a student's success – as the parents can better understand how to adjust existing routines (Martin, 2017). Again, this perspective shows that all family members must be involved – and make a conscious effort – for effective change to be implemented. Ultimately, this theory posits that unity is the most important resource for a family (Huffman et al., 2017).

Role of Animals in the Family System

When animals are adopted into the family system, they become directly involved in the family unit. If the family decides to relocate, the animal is affected by it; just as if a family member is deployed, the animal is also affected. Along with the human family members, the animal must readjust and reintegrate into the new lifestyle changes that military families may require. However, in a military member's absence, a pet can provide companionship and support, offering unconditional love during an otherwise stressful period. In the absence of their loved one, especially during wartime, these pets can become integral parts of the family unit and are often recognized as more of a member than a pet (Mueller & Callina, 2014).

Little research has explored the role of animal companions in the military family. Prior research has explored the benefits of the human-canine bond and the many positive characteristics this relationship can offer the owner. However, little to no research has explored how animals can be used as a form of companionship for the spouses of military

members, particularly throughout the deployment phases. As discussed previously, the scholarly literature on pets focuses almost exclusively on pet therapy or animal-assisted therapy (Furst, 2016). According to Hosey and Melfi (2014), there were only eight journals that published at least five articles related to animals as companions.

Animal-Human Relationship

In the U.S. today, approximately 62% of the population lives with a pet (Saunders et al., 2017). However, pet ownership and the animal-human bond are not new occurrences. Humans and animals have spent thousands of years alongside one another, which has created a significant interdependency between humans and some species (Amiot & Bastien, 2014). According to Mims and Waddell (2016), the relationship between animals and humans dates back 12,000 years ago – and potentially earlier. The earliest documentation of animal-human relationships has been found in cave paintings and historical legends throughout history (Staats, Wallace & Anderson, 2008). Over the years, archaeologists have found remnants of animal skeletons from the prehistoric era buried alongside humans (Staats et al., 2008). This was thought to convey the humans' longing to maintain this friendship, even after their death (Staats et al., 2008). However, the relationship between animals and humans has evolved far beyond needing assistance performing tasks and becoming recognized as companions and integral family members (Blazina and Shen-Miller, 2011). The benefits of animal companionship were further investigated by Florence Nightingale – a British nurse, statistician, and social reformer in the mid-to late-1800s – who attested that small animals helped to comfort gravely ill

patients (MacDonald and Barrett, 2016). Earlier, in 1792, animals were used by The York Retreat in England, a center for the mentally ill, to provide therapy and comfort (Mims and Waddell, 2016).

Today, animals continue to offer companionship, in addition to various other supports, to their owners. The human-canine bond has been found to offer unique benefits, which include "pleasure, relaxation, affection, loyalty and security" (Every, Smith, Smith, Trugg & Thompson, 2017, p. 46). This bond is specifically defined by the American Veterinary Medical Association ("Human-Animal Bond," 2014) as "a mutually beneficial and dynamic relationship between people and animals that is influenced by behaviors that are essential to the well-being of both." The role of the animal-human relationship can be significantly impactful to one's mental health, which is defined by the government's mental health website as focusing on emotional, psychological, and social well-being, as well as how a person thinks, feels, and behaves ("Mental Health," n.d.). The well-being includes, but is not limited to, emotional, psychological, and physical interactions of people, animals, and their environment and may be attributed to several circumstances, including biological factors, life experiences that include trauma, and a history of mental health. The relationship between animals and humans may compensate for a level of companionship and unconditional love often lacking in human relationships (MacDonald & Barrett, 2016). According to Weiss (1974) – as cited by MacDonald and Barrett (2016) – the relationship with a pet can help to alleviate feelings of loneliness and social isolation, especially for individuals that live alone or are experiencing time away from a loved one. This notion is particularly significant for military spouses, who often

spend months to years away from their loved ones. According to Muschel as cited by MacDonald and Barrett (2016), having a pet can help to lessen the stress, loneliness, and lack of human interaction that occurs throughout the absence of a loved one.

According to Saunders et al. (2017), the human-canine bond can help with the following psychological characteristics for the owner: "social attention and behavior, interpersonal interactions, mood, heart rate, blood pressure, fear and anxiety, mental and physical health and cardiovascular function," as well as "on stress and epinephrine/non-epinephrine, immune system functioning, pain management, aggression, empathy and learning" (p. 3). According to Beetz (2017), animals can help "support establishing optimal executive functions, including, for example, impulse control, self-reflection, self-motivation, and working memory, all of which are negatively affected by elevated stress" (p. 145).

According to Nimer and Lundahl (2007) – as cited by Every et al. (2017) – animal companionship can improve emotional welfare in both non-clinical and clinical settings. When patients of healthcare institutions are allotted interactions with animals, they have reported feelings of happiness, coupled with a decrease in stress, loneliness, and suicidal thoughts (Every et al., 2017). Staats et al. (2006) conducted a study of pet ownership that considers what classifies a pet as a companion. The most common responses of the study, which consisted of 241 college student participants from a Midwestern community college, as well as 102 community members from the surrounding area, were as follows: (a): "My pet helps keep me active"; (b) "I would be lonely without my pet"; (c) "Pet serves a useful function"; (d) "I keep the pet for other

people"; (e) and "My pet helps me get through hard times" (p. 283). The predominant reason for pet ownership, noted by 37.8 percent of community members and 37.2 percent of students, was to circumvent loneliness, while 13.4 percent of community members and 18.8 percent of students claimed that having a pet helped them cope with difficult times (Staats et al., 2008). Of the participants that disclosed their gender within the student group, 88 were male, 146 were female, and of the community group, 40 were male, and 60 were female (Staats et al., 2008). The results also indicated that the most common reasons for pet ownership mentioned by each gender were to a) circumvent loneliness, b) keep active and c) help cope with difficult times (Staats et al., 2008). The majority of participants in all age groups in the study also believed that pet ownership would yield positive benefits to their future health (Staats et al., 2008).

Animals have been companions for humans for thousands of years (Staats et al., 2008). As previously stated, this has been noted in prehistoric cave paintings and animal skeletons, which were buried alongside humans (Staats et al., 2008). The human-canine bond offers a unique experience of unconditional love and acceptance, which is noted by feelings of improved emotional, physical, and psychological well-being ("Human-Animal Bond," 2014). It has also helped improve humans' physical condition during trauma (MacDonald & Barrett, 2016). Due to the unique role of animals in the family system, it may be presumed that pets can play a crucial role in the family systems theory. The theory, as it stands, does not specifically state that all family members must be human to qualify as integral members. Pets, particularly canines, offer unconditional love and support that can be acknowledged as an integral part of the family system, particularly for

coping methods. For these reasons, this study serves to examine whether pets provide beneficial for military families, particularly that of the spouses, during times of deployment. The following section further explored how animals affect the mental health of their human cohorts.

Impact of Animals on Mental Health

There is a myriad of positive effects that animals may have on mental health. These effects are particularly noted in the dynamic of pet therapies. Although this research does not surround pet therapy, it is helpful to note the benefits that may arise from interacting with an animal daily, particularly for a pet owner. In the case of at-home military spouses – wives in particular – a study was conducted by Branch (2008) concerning the relationship between animals and females, which found that females experienced superior levels of mental and emotional health due to the unconditional love received from their canine companions (MacDonald & Barrett, 2016). This relationship also helps to provide additional exercise, which improves physical wellness and offers a support system during times of significant distress (MacDonald & Barrett, 2016).

These services are formally known as Animal-Assisted Therapy (AAT) or Animal-Assisted Activities (AAA), both of which include distinct definitions. According to Delta Society (2012), as cited by Mims and Waddell (2016), AAT is defined as:

> [Involving] a health or human service professional who uses an animal as part of his/her job. The professional identify specific goals for each client, and progress is measured and recorded. AAT is a goal-directed intervention in which an animal meeting specific criteria is integral to the treatment process. AAT is delivered and

> directed by a health or human services provider working within the scope of his or her profession. AAT is designed to promote improvement in human physical, social, emotional, and cognitive functioning. AAT is provided in various settings and may be group or individual (Mims and Waddell, 2016, p. 453).

AAT aims to offer long-term, one-on-one treatment for trauma victims (Mims & Waddell, 2016). This is not to be used alone but in conjunction with other forms of therapy (Mims & Waddell, 2016). The animal's presence removes the distress attached to the victim's trauma by presenting a calm relationship that offers unconditional love and support while helping to bridge the rapport between the individual and the caregiver (Mims & Waddell, 2016). Overall, AAT strives to lessen anxiety and isolation, improve mood, tackle sadness and loss, and improve one's self-esteem and interpersonal relationships (Mims & Waddell, 2016). It involves working consistently with an animal, from simply petting, feeding, and spending time together to more advanced activities ("Talk to the animals," 2016). The benefits of AAT have been proven so successful that, in 2010, the U.S. Army devoted $300,000 to developing a program that studies the role of the companionship between veterans and service dogs (Mims & Waddell, 2016). This eventually resulted in the amendment of the Americans with Disabilities Act (ADA), which now cites that posttraumatic stress is classified as grounds for receiving a service dog (Mims and Waddell, 2016). It must be noted. According to Mims and Waddell (2016):

> Service dogs are defined as dogs that are individually trained to do work or perform tasks for people with disabilities. Examples of such work or tasks

> include guiding people who are blind, alerting people who are deaf, pulling a wheelchair, alerting and protecting a person who is having a seizure, reminding a person with mental illness to take prescribed medications, calming a person with Post Traumatic Stress Disorder during an anxiety attack, or performing other duties. Service animals are working animals, not pets (p. ???).

Another form of therapy involving animals is animal-assisted therapy, and AAA is similar to AAT. However, AAA is known to be more informal (Every et al., 2017). These therapies are also provided by a trained professional and are aimed at providing "motivation, education, recreation, and therapeutic benefits" (Mims and Waddell, 2016). According to the Delta Society (2012):

> Activities that involve animals visiting people. The same activity can be repeated with different people, unlike a therapy program tailored to a particular person or medical condition. AAA provides motivational, educational, and recreational opportunities to enhance the quality of life. AAA is delivered in various environments by a specially trained professional, paraprofessional, and volunteer in association with animals that meet specific criteria ().

Regardless of whether pet companionship, AAT, or AAA is selected for the optimal route of care or camaraderie, animals can help reduce feelings of grief in individuals that suffer from physical, mental, and emotional illness, individuals that are incarcerated, individuals that are experiencing high distress or even individuals without any significant dilemma (Crossman, 2017). A chief reason behind these therapeutic properties of the animal is due, in part, to the "unconditional love, constant availability

and non-judgmental nature that transcends into trust, warmth and acceptance" (Mims and Waddell, 2016).

According to Crossman (2017), psychological distress is defined as "the problems with mood and anxiety that lead to emotional hardship, which may also be associated with psychological symptoms" (p. 762). In 2014, the Substance Abuse and Mental Health Services Administration reported that 11 percent of adults report significant psychological distress (Crossman, 2017). This number reflects more than one out of every ten adults (Crossman, 2017). Furthermore, it was also reported that nearly 30 percent of Americans would have at least one "major depressive episode" throughout their lives, while 42 percent of Americans – nearly half of the population – will suffer from an anxiety disorder (Crossman, 2017, p. 762). According to Crossman (2017), these mental reactions are often attributed to distress surrounding serious health problems and the prospect of death (Crossman, 2017). During these situations, the role of an animal companion can greatly assist with coping and relieving distress – and many individuals are looking to animals to provide this comfort. In 2014, at least 925 colleges and universities established programs that facilitated the human-canine relationship to boost students' wellbeing (Crossman and Kazdin, 2015; Crossman, 2017). A year later, in 2015, it was found that more than 65 percent of the nation's households included animals (Crossman, 2017). According to Crossman (2017), if the relationship between humans and animals can help reduce stress and boost morale, then 79.7 million American families have already begun experiencing the benefits.

Animal Companions, Stress, And the Role Of Oxytocin

Oxytocin, a neurotransmitter and hormone regulated by the brain's endocrine system, plays a key role in human bonding and love (De Boer et al., 2012). As human beings, the chief role of oxytocin is to notify the body to produce milk for breastfeeding, which is signified by the mother's bond with her infant (de Boer et al., 2012). Oxytocin is also released during physical touch and stimulation, including sexual activity (Beetz, 2017). However, as oxytocin is strongly associated with dopamine or the pleasure chemical, it is crucial in forming intimate relationships that prove both rewarding and love-filled (de Boer et al., 2012, p. 117). Moreover, oxytocin is also recognized as the trust hormone, offering stress-reducing benefits and the encouragement of trust-building (de Boer et al., 2012, p. 117). It also helps decrease depression and anxiety, amplifies pain tolerance, and encourages interpersonal communication (Beetz, 2017).

It is relevant to discuss oxytocin because it is also released during human-canine bonding (Beetz, 2017). The role of oxytocin is the reasoning as to why the human-canine bond is such a pleasurable experience for humans (Beetz, 2017). According to Beetz (2017), petting a dog for as little as three minutes significantly increases the oxytocin level in female dog owners; this experience is stronger when petting familiar dogs – such as one's own – versus those that are unfamiliar (Beetz, 2017). Even when touch is not involved, the experience of making eye contact with an animal, particularly that of a dog, can boost oxytocin levels and the dog's oxytocin levels (Beetz, 2017). Two experiments conducted by Japanese researchers tested this notion. The first experiment found that dog owners and their canine companions that spent long periods looking at each other within

a 30-minute time frame demonstrated a burst of oxytocin, measured and confirmed by urine samples (Karen, 2015). The second experiment administered a squirt of oxytocin up the dogs' noses before interacting with their owners and two human strangers. The results found that only the female dogs stared more than the males (Karen, 2015). This experiment demonstrates the genuine feelings of companionship shared between the owner and his pet in the first experiment, which occurred when oxytocin levels were induced naturally rather than purposefully.

The role of touch, or contact comfort, is attached to the presence of oxytocin (Crossman, 2017, p. 773). After all, physical touch helps to form attachment (Beetz, 2017) and the experience of touch is beneficial for both animals and humans (Crossman, 2017). Petting or stroking an animal can offer a different experience than touching a human, as some humans do not particularly find pleasure in touching others (Beetz, 2017). This lack of pleasure immediately connotes that oxytocin is not released throughout this process, deeming it an uncomfortable rather than pleasure-filled bonding experience (Beetz, 2017). Moreover, animals are recognized as "willing recipients" of unconditional love and care, which automatically affiliates them with positive emotions and a sense of trust (Beetz, 2017, p. 144). It is important to note that the release of oxytocin and the experience of physical touch can best be brought about by a real animal rather than a simulated animal. According to Oaklander (2017), one study requested that a group of 58 adults pet a rabbit, a turtle, and the toy forms. When petting the toys, the adults did not experience any differences in feelings. The study showed that petting a toy animal proved no better than not petting anything (Saunders et al., 2017). However,

when petting one of the live animals, they immediately noted feelings of decreased anxiety. The study determined that petting animals reduced distress, regardless of whether the participants considered themselves animal lovers or otherwise (Oakland, 2017). The results were attributed directly to the role of oxytocin release when petting a live animal (Saunders et al., 2017).

Animal Companions and Social Facilitation

Animals encourage social interaction (Crossman, 2017). This can be particularly advantageous for people who tend to isolate or are experiencing feelings of loneliness, as animals, particularly dogs, serve as icebreakers (Crossman, 2017). When an individual is seen walking with a friendly-looking dog, they are immediately attached to characteristics of friendliness and convey a sense of social invitation (Beetz, 2017). According to Beetz (2017), the increased interaction that coincides with the presence of dogs is otherwise known as the "social catalyst effect" (p. 144). Individuals who have difficulty communicating socially with others or suffer from a physical, emotional, or mental disorder may find it easier to connect with other individuals when their furry companion is present (Beetz, 2017). Therefore, the mere presence of a dog can help the owner attract, meet, and socialize with new friends.

Animals as Companions for At-Home Spouses

Many organizations offer service dogs to post-deployment military members. Some of these organizations include K9s for Warriors, Hounds and Heroes, and Canines for Vets, which offer unconditional love, support, and comfort to members after they return home. However, these organizations focus on the role of the canine in the military

member's life and do not consider the role of animals in helping military spouses and their families to cope with their loved one's absence. According to Mueller and Callina (2014), adopting a pet into a military family can have positive implications for children and adolescents, which range from improving welfare and mental health to boosting self-esteem, increasing physical health, and encouraging positive coping mechanisms.

, Mueller and Callina (2014) indicated that youth with at least one deployed family member experienced much higher stress levels than their non-military counterparts. The presence of a pet and the quality of the relationship with this pet helped to build resilience (Mueller & Callina, 2014). A positive relationship was also noted between the military children, their attachment to the pet, and positive coping mechanisms (Mueller & Callina, 2014).

No research has been conducted concerning whether canine companions may help at-home spouses cope with the absence of military members during deployment. The scholarship cited in this review provides insight into the stress associated with deployment and the role of animals in helping improve the overall welfare of individuals and their families. As some of the stress of at-home spouses is the responsibility over their children, it may be presumed that if the presence of a pet in the household can alleviate the stress of the children, then it consequentially alleviates some stress of the at-home spouse, whether the spouse interacts directly with the animal or not. However, as there is no literature available about the role of animal companions – particularly canines – in helping at-home military members cope with their spouse's absence, this study

provided foundational information on the role of animals for these spouses during deployment.

Deployment Stress

The deployment of a military member is associated with elevated stress levels, particularly for the family (Owen & Combs, 2017, p. 28). Deployment stress has a large sphere of influence, which encompasses the member, the member's colleagues, the member's spouse, the member's children, and the member's extended family. Perhaps the sphere of influence is considerably large – in the context of the member's family – because the family must reorganize their responsibilities and alter their normal routines to accommodate the military member's absence during deployment periods (Skomorovsky, 2014, p. 44). Each time the military member is deployed, the family must, yet again, adjust their lives accordingly. This places tremendous pressure on the at-home spouse, who is often required to spearhead the changes that are to occur in the military member's absence, which may include relocation (Padden & Agazio, 2013, p. 562). If the family is to relocate, the danger is always a threat, as well as adaptation to the military and its operations, particularly if relocation brings the family to reside on a military base or in a foreign country (Padden & Agazio, 2013, p. 562).

The elevated stress levels are attributed to the household changes and concern over the loved one's safety. Wartime periods propose limited communication with the military member, which stirs constant fear for their welfare – and survival status (Padden & Agazio, 2013, p. 562). While coping with these intense emotions, the spouse must continue to act as a single parent, which includes remaining as the decision-maker of the

household, while being unable to regularly communicate with their spouse regarding any of these matters (Skomorovsky, 2014, p. 44). On the other end of the spectrum, family status can affect the mental and spiritual health of the deployed member (Skomorovsky, 2014, p. 44). Suppose the deployed member is overwhelmed with familial financial problems, quarrels, or related drama. In that case, he or she may lose focus on the prerogative of the military mission (Skomorovsky, 2014, p. 44). If the distraction intensifies, it can affect the member's performance, rank, and compensation, as well as his or her surrounding colleagues (Skomorovsky, 2014, p. 44).

Emotional Cycle of Deployment

According to Padden and Agazio (2013), as referenced by Pincus et al. (2004), deployment consists of five stages, which correlate with an emotional cycle (p. 536). Verdeli et al. (2011) posit that the cycle consists of four stages: pre-deployment, deployment, reunion, and post-deployment. However, for this literature review, the research focused on Padden and Agazio's (2013) five stages, which shed light on the transitional period between deployment and redeployment.

Deployment has a profound impact on both the military member and the at-home spouse, posing both a challenge and a chance for growth for both parties (Knobloch et al., 2016). This cycle, recognized as the emotional cycle of deployment model, was developed by military psychiatrists to present key stages of the member's deployment that constitute unique troubles (Knobloch et al., 2016). These stages include pre-deployment, deployment, sustainment, redeployment, and post-deployment, though the member must be deployed for six months or more to be considered part of the emotional

cycle (Padden & Agazio, 2013, p. 563). Other researchers, like Swenson and Wolff (2011), note that there are four stages of deployment: pre-deployment, deployment, reunion, and post-employment. However, as previously stated, since this study chiefly examines the emotional context of deployment as it relates to the military member's spouse, the focus was on Padden and Agazio's (2013) emotional cycle of deployment model.

Predeployment

In the pre-deployment phase, the military member is informed of his or her upcoming deployment and given time to prepare for departure adequately. This phase focuses on service members as their units undergo specific training to prepare him or them for the duties ahead of them, along with training and medical evaluations to ensure their personal and unit readiness levels ("Deployment," 2017). During this time, the family begins shifting household responsibilities, including parenting and childcare responsibilities, finances and bills, employment, and medical care (Padden & Agazio, 2013, p. 563-564). This process is known as outsourcing, which refers to the dynamic of one partner managing a greater household workload than the other (Martindale-Adams et al., 2016). In military families, the at-home spouse generally fills this role (Martindale-Adams et al., 2016).

Family members may begin to express apprehension, fear, disapproval, or sadness related to the member's impending deployment (Padden & Agazio, 2013, p. 563-564). Couples may begin having small quarrels about the shift in responsibilities, fueled by thoughts of the imminent departure (Padden & Agazio, 2013, p. 563-564). Children may

fear whether they were ever reunited with their loved ones (Swenson and Wolff, 2011). The military member may be caught in an emotional crossfire of becoming emotionally more intimate with their spouse versus mentally separating themselves from their spouse in preparation (Knobloch et al., 2016). However, the family at this stage is typically not affected unless training requires longer duty hours. Most of the time, families typically go on with normal daily routines. This phase does not end until the service member or the unit physically leaves their home duty station ("Deployment," 2017).

Deployment

According to the official military website (military.com), deployments are activities that require the movement of military personnel and materials from their installation to a specific destination ("Deployment," 2017). The deployment stage refers to the military member's first month away from the household (Padden & Agazio, 2013, p. 563-564). For this reason, the separation is marked by geographical parting (Swenson and Wolff, 2011). When possible, he or she looked to open the lines of communication via phone or the Internet (Padden & Agazio, 2013, p. 563-564). However, the focus remained on adjusting to a new work schedule, new housing circumstances, new colleagues, and vocational expectations.

If the military member's family has older children, these children may become responsible for maintaining new household tasks (Swenson and Wolff, 2011). Due to the absence of the military member, there may also be a decrease in parental monitoring unless the at-home spouse makes use of childcare or accepts the help of other family members (Swenson and Wolff, 2011). The at-home family may experience mixed

emotions ranging from anxiety and stress to relief, abandonment, and anger (Padden & Agazio, 2013). These emotions, as stated previously, relate directly to the member's absence, namely the at-home spouse's need to adjust to the change (Padden & Agazio, 2013). The spouse may feel relieved that this major adjustment is finally over, though deserted because of the need to maintain the household singlehandedly (Padden & Agazio, 2013). Positive communication between the spouse and the military member can boost morale for both parties, while negative communication can immediately cause distress, particularly for the military member (Knobloch et al., 2016).

During this phase, families may relocate closer to the military member's base (van den Berk-Clark et al., 2017). Relocation on the family's behalf, often international, may occur numerous times, as military families are more than twice as likely to move than non-military families (van den Berk-Clark et al., 2017). These moves require children to change schools and spouses to change employers. This poses another challenge for at-home spouses, who have high rates of unemployment and underemployment (van den Berk-Clark et al., 2017). Even though military members may receive decent compensation while deployed, these numbers often decrease when they return home (Hosek & Wadsworth, 2013).

Moreover, despite the military member's potentially high earnings while deployed, his or her family may struggle, especially if relocation is consistent (Hosek & Wadsworth, 2013). At-home wives may struggle more than their at-home male counterparts, as women and minorities generally earn lower compensation than Caucasian males (Hosek

& Wadsworth, 2013). In the service member's absence, the family may apply to collect food stamps and make use of other government services (Hosek & Wadsworth, 2013).

Sustainment

This stage begins during the military member's second month of deployment and continues until one month before his or her return. For this reason, this is the longest emotional period that exists throughout the member's active deployment. Throughout this time, the military member learns how to balance communication between his or her family while focusing on vocational demands (Padden & Agazio, 2013, p. 563-564). Too little communication may concern the family members, while too much communication can distract the member from effectively participating in missions, which may threaten safety. During this stage, family members have established new routines, which have been created for the smooth operation of the household in the member's absence. However, it is also during the sustainment period that spouses – and children alike – can show signs of psychological symptoms, such as "depression, anxiety, acute stress reaction, adjustment disorder or increased alcohol use," as well as physical symptoms, like "sleep disturbances, fatigue, headaches, appetite change, weight changes or back pain" (Padden & Agazio, 2013, p. 563-564). This may be recognized as the spouse feeling "the strain of separation" (Knobloch et al., 2016, p. 161). Children and adolescents may exhibit neediness or isolation and increased irritability or sadness, particularly during family holidays or togetherness (Knobloch et al., 2014).

Redeployment

This stage begins during the final month of deployment and continues until the military member's return. Conflicting emotions typically surround re-deployment as family members prepare to, once again, readjust their routines to complement the returning military member (Padden & Agazio, 2013, p. 563-564). Though spouses look forward to the member's return, the at-home spouse may be concerned with the immediate sharing of responsibilities, the loss of their independence, and the potential disagreement over decisions that were made in the member's absence (Padden & Agazio, 2013, p. 563-564). Aside from household duties, spouses may also be concerned over their ability to reconnect on a romantic level (Knobloch et al., 2016). However, children and spouses typically express anticipation and cheerfulness surrounding the member's return (Knobloch et al., 2014).

Post-deployment

This final stage lasts up to approximately six months from the time of the military member's return. It is marked by joyful emotions indicative of a honeymoon phase as the spouses rejoice at the loved one's return (Knobloch et al., 2016). However, although short-term emotions are happiness, this phase entails a harsh adjustment to routines, which may be met with conflict from children and other family members (Padden & Agazio, 2013, p. 566). According to Swenson and Wolff (2011), this is arguably the most difficult deployment phase. The military member may experience physical symptoms from his or her deployment, like insomnia, sensitivity to loud noises, irritability, and culture shock, while others may exhibit symptoms of mental illness,

ranging from anxiety to depression and posttraumatic stress disorder (Padden & Agazio, 2013, p. 566). Post-2001, some 400,000 soldiers have suffered from traumatic brain injuries, posttraumatic stress disorder, anxiety, and depressive disorders (van den Berk-Clark et al., 2017). Military members may appear "different" due to their intense experiences during deployment (Swenson and Wolff, 2011). Moreover, the military member may exhibit physical changes post-deployment. According to van den Berk-Clark et al. (2017), more than 50,000 American service members suffered from physical wounds in 2001.

Spouses may argue over the notion of "who had it worse," while older children may become angry over the loss of prior responsibilities and freedom (Swenson and Wolff, 2011, p. 6). Both children and adolescents are often quite poised throughout the deployment cycle. However, the loved one's return is often met with confusion (Knobloch et al., 2014). Children may feel obligated to emotionally comfort the military member, coupled with fear of the possibility of future deployment (Chernichky-Karcher and Wilson, 2017). The household problems may escalate if there is a history of tribulations, such as marital turmoil, financial troubles, and mental illness (Hollingsworth, Dolbin-MacNab & Marek, 2016). An additional discussion surrounds the understanding of who is and is not perceived as part of the family, a notion that may extend to extended family members or close family friends (Hollingsworth et al., 2016). Due to the immense readjustment required, the spouse and the military member must create space to reconnect their relationship while allotting individual space to acclimate to the change (Padden & Agazio, 2013, p. 566).

The post-deployment phase includes the crucial step of family reintegration. During this process, the military member reintegrates into the family unit, and the family members must adjust accordingly. In other words, military members must learn how to reestablish the normalcy concept, essentially living in a household outside of the military setting (Hollingsworth et al., 2016). Though this phase is marked by happiness surrounding the return, it also presents challenges. Suppose the household was tumultuous or unstable prior to deployment. This established the standard for a situation encouraging negative stress reactions, such as violence, aggression, and substance abuse (Messecar, 2017). Since the military member's return is initially a joyful experience, these behaviors do not always surface immediately (Messecar, 2017). According to a National Guard and Reserve study, violence and substance abuse in post-deployed military members arise approximately three months after returning home in 40 percent of cases (Messecar, 2017). Likewise, another study assessing the mental health of Army soldiers returning from Iraq found that mental health and substance abuse problems became more prominent between three and six months post-deployment (Messecar, 2017).

In order to explore this phenomenon more thoroughly, Messecar (2017) conducted a qualitative descriptive study that interviewed focus groups about the perceptions of National Guard members and their families about post-deployment reintegration (Messecar, 2017). A total of 26 Guard members and 19 family members participated in one of the various groups, with each interview lasting one to two-and-a-half hours (Messecar, 2017). The military members expressed that a period of self-

discovery is needed throughout the reintegration into civilian life. According to Messecar (2017), the military members cited the need to reflect on their experiences and grasp all of the new information provided by their families concerning civilian life during their absence. Furthermore, some military members mentioned difficulties adjusting to the household's reorganized roles (Messecar, 2017). Outside of the household changes, both military members and their families mentioned the following, particularly: "preparation for deployment length and time of deployment, communication during deployment" and "awareness of how deployment changes the military member and the family" (Messecar, 2017, p. 269). The experience of reintegration into family life requires mindfulness on behalf of the family and the military member to accommodate the needs of all those involved.

The emotional cycle of deployment, as a whole, provides a perspective of the dynamic surrounding deployment and reintegration in the family unit (Knobloch et al., 2016). According to Knobloch et al. (2016), the model highlights three crucial factors related to deployment: changes, challenges, and benefits. The change aspect suggests that communication naturally adjusted according to the change in circumstance, while the challenges encompass those personally experienced by the military member, as well as those experienced in the family unit (Knobloch et al., 2016). In a positive situation, the potential benefits are vast for military members, which may include "completing meaningful work, building camaraderie within the unit, making money, improving themselves and their relationships, and a greater appreciation for life in the U.S." (Knobloch et al., 2016, p. 162). In further exploration of the emotional cycle of the

deployment model, Knobloch et al. (2016) collected data from 236 individuals – 118 heterosexual couples – in which one or both spouses were military members. The mean age of the participants was 33 years old, and the mean length of their relationship was ten years, with 98 percent of those classified as married. The average deployment length was ten months; 81 percent of these members were involved in combat. The results of the study found that 43.6% of the participants' communication generally improved between spouses due to the deployment (Knobloch et al., 2016), with one participant, a 26-year-old, at-home Army wife stating: "We have become more open. We do not keep things from each other no matter how hard it might be for the other person to hear. It has helped with understanding each other's mental state" (Knobloch et al., 2016, p. 165).

On the other hand, 19.9 percent cited poorer communication following deployment, with one participant, a 35-year-old, at-home Army National Guard wife, stating: "He seems easier to frustrate and anger. To be honest, I feel that I am easier to frustrate and anger as well" (Knobloch et al., 2016, p. 165). Furthermore, 13.3 percent of participants noted more effortful communication with their spouse following deployment, and 11.8 percent noted an overall stronger relationship (Knobloch et al., 2016). One of the most predominant struggles mentioned by 10 percent of the participants was the restructuring of household responsibilities and deciding which spouse was responsible for household duties (Knobloch et al., 2016).

Effect of Deployment Stress on Military Spouses

According to Padden and Agazio (2013), approximately 3.6 million active duty and reserve service members comprise the Armed Forces, consisting of the National

Guard, the Army, the Navy, the Marines, and the Air Force Reserves. Of this, nearly 44 percent of the Armed Forces are married with children, a number that surmounts to more than 5.4 million people – including military member and their immediate families – that are directly affected by deployment (Padden & Agazio, 2013). When the military member is deployed, the spouse assumes the primary caregiver and head of household for however long the member is required to be deployed (Padden & Agazio, 2013). Simultaneously, the spouse must cope with the absence of a loved one, assuming the role of a single parent (Padden & Agazio, 2013). This stressor, combined with fear for the deployed member's safety, poses significant challenges, particularly when juggling one's own emotions while comforting the emotions of one's children. The elevated stress levels experienced by at-home military spouses continue to rise, despite several support programs enforced by the military and other organizations (Huebner et al., 2009).

Whether traumatic or minimal, life stressors affect one's psychological wellbeing (Skomorovsky, 2014). Stress is typically a psychological perception of pressure involving multiple body systems, from muscles to memory (Zhao et al., 2015). The body produces hormonal signals, including adrenaline and cortisol. These hormonal responses trigger the fight-or-flight response that either prepares an individual to accept or flee from the challenge. This can increase the heart's impulse and blood circulation, activating sugars and fat within the body to assist with energy, attention, triggers of muscles, and focus (Zhao et al., 2015). Once stress is triggered, it can take a while for the body to decompress. When a spouse is left behind during deployment, common symptoms include depression, anxiety, insomnia, and physiological symptoms, like

headaches and gastrointestinal problems (Owen & Combs, 2017). Spieker, Schiff, and Davis (2016) supported that women with deployed husbands are more often diagnosed with such disorders, which include "depressive disorders, sleep disorders, anxiety, acute stress reaction and adjustment disorders" than women married to non-military spouses (p. 243). Feelings of powerlessness over the situation, anxiety about the safety of their loved one, and pressure to adequately maintain the household may also follow (Owen & Combs, 2017). Deployments during active wartime could ignite constant worry on behalf of the member's spouse, who may constantly fear that he or she did not return home (Owen & Combs, 2017).

At-Home Spouses and Relocation Challenges

For families that frequently relocate to accommodate their loved one's deployment periods, it may be difficult for the at-home spouse to find consistent, reliable, and adequate employment (Owen & Combs, 2017). After a move, the at-home spouse must decide whether to remain with their current employer – if feasible – or find a new occupation altogether (Owen & Combs, 2017). Additional concerns may arise, including childcare, particularly if the at-home spouse works full-time or part-time. Coinciding with employment are healthcare concerns and financial status, as a change in income can drastically affect the family's living conditions (Owen & Combs, 2017). Frequently, young families with active-duty members face financial struggles as the member is working toward attaining rank and coinciding with financial stability (Owen & Combs, 2017). This notion demands that a dual income be required, at least temporarily, for financial needs to be met. Frequently, the at-home spouse must apply for government

assistance programs, such as food stamps, temporary assistance, and housing vouchers (Owen & Combs, 2017). In the same vein, this also provides the at-home spouse with an opportunity to advance his or her career during the military member's absence. Certainly, this is a much easier task without children or dependents. However, regardless of whether the at-home spouse pursues a career, federal aid, or both, the pressure is placed on this individual to adequately care for the home and children, which may contribute to the psychological symptoms associated with deployment stress (Owen & Combs, 2017).

Effect of Deployment on Pregnancy

Pregnant women can suffer from serious psychological effects while their spouse is deployed. Moreover, women generally report higher levels of chronic stress than men (Matud, 1998). According to Spieker et al. (2016), these women are nearly three times as likely to develop depression and twice as likely to develop anxiety compared to a pregnant woman with a non-military spouse (p. 243). During pregnancy, psychological problems, such as depression and anxiety, can lead to birth complications, like small gestational age, low birth weight, pre-term delivery, and cesarean delivery (Spieker et al., 2016). Even if the infant is born physically healthy, maternal stress can cause lifelong effects on the child's temperament (Bosquet Enlow et al., 2017). When the fetus is exposed to maternal stress during pregnancy, the infant may develop a difficult temperament characteristic of distressful responses and sadness, with the potential to develop into behavioral and emotional problems (Bosquet Enlow et al., 2017).

To further study the effects of deployment on pregnancy, a retrospective cohort study examined all birth records at MMC, a military treatment center, over the ten years between September 2001 and September 2011. A total of 10,536 births were studied, including 1,364 births (12.9 percent of the births in the study) of women whose spouse was deployed at the time of the birth (Spieker et al., 2016). Although the study could not reveal that women with a deployed spouse were at a greater risk for pre-term delivery or cesarean section, deployment status was found to be associated with the pregnant women's age and several living children (Spieker et al., 2016). Women with two or more living children were 81 percent more likely to birth a child of small gestational age if a spouse was deployed at the time of delivery (Spieker et al., 2016). Moreover, women aged 20 and under were more likely to have a cesarean delivery if their spouse was deployed at the time of the birth (Spieker et al., 2016). This may be due, in part, to significantly higher levels of stress cited by younger women concerning their spouse's deployment status (Spieker et al., 2016). Moreover, as previously stated, younger military families were more likely to experience financial difficulties: an external, socioeconomic stressor associated with higher levels of infant fear and distress, as well as low distress recovery (Bosquet Enlow et al., 2017).

Effect of Deployment on Marriage

According to Karney and Trail (2017), military families perceive deployment as one of the most demanding facets of military involvement. This is due, in part, to the potential for deployment periods – periods of substantial separation between spouses – to strain relationships (Karney & Trail, 2017). These separations can obstruct original

communication patterns, requiring spouses to develop new patterns (Chernichky-Karcher & Wilson, 2017). This is serious for deployment periods, as communication can be the saving grace for marriages undergoing this crucial time (Carter & Renshaw, 2016). MacDermid et al. as cited by Carter and Renshaw (2016)collected information from 27 military members after returning home in 2004 from a deployment to the Middle East, Guantanamo Bay, or a national location. The results were inconsistent, revealing that some military members experienced access to communication while others had to wait up to seven hours for a 15-minute phone call (Carter & Renshaw, 2016). The communication was attributed to rank and status, with the lower-ranked officers receiving less time (Carter & Renshaw, 2016). Merolla (2010) collected qualitative information from 33 military wives regarding communication with their deployed husbands, who were stationed in Iraq, Kuwait, South Korea, and Japan (Carter & Renshaw, 2016). According to the data, 61% of wives communicated via the phone, while 55% used care packages and letters, 52% used emails, 15% used instant messaging, 9% used video chat, and 6% used webcams (Carter & Renshaw, 2016). Certainly, this material changed over time as new communication mediums became both obtainable and more convenient.

In the case of communication decreases, however, the lack of communication may be met with increased anxiety over the welfare of the deployed individual, which can manifest as resentment upon their return (Chernichky-Karcher & Wilson, 2017). The communication, which coincides with emotional unavailability, may also affect the marriage (Cafferky & Shi, 2015). When deployed, the military member is trained to have a battle mind, which allows him or her to sense danger and quickly respond to such,

which is a far cry from the emotional sensitivity and comfort the at-home spouse may desire (Cafferky & Shi, 2015, p. 283). According to Cafferky and Shi (2015), military wives, in particular, are best able to cope with the separation when there is a consistent stream of communication between spouses. When consistent avenues of communication are unavailable, this may lead to poor coping strategies and a distressed attachment reaction (Cafferky & Shi, 2015). In other words, this research supports that wives' coping mechanisms are aligned with the stream of communication between themselves and military members (Cafferky & Shi, 2015). When wives are subject to communication, they can develop a strong emotional connection with their spouses, regardless of distance. However, the distance, coupled with the lack of communication and emotional attachment, can cause distress. If the circumstance persists, the wife is at risk of developing psychological problems (Cafferky & Shi, 2015). Aside from the communication disruptions, the potential exposure to trauma, death, and loss on behalf of the at-home spouse can also negatively affect the marriage (Karney & Trail, 2017). Each deployment return can present more challenges regarding the spouse's mental health, particularly depression, anxiety, and post-traumatic stress disorder (Karney & Trail, 2017).

Family stress theory posits that when one spouse encounters stress, their ability to maintain their relationship successfully decreases (Karney & Trail, 2017). If this continued for prolonged periods, marital dissatisfaction continued to increase, placing the marriage at risk for divorce (Karney & Trail, 2017). According to Karney and Trail (2017), marriages that have endured numerous deployments generally have a less

satisfactory marital experience than marriages that have endured fewer or no deployments. Although divorce places a heavy weight on those involved, it weighs particularly heavy for military couples. This is because military couples have various benefits attached to their marital status, which may include "housing allowances, health benefits, and separation pay" (Karney & Trail, 2017, p. 148). Due to these benefits, many military couples remain in unhappy marriages for longer than their non-military counterparts (Karney & Trail, 2017). To study the effect of deployment on marriage, Karney and Crown (2007, 2010) – as cited by Karney and Trail (2017) – researched military records from 1996 to 2005 to uncover patterns between deployment and divorce. The results revealed that following the tragedy of September 11, 2001, deployment and divorce became directly correlated (Karney & Trail, 2017).

Karney and Trail (2017) said 92.1% of the military members were male, the couples that participated had been married for an average of eight years, and the average number of children was 1.5, with more than 76 percent of couples having one or more children (Karney & Trail, 2017). The results revealed that couples exposed to deployment expressed lower marital satisfaction than couples that had never experienced deployment (Karney & Trail, 2017). However, the results also revealed that satisfaction does not necessarily decrease continuously with each deployment but becomes a learned and expected marital stressor (Karney & Trail, 2017). This implies that successful couples ultimately learn how to work together to overcome the stress presented by deployment (Karney & Trail, 2017).

Effect of Deployment on Families

When military members are deployed, he or she is shifted to the social outskirts of the immediate family (Marini et al., 2016). This shift does not refer to the military member's significance in the family but their active role in decision-making. Since military members are no longer physically present in the household and must take the backburner to decision-making, they are placed outside the immediate familial boundary until their physical return (Marini et al., 2016). This is not necessarily a negative change, as too much interaction with one's family can negatively affect the military member's vocational performance, as previously stated. For this reason, the at-home family may disclose only certain information to the military member (Marini et al., 2016). However, as stated previously, this shift in responsibilities and boundaries during the post-deployment stage can cause ambiguity, whereas the family members are no longer sure of the military member's place within the household following their return (Marini et al., 2016). After all, the family recently adjusted to new routines due to the military member's absence (Marini et al., 2016). Moreover, the military member's return can also stir ambivalent emotions, including happiness and distress over moving back home (Hollingsworth et al., 2016). This, in turn, can affect the interactions between the family members and the military member.

Effect of Deployment on Children

The military member's absence and the stress surrounding the family during this transitional time can greatly impact the children. According to Owen and Combs (2017), the long-term separation caused by deployment directly disrupts the ebb and flow of the family unit, resulting in increased stress levels for both the military member and the

family. Acion et al. (2013) found that previous studies about the impact of deployment on family members revealed that adolescents with a deployed parent generally experience greater levels of stress and emotional and behavioral problems than adolescents whose parents are not deployed. For parents deployed during the war, the children are subject to separation amid constant fear surrounding their parent's safety (Owen & Combs, 2017). This fear is coupled with a greater likelihood of ever-changing family roles, behavioral problems from the at-home parent, and physical and behavioral problems from the returning military member (Lester et al., 2016). According to prior studies, even if the child is prenatal, he or she may still be affected by the parent's military status through prenatal stress, as the mother often experiences higher levels of stress when her spouse is deployed (Mustillo et al., 2016). Prenatal stress as it relates to deployment can significantly impact mood and personality, as well as long-term emotional and behavioral problems (Mustillo et al., 2016).

Younger children, who may be unaware of the parent's deployment status, can grow to experience behavioral and psychosocial problems. These problems include an inability to trust others directly resulting from the deployed parent's frequent departure and return and household tension surrounding the deployment (Owen & Combs, 2017). This has been particularly found in children ages 3 to 5, as this is a vulnerable time in cognitive development (Mustillo et al., 2016). This is the reasoning as to why Lester et al. (2016) noted that younger children – which include infants, toddlers, and preschoolers – are particularly sensitive to the absence of their deployed parent. These children grow accustomed to the lack of this parent's physical presence in the household and the fear

that this parent may not return home (Owen & Combs, 2017). According to Owen and Combs (2017), "difficulty connecting with peers, sustainment of close relationships, adjustment problems to a new school and community/academic challenges" (p. 29). According to MacDermid et al. (2017), the assessment of medical records of more than 700,000 military children revealed that 3 to 8-year-olds were 9 percent more likely to develop anxiety, stress, and behavioral disorders if one of their parents were deployed; this number increased to a 67 percent greater likelihood if the military parent was involved in combat (MacDermid et al., 2017). For 5- to 7-year-old children, their likelihood of taking psychotropic medications increased overall, followed by significant increases in antidepressant medications for children aged 12 and under and anxiety-related medications for children ages 12 to 17 (MacDermid et al., 2017). According to a study by Flake et al. (2009) cited by Swenson and Wolff (2011) that was used to evaluate the risk for emotional and behavioral health comorbidity, children with a deployed military parent were 39 percent more likely to internalize their symptoms, while 29 percent were more likely to externalize their symptoms, 56 percent experienced insomnia, and 14 percent had problems in school. This study also noted that these children were 11 percent more likely to visit the doctor for mental and behavioral problems during the parent's deployment (Swenson & Wolff, 2011).

Since these children are unaware of the context of their parent's absence, they may internalize the constant reunion and separation in a way that manifests as separation anxiety (Lester et al., 2016). This may cause menial separations, such as leaving a child at a friend's house, with a relative, or at daycare, to ignite feelings of danger (Lester et

al., 2016). When the parent returns from deployment, the young child may also display "neediness, confusion, and distress (Owen & Combs, 2017, p. 29). Moreover, children of deployed parents are often found living with family members other than their parents, either due to the deployment status or the financial struggles coinciding with young military families (Acion et al., 2013). These atypical living conditions are also associated with substance abuse, as these children's living arrangements have been disrupted by the deployed status of their parent(s) (Acion et al., 2013).

Children with a parent deployed numerous times are more likely to develop depression, perform poorly in school, demonstrate increased suicidal ideation, and have an overall lower quality of life (Acion et al., 2013). The psychological effects often experienced by children with deployed parents can result in negative worldviews and behaviors (Acion et al., 2013). Moreover, these children are more likely to develop substance abuse disorders and exhibit aggressive behaviors (Acion et al., 2013). In other to better understand the relationship between having a deployed parent and these matters, the Iowa Department of Public Health's Division of Behavioral Health created the Iowa Youth Survey, a statewide, online survey that assessed the behaviors of the sixth, eighth, and eleventh-grade students throughout the state (Acion et al., 2013). The results revealed that children with a deployed parent are likelier to partake in underage drinking and to experiment with illegal substances (Acion et al., 2013).

The Iowa Youth Survey is an example of recent statewide efforts to include questions surrounding parental deployment (MacDermid et al., 2017). A similar assessment was also created in California and Washington, of which researchers

MacDermid Wadsworth, Bailey, and Coppola (2017) studied the data obtained in 2008, 2011, and 2013. The results of this study found that children of military members and civilian children did not differ in their experimentation with alcohol, but children of military members have a 28 percent greater likelihood of bringing a weapon to school and are 23 percent more likely to experience suicidal thoughts (MacDermid et al., 2017). As time went on, the children of military members were more likely to partake in perilous behaviors, such as smoking cigarettes and experimenting with substances, as well as experiencing violence (MacDermid et al., 2017). In this study, these rates proved consistent regardless of age, demographic or parental education (MacDermid et al., 2017). Children directly exposed to deployment proved 9 percent more likely to experiment with alcohol than civilian or unexposed military children, 80 percent more likely to bring a weapon to school, and 34 percent more likely to have suicidal ideation (MacDermid et al., 2017).

Lucier-Greer et al. (2016) explored the relationship between an adolescent's well-being and his or her parent's status as a military member. The study collected data from 1,036 children of military parents residing in the United States regarding parental absence, school and neighborhood changes, pay grade and rank of the military parent, and partaking in military-sponsored activities on behalf of the parent (Lucier-Greer et al., 2016). This study recognizes adolescence as the "personal and physical changes, identity formation, and the need to acquire certain skills in preparation for adulthood" (Lucier-Greer et al., 2016, p. 421). The ideals that an adolescent is provided with during this crucial period are likely to influence the attitudes and behaviors of the adult years

(Lucier-Greer et al., 2016). Of these factors, pay grade/rank was more directly linked to negative welfare for adolescents, while partaking in military-sponsored activities was related to positive welfare (Lucier-Greer et al., 2016). Adolescents with parents who received a lower pay grade were more likely to exhibit symptoms of depression (Lucier-Greer et al., 2016). Moreover, the adolescents that experienced frequent school or community changes were more likely to resort to optimism and self-reliance as a coping strategy if they had a parent absent for six months or more in the past year (Lucier-Greer et al., 2016).

Since the at-home adult is also undergoing a transitional period, the children are more likely to be mistreated during deployment (Acion et al., 1418). Children often look to the caregiver for guidance, and if the caregiver resorts to unhealthy coping strategies, this may affect the children's psychological state (Acion et al., 1418). If the at-home caregiver behaves in a way that connotes "anxiety, irritability, anger, social withdrawal, overeating or vulnerability," the children are more likely to adopt similar behaviors (Owen & Combs, 2017, p. 28). Suppose either parent is noticeably expressing emotions associated with anxiety or posttraumatic stress disorder. In that case, the child is more likely to develop emotional, social, and behavioral problems (Lester et al., 2016). According to the study mentioned earlier by MacDermid Wadsworth et al. (2017), medical visits based on maltreatment increased by 21 percent for children of military parents, age 12 and under, and 130 percent for children whose parent was injured in combat. Suppose the relationship between the military member and the at-home parent is tumultuous post-deployment. In that case, the child may be subject to "spillover," which

includes the lack of attention due to a shift in focus on the marital relationship (Lester et al., 2016, p. 939).

The effects of deployment on the family unit are aligned with the research of Saltzman et al. (2016), who support that hardship, particularly that of wartime and deployment, affects the family unit as a whole. In order to combat these challenges, family-wide adaptations must be enforced (Saltman et al., 2016). These adaptations include decreasing stress, promoting familial healing, and encouraging continued adaptation to ongoing adversities (Saltman et al., 2016). According to these researchers, military members who return to families encouraging such positive traits are less likely to develop posttraumatic stress disorder and associated psychological issues (Saltman et al., 2016). These positive attitudes and behaviors can improve the condition of the family unit, particularly that of the children involved (Saltman et al., 2016). A study cited by Saltman et al. (2016) that assessed the condition of 280 families with at least one military parent demonstrated that the child's emotional and behavioral state correlates with family functioning (Saltman et al., 2016). The more positive the means of functioning, the more positive the child's emotional and behavioral state is, which ultimately fosters a level of resilience following the child's development (Saltman et al., 2016).

Effect of Deployment on Military Members

Although the deployed military member's family must adjust to his or her physical absence, this individual must also undergo a period of intense adjustment. This period begins with the decision to leave his or her family, with the knowledge that he or she may not return. During their time away, military members with children miss

milestones and moments and experience guilt for doing so (Owen & Combs, 2017). These occasions include the likes of births and birthdays, graduations, holidays, and even deaths (Wolf et al., 2017). This guilt may extend to their at-home spouses, eliciting feelings of being absent from their children and placing childcare responsibility on this spouse (Owen & Combs, 2017).

If the deployment requires relocation, the military member may feel guilty for having their family move to a location potentially unwanted by some family members (Owen & Combs, 2017). An unwarranted move can trigger resentment in marriage, leading to turmoil (Owen & Combs, 2017). In the circumstances of younger military families, the military member may feel guilty for the unfavorable financial situation in which his family is placed (Owen & Combs, 2017). The military member must adjust to his designated status, which is that of Active Duty (AC) or the Reserve Component (RC) (Wolf et al., 2017). If the member is chosen for AC, they must permanently move with their families to a new location every two to four years (Wolf et al., 2017). As previously stated, every subsequent move presents challenges for the family, which include acclimation, readjustment, changing vocations and schools, integrating into the new community, and forming new friendships (Wolf et al., 2017). When the military member is deployed, the family must again readjust to accommodate this individual's physical absence (Wolf et al., 2017). If the member is selected for RC, then he or she is considered to be of part-time status, although this may change in wartime (Wolf et al., 2017).

According to Woodruff and Kelty (2017), several characteristics are crucial to a military member's success. These characteristics, which reflect a positive outlook toward the military, include "retention, providing positive word of mouth to others about the military, sacrificing for the mission or organization, use of military services and participation in voluntary organizational activities" (Woodruff & Kelty, 2017, p. 284). Otherwise recognized as organizational identification, positive attitudes and behaviors on behalf of the military member suggest vocational significance and a desire to create strong ties within the organization (Woodruff & Kelty, 2017). The distraction and stress caused by family due to relocation, financial issues, and separation can directly hinder the military member's ability to perform optimally and affect the overall morale of those surrounding this individual (Owen & Combs, 2017). This places additional pressure on the military member, as negative attitudes caused by stress can cause poor work performance, ultimately hindering the member's ability to advance and receive higher compensation (Owen & Combs, 2017). In other words, the family's stress can create a self-sabotaging effect, where the member's stress can cause him or her to remain in the same financial situation. In the case of the military, there exists the option to retire early, though this is a decision that is greatly discouraged (Owen & Combs, 2017). As negative familial pressure has proven to affect the military member negatively, much research – and many questions – have surrounded the notion of how to reduce the stress experienced by family members (Lester et al., 2011).

Postdeployment Substance Abuse

According to prior research, a relationship exists between military members' depression and substance abuse (Bravo et al., 2016). Although social support is a buffer against elevated anxiety, post-traumatic stress disorder, and depression, it does not always successfully protect against alcohol consumption (Bravo et al., 2016). A study conducted by Bravo, Kelly, and Hollins (2016) sheds light on these difficulties in their study of depression and alcohol use in 63 members of the Navy. These members recently completed an eight-month deployment and were evaluated nearly six weeks pre-deployment, six weeks into deployment, and six months post-deployment. This study found that Navy members with greater social support networks were subject to a lower risk of alcohol use and depression than their smaller counterparts (Bravo et al., 2016). However, there was no telling whether a military member took advantage of these services.

According to Stein et al. (2017), a recent survey of the total military force found that approximately 20 percent of military members were classified as "heavy drinkers,"; a term that was defined as "consuming five or more drinks once a week or more" (p. 7). Prior surveys administrated by the Department of Defense between 1998 and 2008 found that binge drinking has increased over these 10 years from 35 to 47 percent for military members, while heavy drinking increased from 15 to 20 percent (Stein et al., 2017). Furthermore, a study conducted on 671 members of the Ohio National Guard found that alcohol abuse was the most common disorder for this population, with a prevalence of 44 percent and a lifetime prevalence of 42 percent (Stein et al., 2017). Suppose this study is

indicative of the larger military population. In that case, this suggests that nearly half of all military members are suffering from alcohol abuse post-deployment. Moreover, the incidence of substance abuse directly correlates with suicidal ideation, behaviors, and mental illness (Stein et al., 2017). As substance abuse – particularly that of alcohol – increases, so does the risk of developing depression and anxiety disorders, intensifying posttraumatic stress disorder and suicidal risk (Stein et al., 2017).

Military members are more likely to develop substance abuse problems than the civilian population (Devonish et al., 2017). This includes the use of tobacco and the abuse of prescription drugs (Devonish et al., 2017). This abuse is directly related to the military member's young age, male gender, single relationship status, combat exposure, and prior deployment history (Devonish et al., 2017). In a survey of 435 males and 440 females – couples that contained at least one military member between the ages of 18 and 45 – the results revealed that prior to deployment, military members had experimented with marijuana but, during deployment, had begun heavily consuming alcohol and decreased the use of marijuana, while 6 percent of the participants began abusing prescription drugs (Devonish et al., 2017). When reintegrating into the population, the military member is exposed to social influences that accept tobacco and alcohol use as the social norm (Devonish et al., 2017). Devonish et al. (2017) posit that one associate's tobacco use with self-identification, while alcohol is associated with socializing (Devonish et al., 2017). Regarding the commonality of such abuse, it may be difficult for the military member to avoid – or initially avoid – partaking in such behaviors. This

difficulty of avoidance is exacerbated if the military member's spouse also exhibits substance abuse behaviors (Devonish et al., 2017).

Postdeployment Suicide And PTSD

Even after the deployment ends, military members experience difficulties reintegrating into civilian life, whether resulting from voluntary retirement or otherwise (Messecar, 2017). According to Houtsma et al. (2017), military members have a greater risk of suicide following reintegration into civilian life. According to a study by Kapur et al. (2009) cited by Houtsma et al. (2017), military members are at the greatest risk for suicide following two years post-deployment. In 2014, the suicide rate for post-deployment military members of the National Guard occurred following reintegration in 90.2 percent of cases, with 66.5 percent of these individuals having had a history of at least one deployment (Houtsma et al., 2017). Suicidal ideation and occurrence post-deployment is related to the experiences of military member throughout their deployment, particularly those related to combat (Houtsma et al., 2017). Repeated exposures to graphic violence and death have lasting psychological and emotional effects on military members (Houtsma et al., 2017).

In 2014, more than 40,000 suicides were reported in the United States (McKinney et al., 2017). Of this population, 22 percent, or 8,800, were military members (McKinney et al., 2017). This high number is attributed to posttraumatic stress disorder, which is characterized by the following: "feelings of detachment and hyper-vigilance, depression and cognitive-emotional factors, including anger" (McKinney et al., 2017, p. 101). Depression, one of the key components of posttraumatic stress disorder, is characterized

by “feelings of worthlessness and hopelessness, general low mood, and changes in physical activity,” which is directly associated with substance abuse and risk of suicide (McKinney et al., 2017, p. 101). According to McKinney et al. (2017), post-traumatic stress disorder and suicide are interconnected since both psychological issues are related to distress and, in the care of military members, trauma. Factors that place military members at risk for posttraumatic stress disorder include the following

> …Pre-trauma factors (e.g., family or personal history of mental disorders, age at trauma, socioeconomic status, personality traits, previous or early traumatization, negative parenting experiences, education, intelligence), peri trauma factors (e.g., the magnitude of stressor, perceived life threat, traumatic brain injury (TBI), emotional responses, dissociation), and post-trauma factors (e.g., social support, emerging symptoms, subsequent life stress) (Pyne et al., 2016, p. 91).

Some similarities between posttraumatic stress disorder and depression include “rumination, dysphoria, sleep difficulties and exacerbation of suicide” (McKinney et al., 2017, p. 101). Military members with existing depression, or a predisposition to depression due to family history, have a greater risk of developing posttraumatic stress disorder (McKinney et al., 2017).

Summary

Deployment stress happens when military members are separated from their spouses and children. This stress is present throughout all stages of the deployment cycle and can potentially affect military members’ and their families’ lives. This research demonstrates that deployment stress can manifest as emotions leading to turmoil within

families. In order to reduce this deployment stress and the personal and familial problems it brings, I explored prior literature about animal-human bonds. Information about the deployment cycle and effects of deployment as experienced by spouses, families, and military members were described.

This quantitative descriptive correlational research study involved addressing whether canine companions help decrease deployment stress for at-home military spouses. Although literature exists about related topics, there is a lack of information about the role of canine companions for military spouses. Chapter 3 contains the methodology, which includes information about the research design, setting, participants, instrumentation, procedure, data process and analysis, and ethical considerations.

Chapter 3: Research Method

The objectives of this quantitative study were to determine whether a relationship exists involving the HCB and stress experienced by military spouses during long-term separations as well as identify whether length of deployment is associated with observed differences in stress levels. I also determined whether stress levels of canine owners were associated with level of pet attachment. Specifically, I aimed to determine whether there were statistically significant differences in terms of stress levels between military spouses who own canines and those who do not, as well as whether length of long-term separation is associated with stress levels. I identified whether there were statistically significant differences between canine and a non-canine pet owners as well as stress levels during long-term deployment. The following research questions and hypotheses were used for this study:

RQ1: What is the relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouse significant others are deployed?

$H_0$1: There is no relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouses' significant others are deployed.

H_a1: There is a relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouses' significant others are deployed.

RQ2: What is the relationship between pet canine owners' pet attachment level and stress levels experienced when their significant others are deployed?

$H_0$2*:* There is no relationship between stress levels experienced by military spouses of deployed personnel and length of deployment of military spouses.

H_a2: There is a relationship between stress levels experienced by military spouses of deployed personnel and length of deployment of military spouses.

This chapter includes discussions about the methodology used to answer research questions in this proposed research study. I describe the population, sampling, sampling procedures, and approach used for data collection. I provide information about instruments used to measure study variables as well as operationalization of study variables. I then describe types of statistical analyses employed for this study, threats to validity, and ethical considerations.

Research Design and Rationale

This study was quantitative and involved evaluating relationships between variables being measured numerically through statistical analysis. I obtained numerical data through an online survey tool. Surveys provide researchers with the opportunity to seek answers by using a measurement tool that involves asking questions to participants (Creswell, 2012). I also used a cross-sectional research design for this study to collect data during the allotted time, with no followup period. Data collection involved measuring stress levels of military spouses and the HCB with canine pets.

An independent *t*-test was used for RQ1. The independent variable was owning a canine, whereas the dependent variable was stress levels. .

RQ2 was measured via a ANCOVA. The independent variable in RQ2 is length of deployment measured as nominal level of months, and the dependent variable was stress levels.

RQ3 was answered by conducting Pearson correlations. Pearson correlations are employed when researchers wish to measure the magnitude and direction between two continuous variables (Laerd, 2019).

The study involved determining statistical significance in terms of the HCB and participants' stress during time of deployment for military spouses. I used the correlational research method, as the purpose of this proposed study was to examine relationships between variables. A correlational research design is used when the study's objective is to analyze relationships between variables or determine the influence of independent variables on a particular dependent variable (Leedy & Omrod, 2010). This study was nonexperimental because I did not use interventions or treatment groups. By comparing stress levels, time of deployment, and companionship of military spouses and their canines, healthcare professionals can be better equipped to assist military spouses by identifying likely positive impacts of canine ownership.

Methodology

Population

The population of interest for this study was military spouses in the U.S. Of the 1,288,596 active-duty members of the military, 689,399 (53.5%) were reported as married in 2016 ("Profile of the military community," 2016). The sample specifications identified spouses who have a deployed military member who is either a canine owner or does not own a canine and is a non-pet owner.

Sampling and Sampling Procedures

An *a priori* power analysis was conducted using G*Power to determine the required minimum sample size for the study. Four factors are considered in the power analysis: significance level, effect size, the power of the test, and statistical technique. The significance level, also known as Type I error, refers to the chance of rejecting a null hypothesis given that it is true (Haas, 2012). Most quantitative studies use a 95% confidence level to support reliability (Creswell & Poth, 2017). The effect size refers to the estimated measurement of the relationship between the considered variables (Cohen, 1988). Cohen (1988) categorizes effect size into small, medium, and large. Berger et al. (2013) purported that a medium effect size is better as it strikes a balance between being too strict (small) and too lenient (large).

The power of the test refers to the probability of correctly rejecting a null hypothesis (Sullivan & Feinn, 2012). In most quantitative studies, 80% power is utilized (Sullivan & Feinn, 2012). The statistical tests for this study are independent *t*-tests and Pearson Correlations. To conduct an independent *t*-test (RQ1) to detect a medium effect size of $f = .25$ at a 95% significance level, with 80% power, a minimum sample size of at least 128 respondents is required.

The one-way ANCOVA with five groups (RQ2) to detect a medium effect size of $f = .25$ at a 5% significance level, with 80% power, requires a minimum sample size of at least 200 respondents. The Pearson Correlations (RQ3) detects a medium effect size of $\rho = .25$, at a 95% significance level, with 80% power; a minimum sample size of at least 84 respondents is required.

In this study, the researcher employed convenience sampling to place participants into groups of canine and non-pet owners. With stratified sampling, the researcher divides the population into groups called strata. The researcher then proceeds to take a convenience sample from the groups. The participants were assigned to two groups: those who indicated canine ownership and non-canine ownership. The participants had the opportunity to participate in the study through a link distributed by the Family Readiness Groups (FRG) organization located on the FRG Facebook page(s).

For the study, it was essential to seek participants who meet the inclusion criteria for the study. Before completing the survey and assessment, the participants were directed to answer specific questions that assisted in determining whether the participant met the criteria for the study. The questions requested specific information, including their spouse or partner's military branch, deployment, length, and canine. If the participants did not meet the criteria, that were not experiencing a current deployment, were not being military, non-canine pet owners, they were exited from the survey.

Additional criteria for participation in the study included that the participants must have an actively deployed military spouse and that the deployment should be a long-term separation (i.e., six months or longer). Military spouses whose spouses were deployed for less than six months were excluded from participation. Also excluded were participants who obtained their canine pet after their spouse deployed. This ensured there had been a prior relationship with the dog, and each participant had experience with deployment. Each participant engaged in the study could view the research results upon completion.

Procedures for Recruitment, Participation, and Data Collection

A cross-sectional design is appropriate for the current study due to the data collection at one point within the research. That the study required no follow-up period. The cross-sectional design provided a cross-section of military families with canine pets versus non-canine pet owners experiencing long-term separation.

Recruiting participants for the research focused on distributing e-mails to the Family Readiness Group (FRG) with an explanation of the study and agreement to participate. The link associated with the surveys was included as an attachment to the FRG Facebook page. The FRG group allocated the link to military spouses who are experiencing deployments. The potential participants who did not respond to the initial link received an e-mail reminder one week after the initial letter.

Once the participant had agreed to the terms and confidentiality agreement, the link was provided to each participant. By clicking the link, the participants agree that they understand the requirements for the study, and their data was kept confidential and was not to specify any pertinent information that identifies them. The link directed the participant to Surveymonkey.com and allowed the participant to proceed with the study.

In this study, the researcher used SurveyMonkey, a web-based survey instrument. The survey instruments utilized for this study were inputted into SurveyMonkey. The survey instruments used for this study included the Pet Attachment Scale (PAS) (Anderson, 2007), The Social Readjustment Scale, and a demographic questionnaire (See Appendix F).

SurveyMonkey provided an introductory page prior to the questionnaires, which included the welcome statement, an explanation of the purpose of the study, and instructions to administer the survey questionnaire (See Appendix B). The second page asks if the respondent satisfies the inclusion criteria (See Appendix B). Once the participant enters the link, they can submit their survey responses.

All forms were distributed as an online packet to ensure the surveys were completed simultaneously. For the study, informed consent has not required a signature to ensure the participant's confidentiality. Participant completion of the survey acted as implied consent. This is documented in the Informed Consent Letter (See Appendix G). The informed consent also discussed how participants' information was labeled with a digital system, which protected their data such as gender, age, and the spouse's military branch. Participants' survey data was stored securely on the SurveyMonkey website.

The present study design was focused on providing the participant with the opportunity to complete the online survey at their convenience. The reliability of the data may decrease if the participant rushes through the online survey. An added constraint to the study was online administration due to internet availability. Viable participants could not be included due to the lack of internet access.

The estimated time for the survey to be accessible is three months. If the sample size is not reached within the estimated three months, then an extension of time to complete until the minimum required sample size is reached. The total sample size was a minimum of 82 military spouses from multiple installations throughout the United States.

After the respondents completed the survey questionnaire, each participant's responses were uploaded directly into the researcher's SurveyMonkey account. The SurveyMonkey site automatically stores and encrypts information on all completed survey responses. Only the researcher had access to the survey responses submitted by inputting the username and password for the SurveyMonkey account created by the researcher. SurveyMonkey provides anonymity and confidentiality by requiring the participant's information to be coded before forwarding the information to the researcher. Once the data was collected, the data was exported to an Excel spreadsheet.

Instrumentation and Operationalization of Constructs

The study included the use of three survey instruments. The scale and survey can be accessed online through the public domain. Although these assessment tools are accessible via the internet, the researcher has requested access to use the instruments within the study. The researcher submitted a permission request to the original authors via e-mail.

The first instrument was the Pet Attachment Scale (PAS), used to assess human-dog attachment. The second instrument used in the research is The Social Adjustment Rating Scale (SAR). The SAR measured the stress levels experienced by civilian spouses of the deployed personnel. The third survey is the demographic questionnaire used to obtain information regarding pet dog ownership and the length of deployment of their military spouse. The SAR assisted in gauging the stress during the long-term separation while measuring the human-canine bond during the period of separation.

PAS

The PAS is a 27-item survey questionnaire that is an internally consistent instrument that can be used to measure human attachment to dogs and cats along two dimensions: (a) Relationship maintenance and (b) intimacy. The scale uses a 4-point Likert response type format (1 = Almost Always, 2 = Often, 3 = Sometimes, and 4 = Almost never). Four items, 2, 13, 19, and 20, were reverse coded before obtaining the score of pet attachment level.

Since 1991, other studies have incorporated this scale to measure the animal-human bond. The PAS has appeared in multiple articles (Budge et al., 1998; Goose et al., 1994; Johnson et al., 1991; Jorolmen, 1998; Marks et al., 1994; Planchon et al., 2002). In the original study by Holcomb et al. (1985), the PAS instrument was divided into two subscales. These subscales were broken down into a relationship maintenance scale that measured specific behaviors such as communication, interaction, time, and financial involvement, and a second subscale focused on intimacy that measured responses such as emotional importance and proximity of a pet. The study identified the Cronbach's alpha was 0.83 for relationship maintenance and 0.74 for intimacy. Holcomb et al. (1985) did not report an overall reliability score. Two samples provided the validation scale. The mean for these samples was 35 and 40 years old adult volunteers who brought their pets to a veterinary facility (Holcomb et al., 1985). Through the data collection, the researchers identified that women scored higher than men on the scale, and the primary caregivers scored higher than the non-primary caregivers. Holcomb et al. (1985)

compared the relationship between canine and feline owners. This resulted in identifying the canine owner scoring higher than feline owners.

Holmes and Rahe Stress Scale

The Holmes and Rahe Stress Scale is also known as the Social Readjustment Rating Scale (SRRS) (See Appendix E). The SRRS was created in 1967 by psychiatrists Thomas Holmes and Richard Rahe (Noone, 2017). During the development of the scale, the psychiatrists surveyed over 5,000 medical patients and examined a series of 43 life events. In 1970, Rahe validated the scale utilizing 2,500 sailors' rating scores of live events over six months (Noone, 2017). The six-month period provided detailed records of the sailors' health (Noone, 2017). The scores on the scale increased as more events were selected. The psychiatrist concluded that the higher the score, the more likely the individual would experience stress.

Gerst et al. (1978) examined the reliability of the Holmes and Rahe Stress Scale, identifying the consistency of rank-ordering between healthy adults and patients. The reliability for healthy adults is r = 0.96 – 0.89, while the reliability for patients is r = 0.91 – 0.70 (Gerst et al., 1978; Holmes & Rahe, 1967; Noone, 2017). The Holmes and Rahe Stress Scale identified a positive correlation of +0.118 between stress scores and illness scores while supporting a correlation between life events and illnesses (Gerst et al., 1978; Holmes & Rahe, 1967; Noone, 2017). The scale supported a correlation between life events and illnesses. The Holmes and Rahe Stress Scale or SRRS assessed different populations within the United States cross-culturally and compared Malaysians and Japanese with Americans (Noone, 2017).

Gerst et al. (1978) identified difficulty with score interpretation due to the coping skills of individuals. The guideline for scoring the scale consists of a total score of 150 or less, which suggests a low level of stress with a low probability of developing a stress-related disorder (Gerst et al., 1978; Holmes & Rahe, 1967; Noone, 2017). A total score of 150 – 299 suggests a moderate level of stress with a 50 percent chance of developing a stress-related disorder (Gerst et al., 1978; Holmes & Rahe, 1967; Noone, 2017). A total score of 300 or more suggests a high-stress level with an 80 percent chance of developing a stress-related disorder (Gerst et al., 1978; Holmes & Rahe, 1967; Noone, 2017).

Demographic Questionnaire

The researcher developed a demographic questionnaire to measure the independent variables of pet ownership and length of deployment of military spouses. Other demographic information, including age, race, gender, type, and several pets presently owned, was also included in the demographic questionnaire (See Appendix F).

Operationalization of Variables

Stress levels. The study's stress level was the dependent variable measured through The Social Readjustment Scale. A total score of 150 – 299 suggests a moderate level of stress with a 50 percent chance of developing a stress-related disorder (Gerst et al., 1978; Holmes & Rahe, 1967; Noone, 2017). A total score of 300 or more suggests a high-stress level with an 80 percent chance of developing a stress-related disorder (Gerst et al., 1978; Holmes & Rahe, 1967; Noone, 2017).

Pet Attachment Level. Pet attachment was the independent variable and was measured using the PAS. A score of 24 typically represents an average level of

attachment between an owner and their pet. Lower scores represent higher levels of pet attachment.

Canine ownership. Canine ownership was the independent variable and was measured using the demographic questionnaire. It was a dichotomous categorical variable coded as 1 for those who own a canine and 2 for those who do not.

Length of deployment. The length of deployment of the military spouse was the independent variable and was measured using the demographic questionnaire. It was a categorical variable with multiple categorical scales based on the following: (a) 6 months to 1 year, (b) more than 1 year to 2 years, (c) more than 2 years to 5 years, and (d) more than 5 years to 10 years, (e) more than 10 years.

Data Analysis

Data cleaning, which ensures that no missing and variable data exist in the final data set, was executed along with calculating overall scores for the survey metrics. Meyers et al. (2013) recommended that data screening and completeness of the surveys should be carried out before the data analysis to detect potential errors and problems involved in a data set. The use of data screening improved the validity of the research. The missing data were eliminated from the study.

The researcher conducted all data analysis for this study with the statistical software of SPSS 24.0. The two types of statistical techniques for the research included descriptive and inferential statistics. The descriptive statistics provided the necessary information, such as the frequency and percentages for categorical measured variables. For continuous variables, the mean and standard deviation was calculated. The data on

stress levels experienced by military spouses of deployed personnel and pet attachment level are continuously measured variables. The researcher utilized inferential statistics to determine a relationship between the variables.

An ANCOVA and Pearson correlation analysis was used to address the research questions. Before addressing the research questions, the assumptions associated with the tests must be performed. For ANCOVA, four assumptions require testing: (a) normality, (b) linearity, (c) no presence of an outlier, and (d) homoscedasticity (Sedgwick, 2015).

First, normality testing was completed by investigating skewness and kurtosis statistics. The normality testing should be investigated to assess the normality of the dataset of (a) stress levels and (b) pet attachment levels. To determine normal distribution in the data, a skewness statistic higher than three indicates strong non-normality, and kurtosis statistics between 10 and 20 indicate non-normality (Kline, 2005). Second, the linearity test involved producing a scatterplot of pet attachment level versus stress levels experienced by spouses of the deployed personnel to determine if there is a linear pattern in the graph. Third, checking the presence of outliers was conducted by investigating the z-scores of the data set. If the z-score is greater than three or less than -3, it is considered an outlier for stress and attachment. The rule of thumb is based on the Empirical rule. Lastly, the assumption of homoscedasticity was tested using Levene's test of homogeneity of variance. The *p*-value of Levene's test should be more significant than the level of significance value of 0.05 to show homoscedasticity. The variance of the dependent variable of stress levels experienced should be equal or homogenous across the two independent variables of canine ownership and length of deployment of their military

spouse. These different assumptions must be met. If violations of the required assumptions occur, the non-parametric version of the ANCOVA, also known as the Kruskal-Wallis test and the Pearson correlation analysis, was being conducted, and if the data present with violations, the Spearman Rho correlation analysis should be conducted.

An ANCOVA was conducted to address the first research question to determine the significance of the stress levels experienced by military spouses of deployed personnel. As stated, the dependent variable was stress levels experienced by military spouses of the deployed personnel, with the independent variable of canine ownership (canine owner versus non-canine owner). An ANCOVA is most appropriate when comparing mean differences in a continuous dependent variable, stress level, across different groupings of the independent variable. The F-statistic is used to determine the significance and investigate the normality of the dataset difference in the stress levels experienced by military spouses of the deployed personnel between those who own a canine and those who do not. The ANCOVA level of significance for the study was 0.05. There is a significant difference in the stress levels experienced if the p-value of the F-statistic is less than or equal to the significance level of 0.05. The study's null hypothesis rejection should be present for the first research question. The observance of a significant difference between groups, further analysis was conducted to determine the significance of the differences. Post-hoc-test was not performed to determine the degree of the significant differences in stress levels experienced by military spouses of the deployed personnel who own a canine and those who do not own a canine since the independent variable of canine ownership has only two independent groupings.

An additional ANCOVA was conducted to address the second research question to determine the significance of the relationship between stress levels experienced by spouses and the length of deployment of their military members. The significance of the relationship was determined by investigating the difference in the stress levels experienced by spouses of the deployed personnel across different groupings and the length of deployment of their military members. An ANCOVA is most appropriate when comparing mean differences in a continuous dependent variable, stress level, across more than two groupings of the independent variable, which is the length of deployment. The F-statistic is used to determine the significant difference in the stress levels experienced by military spouses of the deployed personnel across the different lengths of deployments. The ANCOVA level of significance for the study was 0.05. There is a significant relationship between stress levels experienced by military spouses of the deployed personnel and the length of deployment of their military spouse if the p-value of the F-statistic is less than or equal to the significance level of 0.05. The null hypothesis for the second research question should be rejected. If a significant difference was observed between groups, a post-hoc-test was performed to determine the degree of the significant differences in stress levels experienced by military spouses of the deployed personnel across different groupings of the length of deployment. Specifically, a Tukey's test was conducted in the post-hoc-test.

A Pearson correlation analysis was conducted to address the third research question to determine the relationship between canine owners' pet attachment level during the stress levels experienced by military spouses when their spouse is deployed. Pearson

correlation analysis determined the correlation between two continuously measured variables: pet attachment and stress levels. First, the p-value of the correlation analysis was investigated to determine whether the correlation between the two variables was significant. A level of significance of 0.05 was used in the Pearson correlation analysis. A p-value of less than or equal to 0.05 means a significant correlation between study variables. A p-value greater than 0.05 dictates that no significant correlation exists between variables, and there was a failure to reject the null hypothesis for the second research question. The Pearson Correlation Coefficient (r) was investigated to determine the strength and degree of the correlation. The strength of correlation can be weak ($r < +0.3, r > -0.3$), moderate ($+0.3 < r < +0.5, -0.3 > r > -0.5$), strong ($+0.5 < r < +0.7, -0.5 > r > -0.7$), and perfect ($r = +1.0, r = -1.0$). The degree of correlation can be positive or negative (Sedgwick, 2015). A positive correlation means that the other variable also increases with a variable increase. On the other hand, a negative correlation means that with a variable increase, the other variable decreases.

Threats to Validity

The study produces threats to validity due to conducting a quantitative study versus a qualitative or mixed methods study. A quantitative study does not provide the opportunity to accurately identify if the participants are factual regarding their answers, thus increasing the risk of a margin of error and the study's validity. A second variable that could influence the study's validity is the age of participants, length of the marriage, and employment responsibilities, including high-stress jobs (i.e., emergency room, hospitals, teachers, cops, first aid responders, and mental health workers).

An additional influencer on the validity of the study is where the military spouse resides. Military spouses are offered the opportunity to live on a military installation, while many spouses live off military installations. The stressors can affect how the spouse rates their stress during separations, thus affecting the Social Adjustment Rating Scale. The study was not to explore the gap and recommends future research to evaluate if stress is affected by living on or off military installations.

External Validity

The study's external validity focuses on the participants and the distribution of the surveys. Once the surveys were distributed, it was challenging to identify who was explicitly answering the questions and if the information provided was viable. The researcher cannot determine the specifics and accuracy of the data, and the data was identified as factual. SurveyMonkey offers the opportunity to survey the collectors and send questionnaires through multiple social media sources. Each of these sources is valuable to reach military families due to their locations and busy schedules. The study's main concern is whether the questionnaires and surveys are easily accessible.

In terms of external validity, the applicability of the results from multiple installations throughout the United States allowed the collection of a larger population sample. The research required significant sample size to reduce the study's error margin.

Internal Validity

Threats to internal validity may be presented in the limited studies conducted on the human-canine bond with canine pets. The limited studies on the human-canine bond with pets present a concern due to limited previous studies on such data.

Ethical Procedures

The IRB approval was obtained before the commencement of the study. The IRB approval assisted in ensuring the protection, safety, and welfare of human subjects during the execution of the research exercise and provided the participants with an ethics board they may contact if they have any questions or concerns. Critical steps and processes are essential for achieving the goals and objectives of the IRB in data collection and analysis. Specifically, the author did not consider the appropriate method, design, and data collection for the study to mitigate ethical risks.

Each participant in the study needed to voluntarily agree to take the survey and undergo the informed consent process to be involved in the study. The informed consent process was conducted electronically. The participants were allowed to complete the survey questionnaire online if they did not consent to participate in the online process explained in the data collection procedures section.

Under no circumstance were the participants coerced to provide answers to the survey questions nor pressured to change the content of their responses. The identity of the participant and the answers provided by them was kept confidential at all points of the study. Regarding confidentiality, the study is designed to be anonymous, and no identifying information was collected or stored. Each respondent was given a number code for data processing to eliminate the use of their real names. The study can be associated with minimal risks, including becoming emotional, needing the family pet for comfort during the study, increased stress due to separation, getting upset, etc. For the study, service animals were not included. Only the researcher can access the data used for

this study. Data used in this study was securely stored in a password-protected, external hard drive which was kept for a maximum of five years in the researcher's office and then permanently deleted.

Summary

Chapter 3 included the research methodology, population, sample size, instrumentation, data collection procedures, and data analysis methods used in the current study. I used a descriptive correlational research design to determine whether relationships exist involving the HCB, stress experienced by military spouses when their spouses are deployed, and whether length of deployment is directly correlated. Participants in this study included military spouses from multiple installations throughout the U.S. who have a currently deployed military spouse and own a pet. Participants were recruited through a link distributed by the FRG organization on the military installation. The instruments used for this study were the PAS, Social Adjustment Rating Scale, and a demographic questionnaire. Data collection was administered online using SurveyMonkey. Data analysis involved using descriptive statistics, ANCOVA, and Pearson correlation analysis to address research questions.

Chapter 4: Results

I aimed to determine whether a link exists involving the HCB and stress experienced by military spouses when their significant others are deployed and whether length of deployment is associated with any observed differences in stress levels. The following research questions and hypotheses were addressed:

RQ1: What is the relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouse significant others are deployed?

$H_0$1: There is no relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouses' significant others are deployed.

H_a1: There is a relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouses' significant others are deployed.

RQ2: What is the relationship between pet canine owners' pet attachment level and stress levels experienced when their significant others are deployed?

$H_0$2*:* There is no relationship between stress levels experienced by military spouses of deployed personnel and length of deployment of military spouses.

H_a2: There is a relationship between stress levels experienced by military spouses of deployed personnel and length of deployment of military spouses.

In Chapter 4, I discuss the data collection process used in the study and the population and sample, including demographics. This included frequencies and percentages for categorical (nominal) variables and mean and standard deviations for interval variables. I also present testing of parametric assumptions for statistical analysis

and results of statistical testing. This chapter concludes with a discussion of results for this study.

Data Collection

Recruiting participants for research involved distributing emails to the FRG with an explanation of the study and agreement to participate. The link with surveys was included as an attachment on the FRG Facebook page. The FRG group sent the link to military spouses who were experiencing deployments.

Once participants agreed to terms and confidentiality agreement, links were provided to each participant. By clicking the link, participants agreed they understood requirements for the study, and their data would be kept confidential and would not include any pertinent information that identifies them. The link directed participants to SurveyMonkey and allowed them to proceed with the study.

I assigned participants into two groups: Those who did and did not indicate canine ownership. However, all participants were canine owners. Thus, no comparisons could be made. Participants also completed a demographic survey that included questions regarding gender, age, marital status, branch of the military of spouse, length of deployment, and canine ownership. Additionally, participants completed the PAS, which assessed human-dog attachment. I also used the SAR scale. The SAR scale was used to measure stress levels experienced by civilian spouses of deployed personnel.

The number of submitted surveys came to 202; however, after removal of incomplete cases, there were $N = 175$ complete cases for analysis. This sample size met the minimum requirement of 82 participants, as mentioned in Chapter 3. There was only

one (0.6%) male in the sample, and174 (99.4%) participants were female. Sixty-six participants were in the 30-39 age range (37.77%). Regarding marital status, 165 were married (94.3%). One-hundred and sixty participants stated their spouses currently served in the military (91.4%). Regarding years of service in the U.S. military, 126 stated 9 or more years (72.0%). Regarding length of deployment, 31 stated 0 to three months (17.7%). All participants were canine pet owners (100%). Lastly, regarding number of years of pet ownership, 109 stated 5 or more years (62.3%). Regarding branch of service, 103 were in the Army (57.2%). This was followed by Air Force, with 35 (19.4%), marines with 21 (11.7%), Navy with 19 (10.6%), and Coast Guard with two (1.1%).

Table 1

Gender

	Frequency	Percent
Female	174	99.4
Male	1	.6
Total	175	100.0

Table 2

Age

	Frequency	Percent
18 to 20	4	2.3
21 to 29	45	25.7
30 to 39	66	37.7
40 to 49	42	24.0
50 to 59	17	9.7
60 or older	1	.6
Total	175	100.0

Table 3

Marital Status

	Frequency	Percent
Married	165	94.3
Widowed	1	.6
Divorced	2	1.1
Separated	7	4.0
Total	175	100.0

Table 4

Spouse Currently Serving in the United States Military

	Frequency	Percent
Yes	160	91.4
No	15	8.6
Total	175	100.0

Table 5

Years of Service in the United States Military

	Frequency	Percent
1 to 2	11	6.3
3 to 4	13	7.4
5 to 6	12	6.9
7 to 8	13	7.4
9 or more	126	72.0
Total	175	100.0

Table 6

Length of Deployment of Spouse

	Frequency	Percent
0 to 3 months	31	17.7
4 to 6 months	18	10.3

6 to 8 months	25	14.3
8 to 10 months	30	17.1
10 to 12 months	19	10.9
12 to 14 months	21	12.0
14 to 16 months	3	1.7
16 to 18 months	28	16.0
Total	175	100.0

Table 7

Number of Canine Pets Owned

	Frequency	Percent
1	84	48.0
2	68	38.9
3	16	9.1
4 or more	7	4.0
Total	175	100.0

Table 8

Years of Canine Pet Ownership

	Frequency	Percent
0 to 1	9	5.1
1 to 2	17	9.7
2 to 3	22	12.6
3 to 4	18	10.3
5 or more years	109	62.3
Total	175	100.0

Table 9

Military Branch

	N	%
Army	103	57.2%

Marine	21	11.7%
Air Force	35	19.4%
Coast Guard	2	1.1%
Navy	19	10.6%
Total*	180	100.0%

Note. Five individuals served in more than one military branch; thus, total frequency count exceeded the sample size of 175.

Pet attachment was measured using 27 items from the PAS, which measured levels of attachment on a scale from 1 (almost always) to 4 (almost never). Lower scores indicate higher attachment. Some items were reverse coded to have the same direction as the other responses, i.e., lower values corresponding to higher levels of attachment. The overall reliability of this scale was assessed with Cronbach's alpha, a measure of internal consistency. A generally accepted rule is that α of 0.6-0.7 indicates an acceptable level of reliability, and 0.8 or greater is a very good level (Serbetar et al., 2016). The PAS scale demonstrated a very good level, with a Cronbach's alpha of 0.899. The sum of the responses of the PAS served as an overall measure of pet attachment. A score of 24 typically represents an average level of attachment between an owner and their pet. In this sample, pet attachment ranged from 27 to 74 with a mean of $M = 42.61$ ($SD = 10.31$). To classify pet attachment by lower and higher scores, participants with a pet attachment score less than the mean of 42.61 were classified as a high attachment and those with scores of 42.62 or higher as low attachment. Using this criterion, there were 97 (55.4%) with low pet attachment and 78 (44.6%) with high pet attachment.

Stress was measured by the Social Readjustment Scale (SRS), which consists of 43 items that pertained to a specific stressor. The participant would indicate with a "yes"

if that item was a stressor. Each stressor was allocated with a particular weight, such as "100" for the death of a spouse, 73 for divorce, etc. The sum of the items was calculated and formed an overall measure of stress. Stress ranged from 12 to 746 (M = 216.73, SD = 138.52). A total score below 150 indicates low stress. A score of 150 – 299 suggests a moderate level of stress with a 50 percent chance of developing a stress-related disorder (Gerst et al., 1978; Holmes & Rahe, 1967; Noone, 2017). A total score of 300 or more suggests a high stress level with an 80 percent chance of developing a stress-related disorder (Gerst et al., 1978; Holmes & Rahe, 1967; Noone, 2017). Using this categorization, there were 76 (43.4%) participants with low-stress levels, 56 (32.0%) with moderate, and 43 (24.6%) with high levels of stress.

Stress Level by Pet Attachment

Descriptive statistics of stress by pet attachment were computed with SPSS version 23 (Table 10). Pet owners classified with lower pet attachment had more stress (M = 229.44, SD = 142.09) compared with those with higher levels of pet attachment (M = 200.55, SD = 133/02).

Table 10

Stress Level by Pet Attachment

Pet Attachment Category	Minimum	Maximum	*M*	*SD*
High	17.00	620.00	200.55	133.02
Low	12.00	746.00	229.44	142.09

Using the categorization of low, moderate, and high-stress levels presented earlier, a cross-tabulation of pet attachment (low and high) and stress (low, moderate, and high) was performed. There was a greater frequency of people with low attachment and high

stress (27 out of 175) than those with high pet attachment and high stress (16 out of 175). Table 11 and Figure 1 depict this information.

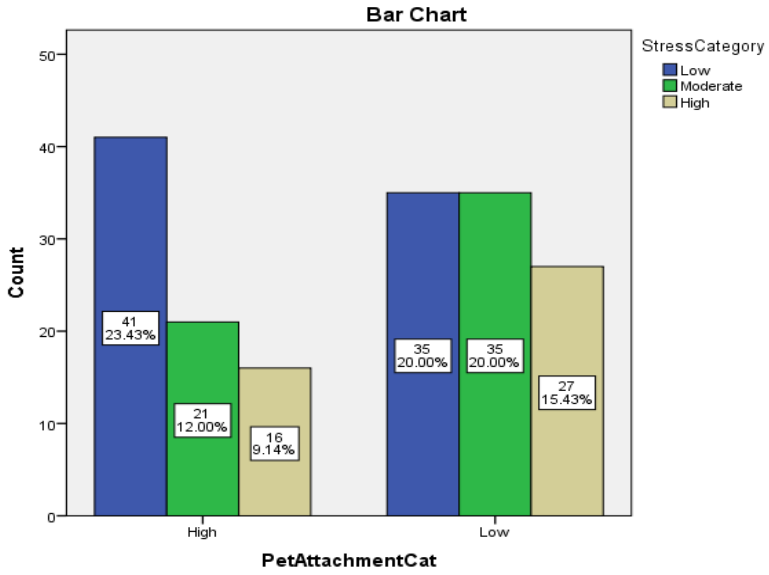
Table 11

Stress Level by Pet Attachment Cross Tabulation

		Stress Category			Total
		Low	Moderate	High	
Pet Attachment	High	41	21	16	78
	Low	35	35	27	97
Total		76	56	43	175

Figure 1

Cluster Bar Chart of Pet Attachment (Low/High) and Stress Level (Low, Moderate, High)



Stress Level by Length of Deployment

Stress levels by the length of deployment are provided in Table 12 and Figure 2. The highest stress level was found in the 12 to 14-month time frame (*M* = 243, 57, *SD* = 167.65). Lower stress levels were found in the 0-3, 4-6, and 6-8 month periods.

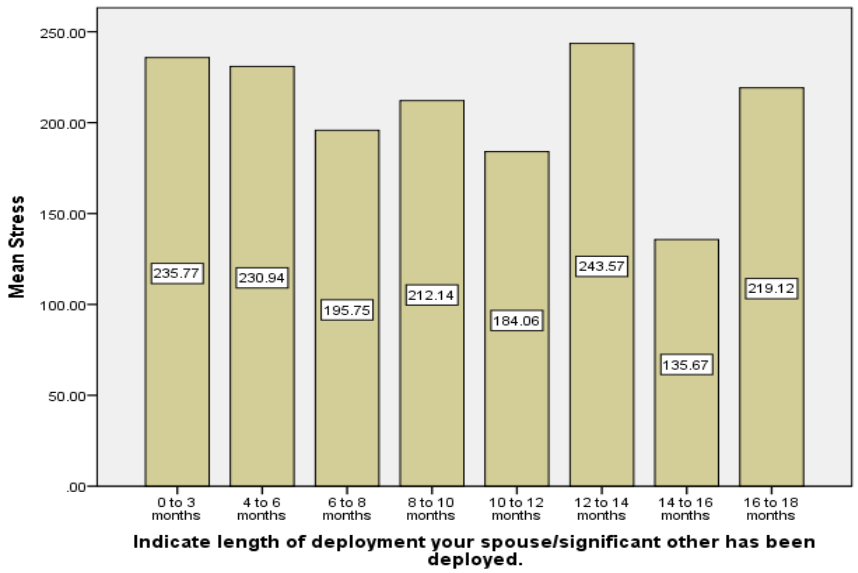
Table 12

Stress Levels by Length of Deployment

Indicate the length of deployment your spouse/significant other has been deployed.	*N*	Minimum	Maximum	*M*	*SD*
0 to 3 months	30	25.00	628.00	235.77	139.17
4 to 6 months	17	42.00	483.00	230.94	136.14
6 to 8 months	24	20.00	425.00	195.75	120.47
8 to 10 months	29	20.00	620.00	212.14	144.54
10 to 12 months	17	53.00	436.00	184.06	102.87
12 to 14 months	21	17.00	746.00	243.57	167.65
14 to 16 months	3	12.00	271.00	135.67	129.89
16 to 18 months	25	33.00	590.00	219.12	150.68

Figure 2

Cluster Bar Chart of Length of Deployment and Stress Level



Testing of Parametric Assumptions

ANCOVA and Pearson's correlations were conducted to assess the research questions. However, some assumptions had to be met before the analysis. ANCOVA and Pearson correlations have normality, linearity, and absence of outliers requirements. Additionally, there is the homogeneity of variance requirement for ANCOVA. Regarding normality, skewness and kurtosis values were computed. The results suggested that the deviation of data from normality was not severe as the skewness and kurtosis index were below 3 and 10, respectively (Kline, 2011). Hair et al. (2010) and Bryne (2010) argued that data is considered normal if skewness is between -2 to +2 and kurtosis is between -7 to +7. Table 13 provides the skewness and kurtosis values for stress (skewness .931, kurtosis .905) and pet attachment (skewness .814, kurtosis .308) within acceptable ranges to assess normality.

Table 13

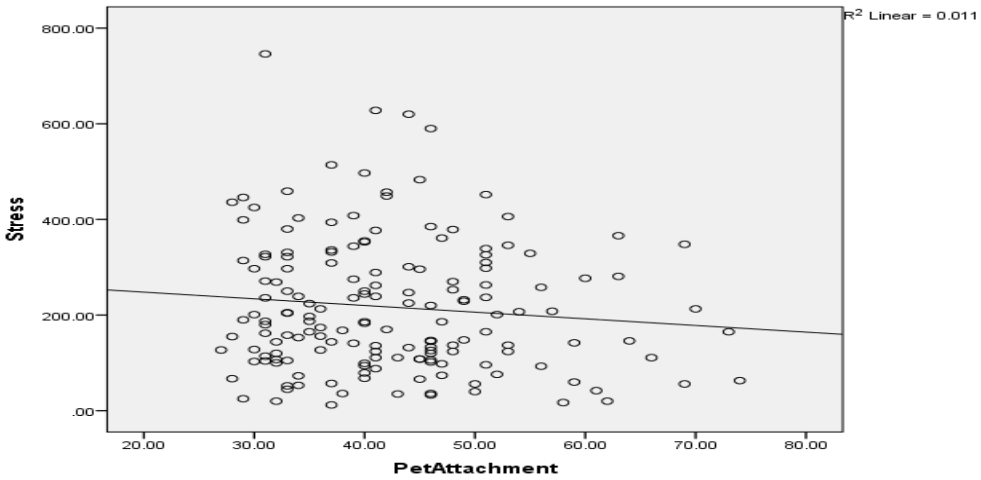
Skewness and Kurtosis Statistics

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Stress	.931	.188	.905	.375
Pet Attachment	.814	.184	.308	.365

Regarding linearity, a scatter plot of stress versus pet attachment revealed a non-curvilinear spread, indicating no violation of the linearity requirement. Figure 3 provides the scatter plot of this relationship and the line of best fit, which indicates a slight negative relationship, i.e., increasing pet attachment scores corresponds to lower stress.

Figure 3

Scatterplot of Pet Attachment Versus Stress



Outliers were assessed through the visual inspection of box plots which revealed no extreme outliers and only five values between -3.6 and -3.8 standard deviations and were kept in the analysis, as they were legitimate values and not the result of data entry errors (Figures 4 and 5). Additionally, there was no violation of the normality assumption, thus, the outliers did not affect normality.

Figure 4

Box Plot of Stress

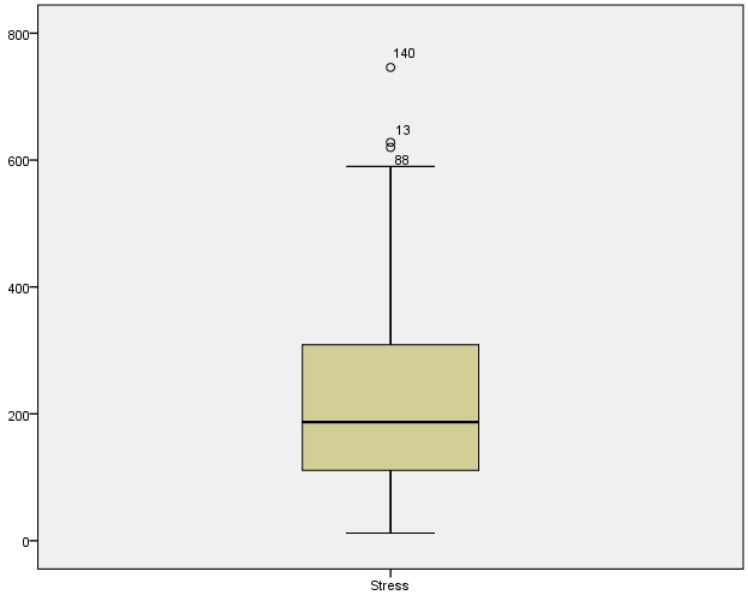
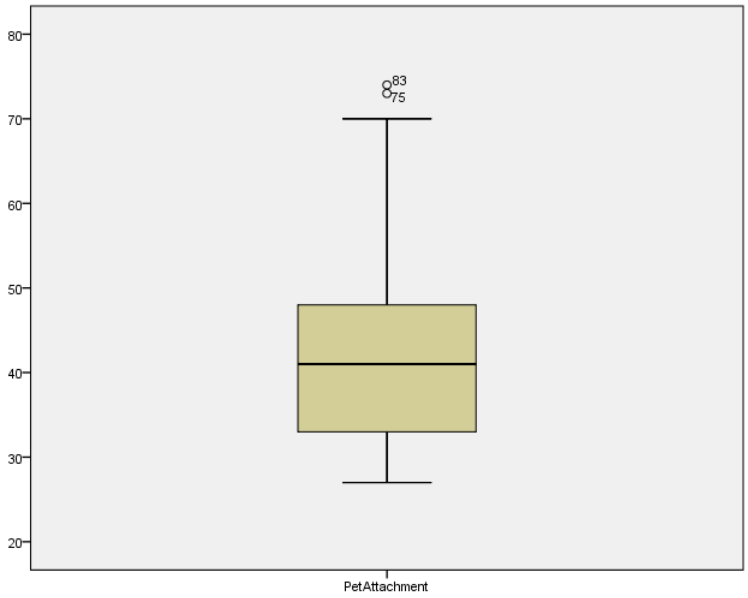


Figure 5

Box Plot of Pet Attachment



The homogeneity of variance assumption for ANCOVA is that the variances between the groups are similar. Levene's Homogeneity of Variance test tested this. The test was not significant ($p > .05$), which indicated no violation of the assumption.

Results

ANCOVA was conducted in order to address tRQ1.

The purpose was to determine if mean stress levels were different between those who were canine owners and those who were not while controlling for deployment length of time. The issue with addressing this research question was that all participants were canine owners. Thus this variable could not be assessed. The ANCOVA model only included the dependent variable of stress and the covariate of deployment length of time. The length of deployment was not found to be a significant factor in mean stress levels, $F(1, 164) = 0.152$, $p = .697$. Table 14 provides this information.

Table 14

Tests of Between-Subjects Effects for RQ1

Source	Type III Sum of Squares	Df	Mean Square	*F*	*P*
Corrected Model	2926.545[a]	1	2926.545	.152	.697
Intercept	1998721.112	1	1998721.112	103.643	.000
Length Deployment	2926.545	1	2926.545	.152	.697
Canine Owner	.000	0	.	.	.
Error	3162689.792	164	19284.694		
Total	10963306.000	166			
Corrected Total	3165616.337	165			

Note. a. R Squared = .001 (Adjusted R Squared = -.005)

ANCOVA was conducted in order to address RQ2.

The purpose was to determine if mean stress levels were different between those with different levels of pet attachment while controlling for deployment length. Although participants with low attachment levels had higher stress (M = 229.44, SD = 142.09) than those with high attachment levels (M = 200.55, SD = 133.02), results of ANCOVA were not significant, $F(1, 165) = 1.825$, $p = .179$. Tables 15 and 16 provide this information.

Table 15

Stress by Pet Attachment Level

Pet Attachment Category	*M*	*SD*
High	200.55	133.02
Low	229.44	142.09
Total	216.73	138.51

Table 16

Tests of Between-Subjects Effects for RQ2

Source	Type III Sum of Squares	df	Mean Square	*F*	*p*
Corrected Model	37949.336[a]	2	18974.668	.989	.374
Intercept	1985062.887	1	1985062.887	103.453	.000
Length Deployment	3808.005	1	3808.005	.198	.657
Pet Attachment	35022.791	1	35022.791	1.825	.179
Error	3127667.002	163	19188.141		
Total	10963306.000	166			
Corrected Total	3165616.337	165			

Note. a. R Squared = .012 (Adjusted R Squared = .000)

Pearson correlations were conducted in order to address RQ3.

.Pearson correlations revealed that the relationship between canine owners' pet attachment levels and stress levels was insignificant (r = -.103, p = .186). Table 17 provides this information.

Table 17

Pearson Correlations

		1	2
Stress (1)	*r*	1	-.103
	p		.186
Pet Attachment (2)	*r*	-.103	1
	p	.186	

Additionally, a Chi-square test of association was conducted to assess the relationship between pet attachment (low/high) and stress level category (low, moderate, high) as nominal variables. The association was not significant at the .05 level but was at the .10 level, $\chi 2(2) = 4.781$, $p = .092$. See Table 18.

Table 18

Chi-Square Tests

	$\chi 2$	df	*p*
Pearson Chi-Square	4.781[a]	2	.092
Likelihood Ratio	4.790	2	.091
Linear-by-Linear Association	3.780	1	.052
N of Valid Cases	175		

Note. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 19.17.

Summary

This study involved determining whether a link exists involving the HCB and stress experienced by military spouses when their significant others are deployed and whether length of deployment is associated with any observed differences in stress levels.

RQ1 could not be assessed because 100% of participants were canine owners. Additionally, there were no significant differences in stress levels based on length of

deployment. Regarding RQ2 and RQ3, both ANCOVA and Pearson correlations revealed no significant associations involving canine owners' pet attachment levels and stress levels experienced when their significant others are deployed. When the variables of pet attachment (low/high) and stress level (low, moderate, high) were measured at the nominal level, Chi-square analysis revealed no significant association at the 5% significance level. In Chapter 5, I discuss how results of this study are interpreted in the context of the theoretical framework. Limitations involving results of the study are provided. Additionally, recommendations for future research are discussed.

Chapter 5: Discussion, Recommendations, and Conclusion

There was a need to address the gap in literature because minimal research has explored effects of the HCB on decreasing stress among military spouses during short- or long-term deployments. Many studies investigated the psychological effects of military deployment on military service members (see Hoge et al., 2006; Warner et al., 2009). However, very few studies addressed how deployment of military service members affects their families (see Verdeli et al., 2011). Heber et al. (2009) found military spouses experienced increased stress. Bartone (2006) indicated decreasing deployment-related stress among military families could increase morale. Literature on pets has focused on pet or animal-assisted therapy. There was a need to explore the possibility of harnessing the human-canine relationship to support deployment stress management among military spouses (Furst, 2016). Specifically, I focused on how the bond between canine pets and military spouses can decrease stress during long-term deployments.

This descriptive quantitative study involved determining whether a link exists involving the HCB and stress experienced by military spouses when their significant others are deployed and whether length of deployment is associated with any observed differences in stress levels. I used a cross-sectional design as data were collected at one point without followup. The cross-sectional design allowed for description of predictors and outcomes, including an associations analysis. The independent variables were canine ownership and length of deployment, while canine ownership served as the dependent variable in terms of differences in stress levels among those who own canines based on their attachment levels. This study is important because it includespreliminary

information regarding how the nature of deployments affected military spouses and how the HCB decreased their stress during separation or deployment. Chapter 5 includes interpretations of findings, limitations of the study, implications of the study, recommendations for future research, and a conclusion.

Interpretation of Findings

two-way and one-way ANCOVAs were conducted to determine if there were any statistically significant differences involving stress levels of military spouses who own canines versus those who do not and whether length of deployment was associated with stress levels. After analysis of RQ1, findings revealed no significant differences in terms of stress levels based on length of deployment. Regarding RQ2 and RQ3, ANCOVA and Pearson correlations revealed no significant associations between canine owners' pet attachment levels and stress levels experienced when their significant others were deployed. When pet attachment (low/high) and stress level (low, moderate, high) were measured at the nominal level, Chi-square analysis revealed no significant association at the 5% significance level.

The chapter includes comparisons of results via quantitative analysis with research reviewed in Chapter 2. Discussion and interpretation of findings are based on each research question.

RQ1: What is the relationship between pet canine ownership, deployment length of time, and military spouses' stress levels when spouse significant others are deployed?

The issue with addressing RQ1 was that all participants were canine owners; thus, this variable could not be assessed. The model only included the dependent variable of

stress and the covariate of deployment length of time. Findings revealed length of deployment was not a significant factor in terms of average stress levels among military spouses. Findings indicated no significant relationship between the stress level among military spouses and the length of deployment of their partners. Results imply that stress levels among military spouses after their partners' deployment did not depend on length of deployment time. These findings provide significant insight in terms of understanding the impact of deployment length time on stress levels of spouses after their partners' deployment.

Findings are inconsistent with results reported in other studies. Owen and Combs (2017) reported deployments during active wartime could lead to constant worry on behalf of spouses, who may constantly fear that he or she could not return home. According to Owen and Combs (2017), length of deployment can increase stress levels involving pulse of the heart and blood circulation, as well as activate sugars and fat within the body to assist with energy, attention, trigger of muscles, and focus. Once stress is triggered, it can take a while for the body to decompress. When a spouse is left behind during deployment, common symptoms include depression, anxiety, insomnia, and physiological symptoms like headaches and gastrointestinal problems (Owen & Combs, 2017).

According to Spieker et al. (2016), women with deployed husbands are more often diagnosed with depressive disorders, sleep disorders, anxiety, acute stress reaction, and adjustment disorders. Feelings of powerlessness involving the situation, anxiety about the safety of their loved ones, and pressure to adequately maintain households may

also follow (Spieker et al., 2016). According to Karney and Trail (2017), if deployment continues for prolonged periods, marital dissatisfaction could continue to increase, placing marriages at risk for divorce because of increased stress levels during their partners' long deployment period. Marriages that have endured numerous deployments generally lead to less satisfactory marital experiences compared to marriages that have endured fewer or no deployments (Karney & Trail, 2017).

Stressors combined with fear for deployed members' safety, lead to significant challenges, particularly when juggling one's own emotions while comforting the emotions of one's children. Elevated stress levels experienced by at-home military spouses continue to rise, despite several support programs provided by the military and other organizations based on length of deployment of spouse partners (Huebner et al., 2009). These findings are inconsistent with current study findings, which indicated no significant relationship between stress levels and length of deployment of spouse partners. Results contribute to the current literature by establishing no significant relationship between stress level of canine owners and length of deployment of their partners.

RQ2: What is the relationship between pet canine owners' pet attachment level and stress levels experienced when their significant others are deployed?

Findings indicated that although spouses with low attachment levels had higher stress levels compared to those with high attachment levels, results of the ANCOVA were not significant. Results indicated no significant relationship between pet attachment level and stress levels of spouses after their partners' deployment. However, analysis also

indicated spouses with low attachment levels had higher stress levels compared those with high attachment levels. Findings imply that stress levels among spouses do not depend on canine owners' pet attachment levels. These findings are important because they enhance understanding of the relationship between non-canine owners' and canine owners' pet attachment levels and stress levels of military spouses after their partners' deployment.

Results are inconsistent with previous literature regarding the relationship between pet attachment levels and stress levels of a spouse after their partner's deployment. Crossman (2017) reported that animals could help reduce grief in individuals suffering from physical, mental, and emotional illness. The main reason behind these therapeutic properties of the animal was that unconditional love transcended into trust and acceptance both physically and emotionally, resulting in reduced stress levels (Mims & Waddell, 2016). Crossman (2017) had earlier established that engaging pets to help cope in stressful situations could help pet owners reduce stress and the prospect of death when their spouses are deployed. Pet ownership and attachment could reduce stress among military spouses helping them cope with stressful situations by walking around with the pet, running, and doing other physical exercises.

The current literature indicates that strong pet attachment levels decrease stress among spouses whose partners are deployed. According to Saunders et al. (2017), when petting one's live animal, the owner immediately feels decreased anxiety. Saunders et al. (2017) established that petting animals reduced feelings of distress, regardless of whether the participants considered themselves animal lovers or otherwise (Oakland, 2017). These

results were attributed directly to the role of oxytocin release when petting a live animal (Saunders et al., 2017). Moreover, animals are recognized as willing recipients of unconditional love and care, which automatically affiliates them with positive emotions and a sense of trust (Beetz, 2017). These results, however, are inconsistent with current study findings indicating that there was no significant relationship between pet attachment and stress levels of spouses after their partners have been deployed; the results indicated that although the analysis revealed no significant relationship between pet owners' level of stress and pet attachment levels among military spouses, this could be because of using different sample sizes and geographical setting in the previous literature. The current study used a small sample size compared to previous studies that adopted large sample sizes, thereby resulting in different levels of significance. Regarding geographical areas of the study, different geographical locations could have diverse conditions that may affect the collection of data, such as limited internet for data online data sources, inability to reach participants in case of physical interviews as well as poor road network for researchers traveling interior areas to collect data. These findings contribute to the current literature by indicating no significant association between stress levels and pet attachment.

RQ3: Is there a statistically significant relationship involving canine owners' pet attachment levels and stress levels experienced by military spouses when their significant others are deployed?

The findings indicated that pet attachment levels were not significantly associated with a spouse's stress after their partner's deployment. Findings imply that pet attachment

levels among canine pet owners did not have a statistically significant impact on spouse's stress level after deployment of their partners, indicating that the level of pet attachment did not change stress levels among military spouses return from their partners' deployment. The findings also indicated that the association between stress levels and canine owners' level of attachment was not significant at the .05 level. These findings are important because they offer insight into the relationship between military spouses' stress levels and the level of pet attachment among canine owners whose partners were deployed. The findings provide information on the effect of pet ownership on stress levels among military spouses, thus offering crucial insight into why military spouses whose partners have been deployed understand the need for pet ownership.

Current study results are inconsistent with previous literature findings regarding the association between stress levels experienced by military spouses when their significant other is deployed and canine owners' pet attachment levels. Branch (2008) reported that females experienced superior mental and emotional health levels due to unconditional love they received from their canine companions. This relationship also helps to provide additional exercise, such as playing and running with the pet playing, which improves physical wellness and offers a support system during times of significant distress among military spouses (Branch, 2008).

The animal's presence removes the distress attached to the owners through a relationship that offers unconditional love and support while helping to bridge the understanding between the individual and the pet (Mims & Waddell, 2016). It involves working consistently with an animal, from petting, feeding, and spending time together to

more advanced activities (Mims & Waddell, 2016). The benefits of AAT have been proven so successful that, in 2010, the U.S. Army devoted $300,000 to develop a program that studies the role of the companionship between veterans and service dogs (Mims & Waddell, 2016).

Previous literature findings are inconsistent with this study's findings, indicating significant relationship between stress levels and canine owners' pet attachment levels of military spouses when their partners are deployed. The deviation in results was because of differences in significance levels between the current study analysis and the previous research analysis. The results have added to the previous literature and theoretical framework by establishing that stress levels had no significant association with the canine owners' pet attachment levels. The findings have answered the research questions by indicating that there was no significant impact of pet attachment levels on the stress levels of the military spouse after their partners' deployment.

Limitations

The study presented numerous limitations. First limitation was that this study focused on canine pets. Focusing on canine pets limited the opportunity to explore how human-canine bond relates to other pets. Future research offers the opportunity to explore how other species of animals are linked to the human-canine bond and how the varieties of pets may decrease stress. The study would offer more statistical data if additional animals were incorporated and included data that correlates or invalidates the research hypotheses.

The study's second limitation focused on spouses during separation and eliminating children, caregivers, and other family members. While spouses are critical, the elimination decreased the data's expansion and decreased the validity of the data by eliminating significant family members, as outlined in Chapter 1. The data also focused on the spouses and eliminated additional data identifying the significant differences between having a canine pet versus a canine pet. Many military families have additional family members who assist in raising the children or who live within the household, which can impact stress within the family. The study did not look further into additional family members, thus impeding the generalizability of study findings.

A third limitation that affected the study was the number of active participants. Increasing the number of participants in the study may present a higher return rate of questionnaires from participants. The number of participants who took part in the questionnaires for the study could affect the study's validity. Thus, such margin error may increase as the study results are received and inputted in SPSS. Although the researcher could increase the number of Family Readiness Groups (FRG) to reach out to, it was not guaranteed, the FRG distributed the links to families of deployed members or even partook in the research.

An additional gap in the research was the exploration of spouses living on and off military installations. The stressors of living on and off the installation could differ from person- to person. Future research is required to evaluate if stress is affected by living on and off military installations with pets.

Recommendations for Further Research

I recommend that future studies include spouses as participants and type of dog temperament owned. In this regard, future research should include all the military spouses, children, and caretakers to understand how pets areimportant in the family as well as the breed or type of dog owned its temperament, and its effect on their daily life when their partners and parent is away on a military mission deployment.

It is recommended that further research be conducted using different geographical settings to the generalizability of findings to other regions. Further, additional studies should include larger and more diverse sample sizes to permit the generalizability of findings because the results could not concur with previous literature findings because the sample was homogenous with a specific population.

Future research is recommended to evaluate if living on and off military installations affects stress . Additionally, the researcher recommends that future research be conducted using an appropriate sample size to determine the relationship between stress level and pet attachment levels of military spouses after their partners' deployment because the sample size used could not provide a significant relationship between spouse's stress levels and pet attachment levels ownership among military spouses; as a result, there is need for further research using large sample size.

Implications for Positive Social Change

This study has several implications for positive social change. The implications are provided at the individual, family, organizational, and societal policy levels. The information regarding the importance of this study's findings may be disseminated to

military spouses through awareness creation via seminars and training of military spouses on the importance of pet ownership and attachment. Regarding the individual-level implications, the findings may help military spouses reduce their stress levels after their partners' deployment by providing comfort through companionship, and performing physical exercises through running and playing with the pet, thus relieving stress and pain among military spouses. Creating awareness regarding the importance of pet ownership and attachment among the military would help them get information about the importance of pet ownership and attachment. Getting crucial information from this study's findings on how important pets might be in providing comfort and companionship could help military spouses understand the importance of pet attachment in regulating stress after their partner's deployment.

Regarding implications at family levels, these findings may assist military families in managing their stress levels after they are left by one of the family members deployed to military service duties. Concerning the implications at the organizational level, V.A. could use these findings to understand the need for pets in families, especially among military spouses, to help them reduce and control stress levels after their partner's deployment. Regarding the societal/implications, local community with military family members may find these findings useful because they may help them implement policies and support services for military spouses after their partners' deployment. Local governments may use the findings to implement significant policies in safeguarding the rights and well-being of the military family's spouses whose partners had been deployed.

These findings are recommended for government to use for implementing the policies to safeguard military spouses and their families. The findings are recommended for the government to create support services such as the provision of psychiatric services to military families to reduce stress levels among military spouses after deployment of their partners and increase awareness of how stress affects spouses in the military. The amount of stress families endure can affect the function of the family system during long-term separations (Oakland, 2017).

Research findings are also recommended for military families to provide them with the ability to identify how canine pets can decrease stress. Pets have been known to offer companionship, decrease medical problems, and enhance life expectancy (While 2017). The ability to provide information on how canine pets offers the opportunity to decrease stress during deployment which would increase the motivation to adopt, foster, or purchase a canine pet for the spouse or family members.

Theoretical Implications

The current study was drawn from two distinctive theories about family dynamics: Bowlby's and Ainsworth's Attachment Theory (1969, 1992) and Bowen's Family System Theory (2002). Bowlby's and Ainsworth's attachment theory (1969, 1992) focused on the relationships and bonds between individuals, such as parents and children, and attempted to describe the long-term and short-term interpersonal relationships between humans (Bretherton, 1992). The theory explains the complexity of interactions within the family unit while describing the complex interactions and the emotional connection between family members (Rothbaum et al., 2002).

Family System Theory was used to explore military spouses as an emotional unit. Family System Theory's focus in the study was to view the military spouses as an emotional unit and the canine pet's interconnection (Rothbaum et al., 2002). Research has not yet followed the long-term effects of deployment on family members and spouses. The current study findings developed a new understanding of how separations can impact spouses and family members in the future and provide significant information on how military spouses with low pet attachment levels experience higher levels of stress compared to those experiencing high pet attachment levels. The study findings have added to the theoretical literature by indicating a potential way to decrease stress within military family households after their spouse's deployment. Using a pet as a companion in the absence of the spouses could help relieve stress among military spouses' pet owners. This is consistent with family system theory, which describes military spouses as emotional unit since the findings revealed that spouses with low levels of pet attachment had higher stress levels than those with high levels of pet attachment during their partners' deployment. Family System Theory focus of the study was to view the military spouses as an emotional unit and the canine pet's interconnection (Rothbaum et al., 2002). The theory indicates the need for high pet attachment levels among military spouses to lower their stress levels and enhance their emotional support during the deployment period of their partners.

Conclusion

There was need to explore further the possibility of harnessing human-canine relationship to support deployment stress management among military spouses. This

study was important because it provided preliminary information regarding how the nature of deployments affected military spouses and how the human-canine bond decreased the spouse's stress during separation or deployment.

The study findings revealed no significant differences between the stress levels of spouses and their pet attachment levels after the deployment of their partners. In contrast, these findings were inconsistent with previous literature, which indicated significant relationship between stress levels of spouses and their pet attachment levels after deployment of their partners. Nevertheless, previous literature findings indicated significant association between stress levels and pet attachment among military spouses after deployment of their partners. The findings imply that pet ownership is fundamental, especially for military spouses whose partners have been deployed to military missions. The findings have demonstrated how canine pets offer opportunities to decrease stress during long-term separation, which can increase the motivation to adopt, foster, and purchase canine pets for spouse and family members. Overall, spouses with low pet attachment levels have higher stress levels than those with high ones. The researcher suggests further research to understand the influence of non-pet ownership on stress levels among military spouses after deployment of their partners.

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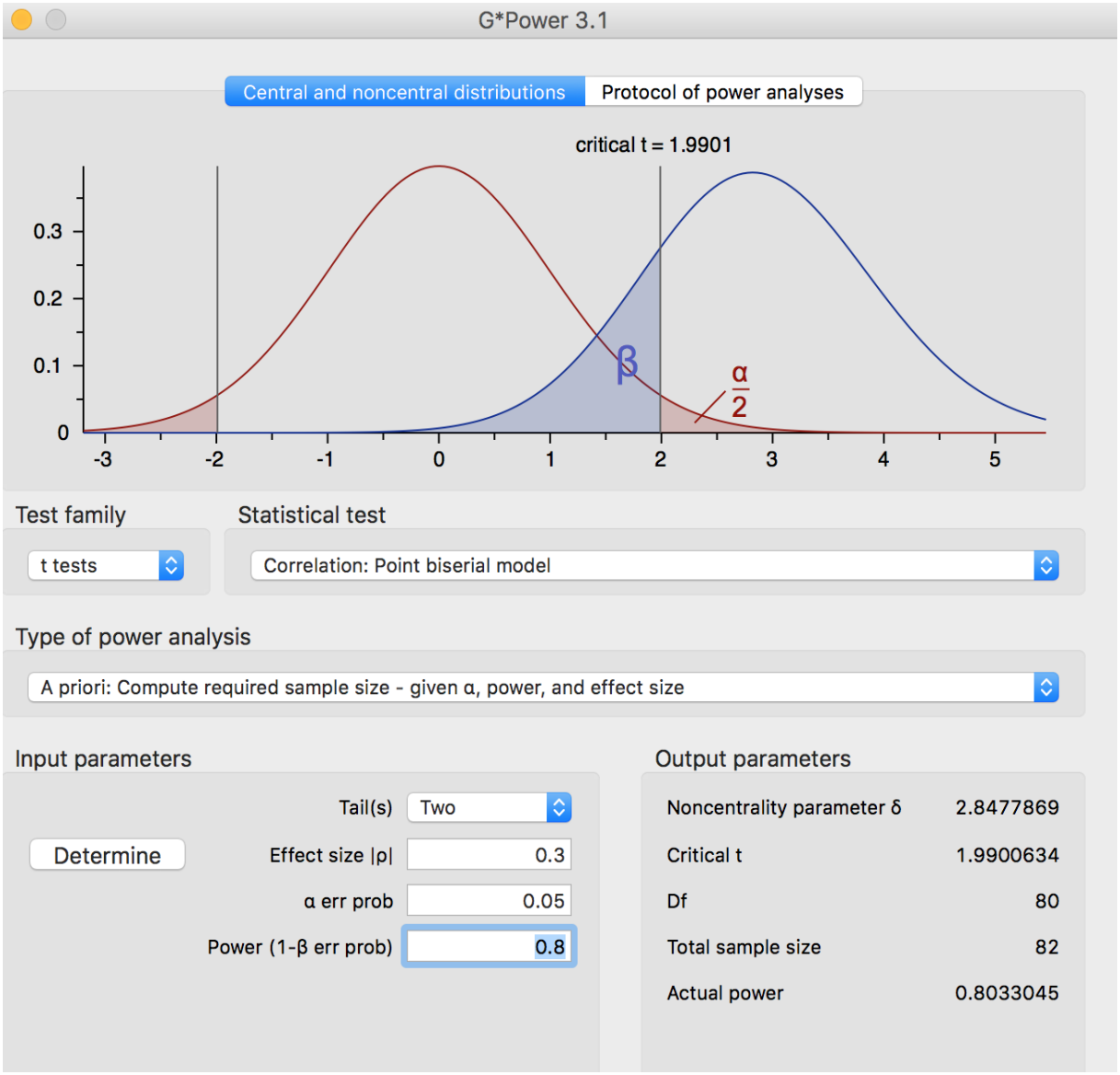
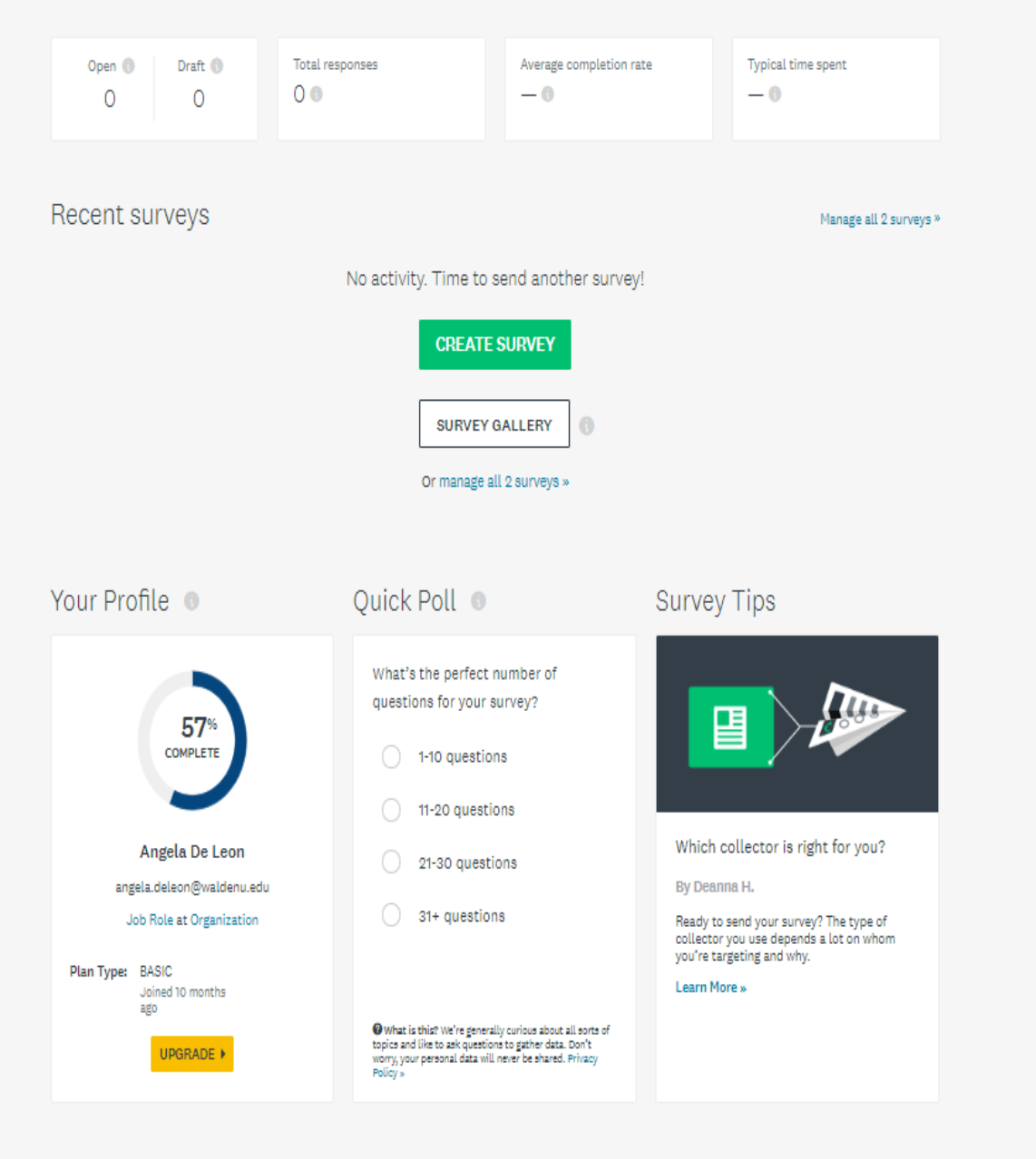
Appendix A: Results of G*Power Sample Size Computation



Appendix B: Introductory Page in SurveyMonkey Website



Appendix C: Permission Letter to Use PAT

December 8, 2020
The Delta Society
345 118th Ave SE, Suite 200
Bellevue, WA 98005

To Whom It May Concern:

I am completing a doctoral dissertation at Walden University entitled The human-animal bond: The levels of stress among military spouses during deployments. I would like your permission to reprint in my dissertation the following:

Holcomb, R., Williams, C.R., Richards, S.P. (1985). The elements of attachment: Relationship maintenance and intimacy. Journal of the Delta Society, 2(1), 28-34.

The requested permission extends to any future revisions and editions of my dissertation, including non-exclusive world rights in all languages, and to the prospective publication of my dissertation. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your signing of this letter will also confirm that you own [or your company owns] the copyright to the above described material.

If these arrangements meet with your approval, please sign this letter where indicated below and return it to me in the enclosed return envelope. Thank you very much.

Sincerely,
Angela De Leon – Muniz

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Mary Margaret Callahan

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Appendix E: SARS

The Stress Scale

To score your stress levels, simply select Yes or No for each of the events in the Statements column that have happened to you in the last year. Then click Calculate My Total.

This scale must not be used in any way to cause harm to an individual's professional career.

43 Statements to Answer	Yes	No
1Death of spouse (100)		
2Divorce (73)		
3Marital separation (65)		
4Jail term (63)		
5Death of close family member (63)		
6Personal injury or illness (53)		
7Marriage (50)		
8Fired at work (47)		
9Marital reconciliation (45)		

43 Statements to Answer	Yes	No
10Retirement (45)		
11Change in health of family member (44)		
12Pregnancy (40)		
13Sex difficulties (39)		
14Gain of new family member (39)		
15Business readjustment (39)		
16Change in financial state (38)		
17Death of close friend (37)		
18Change to a different line of work (36)		
19Change in number of arguments with spouse (35)		
20A large mortgage or loan (31)		
21Foreclosure of mortgage or loan (30)		
22Change in responsibilities at work (29)		
23Son or daughter leaving home (29)		
24Trouble with in-laws (29)		
25Outstanding personal achievement (28)		
26Spouse begins or stops work (26)		

43 Statements to Answer	Yes	No
27Begin or end school/college (26)		
28Change in living conditions (25)		
29Revision of personal habits (24)		
30Trouble with boss (23)		
31Change in work hours or conditions (20)		
32Change in residence (20)		
33Change in school/college (20)		
34Change in recreation (19)		
35Change in church activities (19)		
36Change in social activities (18)		
37A moderate loan or mortgage (17)		
38Change in sleeping habits (16)		
39Change in number of family get-togethers (15)		
40Change in eating habits (15)		
41Vacation (13)		
42Christmas (12)		
43Minor violations of the law (11)		

Appendix F: Demographic Survey

1. What is your gender?
   Female
   Male

2. What is your age?
   17 or younger
   18-20
   21-29
   30-39
   40-49
   50-59
   60 or older

*3. Are you now married, widowed, divorced, separated, or have you never been married?
   Married
   Widowed
   Divorced
   Separated
   Never married

*4. Is your spouse/significant other currently serving in the United States military?
   Yes
   No

5. In which branch (or branches) of the United States military have you served? (Check all that apply)
   Army
   Marine Corps
   Navy
   Air Force
   Coast Guard

6. How many years of service in the United States military?
   1-2
   3-4
   5-6
   7-8

9 +

*7. Is your spouse/significant other currently deployed?
Yes
No

8. Indicate length of deployment your spouse/significant other has been deployed.
0 - 3 months
4 - 6 months
6 - 8 months
8 – 10 months
10 – 12 months
12 – 14 months
14 - 16 months
16 – 18 months

9. Are you a canine owner?
Yes
No

10. How many canine pets do you own?
1
2
3
4+

11. How many years have you owned your canine pet?

0-1
1-2
2-3
3-4
5+

Appendix G: Informed Consent Letter

Informed Consent: This form is part of a process called the informed consent to help you to understand this study before deciding whether to take part. You have been invited to participate in an online survey and assessment about your experience with your canine companion during long-term separation from your active duty member and your stress level during the separation. In order to participate, you must identify to be a military spouse (no gender specific), be at least 18 years of age, and have a deployed military partner/spouse.

Background information and Procedures: This study is being conducted by Angela De Leon, who is a doctoral student at Walden University. The purpose of this study is to determine whether a relationship exists between the human-canine bond and the stress experienced by military spouses when their significant other is deployed and whether length of deployment is associated with any observed differences in stress levels. If you agree to this study, you will be asked to answer questions related to the current deployment status, canine pet owner status, stress level, length of separation, and the bond between the canine and yourself. You will be asked to select the responses that best represent these answers. The survey should take approximately 25-30 minutes to complete and you will only be asked to complete the questions once.

Voluntary Nature of this Study: This study is voluntary. You are free to accept or turn down the invitation to participate in this online survey. No one will treat you differently if you decide not to participate in the study. If you decide to continue, you can still change your mind later. You may stop at any time.

Risks and Benefits of Participating in this Study: Participating in this type of study may involve some risks of minor discomforts that can be encountered in daily life, such as stress or fatigue. Participating in this study should not pose risk to your safety or wellbeing. If you need assistance contact the mental health hotline at 1-800-920-6264 or the suicide hotline at 1-800-273-8255

Your responses will be utilized to help researchers gain a better understand of the stress military spouses go through and the human-canine bond with canine pets. Your responses may positively influence how spouses deal with stress during deployments and how to possibly reduce canines in animal shelters.

Payment: There will be no incentive or form of payment for participating in this study.

Privacy: At no time will your name be collected, and your responses will remain anonymous. Even the researcher will not know how you are. The information you provide will not be utilized for any purpose outside of this research project Data will remain secure by encryption and password protection. The research will adhere to Walden University's and Survey monkeys' privacy policies. Walden University requires that data sets are to be saved for a minimum period of five years. However, the results may be used in future studies.

Contact the Questions: If you have questions while completing the survey or would like to gain access to the findings of this study, contact the researcher at angela.deleon@waldenu.edu. If you would like to speak privately about your rights as a participant, please contact Walden University's Research Participant Advocate by phone

1-800-925-3368 ext. 312-1210 or by email irb@mail.waldenu.edu. Please screenshot, print or save the informed consent form for your records.

Obtaining your consent: By proceeding with this survey, you are indicating that you understand this study well enough to decide to participate in this study on a voluntary basis. Please consent by clicking on the button below.

Thank you for your valuable input and time.