EXAMINING THE EFFECTS OF PARENTAL COMBAT DEPLOYMENT ON THE BODY MASS INDEX AND EATING BEHAVIORS AND ATTITUDES OF ADOLESCENT FEMALE MILITARY DEPENDENTS

by

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Dissertation submitted to the Faculty of the
Medical and Clinical Psychology Graduate Program
Uniformed Services University of the Health Sciences
In partial fulfillment of the requirements for the degree of
Doctor of Philosophy, 2015

UNIFORMED SERVICES UNIVERSITY, SCHOOL OF MEDICINE GRADUATE PROGRAMS
Graduate Education Office (A 1045), 4301 Jones Bridge Road, Bethesda, MD 20814

DISSERTATION APPROVAL FOR THE DOCTORAL DISSERTATION IN THE DEPARTMENT OF MEDICAL AND CLINICAL PSYCHOLOGY

Title of Dissertation: "Examining the Impact of Parental Combat Deployment on the Weight Status and Eating Behaviors and Attitudes of Adolescent Military Defendants"

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Doctor of Philosophy Degree
July 13, 2015

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ACKNOWLEDGMENTS

I would like to thank a number of people who have helped me through this dissertation process. First, I would like to thank my advisor, Dr. Marian Tanofsky-Kraff, for her guidance and support. I would also like to thank Dr. Tracy Sbrocco for chairing my committee and for her wisdom. I would also like to thank my other committee members: CAPT Mark Stephens, Dr. Rusan Chen, and Dr. Eleanor Mackey. Your military leadership, statistical expertise, and patience throughout this process were greatly appreciated. I also appreciate the advice and mentorship of the following people throughout the process: CAPT Jeffrey Quinlan, Cmdr Jeffrey Goodie, Lt Col Robert Vanecek, Dr. Layne Bennion, Dr. Charles Privitera, and Dr. Jeanette Witter. I would also like to thank the Tanofsky-Kraff lab for their support and laughter. I would also like to thank my cohort, particularly my fellow penguins, Alicia, Courtney, and Nicole.

Finally, I would especially like to thank my family and friends, and particularly my husband, Kirk, and son, Jay, who have always provided rays of sunshine on the days I needed them the most.

DEDICATION

To Marie Josette Pierre Joseph and Aidan Bianca Joseph. I think of you when the sun sets, and I think of you when the sun rises.

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February 2, 2016

ABSTRACT

Title of Dissertation: Examining the Effects of Parental Combat Deployment on the Body Mass Index and Eating Behaviors and Attitudes of Adolescent Female Military Dependents

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Studies have demonstrated the psychological and emotional impact of parental combat deployments on military child dependents (Acion, Ramirez, Jorge, & Arndt, 2013; Flake, Davis, Johnson, & Middleton, 2009). However, the effect of these deployments on the weight status and eating behaviors and attitudes of the military child population remains unexplored. Adolescent female military dependents (N = 81) and their parents (N = 68) who received medical care from the Family Medicine Clinic at Fort Belvoir Community Hospital voluntarily completed questionnaires assessing their weight status and eating behaviors and attitudes (e.g., binge/loss of control eating, idealization of the thin-ideal). More than half of the adolescents (56%) experienced at least one parental combat deployment. The mean BMI of adolescents was 22.6 ± 4.9, their mean age was 14.2 ± 1.6y, and most were Caucasian (67%). A majority of the parents who participated in the study (respondent parents) were mothers (88.2%). The mean BMI of the parents was in the overweight range (26.91 ± 5.09) and most were married (85.9%) and Caucasian (73.2%). Parental combat deployment was associated with emotional eating and thin-ideal internalization. Adolescent psychological functioning mediated the relationship between parental combat deployment and adolescent BMI-z, among participants who had experienced at least one parental combat deployment. Implications for primary care providers and future research are discussed.

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CHAPTER 1: Introduction

THE MILITARY CHILD

Nearly two million children reside in military families in which one or both of their parents or guardians are Active Duty, Reserve, or National Guard service members (Sogomonyan & Cooper, 2010). Distinctive features of the military present challenges and opportunities for growth military adolescent dependents (Hall, 2008). This population faces recurrent and prolonged parental deployments, numerous permanent-changes-of-station (PCSs), difficult parental reunions, long and unpredictable duty hours, and the threat of injury or death of their parents or guardians (Black, 1993; National Military Family Association, 2012). Furthermore, they must contend with the reality that their parents can be ordered to temporary duty locations for professional development and field-training or humanitarian and peacekeeping missions (Burrell, Adams, Durand, & Castro, 2006).

As a consequence of their parents' chosen profession, military children endure PCSs at least every two years that require relocating to new states or countries, attending various schools, and developing new friendships (U.S. Department of Defense, 1998). These moves largely lead to geographical dislocation from extended family, potential sources of immediate social support to combat the stressors associated with PCS (Barker & Berry, 2009). Studies have reported that frequent relocations negatively impact children's schoolwork, activities, and social networks and require continuous adjustment to new schools and cultures (Park, 2011). Relocations also pose additional challenges for academic achievement and graduation as the result of varying school and state

requirements for course credits and course materials (Park, 2011). The psychosocial implications of PCSs include growing up feeling rootless, loss of continuity of care and established resources, family and child instability, and difficulties developing meaningful peer relationships or maintaining long-term commitments (Barker & Berry, 2009; Lester et al., 2010; Shaw, 1979; Wertsch, 1991). Despite military-specific demands they experience, military adolescents are remarkably resilient (Cabrera, Figley, Yarvis, & Cox, 2012)

Psychological Functioning of Military Children – Peacetime

Adolescence, characterized as the transition period from childhood to adulthood, is considered a period of heightened stress (Arnett, 1999). The many concurrent changes experienced during this period of development include physical maturation, rapid cognitive development and capacity for abstract reasoning, the drive for social and economic independence, the acquisition of skills needed to carry out adult relationships and roles, and an increased importance of social and peer interactions (Blakemore, 2008; Casey, Getz, & Galvan, 2008a; Casey, Jones, & Hare, 2008b; Spear, 2000). Psychosocial development during adolescence involves the following general psychosocial issues: identity establishment, autonomy development, comfort with one's sexuality, and achievement (Erikson, 1950; Gross, 1987; Steinberg, 2007). The successful navigation of the crises, or times in which the adolescent actively confronts and handles the particulars of each of the five psychosocial issues, may lead to healthy psychological functioning and the solid acquisition of social attitudes and skills needed to maintain healthy relationships.

Data suggest that children of military personnel exhibit psychosocial functioning that differs from children of civilian families, even during times when the military is not actively engaged in combat operations is not at war. Kelley and colleagues (2003) examined the affects of the military lifestyle on the mental health of adolescent dependents during periods of peace and found lower baseline levels of psychopathology compared to children in civilian families. Military adolescents exhibited lower rates of juvenile delinquency, lower likelihood of alcohol or drug abuse, higher grades, and higher median IQs than their civilian counterparts (Jensen, Xenakis, Wolf, & Bain, 1991; Kenny, 1967; Morrison, 1981). Additionally, the population engaged in fewer risky behaviors, exhibited greater self-control, and demonstrated lower levels of impatience, aggression, and disobedience (Hutchinson, 2006; Manning, Balson, & Xenakis, 1988; Watanabe, 1985). Furthermore, when compared to civilian adolescents, military adolescents were found to be more resourceful, adaptable, responsible, and welcoming of challenges (Hall, 2008). Overall, these adolescents reported academic success, high optimism and positive self-image, engagement in school and community activities, and life satisfaction (Jeffreys & Leitzel, 2000; Watanabe, 1985).

A number of factors have been attributed to the overall success of military adolescents in adapting to the lifestyle dictated by their parents' career. For example, military values that emphasize service, sacrifice, honor, teamwork, loyalty, sense of purpose, sense of community, and pride operate as resilience factors to overcome the quotidian demands of military life (Paden & Pezor, 1993). Additionally, adolescents who reside on or near a military base have immediate access to medical and psychosocial

support systems specific to the military such as health care, family support centers, and other peers personally acquainted with the military culture (Johnson & Ling, 2012). Furthermore, research has attributed the employment of active coping strategies as a means of successfully combating the stress associated with the demands of the military within this population. Stress has been defined as the non-specific response of the body to any demand made upon it, which could be a real or perceived threat, challenge, danger, or change that requires the body and mind to adapt (Selye, 1976). It is comprised of three processes: primary appraisal – the process of perceiving a threat to oneself; secondary appraisal – the process of contemplating a potential response to the threat; and, most importantly, coping – the process of executing the threat response (Lazarus, 1966). In terms of the utilization of active coping strategies, military adolescents may employ two general types of coping strategies proposed by Folkman and Lazarus (1985) – *problem-focused coping and emotion-focused coping*. Problem-focused coping centers on assistance seeking from family members or other adolescents experiencing similar stressors and screening out stress-inducing activities such as viewing Internet images showing the perils of war. Reducing or managing the emotional distress associated with a given situation best describes emotion-focused coping (Carver, Scheier, & Weintraub, 1989). Military adolescents may employ this coping strategy by sharing their emotions with their peers or parental guardians when military demands (e.g., parental deployment) become too stressful.

These coping strategies may contribute to the resiliency factors in military adolescents, in addition to community and social support programs that offer support to

military families in the form of therapeutic interventions (e.g., psychoeducation, cognitive-behavior therapy, narrative therapy, etc.) designed to promote healthy development in children and adolescents (MacDermid, Samper, Schwarz, Nishiba, & Nyaronga, 2006). The integration of these programs into the existing military support mechanisms should bode well for the overall psychological health for military adolescents. Results from studies examining these programs have reported that adolescents who received such interventions had better developmental outcomes and better problem-solving skills than those who did not receive the interventions (Rotheram-Borus, Lee, Lin, & Lester, 2007). However, studies have revealed that the more than years of wartime engagement overseas have exacted a heavy toll on military children and adolescents, taxing their coping mechanisms and fracturing their reportedly resilient armor (Chandra, Martin, Hawkins, & Richardson, 2009a; Flake et al., 2009; Gorman, Eide, & Hisle-Gorman, 2010; Mmari, 2009).

Deployment and Child Dependents

Parental combat deployments rank as the most stressful events for military children and adolescents and a significant portion of this population has experienced the stress of parental deployments since September 11, 2001 (Lincoln, Swift, & Shorteno-Fraser, 2008). Approximately 700,000 children have experienced one parental combat deployment to Iraq or Afghanistan and more than 300,000 have experienced multiple deployments (Manos, 2010; U.S. Department of Defense, 2009b). Nearly 19,000 military children and adolescents have had a parent wounded in action and more than 4,800 have lost a parent in the war effort (American Psychological Association Presidential Task

Force on Military Deployment Services for Youth Families and Service Members, 2007; Sogomonyan & Cooper, 2010; Tragedy Assistance Program for Survivors, 2013). These statistics provide a sobering view of the impact of parental combat deployments on children and adolescents in terms of the physical separation, injury, and/or death of the parent.

The psychological reactions of children and adolescents to a parent's deployment vary by developmental stage and the presence of preexisting psychological or behavioral problems (National Center for PTSD, 2013). Research has demonstrated that young children may exhibit separation anxiety and changes in eating habits, while older children may experience declines in academic performance and overall physical health, increases in social withdrawal, apathy, and acting out behaviors (Lincoln et al., 2008). These reactions do not occur in isolation of the familial structure as the deployments can negatively affect the remaining caregiver, further compounding the reactions of the child and adolescent dependents. Non-deployment parents and caregivers have reported increases in family responsibilities, financial hardships, and social isolation during deployment periods, as well as increased anxiety, loneliness, and sadness (National Center for PTSD, 2013). While most of the focus on the impact of parental deployments appears to have focused primarily on the period of deployment in which the parent is absent, some researchers have theorized that the negative impacts of parental deployments actually commence in the months prior to the parent's departure.

Five Stages of Deployment

Pincus and colleagues (2001) characterized the emotional impact of parental deployment across a five-stage process: *pre-deployment, deployment, sustainment, re-deployment, and post-deployment*. The *pre-deployment stage* is characterized as an anticipation of loss or denial when the notification order of deployment is given. Feelings of uncertainty, fear, anger, resentment, and hurt are common as the family attempts to cope with the contradiction between denial of the imminent departure of the loved one and the anticipation of the loss (Hall, 2008; Rotter & Boveja, 1999). During this stage, children may act out with tantrums and poor behavior and resort to magical thinking which may instill the false belief that the deployed parent is leaving because of their perceived bad behavior (Laser & Stephens, 2011). Children and adolescents experience grief, numbness, sadness, and difficulty sleeping during the *deployment stage* and families may grapple with as sense of abandonment, emptiness, pain, disorganization, and loss (Duckworth, 2009; Pincus et al., 2001; Rotter & Boveja, 1999; Slone & Friedman, 2008). The third stage, *sustainment* (2^{nd} month – month prior to return) is marked by a dichotomy of experiences from aggressive behaviors, irritability, and somatic complaints to a sense of feeling more in control, the establishment of a routine and development of community and peer group connections, and communication with the deployed parent (Pincus et al., 2001). The final stages, *re-deployment and post-deployment*, are marked by the anticipatory excitement of the service member's return, a renegotiation of routines, and the reintegration of the deployed parent into the family. Though the emotional impact of parental deployments is experienced throughout each

deployment stage, factors such as media coverage exacerbate the difficulties family members may experience as they move through these stages.

Emotional Impact of Deployments on Child Dependents

Research examining the emotional impact of deployments has provided support to the five stages of deployment theory proposed by Pincus et al. (2001). Rutter (1991) reported that the emotional health of military families could be negatively affected by the need to balance minimal, "hard" knowledge (e.g., email contact, phone calls, etc.) of a service member's status against the unabated media coverage of anxiety-arousing "soft" knowledge of near 'real-time' casualty reports. Access to graphic videos of insurgent attacks against U.S. military personnel and war coverage serve as significant sources of stress for adolescents, decreasing their ability to cope with their parent's deployment (Huebner & Mancini, 2005). The amalgamation of a fear of parental death in combat, a lack of information regarding what is actually occurring downrange, and rapidly cycling news coverage can cause the mood of family members to oscillate swiftly and erratically between hope and despair (Solomon et al., 1992). The rollercoaster of emotions is particularly indicative of the *pre-deployment* and *deployment* stages of the deployment cycle due to the forthcoming and immediate absence of the deployed parent. This absence may lead to feelings of numbness, sadness, abandonment, and residual anger related to tasks left undone (Esposito-Smythers et al., 2011; Pincus et al., 2001). The increased awareness of the perils associated with wartime events through media coverage has placed the children of deployed personnel at particular risk for emotional and behavioral difficulties (Huebner, Mancini, Wilcox, Grass, & Grass, 2007).

Pincus et al. (2001) proposed increased irritability, rebelliousness, and participation in attention-seeking behaviors in adolescents during the *sustainment* stage of the deployment cycle, and several researchers have supported the theory. Modestly high levels of depression and internalizing (e.g., withdrawal, fearfulness) and externalizing (e.g., acting out, delinquency) behaviors have been noted in military children and adolescents whose parents have deployed (Jensen, Martin, & Watanabe, 1996; Manos, 2010; Pincus et al., 2001). In one study, adolescent girls exhibited significant elevations in externalizing behaviors during a parental combat deployment(Manos, 2010). Gibbs and colleagues (2007) reported that this population of military dependents experienced difficulties associated with the *deployment* stage: problems with sleeping, increased levels of stress and anxiety, academic decline and disinterest, student-teacher conflict, and non-deployed parent-child relational problems including child abuse and maltreatment. Furthermore, children whose parents were deployed during the initial sustained combat operations in Iraq (March-May 2003) reported higher physiological stress, as indicated by increases in measured heart rates, and perceived stress levels when compared with civilian peers and children whose parents were not deployed (Barnes, Davis, & Trieber, 2007; Flake et al., 2009). School staff working in schools located on military installations heavily affected by deployments have reportedly witnessed the negative impact of parental deployment on child social and emotional functioning through observed increases in anxiety related to parental absence, increases in home responsibilities and declines in the mental health of the non-deployed parent (Chandra et al., 2010).

In addition to psychosocial problems, recent studies have also shown that mental health and behavioral health visits have increased for this population. Gorman and colleagues (2010) conducted a retrospective cohort study on the frequency of outpatient visits during fiscal years 2007 and 2008 for mental and behavioral health disorders in military family children aged 3 to 8-years-old and discovered that during parental deployment, mental and behavioral health visits increased 11%, and behavioral and stress disorders increased 19% and 18%, respectively. According to the DoD (2009a), between 2003 and 2008, the number of military children receiving outpatient mental healthcare doubled, and inpatient visits increased by 50%, denoting a 20% jump from 2007 to 2008. Barker and Berry (2009) reported that as the frequency of parental deployments increased, children demonstrated a corresponding increase in behavior problems throughout the five stages of deployment, particularly during the stages of *deployment* and *sustainment*. Boss (2007) characterized the loss experienced during these stages as ambiguous due to both the physical absence and psychological presence of the deployed service member. Though the parent is physically absent, he or she is likely to be in regular communication with the family due to improvements in internet and cellular technology and accessibility, which temporarily alleviates the anxiety families experience in relation to the safety of their loved one (Waynick, Frederich, & Scheider, 2005). However, once the contact ceases, safety is questioned due to an increased awareness of the dangers of war and uncertainty of the location and proximity of the deployed one to media reported dangerous combat zones (Huebner et al., 2007). The ambiguity of the safety of the deployed member and perceived loss create a powerful barrier to coping and

grieving and contribute to manifestation of psychological difficulties (e.g., depress and anxiety symptoms) and relational conflict that erode relationships (Boss, 2007).

Deployment, the Non-Deployed Caregiver, and the Role of Attachment

The spouses of deployed personnel face daunting challenges during the deployment of the service member. Wartime relocation may require the spouse to move off-base into the civilian community where they may lose existing military support systems (MacDermid et al., 2006). In addition to coping with the anxiety related to uncertainty about the safety of their loved ones and marital strain due to the deployment-induced separation, these parents must maintain the household while coping with single parenthood during the *deployment, sustainment, and redeployment* stages (Mansfield et al., 2010). Periods of prolonged separation (e.g. deployment) have been shown to be more predictive of poorer psychological and physical well-being than concerns about service member injury or death, frequent relocation, or foreign residence (Chandra, Martin, Hawkins, & Richardson, 2009b). Increased rates of marital dissatisfaction, unemployment, divorce, and declining mental health have also been noted in this population (Angrist & Johnson, 2000; Orthner & Rose, 2005; Schumm, Bell, & Gade, 2000). Cyclic patterns of depressive behavior have been demonstrated in a sample of Navy wives and children, who reported higher levels of depressive mood and behavior prior to and during the *deployment* period than *post-deployment* (Beckman, Marsella, & Finney, 1979; Glisson, Melton, & Roggow, 1981). Additionally, Mansfield et al. (2010) reported that wives of deployed personnel received more diagnoses of depressive and sleep disorders, anxiety, acute stress reaction, and adjustment disorders during periods of

deployment. The stress non-deployed parents experience during deployments has been shown to negatively affect parent-child relationships, as a decline in caregiver mental health has been found to be significantly associated with decreased child well-being, particularly child academic engagement, emotional difficulties, and peer and family functioning (Chandra et al., 2010). In view of the research detailing the difficulties of the parent-child relationship during deployment, it is important to consider how these difficulties may impact the dynamics of attachment in the non-deployed-parent/guardian-adolescent relationship.

Adolescent Attachment

Attachment has been defined as a persistent affectional bond of substantial intensity between a primary caregiver and a child (Ainsworth, 1989; Armsden & Greenberg, 1987; Paterson, Field, & Pryor, 1994b). Experiences with these caregivers lead to expectations and beliefs about the self, the world, and relationships (Bowlby, 1973, 1980). Attachment to parents/caregivers during adolescence differs from other development periods because of its emphasis on emotional autonomy and maximal levels of support from the primary caregiver (Schneider & Younger, 1996). Adolescent attachments aids adolescents in retaining a sense of stability during a periods of substantial cognitive, behavioral and physiological, as well as acts as a secure base from which to explore new social situations (Cooper, Shaver, & Collins, 1998; Rice, 1990a). The formation and maintenance of positive and lasting relationships during adolescence is particularly important because adolescent attachment security has been positively associated with outcomes ranging from peer popularity to higher self-esteem and

inversely related to outcomes ranging from depression to delinquency (van & Bakermans-Kranenburg, 1996).

Internalizing (e.g., depression and anxiety) and externalizing (e.g., delinquency) behavior problems appear to be related to adolescent attachment organization. The belief that one is unable to have his attachment needs met by others or that he does not merit having those attachment needs met by others appear similar to the feelings of low self-worth and negative explanatory styles closely linked to depression (Cummings & Cicchetti, 1990; Kobak, Sudler, & Gamble, 1991). Negative evaluations of caregiver availability have been associated with an insecure attachment organization (Bowlby, 1973). It has been theorized that insecurity may lead to externalizing behavior by triggering hostility and anger toward caregivers that reduces their leverage in exercising behavioral controls and eliminates a significant buffer against adolescent deviance (Allen, Kuperminc, & Moore, 1997; Greenberg & Speltz, 1988).

More recent research has further explicated attachment theory in terms of adolescent attachment and adjustment. Scott and Wright (2011) described adolescence as the period of biological, mental and social changes that mark a developmental period in which the *self-in-relation-to-other* dialect is particularly salient. This period allows adolescents to simultaneously maintain their secure base of emotional support and comfort from their parents and explore new social situations and relationships (Cooper et al., 1998; Rice, 1990b). Naturally, parental attachment shifts during adolescence (Ainsworth, Blehar, Waters, & et al., 1989) as adolescents grow to prefer friends over their parents for their company (Hazan & Zeifman, 1994). However, parents continue to

serve as important attachment figures (Paterson, Field, & Pryor, 1994a), particularly mothers. Adolescents and young adults reported feeling closer to and relying more on their mothers than their fathers (McCormick & Kennedy, 1994). Mothers were ranked as highly as romantic partners for degree of emotional connection, emphasizing the importance of the maternal role during adolescence (Trinke & Bartholomew, 1997). Given that men account for 82% of all military personnel, the aforementioned research is salient considering the majority of non-deployed caregivers are women (DoD, 2010).

Non-Deployed Caregiver/Child Dependent Interaction and Attachment during Deployment

Research conducted during Operation Desert Storm has suggested that families of those deployed to combat areas demonstrated less cohesiveness than the families of service members who were deployed to non-combat areas (e.g., stateside deployments and peacekeeping missions) (Rosen, Teitelbaum, & Westhuis, 1993). The compromise of the emotional state of both the non-deployed caregiver and adolescent may lead to the degradation of the familial structure as the adolescent's ability to depend on his or her caregiver weakens throughout the deployment cycle.

John Bowlby's theory of attachment (1960) may be one underlying model that explains the process of weakening dependence on the non-deployed caregiver and familial degradation. The theory is based on the central postulate that people, motivated by survival, behave in ways to achieve and maintain proximity to an individual who is perceived as more capable of coping with the environment (Bowlby, 1960). Confidence in the availability of attachment figures, or lack of such confidence, is acquired slowly

during infancy and childhood years (Fenney & Noller, 1996). Kelley and colleagues (2001) theorized that the role of the attachment figure is to be sensitive, available, and responsive to the child and to provide comfort and safety in times of stress and danger. The reported mental health difficulties non-deployed caregivers have experienced (e.g., increased depression) would reduce their sensitivity, availability, and responsiveness to the military child, further compounding the difficulties these children face as their secure base falters.

Researchers have studied the effect of parental combat deployments on the relationship between non-deployed caregivers and military children. Chandra and colleagues (2010) studied the impact of parental deployments on children from the perspective of school staff. School administrators and teachers reported that children of deployed parents assumed more responsibility at home due to a change in the non-deployed parent's employment status or personal mental health issues related to the deployment. The non-deployed parent reportedly did not engage in school activities, missed meetings with teachers, did not ensure the completion of homework, and sometimes kept the children from school as a source of emotional comfort during the deployment. More recently, the overall rate of child maltreatment was reported to be higher during times of deployment compared to periods of non-deployment (Gibbs et al., 2007). Maltreatment incidents were characterized as neglect (deprivation of age-appropriate care, including failure to provide necessary care, inadequate supervision, medical neglect, inadequate supervision, medical neglect, educational neglect, and abandonment), physical abuse (physical harm, mistreatment, or injury), adverse effects

on the child's psychological well-being (speech disorders, lags in physical development, and failure to thrive), and sexual abuse (sexual activity with a child for the sexual gratification of an adult) (U.S. Department of Defense, 2006).

While the non-deployed parent/military child interaction cannot be characterized as entirely negative and harmful during the deployment, these findings suggest that these deployments affect every domain of family life. While numerous studies have discussed the negative effects of parental combat deployments on the psychosocial functioning of dependent military children; specifically, school performance, non-deployed caregiver mental health, and internalizing and externalizing behaviors, there has been a lack of research on the relationship between parental deployments and the physical health of their children. In particular, there are limited data examining whether parental combat deployments increases the risk of overweight and obesity in child dependents.

PEDIATRIC OBESITY

Pediatric obesity, characterized as the accumulation of excess body weight, represents one of the most pressing nutritional problems facing children in the U.S.(Troiano, Briefel, Carroll, & Bialostosky, 2000). Overweight and obesity have been defined using sex-specific BMI-for-age percentile ranking for body mass index (BMI; kg/m^2) in which youth at or above 95^{th} percentile are considered obese and those between 85^{th} and 95^{th} percentile are considered at risk for obesity (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Childhood obesity has increased three-fold over the last four decades, tripling for children between 6-11 years-of-age and doubling for youth ages 12-19 years (Ogden, Carroll, Kit, & Flegal, 2012). The prevalence rates of overweight and obese

children in the U.S. are 16.5% and 17.1%, respectively. Although these rates appear to suggest some leveling off (Ogden et al., 2012) or decreasing (Centers for Disease Control and Prevention, 2012), some data suggest that the rates of extreme pediatric obesity (≥ 99% percentile for children) are increasing disproportionately faster than overweight and moderate levels of obesity (95^{th}-99^{th} percentile) (Freedman, Khan, Serdula, Ogden, & Dietz, 2006; Koebnick et al., 2010; Koebnick et al., 2006).

At its most basic level, child obesity develops as an imbalance between caloric intake and physical activity (Anderson & Butcher, 2006; Anderson, Butcher, & Levine, 2003; Cutler, Glaeser, & Shapiro, 2003; Dietz & Robinson, 2008; Loureiro & Nayga, 2005). Excess energy intake and low levels of physical activity (Pereira et al., 2005) have contributed to increased obesity rates in children. However, there are a number of physical and psychosocial associations and predictors that impact the amount of energy consumed and the level of physical activity attained.

Health Correlates of Pediatric Obesity

Childhood overweight and obesity are associated with increased risk for hypertension, hyperlipidemia, certain forms of cancer, musculoskeletal disorders, metabolic syndrome, asthma, sleep apnea, abnormal cholesterol levels, orthopedic complications, and an increased risk of disability (Faith, Saelens, Wilfrey, & Allison, 2001; National Heart Lung and Blood Institute, 1998; Tanofsky-Kraff, Hayden, Cavazos, & Wilfley, 2003). Type 2 diabetes has accounted for approximately half of all new diagnoses of the disease in some adolescent populations, a finding that has been almost entirely attributed to the pediatric obesity epidemic (Fagot-Campagna et al., 2000;

Ludwig & Ebbeling, 2001). The elevated prevalence of a prediabetic state, consisting of glucose intolerance and insulin resistance, has been discovered in severely obese adolescents irrespective of ethnicity (Sinha et al., 2002). Insulin resistance syndrome, a clustering of cardiovascular disease risk factors, has been identified in children as young as 5-years-old (Young-Hyman, Schlundt, Herman, De Luca, & Counts, 2001). As a result, the increase in obesity among children and its accompanying mascrovascular (heart disease and stroke) and microvascular (kidney failure, blindness) sequelae have led the Institute of Medicine to recommend making the prevention of child obesity a national priority (Ebbeling, Pawlak, & Ludwig, 2002; Koplan, Liverman, & Kraak, 2005).

Psychosocial Correlates of Pediatric Obesity

Efforts to clearly define the causal relationship between obesity and psychological factors such as impulsivity, depression, anxiety, and familial influences have been marginally successful due to differing experimental methods and wavering definitions and assessment of child psychopathology (Puder & Munsch, 2010). Overweight and obesity in children have also negatively affected the psychosocial and psychological realms, such as depression, social isolation and exclusion, and a reduction in quality of life (Fallon et al., 2005; Hayden-Wade et al., 2005; Wardle & Cooke, 2005). However, researchers have continued to examine correlates between these factors and the development pediatric obesity in order to improve prevention and intervention methods. Externalizing behaviors such as impulsivity have been shown to be more prominent in obese children than in their normal-weight counterparts (Anderson, He, Schoppe-Sullivan, & Must, 2010). Studies have demonstrated that 8-to-11-year-old obese children

had more problems in a behavioral task that involved waiting for a larger delayed food reward instead of taking an immediate smaller reward compared with normal-weight peers (Bonato & Boland, 1983; Nederkoorn, Braet, Van Eijs, Tanghe, & Jansen, 2006). Additionally, overweight children scored higher on delinquency measures and were evaluated as being more aggressive and disruptive than non-overweight children, suggesting poor inhibitory control (Hwang et al., 2006). Overweight and obese children have also been shown to be more susceptible to internalizing behavior difficulties such as depression and anxiety (Drukker, Wojciechowski, Feron, Mengelers, & Van Os, 2009; Pitrou, Shojaei, Wazana, Gilbert, & Kovess-Masfety, 2010). Pine et al. (2001) demonstrated the correlation between childhood-diagnosed major depression and increased BMI in adulthood, independent of poverty. An inability to regulate affect has been posited as a pathological explanation for the comorbidity of depression and obesity. Goossens and colleagues (2007) reported that emotional eating works as a coping strategy to regulate and reduce negative emotions, establishing a positive relationship between anxiety or depression and excessive food intake. As studies have reported that the children of deployed military personnel showed increases in internalizing and externalizing behaviors, the plausibility of this population being more susceptible to the development of overweight and obesity warrants further investigation.

Environmental Correlates of Pediatric Obesity

Although a wealth of data indicate that there are genetic underpinnings for obesity (Bell, Walley, & Froguel, 2005; Damcott, Sack, & Shuldiner, 2003; Farooqi, 2005; Seal, 2011; Wisniewski & Chernausek, 2009) multiple environmental factors, when coupled

with a child's predisposition for obesity, increases the likelihood of the child becoming obese (Anderson et al., 2003). Familial eating behavior and the transmission of the learned behavior to the child has been reported to play an important role with response to the onset and maintenance of overweight and obesity in children (Birch, 1998; Hasenboehler, Munsch, Meyer, Kappler, & Vogele, 2009; Zeller et al., 2007). For example, children learn eating behaviors through observation, imitation, and modeling of their parents (Puder & Munsch, 2010). A study conducted with 8-to-12 year-old overweight-to-obese treatment-seeking children from the general population confirmed maternal psychopathology to be a predictor for child's psychological problems (Roth et al., 2008). Furthermore, sub-optimal cognitive stimulation at home and poor socio-economic status have been found to predict the development of obesity (Strauss & Knight, 1999). Children and adolescents of poor socio-economic status tend to consume fewer fruit and vegetables and to have a higher intake of total and saturated fat (Kennedy & Powell, 1997; Krebs-Smith et al., 1996).

Stress and Pediatric Obesity

Stress has been defined as the generalized, non-specific aspects of handling environmental change, demand, and/or threat that overwhelms the body's compensatory abilities to maintain homeostasis (Cannon, 1926; Selye, 1976). The stress response involves a complex signaling pathway among neurons and somatic cells, and the chronic alterations in this response can lead to destructive and pathogenic responses to stress (Selye, 1946). Researchers have discovered the contributory role stress plays in the development of overweight and obesity in children. Dockray and colleagues (2009) have

discovered that the product of the stress system, the hypothalamic-pituitary-adrenal (HPA) axis, is a putative prime agent for the development of obesity. The activation of this axis increases cortisol secretion in which high levels are associated with obesity, especially abdominal obesity (Marniemi et al., 2002). Cortisol, a glucocorticoid hormone synthesized from cholesterol by enzymes of the cytochrome P450 family, is the primary hormone responsible for the stress response (Chrousos & Gold, 1992; de Weerth, Zijl, & Buitelaar, 2003). With the main function of restoring homeostasis following exposure to stress, cortisol plays a vital role in an inhibitory feedback loop by blocking the secretion of corticotripin-releasing hormone and preventing actions of the HPA axis central to glucocorticoid secretion (Chrousos, 2000; Tsigos & Chrousos, 2002). Chronic levels of elevated stress have been reported to disrupt the feedback balance, leading to a failure of feedback inhibition and the continued release of cortisol (Tsigos & Chrousos, 2002). Children with high cortisol reactivity have been reported to be less likely to engage in physical exercise (Susman et al., 2007), possibly due to the disruption of the aforementioned feedback loop and continued of the hormone charged with returning the body to its previous homeostatic levels (Yehuda, Yang, Buchsbaum, & Golier, 2006).

Stressors are demands that result in a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being (Lazarus & Folkman, 1994). Familial stressors, such as parental psychiatric illness, or stress associated with low socio-economic status, have been found to further contribute to the manifestation and maintenance of childhood overweight, partly by fostering excessive energy intake

(Pruder & Munsch, 2010), as children may be using food to regulate the negative emotions associated with acute familial stress. While the aforementioned environmental factors are fundamental in understanding childhood obesity, the influence of family functioning, specifically parental mental health, on obesity is a factor that cannot be ignored. Poor family functioning has been linked to child overweight and obesity (Rhee, 2008). Studies have shown that single-parent households (e.g., non-deployed parent and child households during deployment) are positively associated with higher BMIs and greater risk of obesity (Gibson et al., 2007; Strauss & Knight, 1999). These studies are particularly important as households with a deployed parent become defacto single-family households, as the non-deployed parent is largely responsible for the immediate care of the children. Lohman and colleagues (2009) examined the relationship between maternal stress and pediatric obesity and reported that maternal stress, in combination with food insecurity, defined as the limited availability of nutritionally adequate and safe foods or the limited ability to acquire acceptable foods in socially acceptable ways (Dinour, Bergen, & Ming-Chen, 2007), leads to higher probabilities of child overweight or obesity (Lohman, Stewart, Gundersen, Garasky, & Eisenmann, 2009). Various studies have linked maternal psychopathology to the weight status of children (Epstein, Klein, & Wisniewski, 1994; Epstein, Myers, & Anderson, 1996; Favaro & Santonastaso, 1995; Zipper et al., 2001); however, a more recent study found no association with maternal depression (Gibson et al., 2007). For the duration of the deployment, non-deployed parents fall into the category of single-family households wrought with its accompanying

stressors that influence the weight status of child dependents. Investigating the strength of this moderation would shed light on an important, yet overlooked area of study.

DISORDERED EATING BEHAVIORS AND ATTITUDES

Disordered eating has been defined as any abnormal eating pattern consisting of a collection of interrelated eating habits such as inappropriate weight management practices, extreme overeating, or feelings of extreme distress or concern about body weight and shape (National Institute of Mental Health, 2007; Striegel-Moore & Bulik, 2007). Biopsychosocial complications of disordered eating behaviors and attitudes include depression, anxiety disorders, infectious diseases, insomnia, cardiovascular and neurological problems (Johnson et al., 2009), strained interpersonal relationships (Holt & Espelage, 2002), and depleted bone density (Latner, Wetzler, Goodman, & Glinski, 2004). Approximately 20 million women and 10 million men suffer from a clinically significant eating disorder at some point in their lifetime, including anorexia nervosa, bulimia nervosa, binge eating disorder, or other unspecified feeding or eating disorders (Wade, Keski-Rahkonen, & Hudson, 2011).

Anorexia nervosa, described as a "perversion of will" (Gull, 1874) and a "hysteria of the gastric center" (Lasegue, 1873) when first introduced in the late 19th century, has been characterized as a restriction of energy intake relative to nutritional requirements, leading to a significantly low body weight in the context of age, sex, development trajectory, and physical health; in intense fear of gaining weight; and a persistent lack of recognition of the seriousness of the current low body weight (American Psychiatric Association, 2013). A recent cross-sectional survey examining the prevalence rates and

correlates of disordered eating behaviors in a large, representative sample of U.S. adolescents has reported the lifetime and 12-month prevalence rates of this disorder have been reported as 0.3% and 0.2%, respectively (Kessler et al., 2013). Bulimia nervosa has been characterized by recurrent and frequent episodes of eating unusually large amounts of food, a feeling of a lack of control over the food consumption, inappropriate compensatory behaviors in order to prevent weight gain, and the occurrence of binge eating and inappropriate compensatory behaviors at least once a week for three months (American Psychiatric Association, 2013; National Institute of Mental Health, 2007). The lifetime and 12-month prevalence rates of bulimia nervosa has been reported as 0.9% and 0.6%, respectively (Kessler et al., 2013).

Binge eating disorder, which earned its own diagnostic label in 2013, has been defined as recurring episodes of eating an amount of food that is definitely larger than what most people would eat in a similar period of time under similar circumstances and a sense of lack of control over eating during the episode (American Psychiatric Association, 2013). Unlike bulimia nervosa, binge eating disordered has been found to be negatively associated with the recurrent use of inappropriate compensatory behaviors and does not occur exclusively during the course of bulimia nervosa or anorexia nervosa (American Psychiatric Association, 2013). Twelve-month and lifetime prevalence rates of this disorder have been reported as 0.9% and 1.6%, respectively (Kessler et al., 2013). Binge eating appears to be common among adolescents (Glasofer et al., 2007; Greenfield, Quinlan, Harding, Glass, & Bliss, 1987). Studies of overweight adolescents have generally found that those who report loss of control eating (the sense of being unable to

stop eating once started) episodes, with or without unambiguously large amounts of food, have greater eating-related distress, anxiety, and depressive symptomatology and poorer self-esteem than those who do not report such episodes (Berkowitz, Stunkard, & Stallings, 1993; Glasofer et al., 2007; Isnard et al., 2003; Tanofsky-Kraff et al., 2004).

Researchers have focused on the genetic, cultural, and family environmental correlates of disordered eating behaviors and attitudes, particularly in adolescents.

Sociocultural Correlates of Disordered Eating Behaviors and Attitudes

The emphasis of extreme thinness as the female ideal and the objectification of the female body in Western culture are specific risk factors for the development of an eating disorder (Striegel-Moore & Bulik, 2007). Exposure to the thin ideal, internalization of the ideal, and experience of a discrepancy between self and ideal are precursors to the development of body dissatisfaction, dietary restraint, and restriction (Striegel-Moore & Bulik, 2007). Body dissatisfaction, the best known contributor to the development of anorexia nervosa and bulimia nervosa, and sub-clinical disordered eating attitudes and behaviors have been described as constant struggles in Western culture (Stice, 2002). Research has consistently demonstrated the power of the internalization of the thin-ideal and disordered eating behaviors and attitudes in adolescence (Harrison; Striegel-Moore et al., 2005; Woodside et al., 2001). Eating disorders have ranked as the third most common chronic illnesses, after obesity and asthma, in adolescent females (Croll, Neumark-Sztainer, Story, & Ireland, 2002; Leichner, 2002). A longitudinal study revealed that normal-weight children who utilized unhealthy weight-loss tactics increased their risk of both obesity and disordered eating in adolescence (Neumark-Sztainer, Wall, et al., 2006).

Forty-to-sixty percent of elementary and middle school girls (ages 6-12) reported being concerned about their weight or about becoming too fat, and these concerns continue throughout their lifetimes (Smolak, 2011).

Associations between race and ethnicity and disordered eating behaviors and attitudes have also been reported in various studies. For example, binge eating disorder is the most prevalent eating disorder diagnosis across racially/ethnically diverse populations; and its prevalence rate has been estimated to be as high as 21%-48% among overweight and obese individuals in the aforementioned populations (Hudson, Hiripi, Pope, & Kessler, 2007; Latner et al., 2004; Striegel-Moore & Franko, 2008). African American adolescents reported higher self-esteem and lower body-dissatisfaction than other racial/ethnic groups and a weaker relationship between self-esteem and body-dissatisfaction than Caucasian adolescents (van den Berg, Mond, Eisenberg, Ackard, & Neumark-Sztainer, 2010). Asian adolescents reported a weaker relationship between body-dissatisfaction and self-esteem than Caucasian adolescents, but reported lower self-esteem and body dissatisfaction than other racial/ethnic groups (van den Berg et al., 2010). Community-based studies have reported significant racial/ethnic differences in the clinical presentation of African American and Caucasian women with binge eating disorder (Latner et al., 2004). These sociocultural correlates are particularly salient to the military adolescents because the military is uniquely racially and ethnically diverse.

Family Environmental Correlates of Disordered Eating Behaviors and Attitudes

Family functioning refers to the structural and organizational properties and interpersonal interactions of the family unit (e.g., problem solving, warmth and closeness,

behavior control, and communication) (Epstein, Baldwin, & Bishop, 1983; Miller, Epstein, Bishop, & Keitner, 1985). Family system theory postulates that the interactions within a family are reciprocal, as each family member is shaping and being shaped by other family member's actions (Whitchurch & Constantine, 1993). As such, these reciprocal patterns many provide a particular insight into the behaviors that determine dietary intake and physical activity of youths (Whitchurch & Constantine, 1993). More specifically, parents have been reported to be primary targets for identification and gender-role models regarding attitudes about body shape and eating (Rodgers & Chabrol, 2009), and their influence has been determined to be an important source of pressure, independent of media or peer influence, in the prediction of the appearance of weight concerns or constant dieting (Field et al., 2005).

In addition to parental influences, the functioning of the family as a unit has been shown to have an affect on disordered eating behaviors and attitudes in adolescents. Positive family functioning (e.g., healthy communication, structured, and rule-oriented) has been reported to be protective for adolescent girls due to greater family meal participation, more frequency breakfast consumption, higher fruit and vegetable intake, less sedentary activity, and lower BMI-*z* scores (Berge, Wall, Larson, Loth, & Neumark-Sztainer, 2013). Conversely, studies have demonstrated associations between poor family functioning and high depressive symptoms, less academic success, more risk-taking behaviors, and more disordered eating behaviors in adolescents (Annunziata, Hogue, Faw, & Liddle, 2006; Dinsmore & Stormshak, 2003; Kim, Viner-Brown, & Garcia, 2007).

Parental influences on elevated levels of body dissatisfaction and weight concerns reportedly linked to disordered eating among adolescents and young adults are widespread in Western societies (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006), and disordered eating concerns are not gender-bound (Paxton, Eisenberg, & Neumark-Sztainer, 2006). Disordered eating have been reported to be associated with criticism regarding shape and weight in both parents among adolescent girls (Baker, Whisman, & Brownell, 2000). In adolescent girls, constant dieting was predicted by the perception of the importance of thinness to their fathers but not their mothers, while the perceived paternal perceptions to be thin predicted weight control behaviors in middle school girls, although only when parents were separated/divorced (Field et al., 2005; Shisslak et al., 1998). Furthermore, disordered eating has been reported to be associated with criticism regarding shape and weight in both parents among girls, such that perceived parental criticism was more predictive of offspring's disordered eating than parent's own levels of disordered eating behaviors (Baker et al., 2000; Benedikt, Wertheim, & Love, 1998).

Given the high rates of pediatric obesity and the positive, albeit sometimes inconsistent, relationship between parent mental health and child body weight, this is a critical area to elucidate within the military adolescent population. Wassdorp et al. (2007) reported that the rate of disordered eating in a sample of female adolescent dependents was significantly higher than the comparable civilian population. The study also revealed that of those families with a military member deployed or separated from duty in the past 2 years, 34% of the parents and 22% of the adolescents were at risk for developing

abnormal eating behaviors such as binge eating, supplemental pill usage, and self-induced vomiting. To date, no study has examined the relationship between parental deployments and disordered eating behaviors and overweight and obesity in military adolescent dependents. This research is sorely needed as military adolescent dependents may be at particularly high risk for obesity given that they live in potential stressful households and report high rates of disordered eating.

CHAPTER 2: Statement of the Problem

STUDY PURPOSE AND RATIONALE

Over the last ten years, nearly one million of the two million children living in active duty and reserve military households have experienced parental deployments during Operation Iraq Freedom and Operation Enduring Freedom in Afghanistan (Chartrand & Siegel, 2007). Frequent redeployments and an increased operations tempo in Afghanistan have exacted a heavy emotional toll on the military child dependents of these deployed servicemembers. Exhaustive studies conducted from the start of the wars in Afghanistan and Iraq has suggested that parental deployments have increased the rates of internalizing (e.g., depression, anxiety) and externalizing (e.g., aggression, hyperactivity) behaviors in this "left-behind" population (Barnes et al., 2007; Chandra et al., 2009a; Jensen et al., 1996; Manos, 2010). Yet, research examining the relationship between the stressors associated with parental deployments and obesity rates of military child dependents has been lacking. Obesity-related stressors in this population include individual stress, maternal and deployed parent pathology, loss of family cohesiveness, repeated deployments, and media war coverage (Chandra et al., 2009a; Gibbs et al., 2007; Gorman et al., 2010; Rutter, 1991). According to Lohman et al. (2009), increased levels of stress for adolescents are associated with a greater likelihood of being overweight or obese. As the stress levels of military child dependents correlate with continued parent deployments, it is important to study how these stressors may impact obesity rates in this population.

SPECIFIC AIMS AND HYPOTHESES

Specific Aim 1.

The primary aim of the study was to examine the association between parental combat deployment and BMI *z*-score in adolescent military dependents.

Hypothesis 1.1.

Adolescent military dependents that have experienced at least one parental combat deployment will demonstrate higher BMI *z*-scores, relative to those who have not experienced a parental combat deployment.

Hypothesis 1.2.

Adolescent military dependents with more parental combat deployments will demonstrate higher BMI *z*-scores.

Specific Aim 2.

A secondary aim of the study was to examine the association between parental combat deployment and disordered eating behaviors and attitudes in adolescent military dependents.

Hypothesis 2.1.

Adolescent military dependents that have experienced at least one parental combat deployment will demonstrate higher disordered eating behaviors and attitudes, relative to those who have not experienced a parental combat deployment.

Hypothesis 2.2.

Adolescent military dependents with more parental combat deployments will demonstrate greater disordered eating behaviors and attitudes.

Specific Aim 3.

A tertiary aim of the study is to examine the associations between parental combat deployment, BMI *z*-score and disordered eating behaviors and attitudes in adolescent military dependents through the mediating causes of non-deployed parent/guardian and adolescent psychological functioning.

Hypothesis 3.1.

Non-deployed caregiver psychological functioning will mediate the relationship between parental combat deployment and BMI *z*-scores and disordered eating.

Hypothesis 3.2.

Adolescent psychological functioning will mediate the relationship between parental combat deployment and BMI *z*-scores and disordered eating.

CHAPTER 3: Methods

PARTICIPANTS

Participants were female dependents, age 12-17 years, from military families and their parents (military service members and/or spouses of military service members from all branches of service and rank), who received care from the Family Medicine Clinic (FMC) at Ft. Belvoir Community Hospital (FBCH) and other clinics within the Tricare network. Participant recruitment was accomplished by advertising for adolescent dependents through recruitment letters mailed to families with adolescent daughters who

receive care at FBCH and other clinics within the Tricare network; referrals from providers in the FBCH FMC or study team members within the parent study (POMC-A, Preventing Obesity in Military Communities – Adolescents); advertisements in base newsletters, local periodicals and local email listservs (e.g., parent-teacher associations); and through the use of flyers placed in clinics adolescents were more likely to visit (e.g., immunizations). Adolescent participants were paid $10 for their participation. To qualify, participants had to be female military dependents, aged 12 – 17, English-speaking, and capable of completing study procedures. Exclusion criteria included male military dependents, female military dependents younger than 12 years and older than 17 years of age, non-English-speaking, and inability to complete study procedures.

PROCEDURES

Participants first contacted the researchers by leaving a phone message expressing interest in the study and leaving their contact information. Research staff returned the participants' phone calls and conducted telephone screenings to determine potential eligibility (e.g., a teenage girl within the target age group). The phone screen also contained privacy statement regarding information collected over the phone. The parent was also provided additional information about the study team's privacy policies, as described in the Military Health System Notice of Privacy Practices (Defense Health Agency, 2013). Then, if the parent agreed to continue with the screen, minimal personal contact information (e.g., name, date of birth) was collected in order to confirm the adolescent's age and schedule a clinic visit. For individuals who did not meet the

inclusion criteria, callers were informed of their ineligibility, and the call ended without the collection of further information.

Study personnel provided a detailed description of the study, answered questions, confirmed eligibility, and obtained written informed consent and assent (Appendices A and B) during the clinic visit. After signing the consent forms, a $10 gift card was given as compensation for participating in the study. Next, the adolescent participants' anthropometric measurements were collected by FBCH-FMC medical technicians. Body weight and height were used to calculate BMI. Finally, the adolescent dependent and accompanying caregiver were asked to complete separate study questionnaires on paper (Appendix C and D). Research staff verified the completion of the surveys and answered any questions posed by the participants regarding questions on the questionnaires.

MEASURES

Assessments

Anthropometry – A registered nurse or medical technician in the FMC-FBCH collected all anthropometric measurements. Weight was measured to the nearest 100g with a Tanita digital scale, and height was measured to the nearest 0.5cm with a wall-mounted stadiometer. BMI was calculated, and the values converted to BMI *z*-scores and percentiles based on the 2000 Centers for Disease Control and Preventive age- and gender-specific tables using algorithms provided at http://www.cdc.gov/growthcharts (CDC, 2000). Participants were divided into categories based on their BMI percentiles:

Normal weight (<85th percentile); overweight (≥85th and <95th percentile), and obese (≥95th percentile).

Self-Report Measures

Appendix C lists the questionnaire and self-report measures used in this study. The adolescent and parent questionnaires included demographics (e.g., age, race/ethnicity, branch of service), psychosocial functioning, and eating behaviors and attitudes.

Adolescents

Preventing Obesity in Military Communities - Family Questionnaire (POMC-FQ) – Adolescent Version. This study employed the use of the POMC-FQ, derived from the 2003 Growing Up Together Study (Field et al., 2005). The POMC-FQ is a paper-based questionnaire with 350 variables consisting of categorical, continuous, and dichotomous (yes/no) variables. The POMC-FQ – Adolescent Version contains three groupings: (1) demographic information; (2) child psychosocial functioning; and (3) eating behaviors and attitudes.

Coping Skills. Life Events and Coping Inventory (Dise-Lewis, 1988) was used to assess the impact of 125 possible life events and associated stress, as well as coping strategies in response to stressful events in the adolescent participants (Dise-Lewis, 1988). For the purposes of this study, only the 51 coping strategies questions were utilized. The coping item ratings were subjected to a principle component factor analysis with oblique rotation, resulting in a five-factor solution of distinct factors accounting for 49% of the total variance (Dise-Lewis, 1988). The five factors are as follows: aggression

(Cronbach's α = .82), stress-recognition (Cronbach's α = .63), distraction (Cronbach's α = .83), self-destruction (Cronbach's α = .84), and endurance (Cronbach's α = .74) (Dise-Lewis, 1988). The adolescent participants were instructed to think to themselves, *"If I were feeling stressed, how likely it is that I would do this to try to cope with the stress?"* and rate the likelihood of using each of the 51 responses on a 9-point Likert scale.

Impulsivity. Behavioral Inhibition System/Behavioral Action System (BIS/BAS) is a 24-item self-report questionnaire used to access dispositional sensitivity to the behavioral inhibition system and the behavioral activation or behavioral approach system (Carver & White, 1994). For the purposes of this study, the four items of the fun-seeking subscale which assesses the desire for new rewards and impulsive approach to potential rewards (Cronbach's α = .78) of the BAS was utilized (Carver & White, 1994). Each item is rated on a four-point Likert scale ranging from (1) very true for me to (4) very false for me. The four items were: (1) I'm always willing to try something new if I think it will be fun, (2) I will often do things for no other reason than that they might be fun, (3) I often act on the spur of the moment, and (4) I crave excitement and new sensations. Total score were obtained by summing across all four items.

Perceived Stress. The Perceived Stress Scale (PSS) (Cohen, 1983) was used to assess perceived stress. The PSS-4 is a 4-item self-report questionnaire with demonstrated reliability (Cronbach's α = .78). Each item is rated on a five-point Likert scale ranging from (1) never to (5) very often. Adolescents completed the 4-item form measuring the degree to which respondents appraised situations as stressful in the last month (Cronbach's α = .75). The four items were: In the last month, (1) how often have

you felt that you were unable to control the important things in your life? (2) how often have you felt confident about your ability to handle your personal problems? (3) how often have you felt that things were going your way? and (4) how often have you felt difficulties were piling up so high you could not overcome them? Total scores were obtained by reverse coding the positive items and then summing across all four items.

Attachment. The Kerns Security Scale (KSS) (Kerns, 2000) is a 15-item measure with demonstrated reliability (Cronbach's $\alpha = .93$). It is designed to assess adolescents' perceptions of attachment security in the parent-child dyad during middle childhood. The scale assesses the adolescents' perceptions of availability and responsivity of the parent, reliance on the parent in times of stress, and ease and interest in communicating with the parent (Kerns, 2000). Using Harter's (1982) "Some kids…other kids…" format to minimize response bias due to perceptions of social desirability, the adolescents were asked to indicate which statement was most like them, and then to indicate whether it was "sort of true" or "really true." Each item was scored from 1 to 4, with a higher score indicating greater perception of security. Adolescents completed two 15-item forms, one assessing their perceptions of security in relation to mother (Cronbach's $\alpha = .88$) and one in relation to father (Cronbach's $\alpha = .91$). Of the 81 participants, 79 completed the measure for both parents. Total scores were calculated as a mean of the 15 items with a minimum score of 0 and a maximum of 60.

Parents

Preventing Obesity in Military Communities - Family Questionnaire (POMC-FQ) – Parent Version. This study employed the use of the POMC-FQ, derived from the

2003 Growing Up Together Study (Field et al., 2005). The POMC-FQ – Parent Version is a paper-based questionnaire with 142 variables consisting of categorical, continuous, and dichotomous (yes/no) variables. The POMC-FQ contains five groupings: (1) demographic information; (2) military-specific information; (3) parent and child psychological functioning; (4) eating behaviors and attitudes; and (5) Pediatrics Symptoms Checklist.

Pediatrics Symptoms Checklist. The Pediatrics Symptoms Checklist – Parent-Completed version (PCS) (Jellinek, 1988) consists of 35 items rated as (0) never, (1) sometimes, or (2) often. The total score is calculated by summing the 35 items. A cutoff score of 28 or higher indicates psychological impairment.

Data Analysis

The study was a single factor, cross-sectional design. Primary independent variable assessed was parental combat deployment and primary dependent variables were BMI *z*-score and eating behaviors and attitudes in adolescent military dependents. Data was examined using descriptive statistics and distributions for each variable of interest. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. Skewedness and kurtosis were examined, and skewed data was transformed and outliers recoded as necessary.

Number of deployments was log-transformed to address violations of normality. Parental combat deployment was divided into three groups: (1) no deployment, (2) one deployment, and (3) more than one deployment. All psychiatric variables were dichotomous yes/no variables. Weight characteristics (BMI, BMI *z*-score, BMI

percentile, and weight status), psychosocial, and eating behaviors and attitudes variables were analyzed as continuous or categorical variables. Correlation analyses were conducted to explore the interrelationships among the variables and identify potential covariates. Age and race/ethnicity were not identified as potential covariates; however, BMI *z*-score was identified as a covariate due to its high interrelationship with other variables. Independent-samples T-Tests and Kruskal Wallis tests were used where appropriate with respect to variables' distributions to compare the mean scores of those who have experienced at least one parental combat deployment versus those who have not and participants who have experienced at least one parental combat versus participants who have experienced multiple parental combat deployments. Chi-square tests and Fisher's exact tests were used as measures of categorical association of deployment and psychiatric variables. One-way between groups analyses of covariance (ANCOVA) were used to explore the differences between the deployment groups while statistically controlling for BMI *z*-score (Pallant, 2010). Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement of the covariate. All tests were 2-tailed, and alpha was set to .05 for analyses, unless otherwise stated.

A principle component factor analysis (PCA) with orthogonal rotations were used to take a large set of eating behaviors and attitudes and reduce them to a smaller set of factors (Field, 2009; Pallant, 2010). The three main steps in conducting the factor analyses are as follows: (1) assessment of the suitability of the data for factor analysis, (2)

factor extraction, and (3) factor rotation and interpretation (Pallant, 2010). Opinions and guiding rules of thumb regarding sample size have varied in the literature. Tabachnick (2007) suggested having at least 300 cases for factor analysis; Hair et al. (1995) suggested sample sizes should be 100 or greater; and Sapnas and Zeller (2002) suggested 50 cases may be adequate. Given the ambiguity regarding the appropriate sample size for factor analysis, Kaiser-Meyer-Olkin's (KMO) Measure of Sampling Adequacy (1970, 1974) and Bartlett's Test of Sphericity (1950) were used to assess the suitability of the respondent data for factor analysis.

After ensuring all variables were scaled properly, a PCA was conducted on the 26 eating behaviors and attitudes variables with orthogonal rotation (Viramax). The KMO measured verified the sample adequacy for the analysis, KMO = .58 and all KMO values for individual items, as demonstrated in the anti-image correlation matrix, were > .5. Bartlett's test of sphericity χ^2 (325) = 1207.74, $\rho < .001$, indicated that correlation between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component in the data. Seven components had eigenvalues over Kaiser's criterion of 1 and in combination explained 67.85% of the variance. Using Catell's (1966) scree test, the scree plot showed an inflexion that would justify retaining components 1, 2 and 3. The three component solution explained a total of 45.8% of the variance, with Component 1 contributing 20.61%, Component 2 contributing 13.69%, and Component 2 contributing 11.54%. To aid in the interpretation of these three components, an orthogonal rotation was performed.

The rotated solution revealed the presence of simple structure (Thurstone, 1947), with the three components showing a number of strong loadings and all but four variables loading onto one factor. Given the convergence of the scree plot, Kaiser's criterion for the components and the rotation, three components identified as thin-ideal internalization, drive for muscularity, and binge eating/loss of control eating behaviors were retained in the final analysis. There were slightly moderate to weak correlations, ranging from -.48 to .27, between the three factors. The results of this analysis support the use of thin idealization, drive for muscularity, and binge eating/loss of control eating behaviors as separate factors. Thin-ideal internalization refers to the extent that someone incorporates sociocultural ideals of women's beauty into their own personal ideals and values (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Adolescents who have internalize the thin ideal have developed a cognitive schema that associates thinness with positive attributes (e.g., happiness and attractiveness) (Thompson & Stice, 2001; Tiggermann, 2002). Drive for muscularity refers to attitudes and behaviors that reflect the degree of a person's preoccupation with increasing their muscularity (McCreary & Saucier, 2000).

Another PCA with orthogonal rotations was conducted to reduce the number of psychological functioning variables into one factor. The KMO measured verified the sample adequacy for analysis, KMO = .50 and most of the KMO values for individual items, as demonstrated in the anti-image correlation matrix were > .5. Bartlett's test of sphericity χ^2 (1) = 50.31, ρ < .001, indicated that correlation between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each

component in the data. Only one component had an eigenvalue over Kaiser's criterion of 1 and in combination explained 84.40% of the variance. Using Catell's (1966) scree test, the scree plot showed an inflexion that would justify retaining component 1. Adolescent psychological functioning best encapsulates the resulting component.Reliability of the factors derived from the PCA was assessed. According to Nunnally (1967), reliability of a measure suggests the extent to which the measurements are repeatable and free from random error. Internal consistency reliability for the three adolescent eating behaviors and attitudes factors and one non-deployed caregiver eating behavior and attitude factor were calculated using Cronbach's alpha coefficients and all met the acceptable criterion for reliability of a scale (Nunnally, 1994) (Tables 7 and 8).

Finally, mediation analyses were used to help answer the question as to how parental combat deployment (X) transmitted its effect on BMI *z*-score (Y). Hayes (2013) describes a simple mediation model is any causal system in which at least one causal independent variable (*X*) is proposed as influencing a dependent variable (*Y*) through a single mediator variable (*M*). In such a model, there are two distinct pathways by which a specific *X* variable is proposed as influencing Y: (1) direct effect and (2) indirect effect. The direct effect pathway leads from X to Y without passing through *M*, while the indirect effect first passes from the independent variable (X) to a consequent variable (*M*) and them from antecedent variable (*M*) to dependent variable (Y) (Hayes, 2013). The indirect effect represents how *Y* is influenced by *X* though a causal sequence in which *X* influences *M*, which in turn influences *Y*. The proposed model is represented in (Figure 1). Historically, mediation analysis would only be undertaken when an association

between the independent and dependent variables was successfully demonstrated (Baron & Kenny, 1986; Hayes, 2013). Baron and Kenny (1986) proposed a four step approach traditional used to conduct mediation analyses: (1) confirm X is a significant predictor of Y; (2) confirm X is a significant predictor of M; (3) confirm M is a significant predictor of Y, while controlling for X; and (4) confirm the effect of X on Y controlling for M is zero (Baron & Kenny, 1986). The existence of an association between X and Y had been a reasonable precondition for trying to explain the underlying effect of X on Y (Hayes, 2013). However, statisticians have challenged the need for precondition, stating the "…lack of correlation does not disprove causation" and "…correlation is neither a necessary nor a sufficient condition of causality (Bollen, 1989; Cerin & MacKinnon, 2009; Zhao, Lynch, & Chen, 2010). The significance of the indirect effect of non-deployed caregiver and adolescent psychological functioning was tested using bootstrapping procedures (Field, 2015; Kahn, 2014). Unstandardized indirect effects were computed for each of 10,000 bootstrapped samples, and the 95% confidence intervals were computed by determining the indirect effects at the 2.5^{th} and 97.5^{th} percentiles (Kahn, 2014).

Power Analysis

The data set consists of data on 81 participants. For tests of association using bivariate correlations, a moderate correlation between parental combat deployment and the adolescent weight status and eating behaviors and attitudes variables (Braunstein, 2007). To detect a moderate correlation ($r = .30$), a sample size of 80 participants would provide 95% power to discover that the correlation would be significantly different from

there being no correlation at the 0.05 level (Braunstein, 2007). The percentile bootstrap test of mediation was used to determine the sample size necessary to achieve .8 power in the mediation analyses. Based on Fritz and MacKinnon's (2007) empirical estimates of sample sizes needed for .8 power, a sample of 78 was required. Analysis of power was conducted with G*Power software (Faul, Erdfelder, Lang, & Buchner, 2007) and MedPow: Power calculations for mediation analyses, as part of the R-software program (R Core Team, 2012).

CHAPTER 4: Results

PRELIMINARY DATA ANALYSIS

Participant Demographic Characteristics

Eighty-one female adolescents and 68 parents enrolled in the study. Adolescent and non-deployed caregiver participant characteristics are displayed in Tables 1 and 2, respectively. The mean BMI for adolescents in the study was (mean ± SD) 22.6 ± 4.9 (range = 14.3 – 42.4 kg/m^2), indicative of a generally healthy weight sample, their mean age was 14.2 ± 1.6y (range = 12.0 – 17.0y), and most were Caucasian (67%). A majority of the parents who participated in the study (respondent parents) were mothers (88.2%), and 78% of the parents who had deployed were male (n = 55). The mean BMI of the parents was in the overweight range (BMI mean ± SD = 26.91 ± 5.09, range = 19.40 – 42.10 kg/m^2) and most were married (85.9%) and Caucasian (73.2%). A majority of the families identified their branch of service as Army (43.6%) and held a rank between O-4 and O-6 (59.5%). More than half of the adolescent participants had experienced at least one parental combat deployment (58%). Participants who had experienced at least one

parental combat deployment versus participants who had not experienced a parental combat deployment did not differ significantly on indices of race, weight characteristics (e.g., BMI, BMI percentile, and BMI *z*-score), psychosocial characteristics, and most eating behaviors and attitudes.

Participant Eating Behaviors and Attitudes and Psychosocial Characteristics

Participant psychosocial characteristics and self-reported disordered eating behaviors and attitudes are shown in Tables 1 and 2. Eleven (13.6%) adolescent participants reported they had seen a counselor, therapist, doctor, or other healthcare provider for help with an eating disorder. None of the respondent parents reported a diagnosis or treatment for anorexia nervosa, bulimia nervosa, or binge eating disorder. Twenty-two (27.5%) adolescent participants and 17 (23.9%) of respondent parents reported a lifetime history of loss of control eating, feeling as if they could not control how much they were eating, or feeling like they could not stop eating. Twenty-three (28.4%) adolescent participants reported eating frequently (e.g., often or almost always) because they were feeling bored, seven (8.6%) because they were feeling sad or angry, four (4.9%) because they were feeling anxious, and four (4.9%) because they were feeling happy in the past year. Seven (8.6%) of the respondent parents reported eating frequently (e.g., often or almost always) because they were feeling bored, seven (10.3%) because they were feeling sad or angry, eight (11.8%) because they were feeling anxious, and two (2.9%) because they were feeling happy the past year. Eighteen (26.5%) and 11 (15.9%) of respondent parents reported eating in the absence of hunger frequently (e.g.,

often or almost always) when there was food that looked or smelled good or because other people were eating over the past year, respectively.

The two most common psychiatric diagnoses reported by the adolescents and respondent parents were unspecified anxiety disorder (35.8%) and unspecified depressive disorder (32.4%), respectively. Adolescent participants reported greater perceived attachment security to their mothers (1.65 ± .27) than their fathers (1.61 ± .28). On a typical school/work night, adolescents reported sleeping an average of 7.19 (SD 1.28) hours. Forty-one (50.4%) of the adolescents reported the demands in their lives (e.g., academic demands, extracurricular activities) exceeded their ability to cope. In terms of impulsive behaviors, 32 (39.5%) adolescent participants reported acting on the spur of the moment to potential rewards. Forty-five (55.6%) adolescent participants reported using stress-recognition strategies (e.g., talking to a teacher or psychologist), 46 (56.8%) reported using endurance strategies (e.g., just holding it in), 42 (52.5%) reported using distraction (e.g., taking a walk or a bike ride), 27 (33.8%) reported using self-destructive strategies (e.g., smoking cigarettes), and 30 (38%) reported using aggressive strategies (e.g., taking it out on someone else) to cope with stress.

RESULTS FOR SPECIFIC AIM 1: PARENTAL COMBAT DEPLOYMENT AND BMI Z-SCORE

Hypothesis 1.1 predicted that adolescent military dependents who have experienced at least one parental combat deployment would demonstrate higher BMI *z*-score, as compared to participants who had not experienced a parental combat deployment. The BMI *z*-scores of adolescents who had experienced one parental combat deployment was higher (0.63 ± 0.71) compared to adolescents who had not experienced a

parental combat deployment (0.36 ± 1.08); however, there was no statistically significant difference between the groups [t (79) = -1.20, p = .23].

Hypothesis 1.2 predicted that adolescent military dependents with more parental combat deployments would demonstrate higher BMI z-scores. Number of parental combat deployments did not correlate significantly with adolescent BMI z-score (r = .05, p = .74).

Additional exploratory analyses. An examination of only participants who had experienced a parental combat deployment (n = 47) revealed the number of parental combat did not significantly correlate with adolescent BMI z-score (r = -.16, p = .28). The relationship between parental separations and BMI z-score was also non-significant (r = .16, p = .19). The BMI z-scores of adolescents who had experienced more than two parental combat deployment was higher (0.71 ± 0.94) compared to those who had not experienced a parental deployment (0.36 ± 1.08) and those who had only experienced parental non-combat deployments (0.63 ± 0.71). However, a one-way analysis of variance (ANOVA) revealed no significant difference in BMI z-score by parental separation status, F (2, 78) = 1.09, p = .34.

SPECIFIC AIM 2: PARENTAL COMBAT DEPLOYMENT AND DISORDERED EATING BEHAVIORS AND ATTITUDES

Hypothesis 2.1 predicted that adolescent military dependents who had experienced at least one parental combat deployment would demonstrate significantly more disordered eating behaviors and attitudes as compared to participants who had not experienced a parental combat deployment. There was no statistically significant

difference between the deployment groups on most of the eating behaviors and attitudes scales; specifically, the scales derived from the factor analysis (thin idealization, drive for muscularity, and binge/loss of control eating), eating in the absence of hunger, and diagnosis or treatment for eating disorder. There was a statistically significant difference in reported emotional eating between participants who had experienced at least one parental combat deployment (3.81 ± 2.89) and participants who had not experienced a parental combat deployment (5.24 ± 3.14; t (79) = 2.11, p = .04), such that participants who had not experienced at least one parental combat deployment reported higher emotional eating scores than their counterparts. The magnitude of the differences in the means (mean difference = 1.43, 95% *CI*: .08 – 2.78) was moderate (η^2= .05). After adjusting for BMI *z*-score, the difference between the deployment groups on emotional eating, F (1, 78) = 4.20, p = .04, *partial* η^2 = .05, remained significant.

However, post hoc comparisons using a Bonferroni correction indicated there was no statistically significant difference in the mean scores of adolescents who had not experienced a parental combat deployment (M = 5.15, SD = 3.14), adolescents who had experienced one parental combat deployment (M = 3.45, SD = 2.48), and adolescents who had experienced two or more parental combat deployments (M = 4.20, SD = 3.24) [F(78) = 2.18, p = ,12).

Hypothesis 2.2 predicted that adolescent female military dependents with more deployments would demonstrate higher disordered eating behaviors and attitudes. The association between the number of parental combat deployments and adolescent emotional eating was non-significant (r = .06, p = .67). There was no significant

association between the number of parental combat deployments and eating in the absence of hunger (r =.03, p = .82). The number of parental combat deployments did not correlate significantly with adolescent binge/loss of control eating behaviors (r = .10, p = .52). The association between number of parental combat deployments and drive for muscularity approached significance (r = .26, p = .09). There was a positive relationship between the number of parental combat deployments and thin-ideal internalization was statistically significant, r = .31, p = .04, among those who had experienced a parental combat deployment, indicating a positive association.

Additional analyses of adolescent eating behaviors and attitudes:

Emotional eating. The emotional eating scores of adolescent who had experienced more than two parental combat deployments was higher (4.20 ± 3.24) compared to those who had experienced one parental combat deployment (3.45 ± 2.48), but lower compared to those who had not experienced a parental combat deployment (5.15 ± 3.14). However, a one-way ANOVA revealed no significant difference in emotional eating by parental combat deployment status, F (2, 78) = 2.18, p = .12. There was no significant association between parental separations and emotional eating (r = -.12, p = .30).

Eating in the absence of hunger. EAH scores of adolescents who had experienced more than two parental combat deployments was higher (3.32 ± 1.60) compared to those who had experienced one parental combat deployment (3.13 ± 1.86) and those who had not experienced a parental combat deployment (2.82 ± 1.71). However, a one-way ANOVA revealed no significant difference in EAH by parental combat deployment

status, F (2, 78) = .63, p = .54. There was no significant association between parental separations and eating in the absence of hunger (r = .20, p = .08).

Binge/LOC eating. Binge/LOC eating scores of adolescent who had experienced more than two parental combat deployments was higher (.20 ± .35) compared to those who had experienced one parental combat deployment (.15 ± .28), but lower than those who had not experienced a parental combat deployment (.23 ± .35). However, a one-way ANOVA revealed no significant difference in binge/LOC eating by parental combat deployment status, F (2, 78) = .39, p = .68). The association between parental separations and binge/loss of control eating behaviors (r = -.18, p = .17) was not significant.

Drive for muscularity. Drive for muscularіy scores of adolescents who had experienced more than two parental combat deployments was higher (.33 ± .32) compared to those who had experienced one parental combat deployment (.20 ± .26) and those who had not experienced a parental combat deployment (.21 ± .29). However, a one-way ANOVA revealed no dignificant difference in drive for muscularity by parental combat deployment status, F (2, 78) = 1.40, p = .25). The association between parental separations and drive for muscularity (r = -.01, p = .95) were not significant.

Thin-Ideal Internalization. Internalization of the thin-ideal scores of adolescents who had experienced more than two parental combat deployments was higher (mean rank = 43.78) compared to those who had experienced one parental combat deployment (mean rank = 34.08) and those who had not experienced a parental combat deployment (mean rank = 38.66). However, a Kruskal-Wallis test did not reveal a significant difference between thin-ideal internalization and parental combat deployment status, $\chi^2 = 2.55$, p =

.28. There was a positive association between the number of parental separations and thin-ideal internalization (r = .27, p = .03), among those who have experienced a parental separation. This suggests that greater parental separations were associated with a greater internalization of the thin-ideal. When accounting for BMI *z*-score,the relationship between number of parental separations and thin-ideal internalization approached significance, r = .23, p = .06.

SPECIFIC AIM 3: PARENTAL COMBAT DEPLOYMENT, BMI *Z*-SCORE, AND WEIGHT STATUS AND EATING BEHAVIORS AND ATTITUDES MEDIATED BY NON-DEPLOYED PARENT/GUARDIAN AND ADOLESCENT PSYCHOLOGICAL FUNCTIONING

Correlation Analyses Prior to Mediation Analyses

Following Baron and Kenny's (1986) conceptual framework in performing mediation analyses, correlation analyses were conducted to evaluate the association between the independent variable (parental combat deployment) and the potential mediators (non-deployed caregiver psychological functioning and adolescent psychological functioning). A positive association between parental combat deployment and the potential mediators would be required in order to continue with the mediation analyses. There was not a significant correlation between parental combat deployment and non-deployed caregiver psychological functioning (r = .10, p = .55). The association between adolescent psychological functioning and parental combat deployment was not significant (r = .08, p = .51). However, adolescent psychological functioning did significantly correlate with parental combat deployment (r = .33, p = .02), among participants who had experienced at least one parental combat deployment. As a result, mediation analyses using bootstrapping procedures (Hayes, 2013) were conducted

examining the mediational effects of adolescent psychological functioning on the association between parental combat deployment and adolescent BMI *z*-score, and parental combat deployment and adolescent eating behaviors and attitudes, among participants who had experienced at least one parental combat deployment. The bootstrapping method was used to compute a confidence interval around each estimate of the indirect effect, which is preferred because of its increased power and it does not make the assumptions about normality in the sampling distribution of the indirect effect (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

Hypothesis 3.1. Non-deployed caregiver psychological functioning would mediate the relationship between parental combat deployment and adolescent BMI *z*-score, and parental combat deployment and adolescent eating behaviors and attitudes. Non-deployed caregiver psychological functioning included self-reported diagnoses or treatment for depression and/or anxiety.

Hypothesis 3.1.1. Non-deployed caregiver psychological functioning would mediate the relationship between parental combat deployment and adolescent BMI *z*-score.

As non-deployed caregiver psychological functioning did not correlate significantly with parental combat deployment, the variables failed to meet criteria for mediation analyses established by Baron and Kenny (1986); therefore, mediation analyses were not conducted.

Hypothesis 3.1.2. Non-deployed caregiver psychological functioning would mediate the relationship between parental combat deployment and adolescent eating behaviors and attitudes.

As non-deployed caregiver psychological functioning did not correlate significantly with parental combat deployment, the variables failed to meet criteria for mediation analyses established by Baron and Kenny (1986); therefore, mediation analyses were not conducted.

Hypothesis 3.2. Adolescent psychological functioning would mediate the relationship between parental combat deployment and BMI *z*-score, and parental combat deployment and eating behaviors and attitudes. Adolescent psychological functioning encompassed self-reported diagnoses or treatment for depression and/or anxiety, thin-ideal internalization, drive for muscularity, and binge/loss of control eating.

Hypothesis 3.2.1. Adolescent psychological functioning would mediate the relationship between parental combat deployment and adolescent BMI *z*-score.

Adolescent psychological functioning did not correlate significantly with parental combat deployment. The absence of a correlation between the variables failed to meet criteria for mediation analyses established by Baron and Kenny (1986); therefore, mediation analyses were not conducted. However, there was a significant relationship between the number of parental combat deployments and adolescent psychological functioning among participants who had experienced at least one parental combat deployment. Thus, an analyses testing whether adolescent psychological functioning mediates the association between parental combat deployment and adolescent BMI *z*-

score among participants who have experienced at least one parental combat deployment was conducted.

Parental combat deployment, adolescent BMI z-score, and adolescent psychopathology mediation. The regression of the number of parental combat deployments on the mediator, adolescent psychopathology, was significant, $b = .04$, $t(45) = 2.08$, $p = .043$. The regression of adolescent psychopathology on adolescent BMI *z*-score, controlling for number parental combat deployments, was significant, $b = 1.94$, $t(44) = 2.13$, $p = .039$. Controlling for the mediator, adolescent psychopathology, the regression of the number of parental combat deployments on adolescent BMI *z*-score was significant, $b = -.21$, $t(44) = -2.08$, $p = .043$, suggesting adolescent BMI *z*-score decreased as the number of parental combat deployments increased There was a significant indirect effect of parental combat deployment on adolescent BMI *z*-score [b = .08, BCa 95% *CI* (.002, .242)] through adolescent psychological functioning. This represents a medium effect, $K^2 = .12$, 95% BCa CI (.01, .31) (Table 6, Figure 4).

Hypothesis 3.2.2. Adolescent psychological functioning would mediate the relationship between parental combat deployment and adolescent eating behaviors and attitudes.

Adolescent psychological functioning did not correlate significantly with parental combat deployment, therefore the variables failed to meet criteria for mediation analyses established by Baron and Kenny (1986) and mediation analyses were not conducted. However, there was a significant relationship between the number of parental combat deployments and adolescent psychological functioning among participants who had

experienced at least one parental combat deployment. The following mediation analyses depict the mediation of adolescent psychological functioning on the association between parental combat deployment and adolescent eating behaviors and attitudes among participants who have experienced at least one parental combat deployment.

Parental combat deployment, adolescent emotional eating, and adolescent psychopathology mediation. The regression of the number of parental combat deployments on adolescent psychopathology was significant, $b = .04$, $t(45) = 2.08$, $p = .04$. The regression of adolescent psychopathology on adolescent emotional eating scores, controlling for number of parental combat deployments, was non-significant, $b = .73$, $t(44) = .14$, $p = .89$. Controlling for adolescent psychopathology, the regression of the number of parental combat deployments on adolescent emotional eating scores was not significant, $b = .13$, $t(44) = .33$, $p = .74$. There was no significant indirect effect of parental combat deployment on adolescent emotional eating scores [$b = .03$, BCa 95% *CI* (-.25, .64)], through adolescent psychological functioning.

Parental combat deployment, adolescent eating in the absence of hunger, and adolescent psychopathology mediation. The regression of the number of parental combat deployments on adolescent psychopathology was significant, $b = .04$, $t(45) = 2.08$, $p = .04$. The regression of adolescent psychopathology on adolescent eating in the absence of hunger scores, controlling for number of parental combat deployments, was not significant, $b = 4.61$, $t(44) = 1.60$, $p = .12$. Controlling for adoelscent psychopathology, the regression of the number of parental combat deployments on adolescent eating in the absence of hunger scores was non-significant, $b = -.15$, $t(44) = -.60$, $p = .55$.

Parental combat deployment, adolescent binge/loss of control eating, and adolescent psychopathology mediation. The regression of the number of parental combat deployments on adolescent psychopathology was significant, $b = .06$, $t(40) = 2.51$, $p = .02$. The regression of adolescent psychopathology on adolescent binge/loss of control eating, controlling for number of parental combat deployments, was not significant, $b = .54$, $t(39) = 1.54$, $p = .13$. Controlling for adolescent psychopathology, the regression of the number of parental combat deployments on adolescent binge/loss of control eating scores was not significant, $b = -.002$, $t(39) = -.04$, $p = .97$.

Parental combat deployment, adolescent drive for muscularity, and adolescent psychopathology mediation. The regression of the number of parental combat deployments on adolescent psychopathology was significant, $b = .06$, $t(42) = 2.49$, $p = .01$. The regression of adolescent psychopathology on adolescent drive for muscularity scores, controlling for number of parental combat deployments, was non-significant, $b = -.12$, $t(41) = -.24$, $p = .82$. Controlling for adolescent psychopathology, the regression of the number of parental combat deployments on adolescent drive for muscularity scores was not significant, $b = .08$, $t(41) = 1.67$, $p = .10$. There was no significant indirect effect of parental combat deployment on adolescent drive for muscularity [$b = -.02$, BCa 95% *CI* (-.19, .16)], through adolescent psychopathology.

Parental combat deployment, adolescent thin-ideal internalization, and adolescent psychopathology mediation. The regression of the number of parental combat deployments on adolescent psychopathology was significant, $b = .06$, $t(41) = 2.51$, $p = .01$. The regression of adolescent psychopathology on adolescent thin-ideal

internalization scores, controlling for number of parental combat deployments, approached significance, $b = .73$, $t(40) = 1.72$, $p = .09$. Controlling for adolescent psychopathology, the regression of the number of parental combat deployments on adolescent thin-ideal internalization scores was not significant, $b = .04$, $t(40) = 0.61$, $p = .55$. There was no significant indirect effect of parental combat deployment on adolescent internalization of the thin-ideal [$b = .04$, BCa 95% *CI* (-.01, .35)], through adolescent psychological functioning.

Parental separation exploratory analyses. Exploratory analyses examining the impact of parental separations, operationalized as an amalgamation of assignments which would place the parent outside of the household for a period of time (e.g., combat deployments, humanitarian missions, training, temporary duty assignments, etc.), on the BMI *z*-scores and disordered eating behaviors and attitudes of female adolescent military dependents were also conducted. None of the findings using parental separations as the independent variable were statistically significant.

CHAPTER 5: Discussion

The present study examined how parental combat deployments impacted the BMI *z*-score and eating behaviors and attitudes in adolescent female military dependents. As previously discussed, the focus in the literature has been to examine the impact of parental deployment on adolescent behavior problems (Barker & Berry, 2009), depression, anxiety and stress (Barnes et al., 2007; Flake et al., 2009; Jensen et al., 1996; Manos, 2010; Pincus et al., 2001), alcohol and illicit drug use (Acion et al., 2013), academic decline (Gibbs et al., 2007), and non-deployed caregiver mental health (Angrist

& Johnson, 2000; Chandra et al., 2009a, 2009b; Schumm et al., 2000). However, the relationship between parental combat deployment and adolescent BMI *z*-score and eating behaviors and attitudes is not well understood. Though previous research has examined disordered eating in entry-level military personnel and academy cadets (Beekley et al., 2009; Warner et al., 2007), BMI and disordered eating behaviors in adolescent and young adult female military recruits (Garber, Boyer, Pollack, Chang, & Shafer, 2008), disordered eating behaviors in adolescent female military dependents (Waasdorp, 2007), disordered eating and weight changes in military personnel following deployment (Jacobson et al., 2009), there is a lack of information on how parental deployments affect the eating behaviors and attitudes and weight status of adolescents. The present study was developed to begin to address this gap in the literature. Futhermore, the study examined the mediational effect of non-deployed caregiver and adolescent psychological functioning on deployments and weight and eating attitudes/behaviors. Overall, the results of the study confirmed the importance of examining this construct. There was a positive association between the number of parental combat deployments and adolescent internalization of the thin-ideal, which has been linked to body dissatisfaction, dieting, and negative affect (Killen et al., 1996; Stice, 2001), Finally, adolescent psychopathology mediated the association between parental combat deployment and adolescent BMI *z*-score.

DISCUSSION OF AIM 1 RESULTS

Parental Combat Deployment and Adolescent BMI z-score

A key focus on this study was to understand the relationship between parental combat deployment and adolescent weight status. Results suggested that adolescent female military dependents who had experienced at least one parental combat deployment did not demonstrate higher BMI-z scores, as compared to participants who had not experienced a parental combat deployment; however, the differences were not statistically significant. Additionally, the number of parental combat deployments did not correlate significantly with adolescent BMI *z*-scores. Although the association between stressors, such as parental combat deployments, and increases in food consumption and unhealthy food choices has been documented (Zellner, Loaiza, & Gonzalez, 2006), we found no such relationship with BMI *z*-score. The military demographics of the parents and weight composition of the sample may be two reasons why the findings for this hypothesis were non-significant.

The mission of enlisted personnel includes participating in, or supporting, combat or other military operations, such as humanitarian or disaster relief, while officers are tasked with planning, organizing, and leading troops and activities in military operations (Bureau of Labor and Statistics, 2014). Enlisted personnel are more likely to experience combat deployments more often and at varying lengths than officers. The majority of the adolescents represented in the sample were from households in which the military parents were officers, who account for approximately 17% of the total Active Duty force (Bureau of Labor Statistics, 2013). It is possible a statistically significant relationship between parental combat deployment and BMI *z*-scores could have been gleaned if the sample of

respondent parents was more representative of the military population with more enlisted personnel.

The weight composition of the sample and degree of reported stress may explain the absence of an association between combat deployments and body weight. Approximately half of the participants reported feeling capable of handling daily stressors and the weight of the sample was generally healthy. Previous studies have reported that healthy weight individuals may be less vulnerable to stress and stress-related food consumption and subsequent weight gain (Jastreboff et al., 2013). Moreover, compared to individuals with higher BMIs, those with lower BMIs have demonstrated weaker associations between psychological stress and future weight gain (Block, He, Zaslavsky, Ding, & Ayanian, 2009; Brunner, Chandola, & Marmot, 2007). Indeed, data show that after exposure to psychological stress, satiated lean individuals had lower craving for desserts and snacks and lower caloric intake compared to overweight individuals under identical conditions (Lemmens, Rutters, Born, & Westerterp-Plantenga, 2011). Therefore, our findings may be consistent with previous research examining the association between stress and weight status. Alternatively, given the results of our mediation model (discussed in more detail below) it is more likely that combat deployment does not have a direct link with BMI *z*-score.

Though it is beyond the scope of this study, the role of restrictive eating behaviors and psychological distress may also explain the lack of an association between parental combat deployment and BMI *z*-score. While we hypothesized a positive relationship between the number of parental combat deployments and adolescent BMI *z*-score, it is

possible restrictive eating behaviors characteristic of anorexia nervosa were utilized to deal with the stress of a parental combat deployment. These eating behaviors are unhealthy attempts to cope with negative emotions and stress, and this sample may have been restricting their eating in order to have some measure of control (Mayo Clinic, 2014) during a time period in which they are faced with uncertainty and fear regarding the safety of their deployed parent. More research in this area would elucidate the possible relationship between parental combat deployment and BMI *z*-score.

Discussion of Aim 2 Results

Parental Combat Deployment and Adolescent Eating Behaviors and Attitudes

Group differences (no parental combat deployment vs. at least one parental combat deployment and adolescent eating behaviors and attitudes). In contrast to our hypotheses, adolescents who had experienced at least one parental combat deployment and those who had not experienced a parental combat deployment did not differ on many of the eating behaviors and attitudes assessed. Though it appeared there was a statistically significant difference between the groups in regard to emotional eating, post hoc analysis revealed no significant difference between those who had experienced a parental combat deployment and those who had experienced a parental combat deployment.

Number of parental combat deployments and adolescent eating behaviors and attitudes. Contrary to our hypotheses, the number of parental combat deployments was not significant associated with adolescent emotional eating, eating in the absence of hunger, binge/loss of control eating, and drive for muscularity. As previously discussed, parental military demographics may have contributed to these non-significant findings.

However, there was a positive relationship between the number of parental combat deployments and adolescent internalization of the thin ideal such that more deployments were linked to greater internalization of the thin-ideal. A saturation of stressors, normative and deployment-related, may explain the positive relationship between parental combat deployments and thin-ideal internalization. Research has shown that adolescence is characterized by a significant increase in normative stressors, described as irritating or upsetting daily occurrences in an adolescent's life (Rudolph & Hammen, 1999; Seiffge-Krenke, 2000). Parental combat deployments rank as the most stressful events for military children and adolescents and a significant portion of this population has experienced the stress of parental deployments since September 11, 2001 (Lincoln et al., 2008) (Gibbs, 2007; Barnes, 2007; Flake, 2009; Gorman, 2010). The combination of deployment-related stressors (e.g., additional household responsibilities, concern for the deployed parent's safety, etc.) and normative stressors may constitute a period of heightened stress for adolescents.

Research has demonstrated that heightened stress could lead to body image problems by contributing to overall perceptions of self-worth (Salafia & Lemer, 2012). As previously discussed, the internalization of the thin-ideal refers to the extent that someone incorporates sociocultural ideals of women's beauty into their own personal ideals and values (Thompson et al., 1999). Adolescents who have internalize the thin-ideal have developed a cognitive schema that associates thinness with positive attributes (Thompson & Stice, 2001; Tiggermann, 2002). Thin-ideal internalization is hypothesized to directly foster body dissatisfaction because the attainment of this ideal is virtually

impossible for most females (Thompson et al., 1999). Furthermore, internalization of the thin-ideal and body dissatisfaction have been associated with greater subjective stress (Johnson & Wardel, 2005). Results of this study indicated there was a positive association between adolescent internalization of the thin-ideal and perceived stress (r = .48, $p < .001$). Therefore, the amalgamation of normative and deployment-related stressors may explain the increase of thin-ideal internalization as the number of parental combat deployments increase.

Coupled with data showing that the rates of disordered eating in military samples may be greater than civilian populations (Garber et al., 2008), the girls in our study may be at especially high risk for internalizing the thin-ideal when faced with the stress of having a parent deploy. However, the race/ethnicity of the sample must be taken into consideration in terms of the internalization of the thin-ideal. Studies examining ethnic/racial differences in weight-related concerns and behaviors among adolescent girls have found that overweight/obese African-American adolescent females were accepting or even preferred a larger body size (Flynn & Fitzgibbon, 1998; Mitola, Papas, Le, Fusillo, & Black, 2007). African-American adolescent girls are less likely than Caucasian adolescent girls to express body dissatisfaction and unengaged in unhealthy weight control behaviors (Franko & Striegal-Moore, 2002; Neumark-Sztainer et al., 1999). Therefore, the internalization of the thin-ideal finding may not be generalizable to the ethnic minorities, and other expressions of body dissatisfaction should be explored.

DISCUSSION OF AIM 3 RESULTS

Parental Combat Deployment, Adolescent BMI z-score and Non-Deployed Caregiver Psychological Functioning

The absence of an association between parental combat deployment and non-deployed caregiver was surprising given the robust evidence of the difficulties non-deployed caregivers and child dependents have experienced during parental deployments (e.g., Eaton et al., 2008; Mansfield et al., 2010; Chandra, Martin, Hawkins, & Richardson, 2009; Angrist & Johnson, 2000; Orthner & Rose, 2005; Schumm, Bell, & Gade, 2000). Non-deployed caregivers have had to prepare themselves for prolonged separation, manage feelings of possible loneliness, resentment, and/or distrust all while having limited communications with their partner (Paley, Lester, & Mogil, 2013). Deployments have also challenged non-deployed caregivers by requiring them to repeatedly readjust to both the logistical tasks of daily life, such as paying bills and preparing meals (Zvonkovic, Solomon, Humble, & Manoogian, 2005). Therefore, given the wealth of research chronicling the negative impact of deployments on non-deployed caregiver mental health and theoretical underpinnings explaining the relationship, we expected our sample to support to the previous research findings. Two possibilities may explain the incongruent finding in this study: non-deployed caregiver self-regulation and the degree of deployment-related support received.

Previous research studies have proposed three core ingredients of self-regulation: (1) establishment of goals or standards; (2) monitoring one's distance from current status to the desired end point; and (3) operations that move the self from current to desired state (Baumeister, Heatherten, & Tice, 1994; Vohs, Baumeister, & Tice, 2006). The non-deployed caregivers in this study may have been more effective in accomplishing each

requirement towards self-regulatory maintenance during deployment and avoiding self-regulatory depletion, which has been found to mediate the link between external stress and negative appraisals of one's current state of being (Buck & Neff, 2012). This population may have been more effective at self-regulation during deployments because more than half (54.5%) of non-deployed caregivers reported experiencing at least one deployment, and of those, a little more than half (51%) reported experiencing more than two deployments. Self-regulatory resources are often compared to a muscle, which fatigues after exertion (Muraven, Tice, & Baumeister, 1998), but strengthens when given adequate time to recovery before extraneous use. The non-deployed caregivers were afforded an average of 36 months between deployments, which may have been enough time to replenish their resources and rest their "deployment" muscles prior to the subsequent departure of their spouse or partner. Finally, the degree of support provided to non-deployed caregivers may explain our contradictory findings. More than half (53.4%) of non-deployed caregivers who had experienced at least one parental combat deployment reported receiving the "standard level of support" or "maximum level of support" (e.g., command, administrative, and psychological) during the deployment(s). There are a variety of on- and off-post support programs available through all branches of the military, such as the FOCUS Project (Families Overcoming Under Stress) and Military One Source's Military Family Life Counselor Initiative. Additionally, spousal groups are common resources of support for non-deployed caregivers. It is possible the participants in this study utilized the aforementioned resources; however, specifics on the types of services used could not be ascertained in this study.

Parental Combat Deployment, Adolescent BMI z-score, Adolescent Eating Behaviors and Attitudes, and Adolescent Psychological Functioning

Parental Combat Deployment, Adolescent BMI z-score, and Adolescent Psychological Functioning Mediation. It was hypothesized that adolescent psychological functioning would mediate the relationship between parental combat deployment and adolescent BMI *z*-score, which was supported among participants who had experienced at least one parental combat deployment. The positive association between parental combat deployment and adolescent psychological functioning corroborates previous research findings (e.g., (Jensen et al., 1996; Manos, 2010; Pincus et al., 2001). Gibbs and colleagues (2007) reported that this population of military dependents experienced difficulties associated with the *deployment* stage: problems with sleeping, increased levels of stress and anxiety, and other areas of psychosocial functioning. Also, adolescent psychological functioning was positively related to adolescent BMI *z*-score, such that participants who reported higher rates of psychological distress were heavier. This finding also supports previous research, which suggests psychiatric status is related to elevated BMI *z*-score in childhood and adolescence (Puhl & Latner, 2007; Rofey et al., 2009). However, the finding that adolescent psychological functioning could account for a significant amount of variance between parental combat deployment and adolescent BMI *z*-score among participants who had experienced at least one parental combat deployment is novel. Prior correlational analyses did not reveal a statistically significant total effect of parental combat deployment on adolescent BMI *z*-score; however, the results of the mediation analysis revealed a statistically significant direct effect of

parental combat deployment on adolescent BMI *z*-score taking adolescent psychological functioning in consideration. Surprisingly, as parental combat deployment was a negative predictor of adolescent BMI *z*-score, the model predicted that greater parental combat deployments predicted lower BMI *z*-score. Given the relatively healthy weight of the participants, one could theorize that despite psychological distress being a significant predictor of BMI *z*-score, the participants responded to the increase in parental deployments by maintaining their eating habits or eating less. This theory is supported by the absence of an association between parental combat deployment and eating as a coping mechanism among participants who have experienced at least one parental combat deployment, an overwhelming majority of whom is healthy weight. Furthermore, as previously discussed, healthy weight individuals may be less vulnerable to stress and stress-related food consumption and subsequent weight gain (Jastreboff et al., 2013).

Parental Combat Deployment, Adolescent Eating Behaviors and Attitudes, and Adolescent Psychological Functioning. It was hypothesized that adolescent psychological functioning would mediate the relationship between parental combat deployment and adolescent eating behaviors and attitudes. This hypothesis was not supported. Surprisingly, among participants who had experienced at least one parental combat deployment, adolescent psychological functioning was not significantly associated with the adolescent eating behaviors and attitudes examined in the mediation analyses. High levels of depressive symptoms are at least as common as eating disorders among adolescent females (Skinner, Haines, Austin, & Field, 2012). Cross-sectional studies have reported an association between binge eating and low self-esteeem (Ackard, Fulkerson, &

Neumark-Sztainer, 2010), obesity (Stice, Presnell, Shaw, & Rohde, 2005), and depressive symptoms (Neumark-Sztainer & Hannan, 2000). One possible explanation for the null findings is that a majority of the participants who had experienced at least one parental combat deployment did not report significant psychological dysfunction. This may be due to the overall resilience of military children (Johnson & Ling, 2012; MacDermid et al., 2006; Paden & Pezor, 1993), the multitude of support services offered by the military (Forgatch & DeGarmo, 1999; Forgatch et al., 2009) and healthy relationships with their non-deployed caregiver parent (Gewirtz, Forgatch, & Wieling, 2008; Sheppard, Malatras, & Israel, 2010). Another explanation is that a majority of the participants did not have a parent currently deployed to a combat zone, potentially reducing the levels of psychological distress across the whole sample.

IMPLICATIONS

The study results suggest that parental combat deployments may be influencing the weight status and eating behaviors and attitudes of adolescent female dependents. Given the cross-sectional design and predominately healthy weight, Caucasian sample of female adolescents of primarily high ranking officers, it is important to replicate these findings using prospective studies at several military installations with samples that are more representative of current military demographics in order to enhance the confidence of these findings.

Consistent with Eilerman and colleagues (2014), we found the combined prevalence of overweight and obesity to be 30.8% in this study population; however, 16% of the participants in the present study were obese compared to 12.4% in the

aforementioned study. Despite the combined prevalence of overweight and obesity in this sample, experiencing at least one or more parental combat deployment was not associated with higher weight status.

While examinations of the differences between the no-combat deployment and one-combat deploy groups did not yield significant findings on BMI *z*-score and eating behaviors and attitudes, significant differences were noted for youth who had experienced more versus fewer deployments. Participants who experienced more than one parental combat deployment reported higher anxiety and depressive symptoms, impulsivity, and internalization of the thin-ideal than their one parental combat deployment counterparts. This finding may indicate a potential additive effect of the stress of multiple deployments, which negatively affects psychological functioning and eating behaviors and attitudes. This finding aligns with several studies, which indicated that multiple combat deployments had a stronger effect on child behavior, particularly depression and externalizing behaviors (Chartrand et al., 2008; Lester et al., 2010; Baker & Berry, 2009). Adolescents are likely to be vulnerable to increased stress during deployment, particularly when access to parental and emotional resources is repeatedly taxed through multiple deployments (Lara-Cinisomo et al., 2012).

Approximately 28% of adolescent participants and 24% of respondent parents reported a lifetime history of loss of control eating. This finding is consistent with Waasdorp and colleagues' (2007) findings, which revealed a strong correlation in the presence of disordered eating behaviors and attitudes between military dependent adolescent females and their parents. Screening adolescent female dependents and their

parents for eating disorders is paramount, particularly due to the chronicity of eating disorders, typical age-of-onset (after puberty and before age 40), and adverse health effects (Wassdorp et al. 2007; Herzog et al, 1996; Steinhausen, 2002; DSM-5, 2013). Experiencing multiple stressful life events (e.g., repeated parental combat deployments) has also been found to precipitate eating disorder onset (DSM-5, 2013). Previous studies support early detection and management in preventing the progression of eating disorders to more severe and chronic states (American Academy of Pediatrics, 2003), and early identification makes a significant difference in clinical response and improvement (Whitaker, 1992; American Academy of Pediatrics, 2003; Kriepe & Dukarm, 1999). Therefore, military health care providers, as part of the potential first line of defense to detect significant changes in weight status and eating behaviors and attitudes, should screen military parents and their adolescent daughters.

One method of detecting significant changes in weight status and eating behaviors and attitudes in this population would be to develop a joint primary care and mental health program to identify, prevent and treat adverse responses to parental combat deployment. Once a parent has been notified of an upcoming deployment, the adolescent's medical records can be flagged in ALHTA, the electronic medical record system used by Department of Defense medical and mental health providers (Defense Health Clinical Systems, 2015). Medical providers could monitor the adolescent's weight and administer short eating behaviors and attitudes assessments, such as the Eating Disorder Screen for Primary Care (Cotton, Ball, & Robinson, 2003) throughout the deployment cycle. Adolescents who demonstrate extreme fluctuations in weight and

changes in eating behaviors and attitudes would be referred to a mental health provider knowledgeable in the implementation of evidence-based therapeutic interventions [e.g., Interpersonal Psychotherapy for the Prevention of Excess Weight Gain (Tanosfky-Kraff et al., 2014) in order to proactively address their concerns and prevent the development of unhealthy eating habits and disordered body image as a means to deal with interpersonal stressors (e.g., parental separation as the result of combat deployment).

STRENGTHS

There are a number of strengths emphasizing the overall importance of this area of research. First, this is the first study of its kind to explore the relationships between parental combat deployment, weight status and eating behaviors and attitudes in adolescent female dependents. This study attempted to address one of the significant gaps identified by the American Psychological Academy presidential task force on military deployment on our understanding of the impact of the recent wars on military personnel and their families (Johnson et al., 2008). In addition, the questionnaire data was based upon validated measures. Measured height and weight also constitute a strength over self-report data. Finally, the ethnic diversity of the sample mirrored the diversity reported in the military as a whole.

LIMITATIONS

There were a number of limitations of this study. First, causal inferences are not feasible due to the cross-sectional design of the study. A longitudinal design timed to capture every stage of the deployment cycle may have helped elucidate when adolescents

were most vulnerable to weight gain and/or development of disordered eating behaviors and attitudes. Second, while there is confidence in the conceptualization in the development of the factor analysis, the stability of the factor analysis may be numerically unstable due to the low number of participants. Third, despite the fact the mediation analyses may be underpowered due to the sample size of the study, the findings point towards the right direction in terms of the hypothesized effect parental combat deployment may have on adolescent BMI *z*-score and disordered eating behaviors and attitudes. Fourth, the study only provides information regarding on single time point of the participants' reported experiences. Results may have varied if the study was conducted at the peak period of parental combat deployments, rather at a time in which combat operations in Iraq and Afghanistan have markedly decreased. Fifth, non-deployed caregivers reported difficulty recalling all of their spouses' deployments. Some had to call their spouses for the information, while others indicated that the number of deployments was an estimate. The actual number of deployments may be under- or over-reported due to recall bias. Sixth, generalizability is another limitation to consider. A majority of the participants in the study were the children of field-grade officers (i.e., pay grades O4-O6; Majors to Colonels in the Army, Marine Corps and Air Force and Lieutenant Commander to Captain in the Navy). These ranks correspond to higher socioeconomic status which has been shown to be related to lower BMI-*z* scores (Wang & Zhang, 2006). The study only included adolescent girls; therefore, study findings cannot be generalized to the weight status and eating behaviors and attitudes of adolescent boys or younger children who experience parental combat deployments.

FUTURE DIRECTIONS

Future prospective research on the impact of parental combat deployment on the weight status and eating behaviors and attitudes of adolescent dependents will be imperative to address this important research gap. The potential for an escalation of conflict in the warzone and subsequent repeated parental deployments will continue to exist. The impact of deployment entails a dynamic process that unfolds across multiple deployments and at multiple levels (e.g., individual, dyadic) (Paley, 2013); therefore, it would be extremely useful to assess the weight status and eating behaviors and attitudes of adolescents as they navigate the deployment cycle in order to identify optimal points of intervention. No differences between the deployment groups were found regarding coping behaviors; however, an assessment of these behaviors before, during and after a combat deployment could provide more information on coping strategies utilized by this population during a parental separation. Furthermore, future studies are warranted to determine the impact of parental combat deployment on the weight status and eating behaviors and attitudes military male adolescent dependents and younger children.

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TABLES

Table 1 – Adolescent Characteristics (N = 81)

Demographics	Mean (SD)
Age	14.2 ± 1.6
Race/Ethnicity	N (%)
Caucasian	54 (66.7%)
African-American	16 (19.8%)
Asian	1 (1.2%)
Mixed Race	10 (12.3%)
Hispanic	8 (9.9%)
Weight Characteristics	Mean (SD)
BMI (kg/m2)	14.2 ± 1.6
BMI%ile	65.7 ± 25.6
BMI *z*-score	0.54 ± 0.95
Weight Status	N (%)
Healthy Weight	56 (69.2%)
Overweight	12 (14.8%)
Obese	13 (16%)
Deployment and PCS	Mean (SD)
PCS	5.4 ± 2.8
Deployments	5.2 ± 7.8
Combat Deployments	1.1 ± 1.3
Psychosocial Characteristics	Mean (SD)//N (%)
Anxiety	29 (35.8%)
Depression	19 (23.5%)
Impulsivity/Fun-Seeking	0.94 ± 0.14
Perceived Stress	5.85 ± 3.23
Attachment – Mother	1.65 ± 0.27
Attachment – Father	1.61 ± 0.28
Sleep	7.19 ± 1.28
Coping Behaviors	Mean (SD)
Self-Destructive	3.44 ± 1.00
Endurance	7.12 ± 1.23
Aggressive	4.10 ± 1.12
Stress Recognition	7.55 ± 1.31
Distraction	7.98 ± 1.32
Eating Behaviors	Mean (SD)//N (%)
Eating Disorder – Lifetime	11 (13.6%)
Loss of Control – Lifetime	22 (27.5%)
Thin Idealization	1.78 ± 3.04
Drive for Muscularity	0.25 ± 0.29
Binge Eating	0.20 ± 0.33
Eating in the Absence of Hunger	3.06 ± 1.71
Food smelled good	12 (14.8%)
Other people eating	8 (9.9%)
Emotional Eating	4.40 ± 3.06
Bored or tired	23 (28.4%)
Sad, depressed, angry, or frustrated	7 (8.6%)
Anxious or nervous	4 (4.9%)
Happy or excited	4 (4.9%)

Table 2 – Non-Deployed Caregiver and Spouse Characteristics (N = 68)

Demographics	
Race/Ethnicity of Respondent Parent	N (%)
Caucasian	52 (73.2%)
African-American	14 (19.7%)
Mixed Race	3 (4.2%)
Hispanic	1 (5.6%)
Unknown	2 (2.8%)
Race/Ethnicity of Spouse	N (%)
Caucasian	49 (69%)
African-American	15 (21.1%)
Mixed Race	4 (5.6%)
Asian	1 (1.4%)
Hispanic	4 (5.6%)
Unknown	2 (2.8%)
Service Branch	N (%)
Army	41 (43.6%)
Air Force	25 (26.6%)
Navy	19 (20.2%)
National Guard/Reserves/Coast Guard	9 (9.5%)
Rank	N (%)
E1 – E6	12 (12.8%)
E7 – E9	15 (16%)
O1 – O3	11 (11.7%)
O4 – O6	56 (59.5%)
Weight Characteristics of Respondent Parent	Mean (SD)
BMI (kg/m2)	29.91 ± 5.09
BMI%ile	65.73 ± 25.63
Weight Status	N (%)
Healthy Weight	30 (44.1%)
Overweight	17 (25%)
Obese	21 (30.9%)
Psychosocial Characteristics of Respondent Parent	N (%)
Anxiety	12 (17.6%)
Depression	22 (32.4%)
Eating Behaviors and Attitudes of Respondent Parent	Mean (SD)//N (%)
Loss of Control – Lifetime	17 (23.9%)
Shape Concerns	10.38 ± 4.95
Eating in the Absence of Hunger	3.34 ± 1.86
Food smelled good	18 (26.5%)
Other people eating	11 (15.9%)
Emotional Eating	3.92 ± 3.31
Bored or tired	7 (8.6%)
Sad, depressed, angry, or frustrated	7 (10.3%)
Anxious or nervous	8 (11.8%)
Happy or excited	2 (2.9%)

Table 3 – Participant characteristics of female adolescents without and with a parental combat deployment

Characteristics	No Parental Combat Deployment	Parental Combat Deployment	*p*
N (%)	34 (40.7%)	47 (59.3%)	--
Race			
African- American/Mixed Race/Asian	10 (12.3%)	17 (21%)	ns[a]
Caucasian	23 (28.4%)	31 (38.3%)	
Weight Characteristics			
BMI	22.6 ± 5.5	22.6 ± 4.5	ns
BMI%ile	61.3 ± 27.9	68.8 ± 23.7	ns
BMI *z*-score	0.39 ± 1.08	0.65 ± 0.84	ns
Weight Status			
Healthy Weight	24 (72.7%)	32 (66.7%)	ns
Overweight	4 (12.1%)	8 (16.7%)	
Obese	5 (15.2%)	8 (16.7%)	
Psychosocial Characteristics			
Anxiety	12 (14.8%)	17 (21%)	ns[a]
Depression	10 (12.3%)	9 (11.1%)	ns[a]
Impulsivity	0.92 ± 0.13	0.96 ± 0.14	ns
Perceived Stress	6.18 ± 3.29	5.63 ± 3.19	ns
Attachment – Mother	1.69 ± 0.08	1.62 ± 0.35	ns
Attachment – Father	1.64 ± 0.12	1.58 ± 0.35	ns
Sleep	7.12 ± 1.34	7.23 ± 1.24	ns
Coping Behaviors			
Self-Destructive	3.52 ± 0.98	3.40 ± 1.02	ns
Endurance	7.18 ± 1.53	7.09 ± 1.00	ns
Aggressive	4.17 ± 0.98	40.6 ± 1.22	ns
Stress Recognition	7.62 ± 1.61	7.50 ± 1.07	ns
Distraction	7.99 ± 1.49	7.97 ± 1.22	ns
Eating Behaviors			
Eating Disorder Ever	4 (4.9%)	7 (8.6%)	ns[b]
Loss of Control Eating Ever	10 (12.5%)	12 (15%)	ns[a]
Thin Idealization	2.00 ± 3.20	1.61 ± 2.94	ns
Drive for Muscularity	0.22 ± 0.29	0.27 ± 0.30	ns
Binge Eating	0.24 ± 0.35	0.17 ± 0.31	ns
Eating in the Absence of Hunger	2.88 ± 1.71	3.18 ± 1.72	ns
Emotional Eating	5.24 ± 3.14	3.81 ± 2.89	.04

Note: BMI = body mass index and BMI%ile = BMI percentile

[a] Chi-square or Fisher's exact tests (for analyses in which the expected count was less than 5 in 20% of cells).
[b] Fisher's exact test.

Table 4 – Participant characteristics of female adolescents with one parental combat deployment and multiple combat deployments

Characteristics	One Parental Combat Deployment	Multiple Parental Combat Deployments	*p*
N (%)	22 (46.8%)	25 (53.2%)	--
Race			
African- American/Mixed Race/Asian	7 (14.9%)	10 (21.3%)	ns[a]
Caucasian	15 (31.9%)	15 (31.9%)	
Weight Characteristics			
BMI	22.2 ± 3.3	23.1± 5.4	ns
BMI%ile	69.6 ± 21.6	69.6 ± 25.2	ns
BMI *z*-score	0.63 ± .71	0.71 ± .94	ns
Weight Status			
Healthy Weight	15 (31.9%)	16 (34%)	ns[a]
Overweight/Obese	7 (14.9%)	9 (19.1%)	
Psychosocial Characteristics			
Anxiety	4 (8.5%)	12 (25.5%)	.03[a]
Depression	1 (2.1%)	8 (17%)	.02[b]
Impulsivity	1.00 ± 0.12	0.92 ± 0.14	.03
Perceived Stress	4.77 ± 2.8	6.44 ± 3.40	.08
Attachment - Mother	1.63 ± 0.37	1.61 ± 0.34	ns
Attachment - Father	1.58 ± 0.36	1.58 ± 0.34	ns
Sleep	7.27 ± 1.32	7.12 ± 1.17	ns
Coping Behaviors			
Self-Destructive	3.34 ± 0.95	3.47 ± 1.21	ns
Endurance	6.87 ± 1.05	7.28 ± 0.94	ns
Aggressive	4.02 ± 1.19	4.09 ± 1.28	ns
Stress Recognition	7.54 ± 0.92	7.44 ± 1.23	ns
Distraction	7.78 ± 1.33	8.10 ± 1.14	ns
Eating Behaviors and Attitudes			
Eating Disorder	1 (2.1%)	6 (12.8%)	.07[b]
Loss of Control Eating	4 (8.7%)	8 (17.4%)	ns[a]
Thin Idealization	0.65 ± 1.39	2.25 ± 3.67	.03
Drive for Muscularity	0.21 ± 0.26	0.33 ± 0.32	ns
Binge Eating	0.15 ± 0.28	0.20 ± 0.35	ns
Eating in the Absence of Hunger	3.45 ± 2.48	4.20 ± 3.24	ns
Emotional Eating	3.14 ± 1.86	3.32 ± 1.60	ns

Note: BMI = body mass index and BMI%ile = BMI percentile

[a] Chi-square or Fisher's exact tests (for analyses in which the expected count was less than 5 in 20% of cells).
[b] Fisher's exact test.

Table 5 – Analysis of Covariance of Parental Combat Deployment and Emotional Eating, with BMI-z as Covariate

Source	*df*	*MS*	*F*	*p*	η^2
Intercept	1	1260.96	139.14	.000	.641
BMI z-score	1	0.49	0.05	.817	.001
Combat Deployment	1	38.09	4.20	.044	.051
Error	77	9.06			
Total	81				
Corrected Total	80				

Table 6. Model Coefficients for the Adolescent Functioning Mediation on the Association between Parental Combat Deployment and Adolescent BMI *z*-score

		Consequent						
		M (NPCG Ψ)				*Y* (EE)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (PCD)	*a*	0.04	0.02	.04	*c'*	-.21	0.10	.04
M (NPCG Ψ)		----	----	----	*b*	1.94	0.91	.04
Constant	i_1	-0.02	0.03	.55	i_2	.094	0.21	.00
		R^2 =0.11				R^2 = 0.13		
		F (1, 45) = 4.34, *p* = .04				*F* (2, 44) = 3.07, *p* = .06		

Note: PCD = Parental Combat Deployment; NPCG Ψ = Non-Deployed Caregiver Psychological Functioning; EE = Emotional Eating

Table 7 – Factor Loadings for Varimax Orthogonal Three-Factor Solution for the Eating Behaviors and Attitudes Items of the POMC-FQ – Adolescent Version

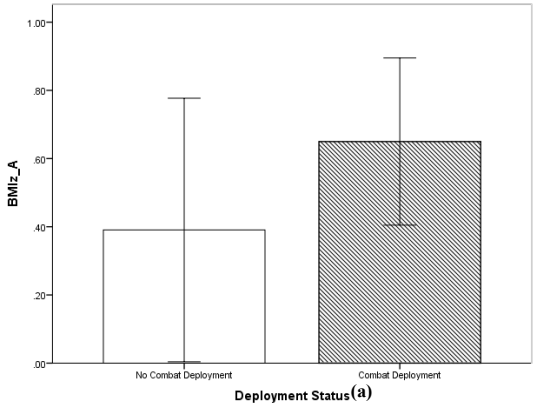
Item	Factor Loading
Factor 1: Thin-Ideal Internalization (Cronbach's α = .908)	
When you felt this out of control feeling, did you feel really bad about yourself or feel guilty after you finished eating?	.806
In the past year, how often have you felt fat?	.805
In the past year, how often have you worried about having fat on your body?	.774
In the past year, how often have you tried to change your weight so you would not be teased by boys/men (like male friends, other boys, or brothers)?	.739
In the past year, how often have you tied to lose weight?	.736
In the past year, how often have you thought about wanting to be thinner?	.708
On average over the past year, how many times did you exercise to keep from gaining weight?	.675
In the past year, how much do you think your weight or muscle definition made boys/men not like you?	.674
In the past year, how much do you think your weight or muscle definition made people that you were attracted to (or had a crush on) not like you?	.651
In the past year, have you tried to change your weight or increase your muscle definition so	.647

you would not be teased by boys/men (like your male friends, other boys, or brothers)?	
Over average, when you felt like you couldn't control your eating, how often did you eat less or pretty much the same as other people would eat at a meal or snack?	.509
In the past year, how often have you changed your eating when you were around girls/young women (like your female friends, other girls, or sisters)?	.407
Factor 2: Drive for Muscularity (Cronbach's α = .765)	
In the past year, how often have your friends talking about wanting to have toned or defined muscles?	.689
In the past year, how important has it been to your friends that they have toned or defined muscles?	.675
In the past year, how often have you thought about wanting to have toned or defined muscles?	.657
In the past year, how often have your friends talking about wanting to lose weight?	.654
In the past year, how important has it been to your friends that they be thin?	.645
In the past year, how often have you thought about wanting to be more muscular?	.623
How important is it to your mother (or person who acts like your mother to you) that you be thin?	.546
In the past year, how important has it been to your friends that you be thin?	.441
Factor 3: Binge Eating/Loss of Control Eating (Cronbach's α = .909)	
On average over the past year, how often have you felt like you couldn't control how much you were eating, or felt like you couldn't stop eating (even if it was just for a moment)?	.777
Was there a period of at least three months during the past year when you felt like you couldn't control how much you were eating, or felt like you couldn't stop eating (even if it was just for a moment)?	.739
When you felt this out of control feeling, did you eat until your stomach hurt or you felt sick?	.696
When you felt this out of control feeling, did you eat by yourself because you didn't want anyone to see how much you ate?	.658
Over the past year, did you ever feel like you couldn't control how much you were eating, or felt like you couldn't stop eating (even if it was just for a moment) for more than one time in a day?	.612
Have you ever felt this way, like you couldn't control how much you were eating, or felt like you couldn't stop eating (even if it was just for a moment)?	.603
When you felt this out of control feeling, did you eat when you didn't feel hungry?	.520
When you felt this out of control feeling, did you eat very fast or faster than normal?	.516

Table 8 - Factor Loadings for Varimax Orthogonal One-Factor Solution for the Adolescent Psychological Functioning

Item	Factor Loading
Factor 1: Adolescent Psychopathology (Cronbach's α = .815)	
Have you ever seen a counselor, therapist, doctor, or other healthcare provider for help with depression?	.873
Have you ever seen a counselor, therapist, doctor, or other healthcare provider for help with anxiety?	.875

FIGURES



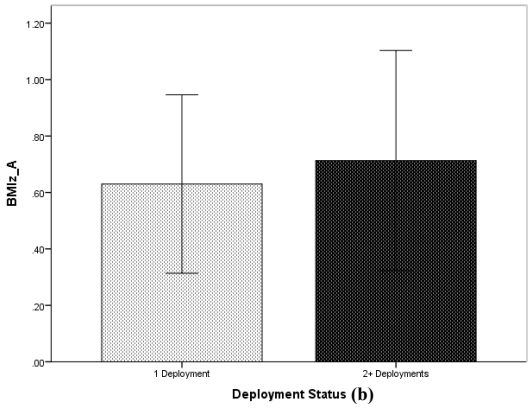


Figure 1. Parent combat deployment status and mean BMI *z*-score.
(A) No deployment vs. one deployment group. (B) One deployment vs. more than one deployment group.

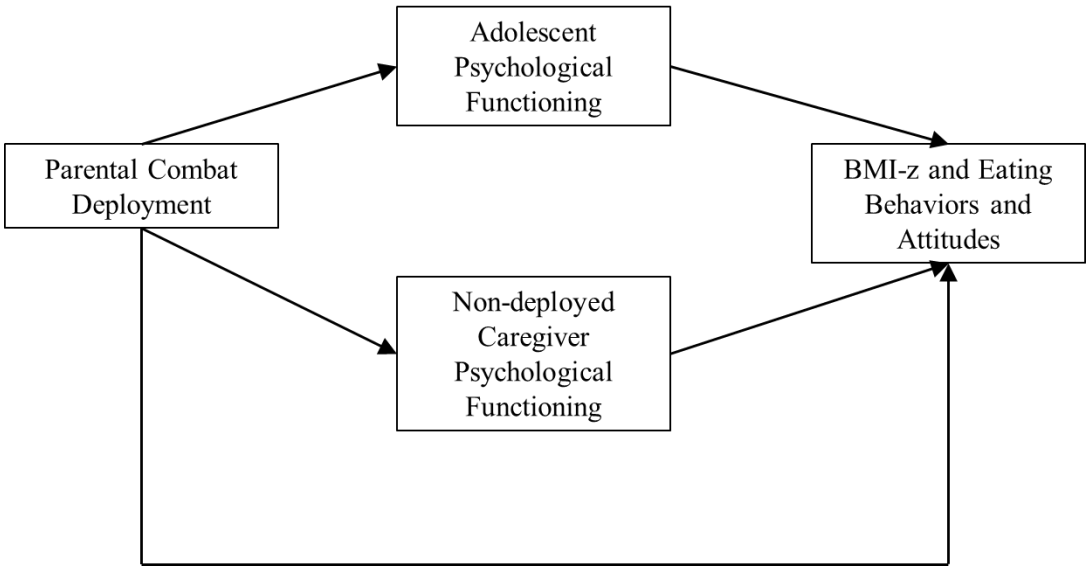


Figure 2. Conceptual Model.

The independent variable, X, is Parental Combat Deployment (Group), a categorical variable with 3 levels. Using the terminology of Baron and Kenny (1986), the arrow from Parental Combat Deployment (X) to Adolescent and Non-Deployed Caregiver Psychological Functioning (the mediators, M) represent the a paths. The arrow from the mediators to the dependent variable (Y) represents the b path. Mediation is indicated if both the a and b paths are significant for an individual mediator. The direct arrow from X to Y represents the c' path (a path between X and Y that is not mediated by the mediators). Both BMI-z and eating behaviors and attitudes were considered as dependent variables (Y). The a, b, and c' paths are all considered to represent causal relationships. In Baron and Kenny's terminology, the c path (not shown in Figure) is the relationship between X and Y in the absence of the mediator variables.

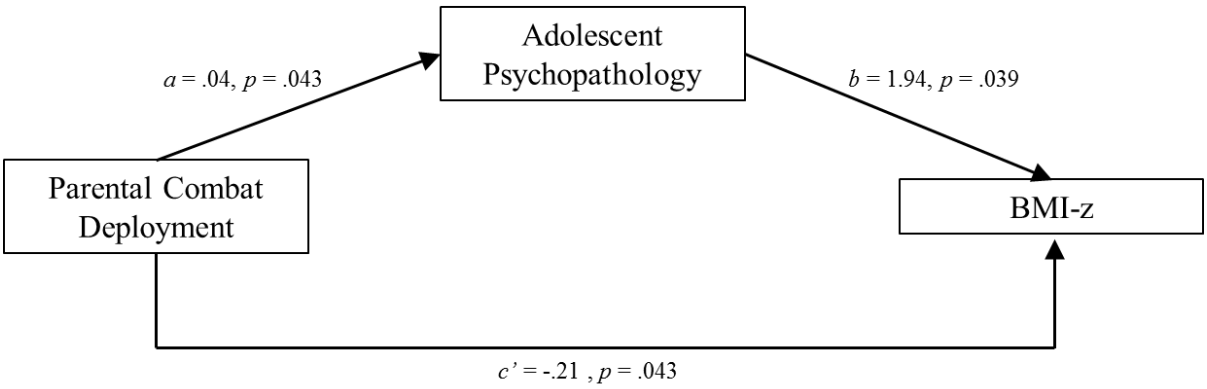


Figure 3. Model representation of the mediation effect of non-deployed caregiver psychopathology in the association between parental combat deployment and adolescent BMI-z.

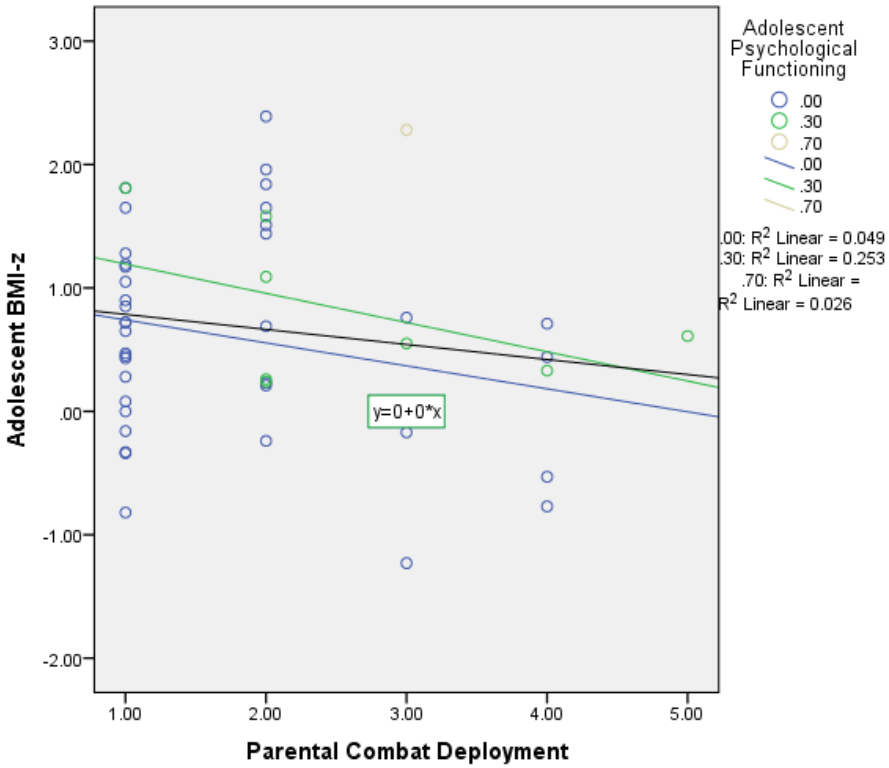


Figure 4. Graphical representation of adolescent psychological functioning mediation of parental combat deployment and adolescent BMI-z.

APPENDICES

APPENDIX A: Recruitment Letter

Uniformed Services University of the Health Sciences
F. Edward Hebert School of Medicine
4301 Jones Bridge Road
Bethesda, MD 20814-4799

Fort Belvoir Community Hospital
9300 DeWitt Loop
Fort Belvoir, VA 22033

Dear Parent,

We are reaching out to military families to let them know about an exciting new research study we are conducting at Fort Belvoir Community Hospital! If this information may be of interest to you, please see the information below; otherwise, please disregard this letter.

Purpose of our study: To learn more about the health and eating habits of **teen girls** (ages 12 to 17), each with one parent or guardian, from military families. The information we gain from this study will help us better understand the habits of military communities so that we can design program to promote healthy behaviors.

What your involvement would include: We are asking parents and their daughters to each fill out a **brief questionnaire** about eating habits, weight, and related health topics. We would also ask to measure your daughter's height and weight in the clinic. The visit would be in the Family Medicine Clinic at **Fort Belvoir Community Hospital**, and we expect it to take **1-2 hours**. Teens who participate in the study will be compensated for their time.

If you and/or your daughter may be interested: Please give us a call at **301-295-1598**!

Please feel free to contact us anytime with questions or concerns. Thank you for your consideration!

Sincerely,

The Preventing Obesity in Military Communities (POMC) Study Team:
Tracy Sbrocco, PhD
LTC Dean Seehusen, MD
CAPT Mark Stephens, MD
Marian Tanofsky-Kraff, PhD
Kelly Theim, PhD
1stLt Edny Bryant, M.S.

Study Contact:
Adelyn Cohen, BA
(301) 295-1598
lauren.cohen.ctr@usuhs.edu

APPENDIX B: Parent Consent Form

Uniformed Services University of the Health Sciences
F. Edward Hebert School of Medicine
4301 Jones Bridge Road
Bethesda, MD 20814-4799

Fort Belvoir Community Hospital
9300 DeWitt Loop
Fort Belvoir, VA 22033

INFORMED CONSENT FORM RESEARCH STUDY

PARENT FOR CHILD

POMC - FAMILY QUESTIONNAIRE STUDY

This consent form is valid only if it contains the "USUHS IRB Approved" stamp. Do **not** sign this form or participate in this research if the IRB stamp is not present or if it has expired.

INTRODUCTION

You and your child are being asked to take part in a research study. 1st Lt Edny Joseph Bryant, working with Dr. Marian Tanofsky-Kraff, is the Principal Investigator for this study. Before you decide if you want you and your child to be in the study, it is important for you both to understand the risks and benefits so that you can make an informed decision. This is known as informed consent.

This consent form provides information about a research study. Once you understand what it involves, you will be asked to confirm whether you and your child want to take part in it. Your and your child's decision to take part in the study is entirely voluntary. This means that you and your child are free to choose whether or not you want you and your child to be research subjects.

DESCRIPTION OF THE RESEARCH AND ITS PURPOSE

The Uniformed Services University of the Health Sciences has partnered with the Ft. Belvoir Community Hospital (Ft. Belvoir) to conduct a research study aimed at understanding eating- and weight-related attitudes and behaviors of various members of the military family. Your family has been identified as

including at least one active duty member or retiree from military service. Due to the rising incidence of overweight and obesity among military service members and their families, our research team is interested in identifying unique and common risk factors for weight gain and obesity within the military family community. Obesity puts individuals at risk for medical problems such as high blood pressure, heart disease, type 2 diabetes mellitus (sugar diabetes), sleep apnea (trouble breathing while sleeping), joint disease, and certain forms of cancer. Obesity also is associated with a number of psychological problems including social difficulties, eating disorders, depressive symptoms, and poor quality of life.

This study primarily involves both you and your child each filling out a series of questionnaires, as described in more detail below.

PROCEDURES OF THE STUDY

1. Consent. We ask that you and your child go over the contents of this form in detail, and review all parts of the study. If you and your child choose to participate, we ask that you and your child sign the consent and assent forms.

2. Measurements. A study staff member or clinic nurse will measure you and your child's height and weight.

3. Questionnaires. We ask that you and your child answer questions about your demographic information, general health, social and psychological functioning, and eating behaviors and attitudes.

All of this information (both yours and your child's) is kept confidential, unless we have a concern about your or your child's health or safety. **The proper authorities will be informed if information is revealed concerning child abuse or neglect. If you or your child feels uncomfortable answering any question, you or your child do not have to answer that question.** All participants who need further behavioral health or medical services, will be accommodated through their primary care medical doctor in accordance with normal clinical standard of care. This will be accomplished by the participant directly contacting their primary care physician.

POSSIBLE BENEFITS

This project is being conducted for research purposes only and is not intended to benefit you or your child. Financial compensation of a $10 Visa gift card is being offered for participation to the adolescents.

POSSIBLE RISKS

1. Answering questions involves minimal risks, but may be inconvenient because of the time required to complete them. Some children or parents may feel uncomfortable being asked about the way they feel about themselves or about their relationships with others. If you or your child feels uncomfortable answering any question, you do not have to answer that question.

2. The time required for participation in the length of time taken to review the consent form, have your height and weight measured, and complete the questionnaire packets. We expect this visit should take no more than 2 hours to complete.

RIGHT TO WITHDRAW FROM THE STUDY

You or your child may decide to stop taking part in this study at any time, without loss of benefits, by simply informing the investigators of your and/or your child's desire to stop participating in the study.

PRIVACY AND CONFIDENTIALITY

All information you and your child provide as part of this study will be confidential and will be protected to the fullest extent provided by law. There is one exception. **The proper authorities will be notified if information is revealed concerning harm to self or others.** Your completed questionnaires will be kept in locked filing cabinet in the research team's laboratory offices. All records related to this study will be accessible to those persons directly involved in conducting this study and members of the USUHS Institutional Review Board (IRB) and the FBCH Department of Research Programs (DRP). In addition, the IRB/DRP at these locations and other federal agencies that help protect people who are involved in research studies may need to see the information you give us. Other than those groups, records from this study will be kept private to the fullest extent of the law. Scientific reports that come out of this study may include your ideas, but they will not use your or your child's name or identify you in any way.

All electronic and hard copy documents related to this protocol that contain Protected Health Information (PHI) are secured in accordance with the HITECH Act of 2009.

RECOURSE IN THE EVENT OF INJURY

This study should not entail any physical or mental risk beyond those described above. We do not expect complications to occur, but if, for any reason, you feel that continuing this study would constitute a hardship for you, we will end your participation in the study. If you think you have a study-related injury you should contact the FBCH Office of the Command Staff Judge Advocate in the Sunrise Pavilion at (571) 231-2877. If you believe that you have suffered an injury or illness as a result of participating in this research project, you should contact FBCH DRP at (571) 231-4020 or the USUHS Office of Research at (301) 295-3303.

IF YOU HAVE QUESTIONS OR CONCERNS

If you have questions about this research, you should contact 1st Lt Edny Joseph Bryant at (301) 295-1598, Dr. Marian Tanofsky-Kraff at (301) 295-1482, or Dr. Kelly Theim at (301) 295-2253. Even in the evening or on weekends, you can leave a message at that number. Additionally, you can contact Dr. Dean Seehusen (Family Medicine Clinic – Ft. Belvoir) at (703) 805-8030. For questions about your and your child's rights as research participants, contact FBCH DRP in the Oaks Pavilion at (571) 231-4020 or the USUHS Office of Research at (301) 295-3303. If you consent to your child participating in this study, but you yourself do not wish to participate, you may elect to sign in the second section below to indicate this.

By signing this form you are agreeing that this study has been explained to you and that you understood that explanation.

By signing here, I consent for both my child and myself to participate in this research study.

_____ _____

Parent/Guardian Date of signature

_____ _____

Child Subject Date of signature

I certify that the research study has been explained to the above individuals, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered.

Investigator	Date of signature

APPENDIX C: Adolescent Consent Form

Uniformed Services University of the Health Sciences
F. Edward Hebert School of Medicine
4301 Jones Bridge Road
Bethesda, MD 20814-4799

Fort Belvoir Community Hospital
9300 DeWitt Loop
Fort Belvoir, VA 22033

Assent Information Sheet for Minor to Participate in Research

POMC - FAMILY QUESTIONNAIRE STUDY

This consent form is valid only if it contains the "USUHS IRB Approved" stamp. Do not sign this form or participate in this research if the IRB stamp is not present or if it has expired.

My name is 1st Lt Edny Joseph Bryant working with Dr. Marian Tanofsky-Kraff.

Our research team and your parents have talked with you about taking part in this research study. Research is a way of answering different questions. It is important to make sure that you know why you are taking part in a research study. You can decide if you want to be part of this study. To be part of this study, both you and your parent or guardian must agree for you to be in the study.

This research study is designed to learn about different behaviors related to health and eating that could impact weight, among both children and parents from military families.

If you *decide* to be in the study, here is what will happen:

We will measure your height and weight, and then you will be paid $10 for participating in the research study. We will have you (and your parent) fill out a brief questionnaire packet that has questions about eating, weight, and other health behaviors. We would ask you to answer all the questions in the packet, and then collect it. If you do not want to answer any of these questions for any

reason, you can skip those questions. We will not share the answers to these questions, unless we learn about a problem with your health or safety, in which case we may need to tell your parent and refer you for other treatment. If you want to stop being in the study because you are uncomfortable, no longer want to participate, or any other reason, you can stop at any time without any penalty. It is important that you actually want to be in the study, and that you do not feel like anyone is pressuring you to do it.

If this study does not sound like something that you want to be involved with, just let us know that you do not want to do it. For example, your choice to be in this study (or not) will not in any way affect the care that you get at Fort Belvoir or at any other doctor's office. **Remember, if you do decide to participate in this study, you can stop at any time if you want to.**

Your responses to the questionnaires will be kept in a locked filing cabinet in the research team's laboratory offices. Additionally, records may be looked at by staff from the FBCH Department of Research Programs (DRP).

The possible risk from being in the study includes possibly feeling uncomfortable being asked about your eating behaviors or weight, etc. For example, you may feel sad when thinking about topics that bother you (e.g., while filling out questionnaires).

You may change your mind about taking part in this study even after signing this form. Changing your mind won't affect your relationship with your doctors or anyone else involved in your care. If you decide to stop being in the study, you should call (or ask your parents to call) 1st Lt Edny Bryant at (301) 295-1598, Dr. Marian Tanofsky-Kraff at (301) 295-1482, or Dr. Kelly Theim at (301) 295-9880. Additionally, you can also contact Dr. Dean Seehusen (Ft. Belvoir) at (703) 805-8030. If at any time you believe you have suffered an injury or illness as a result of participating in this research project, you should contact FBCH DRP at (571) 231-4020. If you think you have a study-related injury you should contact the FBCH Office of the Command Staff Judge Advocate in the Sunrise Pavilion at (571) 231-2877. For questions about your rights as a research participant, contact FBCH DRP in the Oaks Pavilion at (571) 231-4020 or the USUHS Office of Research at (301) 295-3303. If you have questions about the study, contact the FBCH Investigator: Dr. Dean Seehusen, Family Medicine Department, (703) 805-8030.

If you want to be in this study, please print your name in the consent form under the assent section and then sign your name and write the date on the lines below on this form.

I _____would like to be in a research study called

(**print your name**)

"Preventing obesity in military communities – Family Questionnaire Study." I understand what my participation in the study will involve and all of my questions have been answered.

X_____ _____

Signature **Date of signature**

AUTHORIZATION FOR RESEARCH USE OF PROTECTED HEALTH INFORMATION

The Federal Health Insurance Portability and Accountability Act (HIPAA**) includes a Privacy Rule that gives special safeguards to Protected Health Information (**PHI**) that is identifiable, in other words, can be directly linked to you (for example, by your name, Social Security Number, birth date, etc.). We are required to advise you how your PHI will be used. This authorization is effective until this study is closed.**

(1) What information will be collected?

For this research study, one questionnaire will collect name, age, date, gender, deployment history, military service branch, and eating behaviors. On another questionnaire we will collect child's name, grade, school of attendance, date, and information on depression, eating behaviors and attitudes, emotions, thoughts, mood, learning difficulties, and sleep. On another questionnaire we will collect information on emotional problems, past diagnoses, and history of therapy. We will also be collecting information on height and weight.

(2) Who may use your PHI within the Military Healthcare System?
The members of the research team will have access to your health information in order to find out if you qualify to participate in this study and to analyze the research data. Additionally, your PHI may be made available to health oversight groups such as the FBCH DRP and the USUHS IRB.

(3) What persons outside of the Military Healthcare System who are under the HIPAA requirements will receive your PHI?
No persons outside of the Military Healthcare System will receive PHI.

(4) What is the purpose for using or disclosing your PHI?
The members of the research team need to use your PHI in order to analyze the study information.

(5) How long will the researchers keep your PHI?
The research team will keep the research data for up to six years after the end of the study. At that time all the information will be destroyed. The master code will be destroyed as soon as all data collection is completed. This assent or consent form and HIPAA authorization will be maintained for a period of six years after the study is completed.

(6) Can you review your own research information?
You will not be able to look at your research information.

(7) Can you cancel this Authorization?
Yes. If you cancel this Authorization, however, you will no longer be included in the research study. The information we collected from you can be destroyed at your request.
If you want to cancel your Authorization, please contact the Principal Investigator in writing.

(8) What will happen if you decide not to grant this Authorization?
If you decide not to grant this Authorization, you will not be able to participate in this research study. Refusal to grant this Authorization will not result in any loss of medical benefits to which you are otherwise entitled.

(9) Can your PHI be disclosed to parties not included in this Authorization who are not under the HIPAA requirements?
There is a potential that your research information will be shared with another party not listed in this Authorization in order to meet legal or regulatory requirements. Examples of persons who may access your PHI include representatives of the DOD Higher Level Review, the Food and Drug Administration, the Department of Health and Human Services (DHHS) Office for Human Research Protections (OHRP), and the DHHS Office for Civil Rights. This disclosure is unlikely to occur, but in that case, your health information would no longer be protected by the HIPAA Privacy Rule.

(10) Who should you contact if you have any complaints?
If you believe your privacy rights have been violated, you may file a written complaint with the FBCH Privacy Office, located at 9300 Dewitt Loop, Oaks Pavilion, Fort Belvoir, VA 22060 at 571-231-3319.

Your signature on the attached document acknowledges that you authorize FBCH personnel to use and disclose your Protected Health Information (PHI) collected about you for research purposes as described above.

APPENDIX D: POMC Family Questionnaire – Adolescent Version

Participant Number: _____

Date: _____

Family Questionnaire Study: Adolescent Questionnaire

POMC Family Questionnaire Study – Adolescent

Date _____ ID# _____

Questions about yourself…

1. What is your date of birth? _____
2. What grade are you currently in? _____
3. What school are you currently attending? _____
4. How tall are you? _____ feet _____ inches
5. How much do you weigh? pounds
6. How would you describe your weight? Please check one.

☐	☐	☐	☐	☐
Very underweight	Slightly underweight	About the right weight	Slightly overweight	Very overweight

Questions about what you and your family members look like…

7. For the following questions, check the box of the body figure that best answers each question. Please pick only one figure for each person.

Female

1 2 3 4 5 6 7 8 9

Which of the pictures above looks most like…

	1	2	3	4	5	6	7	8	9	
You currently?	☐	☐	☐	☐	☐	☐	☐	☐	☐	
How you <u>want</u> to look?	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Close female friend 1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐ No close female friends
Close female friend 2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Mom	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐ No mom
Sister 1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐ No sister
Sister 2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐ No sister
Sister 3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐ No sister

Questions about how you've been feeling…

8. **Has anyone ever told you that they thought you had any of the following health conditions?**

	No	Yes	I'm not sure/I don't know
An allergy to nuts	☐	☐	☐
Anxiety	☐	☐	☐
Asthma	☐	☐	☐
Attention Deficit Hyperactivity Disorder (ADHD)	☐	☐	☐
Bipolar Disorder	☐	☐	☐
Celiac Disease (an allergy to gluten or wheat)	☐	☐	☐
Depression	☐	☐	☐
Diabetes	☐	☐	☐
An eating disorder	☐	☐	☐
Obsessive Compulsive Disorder (OCD)	☐	☐	☐
Insomnia/Difficulty Sleeping	☐	☐	☐
Lactose intolerance (can't digest milk products)	☐	☐	☐

9. **Have you ever seen a counselor, therapist, doctor, or other healthcare provider for help with any of the following?**

	No	Yes, in the past	Yes, currently
Anxiety	☐	☐	☐
Asthma	☐	☐	☐
Attention Deficit Hyperactivity Disorder (ADHD)	☐	☐	☐
Bipolar Disorder	☐	☐	☐
Bullying	☐	☐	☐
Celiac Disease (an allergy to gluten or wheat)	☐	☐	☐
Class or college advising	☐	☐	☐
Depression	☐	☐	☐
Diabetes	☐	☐	☐
An eating disorder	☐	☐	☐
Obsessive Compulsive Disorder (OCD)	☐	☐	☐
Insomnia/Difficulty Sleeping	☐	☐	☐
Trouble with school work	☐	☐	☐

Questions about eating…

10. **Sometimes people start eating and feel out of control, like they can't stop eating even if they really want to. They can feel this out of control feeling when they are eating either a really big amount of food or a small amount.**

a) **Have you ever felt this way, like you couldn't control how much you were eating, or felt like you couldn't stop eating (even if it was just for a moment)?** O Yes O No

If "no," skip the shaded box of questions, and go down to question 11

b) **On average over the past year, how often have you felt this way?**	O Not at all	O Less than once a month	O 1-3 times a month	O Once a week	O More than once a week	O Every day
c) **Over the past year, did you ever feel this way more than one time in a day?**	O Never	O Sometimes	O Often	O Always		
d) **Was there a period of at least three months during the past year when you felt this way frequently?**	O No	O Yes, weekly	O Yes, more than weekly			
e) **On average, when you felt like you couldn't control your eating, how often did you eat:**						
a. **Less than or pretty much the same as other people would eat at a meal or snack?**	O Never	O Sometimes	O Almost every time	O Every time		
b. **Much more than other people would eat a regular meal or snack?**	O Never	O Sometimes	O Almost every time	O Every time		
f) **When you felt this out of control feeling, did you:**						
a. **Eat very fast or faster than normal?**	O No	O Yes				
b. **Eat until your stomach hurt or you felt sick?**	O No	O Yes				
c. **Eat when you didn't feel hungry?**	O No	O Yes				
d. **Eat by yourself because you didn't want anyone to see how much you ate?**	O No	O Yes				
e. **Feel really bad about yourself or feel guilty after you finished eating?**	O No	O Yes				

g) Over the past year, after those times when you felt out of control when you were eating, how often did you:					
a. Make yourself sick (throw up) afterward?	O Never	O A couple of times	O Several times	O Often	O Always/ Almost Always
b. Use diuretics? (pills that make you pee more)	O Never	O A couple of times	O Several times	O Often	O Always/ Almost Always
c. Use laxatives? (medicines that make you have a bowel movement)	O Never	O A couple of times	O Several times	O Often	O Always/ Almost Always
d. Exercise extra hard to make up for it?	O Never	O A couple of times	O Several times	O Often	O Always/ Almost Always

11. Over the past year, how often have you eaten because you were feeling:

		Never	Rarely	Sometimes	Often	Always/Almost Always
a.	Bored or tired?	O	O	O	O	O
b.	Sad, depressed, angry, or frustrated?	O	O	O	O	O
c.	Anxious or nervous?	O	O	O	O	O
d.	Happy or excited?	O	O	O	O	O

Questions about weight and shape…

12.

a.	Which of the following do you want to do about your weight?	O Nothing	O Lose a little weight	O Lose a lot of weight	O Stay the same	O Gain weight
b.	Which of the following are you actively trying to do about your weight?	O Nothing	O Lose a little weight	O Lose a lot of weight	O Stay the same	O Gain weight
c.	Over the past year, how often did you go on a diet to lose weight?	O Never	O A couple of times	O Several times	O Often	O Always on a diet
d.	How long did you stay on the diet?	O Less than a week	O 1-3 weeks	O 1-3 months	O More than 3 months	
e.	On average over the past year, how many times did you exercise to keep from gaining weight?	O Never	O Less than monthly	O 1-3 times per month	O 1-4 times per week	O 5 or more times per month

Did you continue exercising (to lose or keep from gaining weight) even if you were sick or injured?	O No	O Yes, sometimes	O Yes, frequently
Was it hard to find time for work or homework because of the amount of time that you were exercising (to lose or keep from gaining weight)?	O No	O Yes, sometimes	O Yes, frequently

f. During the past year, how many times have you done the following to lose weight or keep from gaining weight?

	Never	Less than monthly	1-3 times a month	Once a week	More than 1 time a week
1. Fast (not eat anything for at least a whole day)	O	O	O	O	O
2. Make yourself throw-up?	O	O	O	O	O
3. Take laxatives?	O	O	O	O	O
4. Take diuretics?	O	O	O	O	O

13. In the past year, HOW OFTEN have:	Never	A little	Sometimes	A lot	Always
a. You thought about wanting to be thinner?	O	O	O	O	O
b. You thought about wanting to have toned or defined muscles?	O	O	O	O	O
c. You worried about having fat on your body?	O	O	O	O	O
d. You thought about wanting to be more muscular?	O	O	O	O	O
e. You felt fat?	O	O	O	O	O
f. You tried to lose weight?	O	O	O	O	O
g. Your friends talked about wanting to lose weight?	O	O	O	O	O
h. Your friends talked about wanting to have toned or defined muscles?	O	O	O	O	O
i. You changed your eating when you were around girls/young women (like your female friends, other girls, or sisters)?	O	O	O	O	O

In the past year, HOW OFTEN have:	Never	A little	Sometimes	A lot	Always
j. Girls/women (like your female friends, other girls, or sisters) made fun of you because of your weight or muscle definition?	O	O	O	O	O
k. You tried to change your weight or increase your muscle definition so you would not be teased by girls/women (like your female friends, other girls, or sisters)?	O	O	O	O	O
l. You changed your eating when you were around boys/men (like your male friends, other boys, or brothers)?	O	O	O	O	O
m. Boys/men (like your male friends, other boys, or brothers) made fun of you because of your weight or muscle definition?	O	O	O	O	O
n. You tried to change your weight or increase your muscle definition so you would not be teased by boys/men (like your male friends, other boys, or brothers)?	O	O	O	O	O

14. In the past year, how IMPORTANT has it been to your friends:

	Not at all	A little	Somewhat	A lot	Totally	Not Sure
a. That they be thin?	O	O	O	O	O	O
b. That you be thin?	O	O	O	O	O	O
c. That they have toned or defined muscles?	O	O	O	O	O	O
d. That you have toned or defined muscles?	O	O	O	O	O	O

15. In the past year, how much:

	Not at all	A little	Somewhat	A lot	Totally
a. Do you think your weight or muscle definition made girls/women not like you?	O	O	O	O	O
b. Do you think your weight or muscle definition made boys/men not like you?	O	O	O	O	O
c. Do you think your weight or muscle definition made people that you were attracted to (or had a crush on) not like you?	O	O	O	O	O
d. Has your weight or muscle definition made a difference in how you feel about yourself?	O	O	O	O	O

16. How IMPORTANT is it…(If you do not have one of these members in your family, mark "**N/A**" for that question)

	Not at all	A little	Somewhat	A lot	Totally	N/A
a) To your **mother** (or person who acts like a mother to you) that you be thin?	O	O	O	O	O	O
b) To your **mother** (or person who acts like a mother to you) that you be fit?	O	O	O	O	O	O
c) To your **father** (or person who acts like a father to you) that you be thin?	O	O	O	O	O	O
d) To your **father** (or person who acts like a father to you) that you be fit?	O	O	O	O	O	O

Questions about sleep…

17. On a typical night when you have school or work the next day, how many hours of sleep do you get?

O	O	O	O	O	O	O	O
Less than 5 hours	5 hours	6 hours	7 hours	8 hours	9 hours	10 hours	11+ hours

Questions about how you've been feeling…

18. Please say how much you agree with each statement. Please only give one answer per statement.

	Very True for Me	Somewhat True for Me	Somewhat False for Me	Very False for Me
a. I'm always willing to try something new if I think it will be fun.	O	O	O	O
b. I will often do things for no other reason than that they might be fun.	O	O	O	O
c. I often act on the spur of the moment.	O	O	O	O
d. I crave excitement and new sensations.	O	O	O	O

19. In the last month, how often have you…

	Never	Almost Never	Sometimes	Fairly Often	Very Often
a. Felt that you were unable to control the important things in your life?	O	O	O	O	O
b. Felt confident about your ability to handle your personal problems?	O	O	O	O	O
c. Felt that things were going your way?	O	O	O	O	O
d. Felt difficulties were piling up so high that you could not overcome them?	O	O	O	O	O

LIFE EVENTS AND COPING INVENTORY
LECI – Life Events

Below you will see a list of different things which could happen to someone of your age. Please read each item and think to yourself, "If this happened to me, how much stress would it cause me?" Then put a number next to each item to indicate how stressful it would be for you if it happened to you. Use the numbers from 1 to 9 to show how much stress you would feel, on this scale:

1	2	3	4	5	6	7	8	9
No stress at all		A little stress		Pretty much stress		A lot of stress		An extreme amount of stress

1 2 3 4 5 6 7 8 9 Someone close to you (like a friend) died.

1 2 3 4 5 6 7 8 9 One of your parents died.

1 2 3 4 5 6 7 8 9 A close family member (grandparent, brother, sister died).

1 2 3 4 5 6 7 8 9 You moved to a new home.

1 2 3 4 5 6 7 8 9 Your pet died.

1 2 3 4 5 6 7 8 9 One of your parents was put in the hospital.

1 2 3 4 5 6 7 8 9 You were seriously injured or became seriously ill.

1 2 3 4 5 6 7 8 9 A close family member (not parent) was put in the hospital.

1 2 3 4 5 6 7 8 9 A close friend was put in the hospital.

1 2 3 4 5 6 7 8 9 Some of your personal property was lost or stolen.

1 2 3 4 5 6 7 8 9 Something violent happened in your school or neighborhood.

1 2 3 4 5 6 7 8 9 Your friend had to move away.

1 2 3 4 5 6 7 8 9 You had to study for a big test.

1 2 3 4 5 6 7 8 9 You had a school report to do.

1 2 3 4 5 6 7 8 9 You got your report card or grades.

1 2 3 4 5 6 7 8 9 You were late for class.

1 2 3 4 5 6 7 8 9 You got a regular job on your own.

1 2 3 4 5 6 7 8 9 You lost or quit a regular job.

1 2 3 4 5 6 7 8 9 You have chores to do.

1 2 3 4 5 6 7 8 9 You had to take gym class.

1 2 3 4 5 6 7 8 9 You had a sports or play tryout.

1 2 3 4 5 6 7 8 9 Other kids forced you to do something you didn't want to.

1 2 3 4 5 6 7 8 9 You were put in special services or a special class.

1 2 3 4 5 6 7 8 9 All your homework and other work is piled up at once.

1 2 3 4 5 6 7 8 9 Some kids laughed at you, picked on you or called you names.

1 2 3 4 5 6 7 8 9 Kids threatened you or beat you up.

1 2 3 4 5 6 7 8 9 Kids talked about you behind your back or spread rumors.

1 2 3 4 5 6 7 8 9 You had a fight, conflict, or argument with a friend.

1 2 3 4 5 6 7 8 9 Your friend criticized you or put you down.

1 2 3 4 5 6 7 8 9 Your friend deserted you or didn't like to be with you.

1 2 3 4 5 6 7 8 9 You weren't invited to a party your friends went to.

1 2 3 4 5 6 7 8 9 You felt jealous of a friend for something.

1 2 3 4 5 6 7 8 9 Your friend had a problem or something the matter with him/her.

1 2 3 4 5 6 7 8 9 You were stood up by a date.

1 2 3 4 5 6 7 8 9 You compared grades with other kids.

1 2 3 4 5 6 7 8 9 You competed with other kids in classwork.

1 2 3 4 5 6 7 8 9 You competed with other kids in sports.

1 2 3 4 5 6 7 8 9 You started to date.

1 2 3 4 5 6 7 8 9 Your parents didn't listen to you when you tried to tell them something.

1 2 3 4 5 6 7 8 9 Your parent holds high expectations of you.

1 2 3 4 5 6 7 8 9 Your parents decided to get a divorce.

1 2 3 4 5 6 7 8 9 Your parents had a fight or argued with each other.

1 2 3 4 5 6 7 8 9 Your parent lost his/her job.

1 2 3 4 5 6 7 8 9 Your parent came home mad.

1 2 3 4 5 6 7 8 9 Your parent embarrassed you.

1 2 3 4 5 6 7 8 9 One of your parents started to be away from home more.

1 2 3 4 5 6 7 8 9 Your parent didn't give you something that was promised you.

1	2	3	4	5	6	7	8	9	
No stress at all			A little stress		Pretty much stress		A lot of stress		An extreme amount of stress

1 2 3 4 5 6 7 8 9	Another adult moved in to live with your family.
1 2 3 4 5 6 7 8 9	You were caught stealing something.
1 2 3 4 5 6 7 8 9	Your teacher embarrassed you.
1 2 3 4 5 6 7 8 9	Your parents put you down or criticized you.
1 2 3 4 5 6 7 8 9	Your parent accused you of something you didn't do.
1 2 3 4 5 6 7 8 9	Your parent didn't seem to understand when you tried to tell him/her something.
1 2 3 4 5 6 7 8 9	Your mom or dad moved out of your home.
1 2 3 4 5 6 7 8 9	Your mom or dad was put in jail.
1 2 3 4 5 6 7 8 9	Your family had financial problems.
1 2 3 4 5 6 7 8 9	You competed with your brother or sister.
1 2 3 4 5 6 7 8 9	Your family members had arguments with one another.
1 2 3 4 5 6 7 8 9	Your brother or sister bothered or bugged you.
1 2 3 4 5 6 7 8 9	Your brother or sister was mean to you.
1 2 3 4 5 6 7 8 9	You had to keep a family secret from other people.
1 2 3 4 5 6 7 8 9	Your brother or sister moved out of the home.
1 2 3 4 5 6 7 8 9	Someone in your family was in an accident or was beaten up.
1 2 3 4 5 6 7 8 9	A new brother or sister was born into your family.
1 2 3 4 5 6 7 8 9	You felt like no one liked you.
1 2 3 4 5 6 7 8 9	You felt rushed or pressured.
1 2 3 4 5 6 7 8 9	You felt upset or angry.
1 2 3 4 5 6 7 8 9	You felt alone.
1 2 3 4 5 6 7 8 9	You thought that you were ugly or you worried about your looks.
1 2 3 4 5 6 7 8 9	You felt frustrated.
1 2 3 4 5 6 7 8 9	You worried about hurting your parents.
1 2 3 4 5 6 7 8 9	You worried over a decision.
1 2 3 4 5 6 7 8 9	You worried about being good.
1 2 3 4 5 6 7 8 9	You felt rejected by someone important to you.
1 2 3 4 5 6 7 8 9	You felt like you are not worth anything.
1 2 3 4 5 6 7 8 9	You tried out for an activity or team and didn't make it.
1 2 3 4 5 6 7 8 9	You were kept back in the same grade.
1 2 3 4 5 6 7 8 9	You had a sexual experience.
1 2 3 4 5 6 7 8 9	You started junior (middle) school.
1 2 3 4 5 6 7 8 9	You felt angry with yourself.
1 2 3 4 5 6 7 8 9	You couldn't get to sleep.
1 2 3 4 5 6 7 8 9	You had bad dreams
1 2 3 4 5 6 7 8 9	You smoked cigarettes.
1 2 3 4 5 6 7 8 9	You drank too much once.
1 2 3 4 5 6 7 8 9	You've taken drugs.
1 2 3 4 5 6 7 8 9	You got in trouble at school.
1 2 3 4 5 6 7 8 9	Your teacher yelled at you.
1 2 3 4 5 6 7 8 9	You were sent to the principal's office.
1 2 3 4 5 6 7 8 9	You were grounded.
1 2 3 4 5 6 7 8 9	You were punished for something you did.
1 2 3 4 5 6 7 8 9	You felt like your brother or sister was better than you at something.
1 2 3 4 5 6 7 8 9	You got in trouble with adults.
1 2 3 4 5 6 7 8 9	You were suspended from school.
1 2 3 4 5 6 7 8 9	You were picked up by the police.
1 2 3 4 5 6 7 8 9	You found out you had to go to summer school.
1 2 3 4 5 6 7 8 9	You have felt like you have no money.
1 2 3 4 5 6 7 8 9	You've had to do some things that you don't want to do (eg. chores, babysitting).
1 2 3 4 5 6 7 8 9	You wanted to do some things which you were not allowed to do.
1 2 3 4 5 6 7 8 9	You've felt like there is nothing enjoyable to do.
1 2 3 4 5 6 7 8 9	You tried to do something and failed at it.
1 2 3 4 5 6 7 8 9	You've felt bored.
1 2 3 4 5 6 7 8 9	You told someone a lie.
1 2 3 4 5 6 7 8 9	You did something wrong or bad.
1 2 3 4 5 6 7 8 9	You've thought about sex.
1 2 3 4 5 6 7 8 9	Some of your friends have started to date.
1 2 3 4 5 6 7 8 9	A friend told you about a sexual experience.
1 2 3 4 5 6 7 8 9	You were lost somewhere.

1	2	3	4	5	6	7	8	9
No stress at all		A little stress		Pretty much stress		A lot of stress		An extreme amount of stress

1 2 3 4 5 6 7 8 9	You were part of an important religious event (Confirmation, Bar Mitzvah, etc.)
1 2 3 4 5 6 7 8 9	One of your parents went away for a trip.
1 2 3 4 5 6 7 8 9	You moved away from one parent to live with the other one.
1 2 3 4 5 6 7 8 9	A member of your family got in serious trouble with the police.
1 2 3 4 5 6 7 8 9	You broke up with your boyfriend (girlfriend).
1 2 3 4 5 6 7 8 9	You had to move in with relatives or into a foster home.
1 2 3 4 5 6 7 8 9	One of your parents physically hit you.
1 2 3 4 5 6 7 8 9	You started to date.
1 2 3 4 5 6 7 8 9	You begin to develop physically.
1 2 3 4 5 6 7 8 9	Your physical development has been slower than other kids.

Life Events and Coping Inventory

LIFE EVENTS AND COPING INVENTORY
LECI-Coping

Below is a list of coping behaviors—things that students of your age say that they might do when they are feeling stressed. Read through the list and rate each of the coping responses. Please read each one and think to yourself, "If I were feeling stressed, how likely is it that I would do this to try to cope with the stress?" Then circle the number next to each behavior that shows how much you think you would do each one if you were feeling stressed. Use the rating scale below:

1	2	3	4	5	6	7	8	9
Would definitely not do this		I would probably not do this		I am not sure if I would do this or not		I would probably do this		I would definitely do this

1 2 3 4 5 6 7 8 9	Talk to my parents
1 2 3 4 5 6 7 8 9	Talk to my friend
1 2 3 4 5 6 7 8 9	Talk to my brother or sister
1 2 3 4 5 6 7 8 9	Get advice from someone
1 2 3 4 5 6 7 8 9	Talk to a teacher or psychologist
1 2 3 4 5 6 7 8 9	Think about it by myself, try to figure it out
1 2 3 4 5 6 7 8 9	Write about it for myself only (like in a diary)
1 2 3 4 5 6 7 8 9	Write to someone else about it
1 2 3 4 5 6 7 8 9	Talk to my pet
1 2 3 4 5 6 7 8 9	Talk to a tape recorder or just to myself
1 2 3 4 5 6 7 8 9	Get away from everyone and just be alone
1 2 3 4 5 6 7 8 9	Relax; try to be less tense
1 2 3 4 5 6 7 8 9	Go to sleep or sleep it off
1 2 3 4 5 6 7 8 9	Get stoned or take drugs
1 2 3 4 5 6 7 8 9	Take my mind off it; think about something else
1 2 3 4 5 6 7 8 9	Watch T.V.
1 2 3 4 5 6 7 8 9	Just hold it in
1 2 3 4 5 6 7 8 9	Try to forget about it
1 2 3 4 5 6 7 8 9	Take it out on myself in some way
1 2 3 4 5 6 7 8 9	Develop nervous habits, like biting my nails or fidgeting
1 2 3 4 5 6 7 8 9	Smoke cigarettes
1 2 3 4 5 6 7 8 9	Drink alcohol
1 2 3 4 5 6 7 8 9	Think about committing suicide
1 2 3 4 5 6 7 8 9	Hurt myself physically
1 2 3 4 5 6 7 8 9	Eat
1 2 3 4 5 6 7 8 9	Clench my teeth
1 2 3 4 5 6 7 8 9	Stop doing my schoolwork
1 2 3 4 5 6 7 8 9	Scream
1 2 3 4 5 6 7 8 9	Hit something like my pillow or the wall
1 2 3 4 5 6 7 8 9	Throw things or break things
1 2 3 4 5 6 7 8 9	Cry
1 2 3 4 5 6 7 8 9	Clean my room or rearrange it
1 2 3 4 5 6 7 8 9	Scribble or draw something
1 2 3 4 5 6 7 8 9	Listen to music
1 2 3 4 5 6 7 8 9	Run or exercise hard
1 2 3 4 5 6 7 8 9	Take a walk or a bike ride
1 2 3 4 5 6 7 8 9	Do a hobby or something I enjoy
1 2 3 4 5 6 7 8 9	Think of my good points
1 2 3 4 5 6 7 8 9	Do something dangerous
1 2 3 4 5 6 7 8 9	Take it out on someone else
1 2 3 4 5 6 7 8 9	Hit someone or hurt someone physically
1 2 3 4 5 6 7 8 9	Get in a fight with someone
1 2 3 4 5 6 7 8 9	Yell, scream, or curse at someone
1 2 3 4 5 6 7 8 9	Take someone else's things
1 2 3 4 5 6 7 8 9	Wreck someone's things or do some vandalism
1 2 3 4 5 6 7 8 9	Do a sport with someone else
1 2 3 4 5 6 7 8 9	Go over to a friend's house
1 2 3 4 5 6 7 8 9	Read a book
1 2 3 4 5 6 7 8 9	Talk with a youth group leader
1 2 3 4 5 6 7 8 9	Meditate
1 2 3 4 5 6 7 8 9	Make jokes

PART 1

Which Kids I Am Like

(*If you don't have a mom or stepmom, please skip to **Part 2**)

Now we're going to ask you some questions about you and your **MOM**. We are interested in what each of you is like. What kind of a person you are like. First, let me explain how these questions work. Each question talks about two kinds of kids, and we want to know which kids are most like you. Here is a sample question.

Really True For Me	Sort of True For Me			Sort of True For Me	Rea For
		Some kids would rather play outdoors in their spare time	BUT	Other kids would rather watch T.V.	

What I want you to decide first is whether you are more like the kids on the left side who would rather play outdoors, or more like the kids on the right side who would rather watch T.V. Don't mark anything yet, but decide which kid is most like you and g to that side of the sentence. Now, decide whether that is sort of true for you, or really true for you, and check that box.

For each sentence you will only check one box, the one that goes with what is true for you, what you are most like.

****

Now we're going to ask you some questions about you and your mom.

Do you like your mom?	Yes _____ No_____
Do you live with your mom?	Yes _____ No_____
Do you have a stepmom?	Yes _____ No_____
If yes, do you live with your stepmom?	Yes _____ No_____

If you have both a mom and stepmom, which one do you want to tell us about?

Mom _____ Stepmom _____

PLEASE ONLY CHECK ONE BOX FOR EACH QUESITON

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
1.			Some kids find it easy to trust their mom.	BUT Other kids are not sure if they can trust their mom.		
2.			Some kids feel like their mom butts in a lot when they are trying to do things.	BUT Other kids feel like their mom lets them do things on their own.		
3.			Some kids find it easy to count on their mom for help.	BUT Other kids think it's hard to count on their mom.		
4.			Some kids think their mom spends enough time with them.	BUT Other kids think their mom does not spend enough time with them.		

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
5.			Some kids do not really like telling their mom what they are thinking or feeling.	BUT	Other kids do like telling their mom what they are thinking or feeling.	
	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
6.			Some kids do not really need their mom for much.	BUT	Other kids need their mom for a lot of things.	
	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
7.			Some kids wish they were closer to their mom.	BUT	Other kids are happy with how close they are to their mom.	
	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
8.			Some kids worry that their mom does not really love them.	BUT	Other kids are really sure that their mom loves them.	

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
9.			Some kids feel like their mom really understands them.	BUT Other kids feel like their mom does not really understand them.		

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
10.			Some kids are really sure their mom would not leave them.	BUT Other kids sometimes wonder if their mom might leave them.		

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
11.			Some kids worry that their mom might not be there when they need her.	BUT Other kids are sure their mom will be there when they need her.		

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
12.			Some kids think their mom does not listen To them.	BUT Other kids do think their mom listens to them.		

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
13.			Some kids go to their mom when they are upset.	BUT Other kids do not go to their mom when they are upset.		
14.			Some kids wish their mom would help them more with their problems.	BUT Other kids think their mom helps them enough with their problems.		
15.			Some kids feel better when their mom is around.	BUT Other kids do not really feel better when their mom is around.		

Here are three ways that kids can feel about their mom. Put an X by ONE that is most like the way you feel about your mom.

_____ I like to do things by myself rather than ask my mom for help. Sometimes it's hard for me to count on her or tell her what I am thinking or feeling.

_____ I'm really close to my mom. I know my mom always listens when I tell her things. I know she'll be there if I need her.

_____ Sometimes I wish my mom and I were closer. It also sometimes seems like my mom gets in the way when I'm trying to do things.

Part II

Which Kids I Am Like

(*If you don't have a dad or stepdad, please skip the rest of the questions on this form)

Now we're going to ask you some questions about you and your **DAD**. We are interested in what each of you is like. First, let me explain how these questions work. Each question talks about two kinds of kids, and we want to know which kids are most like you. Here is a sample question.

Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
		Some kids would rather play outdoors in their spare time	BUT	Other kids would rather watch T.V.	

What I want you to decide first is whether you are more like the kids on the left side who would rather play outdoors, or more like the kids on the right side who would rather watch T.V. Don't mark anything yet, but decide which kid is most like you and go to that side of the sentence. Now, decide whether that is sort of true for you, or really true for you, and check that box.

For each sentence you will only check one box, the one that goes with what is true for you, what you are most like.

****

(If you don't have a dad or stepdad, please skip these questions)

Now we're going to ask you some questions about you and your dad.

Do you like your dad?	Yes _____ No_____
Do you live with your dad?	Yes _____ No_____
Do you have a stepdad?	Yes _____ No_____
Do you live with your stepdad?	Yes _____ No_____

If you have both a dad and stepdad, which one do you want to tell us about?

Dad _____ Stepdad _____

PLEASE ONLY CHECK ONE BOX FOR EACH QUESITON

	Really True For Me	Sort of True For Me				Sort of True For Me	Really True For Me
1.			Some kids find it easy to trust their dad.	BUT	Others kids are not sure if they can trust their dad.		

	Really True For Me	Sort of True For Me				Sort of True For Me	Really True For Me
2.			Some kids feel like their dad butts in a lot when they are trying to do things.	BUT	Other kids feel like their dad lets them do things on their own.		

	Really True For Me	Sort of True For Me				Sort of True For Me	Really True For Me
3.			Some kids find it easy to count on their dad for help.	BUT	Other kids think it's hard to count on their dad.		

	Really True For Me	Sort of True For Me				Sort of True For Me	Really True For Me
4.			Some kids think their dad spends enough time with them.	BUT	Other kids think their dad does not spend enough time with them.		

	Really True For Me	Sort of True For Me				Sort of True For Me	Really True For Me
5.			Some kids do not really like telling their dad what they are thinking or feeling.	BUT	Other kids do like telling their dad what they are thinking or feeling		
6.			Some kids do not really need their dad much.	BUT	Other kids need their dad for a lot of things.		
7.			Some kids wish they were closer to their dad.	BUT	Other kids are happy with how close they are to their dad.		
8.			Some kids worry that their dad does not really love them.	BUT	Other kids are really sure that their dad loves them.		

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
9.			Some kids feel like their dad really understands them.	BUT Other kids feel like their dad does not really understand them.		

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
10.			Some kids are really sure their dad would not leave them.	BUT Others kids sometimes wonder if their dad might leave them.		

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
11.			Some kids worry that their dad might not be there when they need him.	BUT Others kids are sure their dad will be there when they need him.		

	Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
12.			Some kids think their dad does not listen to them.	BUT Other kids do think their dad listens to them.		

	Really True For Me	Sort of True For Me				Sort of True For Me	Really True For Me
13.			Some kids go to their dad when they are upset.	BUT	Others kids do not go to their dad when they are upset.		

	Really True For Me	Sort of True For Me				Sort of True For Me	Really True For Me
14.			Some kids wish their dad would help them more with their problems.	BUT	Others kids think their dad helps them enough with their problems.		

	Really True For Me	Sort of True For Me				Sort of True For Me	Really True For Me
15.			Some kids feel better when their dad is around.	BUT	Others kids do not really feel better when their dad is around.		

Here are three ways that kids can feel about their dad. Put an X by ONE that is most like the way you feel about your dad.

_____ I like to do things by myself rather than ask my dad for help. Sometimes it's hard for me to count on him or tell him what I am thinking or feeling.

_____ I'm really close to my dad. I know my dad always listens when I tell him things. I know he'll be there if I need him.

_____ Sometimes I wish my dad and I were closer. It also sometimes seems like my dad gets in the way when I'm trying to do things.

EATING SCREEN

Please carefully complete all questions

Over the past 3 months…	Not at all		Slightly		Moderately		Extremely
1. Have you felt fat?	0	1	2	3	4	5	6
2. Have you had a definite fear that you might gain weight or become fat?	0	1	2	3	4	5	6
3. Has your *weight* influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
4. Has your *shape* influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6

---

5. During the past **6 months** have there been times when you felt you have eaten what other people would regard as an unusually large amount of food (e.g., a quart of ice cream) given the circumstances? . . . . . YES NO

6. During the times when you ate an unusually large amount of food, did you experience a loss of control (feel you couldn't stop eating or control what or how much you were eating)? . . . . . YES NO

7. How many **DAYS per week** on average over the **past 6 MONTHS** have you eaten an unusually large amount of food and experienced a loss of control?

0 1 2 3 4 5 6 7

8. How many **TIMES per week** on average over the **past 3 MONTHS** have you eaten an unusually large amount of food and experienced a loss of control?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

9. During the past **month**, did you experience a loss of control over eating (feel you couldn't stop eating or control what or how much you were eating), even if the amount of food eating was not unusually large? . . . YES NO

10. How many **DAYS per week** on average over the **past 3 MONTHS** have you experienced a loss of control while eating an amount of food that was not unusually large?

0 1 2 3 4 5 6 7

11 How many **TIMES per week** on average over the **past 3 MONTHS** have you experienced a loss of control while eating an amount of food that was not unusually large?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

During these episodes of eating while experiencing loss of control did you…

12. Eat much more rapidly than normal?. . . . . YES NO

13. Eat until you felt uncomfortably full?. . . . . YES NO

14. Eat large amounts of food when you didn't feel physically hungry?. . . . . YES NO

15. Eat alone because you were embarrassed by how much you were eating?. . . . . YES NO

16. Feel disgusted with yourself, depressed, or very guilty after overeating?. . . . . YES NO

17. Feel very upset about your uncontrollable overeating or resulting weight gain?. . . . . YES NO

---

18. How many **times per week** on average over the past **3 months** have you made yourself vomit to prevent weight gain or counteract the effects of eating?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

19. How many **times per week** on average over the past **3 months** have you used laxatives or diuretics to prevent weight gain or counteract the effects of eating?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

20. How many **times per week** on average over the past **3 months** have you fasted (skipped at least 2 meals in a row) to prevent weight gain or counteract the effects of eating?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

21. How many **times per week** on average over the past **3 months** have you engaged in excessive exercise specifically to counteract the effects of overeating episodes?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

22. Over the past **3 months**, how many menstrual periods have you **missed?** 0 1 2 3 n/a

23. Have you been taking birth control pills during the **past 3 months**?. . . . . YES NO

APPENDIC E: POMC Family Questionnaire – Parent Version

Participant Number: _____

Date: _____

Family Questionnaire Study:

Parent Questionnaire

POMC Family Questionnaire Study – Adult

Date _____ ID# _____

Filled out by (please check one): ☐ Mother ☐ Father ☐ Step-Mother ☐ Step-Father

☐ Other Guardian:

Demographics

1. **Which of the following describes your marital status?**

   ☐ Never Married ☐ Married ☐ Separated ☐ Widowed ☐ Divorced/Not remarried

   Divorced/Remarried

2. **Please check the racial group(s) that <u>YOU</u> most identify with (please check all that apply):**

   American Indian or Alaskan Native

   ☐ Asian

   ☐ Native Hawaiian or Other Pacific Islander

   ☐ Black or African American, not of Hispanic origin

   ☐ White or Caucasian, not of Hispanic origin

   ☐ Other (please specify): _____

3. **Please check the ethnic group that <u>YOU</u> most identify with:**

   ☐ Hispanic or Latino ☐ Not Hispanic or Latino

4. **Please check the racial group(s) that <u>your SPOUSE/PARTNER</u> most identifies with (please check all that apply): If you are neither married nor partnered, check N/A for Spouse/Partner**

   American Indian or Alaskan Native

   ☐ Asian

   Native Hawaiian or Other Pacific Islander

   ☐ Black or African American, not of Hispanic origin

   White or Caucasian, not of Hispanic origin

   ☐ Other (please specify):

   ☐ N/A

5. **Please check the ethnic group that your SPOUSE/PARTNER most identifies with (please check all that apply): If you are neither married nor partnered, check N/A for Spouse/Partner.**

☐ Hispanic or Latino ☐ Not Hispanic or Latino

6. **Please check the racial group(s) that your CHILD most identifies with (please check all that apply):**

☐ American Indian or Alaskan Native

☐ Asian

☐ Native Hawaiian or Other Pacific Islander

☐ Black or African American, not of Hispanic origin

☐ White or Caucasian, not of Hispanic origin

☐ Other (please specify): _____

7. **Please check the ethnic group that your CHILD most identifies with (please check all that apply):**

☐ Hispanic or Latino ☐ Not Hispanic or Latino

Questions about your family's deployment history…

8. Please indicate which of your **CHILD's relatives are Active Duty, former Active Duty, Reserve, or Former Reserve military personnel (please check all that apply)**: For service branch please indicate Air Force, Army, Coast Guard, Navy, Marine Corps, or Reserves (including branch).

☐ Mother: N/A
Service Branch _____
Numbers of Years in Service _____
Highest Rank/Grade _____

☐ Father: N/A
Service Branch _____
Numbers of Years in Service _____
Highest Rank/Grade _____

☐ Stepmother: N/A
Service Branch
Numbers of Years in Service
Highest Rank/Grade

☐ Stepfather: N/A
Service Branch _____
Numbers of Years in Service _____
Highest Rank/Grade _____

☐ Other Guardian: N/A
Service Branch _____
Numbers of Years in Service _____
Highest Rank/Grade _____

9. **In general, what is the total number of caregivers living in your home** when no adults from the home are deployed (or TDY, etc.)? *Please do not count adults living in the house who do not or are unable to care for children.*

☐ 1 ☐ 2 ☐ 3 ☐ 4 or more

10. **Has any adult in your home ever been deployed (or TDY, etc.) after your child's birth?**

☐ Yes (If YES, please answer questions 11-16) ☐ No (If NO, please skip to question 17)

11. **Which of the following adult caregivers in your home have been deployed since your child's birth?** *(Please check all that apply and write the number of times in the space provided)*

☐ **You** _____ times ☐ **Your Spouse or Partners** _____ times

12. **List the location(s) and year(s) of Combat Zone Deployments:**

You:	**Your Spouse or partner:**

13. **What is the total amount of dwell time between Combat Zone Deployments?**

You: _____ Month(s) _____ Year(s) **Your Spouse or partner**: _____ Month(s) _____ Year(s)

14. **What is the total number of deployments (including those BEFORE your child's birth) that the above caregivers have been deployed?**
(include sum time of all deployments, if multiple deployments)

You (total #of deployments):
You: _____ Month(s) _____ Year(s)

Your spouse or partner (total #of deployments):
Your spouse or partner: _____ Month(s) _____ Year(s)

15. **With whom did your child(ren) live during the above deployments? (Please check all that apply)**

☐ You ☐ Your Spouse/ Partner ☐ Grandparent(s) ☐ Aunt(s) and/or Uncle(s) ☐ Friend(s) ☐ Other: _____

16. **Please indicate whether the family (excluding the service member) moved to another location due to an active duty family member's deployment:**

☐ Yes ☐ No ☐ N/A

a. If yes, did you move off of or away from base? | | Yes | No | | N/A

b. If yes, where did you move (please check all that apply)

☐ In-State ☐ Out of State ☐ With Family ☐ Near Family ☐ With Friends ☐ Near Friends ☐ N/A

17. **Is anyone who lives in your household currently deployed? What was his/her date of departure and estimated return?**

☐ Yes ☐ No Date of Depature & Est. Return: _____

18. **Please rate the level of support you feel your family was provided (e.g., command, administrative, psychological) during the deployment(s):**

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
No Support	Minimal Support	Standard Level of Support	Maximum Level of Support	N/A

19. **Please indicate the number of times that your family has experienced a Permanent Change of Station (PCS):**
    a. **Number of PCS's:** _____
    b. **Were any of these overseas relocations?** ☐ Yes ☐ No ☐ N/A
    c. **If so, how many?** _____

Questions about you and your family….

20. **How tall are you?** **feet** **inches**
21. **How much do you weigh?** _____ **pounds**
22. **How would you describe your current weight?**

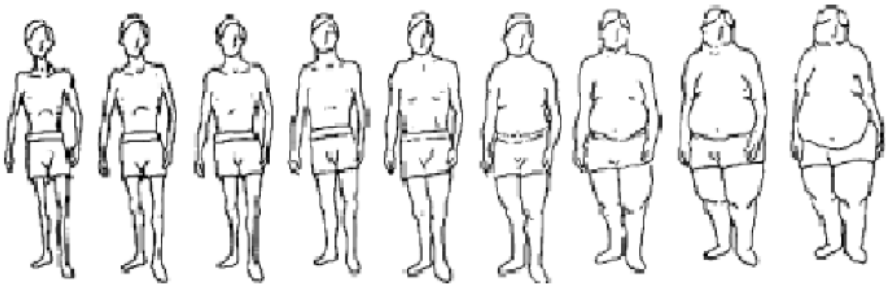
☐	☐	☐	☐	☐
Very Underweight	Slightly Underweight	About the Right Weight	Slightly Overweight	Very Overweight

23. For the following questions, check the box of the figure that best answers each question. Please pick only one figure for each person. If the figures do not apply to you, please mark N/A.

Female

1 2 3 4 5 6 7 8 9

Male



A B C D E F G H I

Which of the pictures above looks *most* like…

You currently?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ N/A
	☐ A	☐ B	☐ C	☐ D	☐ E	☐ F	☐ G	☐ H	☐ I	
How you <u>want</u> to look?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ N/A
	☐ A	☐ B	☐ C	☐ D	☐ E	☐ F	☐ G	☐ H	☐ I	
Your Spouse/Partner	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ N/A
	☐ A	☐ B	☐ C	☐ D	☐ E	☐ F	☐ G	☐ H	☐ I	
Daughter participating in this study	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	

Questions about health conditions…

24. Have YOU ever been diagnosed with or sought treatment for any of the following?

	No	Yes
Anxiety	☐	☐
Attention Deficit Hyperactivity Disorder (ADHD)	☐	☐
Bipolar Disorder	☐	☐
Diabetes	☐	☐
Depression	☐	☐
Anorexia nervosa	☐	☐
Bulimia nervosa	☐	☐
Binge Eating Disorder	☐	☐
Obsessive Compulsive Disorder (OCD)	☐	☐
Insomnia/Difficulty Sleeping	☐	☐

25. Has YOUR CHILD ever been diagnosed with or sought treatment for any of the following?

	No	Yes
Anxiety	☐	☐
Attention Deficit Hyperactivity Disorder (ADHD)	☐	☐
Bipolar Disorder	☐	☐
Diabetes	☐	☐
Depression	☐	☐
Anorexia nervosa	☐	☐
Bulimia nervosa	☐	☐
Binge Eating Disorder	☐	☐
Obsessive Compulsive Disorder (OCD)	☐	☐
Insomnia/Difficulty Sleeping	☐	☐

26. Which one of the following do you <u>want</u> to do about your weight?

☐	☐	☐	☐	☐
Nothing	Lose a little weight	Lose a lot of weight	Stay the same	Gain weight

27. Which of the following are you actively <u>trying</u> to do about your weight?

☐	☐	☐	☐	☐
Nothing	Lose a little weight	Lose a lot of weight	Stay the same	Gain weight

28. Over the past year, how often did you go on a diet to lose weight?

☐	☐	☐	☐	☐
Never	A couple of times	Several times	Often	I'm always on a diet

a. How long did you stay on that diet?

☐	☐	☐	☐
Less than a week	1-3 weeks	1-3 months	More than 3 months

29. On average over the past year, how often did you exercise?

☐	☐	☐	☐	☐
Never	Less than monthly	1-3 times per month	1-4 times per week	5 or more times per week

	No	Yes, sometimes	Yes, frequently	Yes, always
A. Did your exercise *primarily* to lose weight?	☐	☐	☐	☐
B. Did you continue exercising if you were sick or injured?	☐	☐	☐	☐
C. Was it hard to find time for work or hobbies because of the amount of time that you were exercising?	☐	☐	☐	☐
D. Take diuretics?	☐	☐	☐	☐

30. During the past year, how many times have you done the following to lose weight or to keep from gaining weight?

	Never	Less than monthly	1 3 times a month	Once a week	2 6 times per week
A. Fast (not eat anything for at least a whole day?					
B. Make yourself vomit?					
C. Take laxatives?					
D. Take diuretics?					

31. During the past year, how often have…

	Never	A little	Sometimes	A Lot	Always
A. You thought about wanting to be thinner?					
B. You thought about wanting to have toned or defined muscles?					
C. You worried about having fat on your body?					
D. You thought about wanting to be more muscular?					
E. You felt fat?					
F. You tried to lose weight?					
G. Your friends talked about wanting to lose weight?					

32. During the past year, how important has it been to YOU…

	Not at all	A little	Somewhat	A Lot	Extremely	N/A
A. that you be thin?						
B. that you be fit?						
C. that your daughter(s) be thin?						
D. that your daughter(s) be fit?						

Questions about food and eating…

33. Who is primarily responsible for meal preparation in the home?

You	Your spouse/partner	Your child(ren)	Other: _____
☐	☐	☐	☐

34. On average, how many times per week do you eat at restaurants or eat pre-made meals as a family (do not include fast-food)?

Less than once per week	Once per week	2-4 times a week	5 or more times per week	Most or every meal
☐	☐	☐	☐	☐

35. On average, how many times per week do you eat fast-food as a family?

Less than once per week	Once per week	2-4 times a week	5 or more times per week	Most or every meal
☐	☐	☐	☐	☐

36. On average, how many times per week do your children eat fast food outside of family meal times?

Less than once per week	Once per week	2-4 times a week	5 or more times per week	Most or every meal
☐	☐	☐	☐	☐

37. Over the past year, how often have YOU eaten because you were feeling?

	Never	Rarely	Sometimes	Often	Always/Almost always
A. Bored or tired?	☐	☐	☐	☐	☐
B. Sad, depressed, angry, or frustrated?	☐	☐	☐	☐	☐
C. Anxious or nervous?	☐	☐	☐	☐	☐
D. Happy or excited?	☐	☐	☐	☐	☐

38. Over the past year, how often have YOU eaten or continued eating when you were not feeling hungry?

	Never	Rarely	Sometimes	Often	Always/Almost always
A. How often was it because <u>there was food that looked or smelled good</u>?	☐	☐	☐	☐	☐
B. How often was it because <u>other people were eating</u>?	☐	☐	☐	☐	☐

39. Over the past year, how often has YOUR CHILD eaten because she was feeling…

	Never	Rarely	Sometimes	Often	Always/Almost always
A. Bored or tired?	☐	☐	☐	☐	☐
B. Sad, depressed, angry, or frustrated?	☐	☐	☐	☐	☐
C. Anxious or nervous?	☐	☐	☐	☐	☐
D. Happy or excited?	☐	☐	☐	☐	☐

40. Over the past year, how often has YOUR CHILD eaten or continued eating when she was NOT feeling hungry?

	Never	Rarely	Sometimes	Often	Always/Almost always
A. How often was it because there was food that looked or smelled good?	☐	☐	☐	☐	☐
B. How often was it because other people were eating?	☐	☐	☐	☐	☐

41. Have you ever experienced the feeling that you could not control how much you were eating, or felt like you couldn't stop eating (even when it was just for a moment)? Namely, did you feel a loss of control while eating or that your eating felt like it was out of control? (Please check one of the responses below).

Yes ☐ → Please proceed to the shaded questions below.

No ☐ → If NO, please end questionnaire here!

42. On average over the past year, how often have you felt this way (that you could not control how much you were eating)?

Not at all	Less than once a month	1-3 times a month	Once a week	More than once a week	Every day
☐	☐	☐	☐	☐	☐

43. Over the past year, did you ever feel this way more than one time in a day?

No, never	Yes, sometimes	Yes, often	Yes, always
☐	☐	☐	☐

44. Was there a period of <u>at least three months</u> during the past year when you felt this way frequently?

No, never	Yes, weekly	Yes, more than weekly
☐	☐	☐

45. On average, <u>when you felt like you couldn't control your eating</u>, how often did you eat:

	Never	Sometimes	Almost every time	Every time
A. Less than or pretty much the same as other people would eat at a meal or snack?	☐	☐	☐	☐
B. Much more than other people would eat a regular meal or snack?	☐	☐	☐	☐

46. When <u>you felt like you couldn't control your eating</u>, did you…

	No	Yes
A. Eat very fast or faster than normal?	☐	☐
B. Eat until your felt sick?	☐	☐
C. Eat when you didn't feel hungry?	☐	☐
D. Purposefully eat by yourself or in secret?	☐	☐
E. Feel guilty or ashamed after eating?	☐	☐

47. Over the past year, after those times when you felt like you couldn't control your eating, how often did you do the following to keep from gaining weight:

	Never	A couple of times	Several times	Often	Always/Almost always
A. Make yourself sick (vomit?)	☐	☐	☐	☐	☐
B. Use diuretics?	☐	☐	☐	☐	☐
C. Use laxatives?	☐	☐	☐	☐	☐
D. Exercise extremely hard to make up for it?	☐	☐	☐	☐	☐

Child's Name _____ Record Number _____
Today's Date _____ Filled out by _____
Date of Birth _____

Pediatric Symptom Checklist

Emotional and physical health go together in children. Because parents are often the first to notice a problem with their child's behavior, emotions or learning, you may help your child get the best care possible by answering these questions. Please mark under the heading that best fits your child.

			Never (0)	Sometimes (1)	Often (2)
1.	Complains of aches/pains	1	_____	_____	_____
2.	Spends more time alone	2			
3.	Tires easily, has little energy	3	_____	_____	_____
4.	Fidgety, unable to sit still	4	_____	_____	_____
5.	Has trouble with a teacher	5	_____	_____	_____
6.	Less interested in school	6			
7.	Acts as if driven by a motor	7	_____	_____	_____
8.	Daydreams too much	8	_____	_____	_____
9.	Distracted easily	9	_____	_____	_____
10.	Is afraid of new situations	10			
11.	Feels sad, unhappy	11	_____	_____	_____
12.	Is irritable, angry	12	_____	_____	_____
13.	Feels hopeless	13	_____	_____	_____
14.	Has trouble concentrating	14	_____	_____	_____
15.	Less interest in friends	15	_____	_____	_____
16.	Fights with others	16	_____	_____	_____
17.	Absent from school	17	_____	_____	_____
18.	School grades dropping	18	_____	_____	_____
19.	Is down on him or herself	19			
20.	Visits doctor with doctor finding nothing wrong	20	_____	_____	_____
21.	Has trouble sleeping	21	_____	_____	_____
22.	Worries a lot	22	_____	_____	_____
23.	Wants to be with you more than before	23			
24.	Feels he or she is bad	24	_____	_____	_____
25.	Takes unnecessary risks	25	_____	_____	_____
26.	Gets hurt frequently	26	_____	_____	_____
27.	Seems to be having less fun	27			
28.	Acts younger than children his or her age	28	_____	_____	_____
29.	Does not listen to rules	29	_____	_____	_____
30.	Does not show feelings	30			
31.	Does not understand other people's feelings	31			
32.	Teases others	32	_____	_____	_____
33.	Blames others for his or her troubles	33	_____	_____	_____
34.	Takes things that do not belong to him or her	34	_____	_____	_____
35.	Refuses to share	35			

Total score _____

Does your child have any emotional or behavioral problems for which she/he needs help? ( ) N ( ) Y
Are there any services that you would like your child to receive for these problems? ( ) N ( ) Y

If yes, what services?_____

APPENDIX F: Mental Health Resource Flyer