THE RELATIONSHIP OF PARENTAL PSYCHOLOGICAL DISTRESS AND NEGATIVE FAMILY INTERACTION TO CO-PARENTING WITHIN MILITARY FAMILIES

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THE RELATIONSHIP OF PARENTAL MENTAL ILLNESS AND NEGATIVE FAMILY INTERACTION TO CO-PARENTING WITHIN MILITARY FAMILIES

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ABSTRACT

Overseas deployment and subsequent reintegration of service members into the family is a difficult process for both service members as well as their spouses. Service members and spouses may experience elevated rates of psychological distress, higher rates of marital dissatisfaction, problematic interaction patterns (behavioral withdrawal, emotional unavailability, or coercion and reactivity), and difficulty with the co-parenting relationship compared to families in the general population.

Six different models were tested in the present study to expand our understanding of this topic by examining the role of service member and spouse psychological distress on negative interaction patterns and co-parenting behavior, as well as investigating treatment effects in families that have completed a parent management training program. The study sample includes 184 National Guard and Reservist service members and their spouses. Baseline data were used for cross-sectional analyses and 1-year follow-up data were used for longitudinal analyses in the present study.

Significant associations were found between psychological distress and negative interaction in spouses. The relationships between reported PTSD symptoms and partner negative interaction patterns was also significant. Targeting individual symptoms of psychological distress may be helpful in improving communication patterns between partners. Significant associations were also observed between treatment status and co-parenting behavior. Completion of the parent program led to an increase in positive co-parenting behavior at 1-year follow-up. Holistic services are increasingly being provided to military families, which may lead to increased positive interaction and a smoother transition during the reintegration period following deployment in military families.
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CHAPTER I

INTRODUCTION

Nearly two million members of the United States (U.S.) armed forces have served in combat zones since the outset of Operation Enduring Freedom (OEF; Afghanistan) and Operation Iraqi Freedom (OIF; Iraq), and nearly three million family members have been affected by these military deployments (Khaylis, Polusny, Erbes, Gewirtz, & Rath, 2011). Service members and their spouses face a number of challenges both during and following deployment, such that prevalence rates of mental illness are heightened in both groups. For example, over 40% of service members report postdeployment psychopathology in the form of either diagnosable mental illness [e.g., posttraumatic stress disorder; (PTSD)] or nondiagnostic, yet significant functional impairment (e.g., excessive alcohol use, aggressive behavior; Hoge, Auchterlonie, & Milliken, 2006; Reeves, Parker, & Konkle-Parker, 2016; Thomas et al., 2010). Specifically, 12-18% screen positive for PTSD upon return from deployment and 24.5 – 30% screen positive for PTSD 6 months following deployment (Milliken, Auchterlonie, & Hoge, 2007; Thomas et al., 2010).

In addition to PTSD diagnoses, rates of depression in service members range from 8.5 – 20% 6 months following deployment (Ramchand et al., 2008). Further complicating the treatment of these diagnoses is the fact that among service members who screen positive for depression or PTSD, approximately half will display comorbid alcohol misuse or elevated aggressive behavior (Hoge et al., 2006; Thomas et al., 2010).

Rates of mental illness and functional impairment are similarly elevated in military spouses where 10 – 15% meet diagnostic criteria for major depressive disorder and 17-23% meet criteria for generalized anxiety disorder (Eaton et al., 2008; Verdelli et al., 2011). Additionally,
almost a quarter of the spouses of deployed service members report that stress and emotional instability during deployment negatively impacted their quality of work or other activities (Drummet, Coleman, & Cable, 2003; Rosen, Carpenter, & Moghadam, 1989). Therefore, the mental health burden to service members as well as to their families is a considerable problem.

In addition to increased levels of mental illness, service members and their spouses also experience challenges readjusting to family roles following deployment, which can impair their capacity to effectively co-parent their children (Gewirtz, Polusny, DeGarmo, Khaylis, & Erbes, 2010). Conceptually, co-parenting is used to describe a situation where parents work together to raise a child, regardless of whether the parents are still in a relationship. Further, co-parenting refers to the shared responsibility for rearing children and consists of the support and coordination, or lack of support and coordination that parental figures exhibit in their overlapping duties toward childcare (Feinberg, 2003; Teubert & Pinquart, 2010).

Parents’ ability to amicably and effectively co-parent children has been consistently linked to positive experiences in the family, such as children’s compliance with parental requests (Lindsey & Caldera, 2005), increased cooperation (Margolin, Gordis, & John, 2001), and decreased levels of externalizing symptoms in children (Schoppe, Mangelsdorf, & Frosch, 2001). Conversely, negative co-parenting relations have been consistently linked to decreased marital satisfaction (Margolin et al., 2001; McHale, Kuersten, & Lauretti, 2000) as well as child and adolescent internalizing (Belsky, Putnam, & Crinic, 1996; Teubert & Pinquart, 2010) and externalizing problems (Margolin et al., 2001). Based on this literature, it can be inferred that the co-parenting relationship is an established predictor of child development. Due to the characteristically high level of stress and uncertainty in military families and the already established link between the co-parenting relationship and familial adjustment, the co-parenting
relationship during the family reintegration phase postdeployment needs to be examined more closely. (Emery, 1982; Hetherington, Cox, & Cox, 1982).

Because of adjustment difficulties typically seen following a service member’s return from deployment, service members as well as their spouses can receive individual treatment through the U.S. Department of Veteran Affairs (Seal et al., 2009). However, even if service members and their spouses are able to access treatment, individual treatment is not designed to target, and therefore, may not ameliorate the family-level adjustment and co-parenting problems associated with reintegration. In 2007, the American Psychological Association Presidential Task Force on Military Deployment Services for Youth, Families, and Service Members concluded that there is a “shortage of family-based interventions for military families in general… but the greatest need is faced by families facing deployment and postdeployment” (American Psychological Association Presidential Task Force, 2007, p. 31). Without intervention, these families are more likely to struggle with reintegration and adjustment following deployment (MacDermid et al., 2008; Park, 2011). One program that has shown promise as a family based intervention for military families is the After Deployment, Adaptive Parenting Tools (ADAPT) intervention. ADAPT is an adaptation of a 14-week parent management training prevention intervention (PMTO: Forgatch & DeGarmo, 1999), which has been modified for use with military families (Gewirtz, Pinna, Hanson, & Brockberg, 2014.) The present study will investigate the effects of the ADAPT program on family interaction and the co-parenting relationship in a postdeployment sample of National Guard and military reserve families.

**Purpose of the Study**

The goals of the present study are to investigate co-parenting in a sample of service members and their spouses, identify variables that may influence co-parenting abilities, and
determine if participation in a family-level intervention improves co-parenting. Specifically, the project will utilize an Actor-Partner Interdependence Models (APIM; Cook & Kenny, 2005; Kenny, 1996) to examine whether parental adjustment and primary family interaction patterns (e.g. coercion, withdrawal, distress avoidance) at baseline affects co-parenting behaviors 1-year after baseline. It is well established that parental mental illness is associated with negative family interaction (Saxbe et al., 2014), and that negative family interaction is associated with co-parenting behaviors (Schoppe et al., 2001); however, these variables have never been examined in the same model. The present study will add to the current literature by examining all three variables in the same model. In other words, the bidirectional effects of parental mental illness, family interaction, and co-parenting behaviors of both the service member and spouses will be examined in a single APIM model. Understanding how these variables are related and how they influence both members of a co-parenting dyad may help to guide future intervention. It is expected that service member and spouse mental illness will be correlated with negative interaction patterns that will then be correlated with negative co-parenting behavior. It is expected that these patterns will be observed both within and across individuals.

Additionally, the present study will examine the effects of the ADAPT prevention/intervention program on service member and spouse mental illness, negative interaction patterns, and co-parenting behavior. It is expected that families in the treatment group will report lower rates of mental illness in both service members and spouses. It is also expected that families who complete the ADAPT program will engage in less observed negative interaction with each other and will display more positive co-parenting behavior than families who are in the treatment as usual group. Current research on the ADAPT intervention has shown that families who have completed the program demonstrate lower levels of child
psychopathology (Gewirtz et al., 2014). The present study will add to this research by exploring possible mechanisms of action. Specifically, this study will investigate whether the ADAPT program has an influence on parental psychopathology, positive interaction patterns between spouses, and co-parenting behavior.
CHAPTER II
LITERATURE REVIEW

Since the outset of Operation Enduring Freedom (OEF; Afghanistan) and Operation Iraqi Freedom (OIF; Iraq), nearly five million service members and family members have been affected (Khaylis et al., 2011). Multiple deployments place added stress on these military families, as more than 25% of service members are deployed twice while approximately 13% are deployed three or more times (Chartrand et al., 2008). Because of the high degree of stress associated with the frequent transitions and changes of the military lifestyle, these families are particularly vulnerable to both individual and family level distress, including a heightened risk for psychopathology, maladaptive patterns of family interaction, and disruption of the coparenting relationship (Gewirtz et al., 2010). Unique challenges are faced during each stage of the full cycle of deployment (Lincoln, Swift, & Shorteno-Fraser, 2008); however, as the proposed research design focuses on a postdeployment sample, the literature review will also focus on postdeployment military families. Postdeployment occurs following a service member’s return home and presents families with a variety of challenges as they attempt to reintegrate, redefine roles, and reengage with the returning service member (Gewirtz, et al., 2010). The present study will investigate the relationship between postdeployment challenges and how treatment may improve mental health outcomes and family interaction patterns within families that typically struggle with both mental health diagnoses and communication following return from deployment.

Postdeployment Mental Illness

Service members may face severe stressors while deployed as well as a number of adjustment challenges following deployment, both of which can precipitate emotional distress
and/or psychiatric disorders for this population (Khaylis et al., 2011). Upon returning from deployment, service members must readjust to civilian life as well as family life. In the past 10 years, research has shown an increasing prevalence of service members who experience mental health diagnoses during and following deployment. Since 2004, 20 – 40% of service members have reported the incidence of postdeployment psychopathology or other significant functional impairment (Hoge et al., 2004; Thomas et al., 2010). Differential diagnosis for service members is broad and can depend on several factors, including individual patient characteristics, availability of support, combat exposure, and the time elapsed since the start of deployment and/or since returning home (Reeves et al., 2005). The present review will examine some of the most prevalent mental health issues faced by service members.

Posttraumatic stress disorder (PTSD) is the most common form of psychopathology experienced by service members and carries the highest incidence rate for this population. Milliken et al. (2007) found that 12.7 – 18.2% of service members in their sample screened positive for PTSD upon return from deployment and 24.5 – 31% screened positive for PTSD 6 months following deployment. Thomas et al. (2010) found prevalence rates for PTSD between 8.5 – 31.1% in their sample of returning service members, and Wisco and colleagues (2014) reported an average lifetime prevalence of PTSD at about 12-15%. Despite a range between 8 – 31% for PTSD prevalence in service members, these rates are still significantly higher than in U.S. civilians where the lifetime prevalence of PTSD ranges from 3.8 – 8.3% (Kessler et al., 2005; Kilpatrick et al., 2013).

Service members who were exposed to combat are at an elevated risk for PTSD. This subset of service members may report extreme stressors, including “being surrounded by the enemy,” “being under enemy fire,” or “being in danger of injury or death” (Keane et al., 1989).
The role of combat exposure is assumed to be central in the development of PTSD (Egendorf et al., 1981; Foy et al., 1984; Smith et al., 2008). Therefore, the incidence of PTSD is reported to be 2-3 times higher among those exposed to combat compared with those who did not report combat exposure (Thomas et al., 2010). Incidence rates range from 20% to nearly 45% of combat exposed service members meeting criteria for PTSD postdeployment (LeardMann et al., 2009; Smith et al., 2008). Thus, combat service members are a particularly susceptible subset of the military population who experience psychopathology and functional impairments at rates even higher than those experienced by service members who did not experience combat.

In addition to the high prevalence of PTSD, service members also meet diagnostic criteria for mood disorders at higher rates than those observed in the general population. Thomas and colleagues (2010) reported rates of depressive disorders in service members ranging from 8.5% – 20%. Black and colleagues (2004) found that 32% of their sample of service members met criteria for a current or lifetime depressive disorder. In a sample of combat exposed service members, 36% met diagnostic criteria for a depressive disorder, while nearly 70% of service members in the sample reported experiencing symptoms of depression (e.g., depressed mood, feelings of hopelessness, low energy), even if they did not meet full diagnostic criteria (Wells et al., 2010). Many service members who do not meet full criteria for a depressive disorder still commonly report a high degree of subclinical yet distressing levels of guilt, sadness, loss of pleasure in previously enjoyable activities, and difficulty sleeping following deployment (Hoge et al., 2006). While PTSD may receive the majority of the attention when considering mental health diagnoses in service members, depressive disorders also pose a serious problem for this population, especially as a diagnosis of a mood disorder makes other functional impairments more likely as well.
Alcohol misuse and aggressive behavior are also common impairments for returning military members. The overlap between these conditions is high – alcohol use has been linked to increases in aggressive behavior and vice versa (Leonard et al., 1985) – and they both tend to be comorbid with PTSD and major depressive disorder (MDD) in service members (Black et al., 2004; Jacobsen et al., 2008; Thomas et al., 2010). In one sample, approximately half of soldiers who screened positive for depression or PTSD also reported struggling with substance use and/or aggression (Thomas et al., 2010). Further, Black and colleagues (2004) found in a sample of deployed and nondeployed service members that both groups displayed considerable substance use, though it was seen at a higher level in deployed service members. Prevalence of lifetime substance use disorders in service members who had been deployed in this sample was 70% and prevalence for nondeployed service members was 52%. Alcohol use disorders are the most prominent substance use related diagnosis, with a 68% lifetime prevalence in postdeployed service members and a 52% lifetime prevalence in nondeployed service members (Black et al., 2004).

Aggressive behavior (e.g., threatening with physical violence, getting into a fight with another individual) is also heightened in service members after returning from deployment (Thomas et al., 2010). Rates of different aggressive behaviors ranged from 9.7% (getting into a physical fight) – 14.7% (threatening physical violence), and both behaviors were seen to increase over the first 6 months following a service member’s return from deployment (Jakupcak et al., 2007). Combat exposed service members are more likely to engage in alcohol misuse and aggressive behavior in comparison with service members who were not exposed to combat (LeardMann et al., 2009).
There are also heightened rates of traumatic brain injury (TBI) in service members deployed to OEF/OIF conflict (Defense and Veterans Brain Injury Center, 2013; Warden, 2006.) Hoge and colleagues (2008) reported that approximately 15 – 19% of returning OIF/OEF service members reported a TBI with either a loss or alteration of consciousness (e.g., confusion, disorientation, memory loss). Further, nearly 10% of service members receiving care in the Veteran Health Administration have been identified as having a TBI (Taylor et al., 2012). For some service members, mild traumatic brain injury can progress into more severe neurological disorders. Of particular concern has been the risk of posttraumatic epilepsy (Pugh et al., 2015) and memory decline (Seal et al., 2016). Originating in studies of World War II and the Korean War, a link was identified between combat-related head injury and epilepsy (e.g., Caveness, 1976; Walker, 1989;). More recent research has supported this theory that service members who experience penetrating head injuries where the skull is pierced, are more likely to also experience epileptic seizures following return from war (Pugh et al., 2015). Similar trends have been noted with memory decline, in that service members who experience a TBI during deployment are more likely to report both short-term and long-term memory deficits, particularly in regard to the recall of specific information (Seal et al., 2016). The physical and mental deficits associated with TBI can make these injuries particularly distressful for service members.

The increased prevalence of mental illness in service members has been linked to higher rates of overall dysfunction in their families. For example, high rates of relationship dissatisfaction have been reported in treatment-seeking service members (Sayer et al., 2010). Divorce is seen more frequently in military couples following service member return from deployment, especially those who report higher marital dissatisfaction and communication difficulties (Karney & Crown, 2007). The marital relationship is not the only relationship
affected by deployment. Parental deployment can affect children’s physical health, contribute to academic performance problems, increase externalizing behaviors, and increase internalizing symptoms in the children of service members (Chandra et al., 2010; Chartrand & Siegel, 2007; Park, 2011). Thus, a broad range of family dysfunction is observed in conjunction with the increased rates of mental illness in military families with a service member who has been deployed.

Unfortunately for service members, many of these mental health and family-wide issues do not occur in isolation – comorbid diagnoses and functional impairment are common (Thomas et al., 2010; Trivedi et al., 2015). Multiple mental health symptoms and higher levels of psychological distress cause a number of other significant challenges for these service members. Exposure to combat and other traumatic stressors increases the possibility that service members may demonstrate experiential avoidance, which is when an individual is unwilling to remain in contact with certain experiences and takes steps to alter these experiences (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Experiential avoidance may make it more difficult for service members to have difficult conversations with their spouse or to effectively tolerate their spouses’ distress. Experience of comorbid diagnoses can make it more difficult for service members to reintegrate with their families following deployment, an adjustment that is difficult regardless of mental health status (Jobe-Shields, Flanagan, Killeen, & Back, 2015). These service members may demonstrate more ineffective communication with family members (Friedmann et al., 1997), have lower reported marital satisfaction (Robles, Slatcher, Trombello, & McGinn, 2014), and indicate an overall difficulty in reintegrating to the rules and routine of their home (Seal et al., 2007). Further, increased prevalence of mental health diagnoses in service members also leads to the increased potential for mental health issues in other family members,
likely due to the ineffective communication patterns and lower reported marital satisfaction. Military spouses are often the most likely of family members aside from the service member to see increases in mental health diagnoses.

**Military Spouse Mental Illness**

Heightened rates of mental illness are also seen in the spouses of service members during and following the service member’s deployment. The spouses of deployed service members experience a number of prolonged stressors, including absence of the service member, disrupted communication with the deployed partner, parenting stress, and financial or occupational strains (Faber et al., 2008; Flake, Davis, Johnson, & Middleton, 2009). As a result of these stressors, mental illness is common. Approximately 20% of spouses meet criteria for at least one internalizing disorder during the service member’s deployment (Rosen, Carpenter, & Moghadam, 1989). Generalized anxiety disorder (GAD) is the most commonly seen internalizing disorder in military spouses, with 17% meeting diagnostic criteria for the disorder when the service member returns home (Rosen et al., 1989). Depression is also seen commonly in this population, with 12% meeting criteria for major depressive disorder (MDD). Comorbidity is high, as about half of military spouses who meet diagnostic criteria for one internalizing disorder will also meet criteria for a second internalizing disorder (Eaton et al., 2008). The estimated current prevalence of MDD and GAD in the general population is approximately 6.7% and 3.1%, respectively (Center for Disease Control and Prevention, 2010; Hasin, et al., 2005; Kessler et al., 2003), indicating significantly higher levels of current internalizing disorders in spouses of service members.

An increased prevalence of internalizing disorders is often associated with an increase in substance use, though this relationship is especially elevated in military spouses (Eaton et al.,
Rates of substance use, particularly alcohol use, in military spouses have ranged from 12 – 22% (Ahmadi & Green, 2011; Eaton et al., 2008). The shame and stigma surrounding seeking treatment for such issues creates barriers for military spouses who might benefit from additional support (Martin & Ickovics, 1987). Specific barriers that may prevent spouses from seeking help for mental health disorders include difficulty with childcare, inability to take time off work, cost, and not knowing where to seek help (Eaton et al., 2008). These issues are especially salient for military spouses while their partner is deployed, as they struggle to balance work and family demands on their own. Further, in a cyclical pattern, substance use can further exacerbate internalizing issues and other stresses associated with having a spouse who is deployed. This would increase the need for treatment, without decreasing the stigma or reducing the challenges associated with military spouses seeking treatment. Stigma surrounding mental illness for both service members and military spouses makes it less likely that this population will report symptoms of mental illness, thereby making it less likely that they will seek treatment.

**Stigma and Mental Illness in the Military**

Despite the high percentages of service members and military spouses experiencing psychological distress, research indicates that a minority of this population expresses interest in seeking treatment and an even smaller minority follows through with seeking psychological treatment. Hoge et al., (2004) found that in a population of service members who met the criteria for a mental illness, only 38 – 45% indicated an interest in receiving help. Furthermore, of those who were interested in getting help, only 23 – 32% reported actually receiving professional help (Hoge, et al., 2004). More recently, Ben-Zeev et al., (2012) reported similar numbers, suggesting that only 20 – 30% of service members who scored highly on a postdeployment mental health screener ultimately sought treatment. These numbers stand in contrast to service members
seeking medical care following deployment. Service members required to complete both an interview with a medical professional and an interview with a psychological professional reported more discomfort in discussing potential psychological problems than medical problems, especially when they were returning to their unit following the interview (Greene-Shortridge, Britt, & Castro, 2007). In addition, service members reportedly were more than three times less likely to follow through with a psychological referral than a medical referral (Britt, 2000). Clearly, many service members who could benefit from evidence-based psychological treatments appear to be disinterested in receiving care and do not actively seek help for psychological distress. It is believed that a major factor preventing military populations from admitting a problem and seeking help is the stigma associated with mental illness.

Stigma can be defined as a negative and erroneous belief about a person and can be examined as both public stigma and self-stigma. In the case of mental illness, public stigma is the reaction of the general public toward people with mental illness, whereas self-stigma is the internalization of how the public portrays people with mental illness and the belief in that portrayal (Green-Shortridge et al., 2007). Research suggests that service members experience both public stigma and self-stigma, which can reduce the likelihood of their seeking treatment (e.g., Cooper, Corrigan, & Watson, 2003; Corrigan & Watson, 2002). This seems to be especially common if service members believe that there may be negative consequences (e.g., from fellow service members or commanders) if the service member admits to having psychological distress. Attempts to reduce any possible stigma may include under-reporting symptoms, denying a problem, and refusing to seek treatment (Ben-Zeev, et al., 2012). This can happen in both service members and spouses who are trying to display strength and fortitude as they work through the postdeployment and reintegration process.
When service members and spouses are experiencing mental illness, reintegration for the family can be even more challenging due to increased difficulties with communication, redefining roles, and overcoming stigma. However, not all service members and spouses will experience mental illness, and of those who do, not all will experience difficulty readjusting to the predeployment roles and routines of the home. There are a number of factors that may play an important role in both service members’ and family members’ adjustment following deployment. The current research focuses on the possibility that interaction patterns and other interpersonal processes between service member and spouse may serve as protective and/or risk factors for how well each is able to adjust following deployment. A better understanding of these patterns and their impact on adjustment could facilitate the creation and delivery of interventions to effectively promote the adjustment of service members, their spouses, and children. One such factor that may be targeted in an intervention would be the influence that spouses tend to have on the other’s behaviors and interactions, an influence which can be further complicated by mental illness.

**Reciprocal Influence of Spouse Behavior**

One of the most developed theories of influence is expectation states theory (EST; Berger et al., 1977). This theory is an approach to understanding how people evaluate the competence of others while completing tasks and the amount of credibility or influence they attribute to the other individuals as a result (Correll & Ridgeway, 2006). Social scientists have utilized this theory to explain the origins and influence of beliefs about the status of others, particularly in relation to social inequality. It is thus believed, according to EST, that a person’s formulation of others may be based on their perceived competence – the higher the perceived competence, the more influence individuals are seen to have (Correll & Ridgeway, 2006). EST was originally
developed for use in traditional small task groups, but has since been adapted in the study of marital interaction (Stets, 1997; Stets & Burke, 1996). According to EST, people develop expectations for one another within their interactions based on each other’s relative status (Ridgeway & Walker, 1995). Therefore, in a marital relationship, the partner that is seen as having a higher status will have greater influence on the self-views and behavior of the lower status spouse. The lower-status spouse will also be more likely to defer to the higher-status spouse when making decisions and judgments due to a presumed belief that the high-status spouse can do this more successfully (Cast, Stets, & Burke, 1999; Ridgeway & Bourg, 2004).

EST has continued to be adapted to different settings where the expectations of one spouse may influence the decisions of the other. Research examining the influence of a spouse’s expectations on the behavior of the other spouse has focused most frequently on the areas of smoking and drug use. Results have suggested that similarity of beliefs and premarital behavior are the two most important factors that contribute most to spousal influence on the other’s behavior (Price & Vandenberg, 1980; Venters et al., 1984). For example, premarital marijuana use by wives was related to continued use of marijuana by husbands 5 years into the marriage, in that husbands with wives who had used marijuana prior to their marriage were almost three times more likely to be using marijuana 5 years into their marriage. However, in marriages where wives did not use marijuana prior to the wedding, husbands were 60% less likely to continue their use (Yamaguchi & Kandel, 1997). Participants reported that a negative view of marijuana use by their partner was directly related to their choice to decrease or stop their use upon marriage. Similar results have been found with cigarette use. Married pairs were likely to either both smoke or both not smoke at a rate higher than the average concordance rate for randomly selected male/female dyads (Venters et al., 1984). Further, married couples were more likely to
increase, decrease, or completely change their smoking behavior in an effort to more closely align with the views of their partner (Gerrard et al., 2008). This research on drug use suggests that the behavior of one spouse can be influenced by the beliefs, behavior, and/or expectations of the other spouse.

Spousal expectations and perceived influence, as described through EST, can regularly impact their daily routines and interactions. The theory predicts that generally men will be more influential, assertive, and less inclined to agree with their spouse due to the stereotypical presentation of men as dominant in relationships (Ridgeway & Smith-Lovin, 1999). This can cause conflict in the relationship, as the female partner feels that her influence does not match that of her spouse. The typical pattern that EST predicts between spouses may be altered, however, in military families because the wife is often required to serve as head of the household while the service member is deployed. She may thus maintain her more influential status postdeployment, as the service member needs to spend time reintegrating to civilian life (Cast, Stets, & Burke, 1999; Karney & Crown, 2007). Expectations of either spouse can influence a number of areas – the present study will examine the influence of each spouse on the other in regard to mental illness, co-parenting behavior, and interaction patterns between spouses. Interaction patterns between military spouses are of special consideration, as military training and lifestyle likely influence these patterns in a way not seen in civilian populations.

Maladaptive interaction patterns and overlearned responses to environmental challenges are likely to be common in all families; however, specific responses may be seen more frequently in military families following return from deployment (Cozza, Holmes, & Van Ost, 2013). Greater frequency of automatic responding (e.g., responding without thought) may be due to the training service members receive while in combat and the high levels of stress endured by
all family members (Ruscio, Weather, King, & King, 2002). For service members, these automatic, overlearned responses are expected while deployed and reflect training to suppress emotions and to react automatically to perceived danger, which is adaptive in combat. These responses also reflect the spouse’s need to suppress feelings of stress and sadness when caring for the family while the service member is deployed (Ruscio et al., 2002). Thus, the expectations put on each spouse by the situation are strongly influential in the ensuing behavior and interaction styles.

If these response patterns generalize to family interactions, service members and spouses may react to each other and to their children through behavioral withdrawal, emotional unavailability, and/or coercion and reactivity (MacDermid, 2006; Riggs, Byrne, Weathers, & Litz, 1998). Alternatively, service members and spouses with more sophisticated ability to adjust following a period of deployment may demonstrate more positive and constructive family functioning and interaction (Gewirtz et al., 2011). This constructive engagement is generally diminished in families experiencing higher postdeployment adjustment issues, as these families may be allowing previous negative influences or current external expectations to influence their behavior.

When one of the spouses is afflicted with a mental illness, both patterns of communication and influence can be disrupted. Research has shown that when one or both parents struggle with mental illness, they are less able to effectively communicate with each other regarding personal and parental issues (Reupert & Mayberry, 2007). There are a number of elements that may differentiate between effective and ineffective communication in these couples. For example, spouses with depression have been found to be more likely to withdraw from conversation and less likely to engage in active listening (Baucom et al., 2007). Mental
illness in general has been linked with an increase in nagging, discourtesy during conversation, and an overall lack of communication between spouses (Harper & Sandberg, 2009). Other ineffective communication practices that seem to be more common in individuals with mental illness include a lack of understanding, minimal self-disclosure, difficulty in handling anger, and an inability to articulate one’s ideas in an effective manner (Baucom et al., 2007). The overall communication style of couples affected by mental illness can generally be described in terms of maladaptive patterns of communication. Two specific patterns will be focused on in the present study: (a) behavioral withdrawal, which may include deliberate avoidance of distressful interactions, and (b) reactivity/coercion.

Behavioral withdrawal is a common maladaptive reaction seen in dysfunctional communication patterns between spouses, particularly when the home environment is stressful. Withdrawal leads to diminished availability to family members, as conveyed through fewer positive initiations and a lower level of responding to others (Piotrkowski, 1979; Repetti, 1989). Spouses may either avoid conversation due to a perceived reduction in responsiveness or they may respond with an increase in coercive interaction patterns (Conger, Ge, Elder, Lorenz, & Simons, 1994). Avoidance of distress, specifically, involves the tendency to rapidly respond to displays of emotional distress or the negative behavior of other family members with a general wariness. Family members may experience discomfort in relation to other’s distress, which leads to withdrawal from conversation or quick attempts to soothe without discussing the actual problem (Davis 1983; Palladino et al., 2013).

Coercion in family interaction refers to family members acting in manipulative ways toward one another in order to avoid unpleasant events and demands from one another (Patterson, 1982). Spouses may get angry in order to weaken the attempt of the other to set
expectations or may respond more harshly or critically in an attempt to elicit attention or compliance. The presence of behavioral withdrawal and/or reactive or coercive interaction patterns is seen more frequently in families with mental illness, due to the increase in stress and uncertainty (Eldridge & Christensen, 2002). These patterns of interaction make it more difficult for spouses to have conversations about important topics, such as co-parenting. The present study will investigate the linkage of parental mental illness, bi-directional influence between spouses, and family interaction to co-parenting behavior.

Co-Parenting

Conceptually, co-parenting refers to the way parents and/or parental figures relate to each other in the context of caring for a child. Specifically, co-parenting occurs when individuals have overlapping or shared responsibility for raising and caring for particular children, and it is through this relationship that parents negotiate their respective roles, responsibilities, and contributions to these children (Feinberg, 2003). The co-parenting relationship is measured by the extent to which parents support one another’s parenting efforts; higher levels of support are generally indicative of a more successful and amicable co-parenting relationship, even in instances of divorce (Margolin et al., 2001). According to Aydintug (1995), parents who are more “successful” in navigating the co-parenting relationship will be able to have discussions about their children, to reach mutual decisions about their children and to avoid arguing and criticizing each other in front of their children. “Successful” co-parenting is thus important in both the adjustment of the child and the development of the relationship between co-parents.

Despite the increased research being conducted on the predictors and outcomes of successful co-parenting, there exists no uniform definition of co-parenting. Feinberg (2002, 2003) and Van Egeren and Hawkins (2004) have provided two of the most widely used models.
Feinberg (2003) identified four components essential to co-parenting: (a) childrearing agreement, (b) division of labor, (c) support-undermining, and (d) joint family management. Childrearing agreement is a component that examines how well parents agree on a variety of important child-related topics, including behavioral expectations, discipline strategies, and education. Division of labor relates to the equitable, or unequitable, separation of household, financial, and legal duties and tasks as they relate to childcare and management of the family (Feinberg, 2003). Support and undermining looks at each parent’s supportiveness of the other in terms of parenting capabilities and meaningful contribution to the co-parenting relationship. The negative counterpart, undermining, examines the extent to which one parent challenges the other’s abilities through criticism and blame. Joint family management assesses different dynamics within the family and how parents work together to manage positive dynamics and alter negative dynamics. Of particular interest to Feinberg (2003) were interparental conflict and coalitions between family members. Feinberg suggested that a relationship could be classified as a co-parenting relationship if these four components are present.

Van Egeren and Hawkins (2004) also developed a popular framework detailing the co-parenting that suggested four components to describe the construct: (a) co-parenting solidarity, (b) co-parenting support, (c) undermining co-parenting, and (d) shared parenting. Co-parenting solidarity exemplifies the emotion-driven quality of growing together as parents and is evidenced by expressions of warmth and positive emotions during interactions (McHale, 1995) and/or reports of becoming closer as a result of co-parenting (Frank, Jacobsen, & Averey, 1998; Schoppe et al., 2001).

The second and third dimensions suggested by Van Egeren and Hawkins – co-parenting support and undermining co-parenting – are similar to the components proposed by Feinberg.
They are defined, respectively, as strategies that support the partner’s efforts to reach parenting
goals and strategies that thwart or prevent the partner’s efforts to reach goals. Shared parenting is
the broadest dimension and consists of division of labor and balance of involvement, which
describes the degree to which each partner is engaged with the child relative to the other partner
(McHale, 1995). Van Egeren and Hawkins, as well as Feinberg, provided these models as
holistic definitions of different factors that are all important to the definition of co-parenting.

While the two conceptualizations share some common features, such as the inclusion of
supportive and undermining co-parenting, there are some distinctions to be made. The
framework developed by Van Egeren and Hawkins (2004) differed from that proposed by
Feinberg (2003), in that it is more methodologically driven. In creating their framework from a
research based perspective, Van Egeren and Hawkins relied on parent self-report measures,
observations, and direct experience. Feinberg, on the other hand, clarified co-parenting
characteristics that are likely to be more useful in clinical practice. They also differ in the extent
to which each framework considers the parents’ experiences of co-parenting based on perceived
reports or observed actions by the partner (Van Egeren & Hawkins, 2004). However, despite
their differences, both still are noted as providing comprehensive definitions of the concept of
cooparenting.

Co-parenting is thought to be related to marital satisfaction, yet is traditionally examined
as a distinct concept. Researchers interested in martial satisfaction typically assess couple’s
relationship quality via partner reports and observations of their interactions with each other
(Mangelsdorf, Laxman, & Jessee, 2011). All couples, including those who are and are not
parents, can be examined in regard to commitment to his or her partner and the perceived
fulfillment each gets from the relationship. Martial satisfaction is still an important contextual
factor when examining childhood outcomes, as satisfaction in a marital relationship is considered a predictor of child adjustment (Frosch, Mangelsdorf, & McHale, 2000). In contrast, the co-parenting relationship focuses on the interactions of partners only to the extent that they relate to the child and their shared responsibility of that child. Romantic, financial, and other factors are only considered in the context of the co-parenting relationship to the extent that they have an effect on the individual’s capacity to care for the child (Feinberg, 2003). For example, divorced couples who exhibit high levels of conflict may have a poorer co-parenting relationship because of their difficulty in effectively communicating about their child without argument. Both co-parenting and marital satisfaction appear to be distinct predictors of child adjustment (Feinberg, Kan, & Hetherington, 2007; Frosch et al., 2000).

Because of the proximity of the co-parenting relationship to children’s success, much research has investigated the contribution of parental agreement/disagreement in childrearing to child development and adjustment. The majority of these studies target young children (ages 2 – 7) and their parents, though research has consistently found that co-parenting is a relevant factor in child development from early childhood all the way through late adolescence. For example, co-parenting conflict in infancy predicted higher preschool teacher ratings of child aggression at age 4 (McHale & Rasmussen, 1998) and higher levels of parental cooperation showed a negative association with externalizing behaviors at age 4 (Schoppe et al., 2001). More recently, Schoppe-Sullivan and colleagues (2009) reported that effective co-parenting served as a buffer against a child’s tendency toward externalizing behavior. Specifically, when parents displayed high levels of supportive co-parenting behavior and low levels of undermining co-parenting behavior, increased levels of externalizing behavior were not seen; this was true even for children with low
effortful control, meaning those who have difficulty inhibiting behaviors and maintaining attention (Rothbart & Bates, 2006).

Similar outcomes have also been seen for older children. Low parental cooperation during the summer months, as evidenced by disagreement between parents in regard to the child’s schedule, limits, etc., predicted attention problems, diminished mathematical abilities, and passivity in third grade students (Stright & Neitzel, 2003). Additionally, Jones and colleagues (2003) showed a longitudinal relationship between conflict in the co-parenting relationship and both internalizing and externalizing symptoms in grade school-aged children.

In adolescence, Baril, Crouter, and McHale (2007) found that high levels of conflict between parents in regard to children-related decisions predicted adolescent risk and impulsive behavior at baseline and at 1-year follow-up. In other longitudinal studies, co-parenting conflict was related to adolescent antisocial behavior (Feinberg et al., 2007), and difficulties in family management. Triangulation dynamics, in which one parent tries to gain cooperation of the child against the other parent, seen among family members was associated with internalizing problems in adolescents over time (Buehler & Welsh, 2009). Through previous literature, co-parenting is shown to be very important in the child’s success, a correlation that is seen throughout childhood and adolescence. Though to a lesser extent, research has also examined the relationship between co-parenting behavior and its influence on partner adjustment.

Parenting behavior is likely to be influenced by a number of factors. Some of the most studied factors that can influence parenting behavior include personal and psychological resources of the parents (Baldwin, Cole, & Baldwin, 1982; Schleider, et al., 2015), characteristics of the child (Lerner, 1982), and sources of stress and support (Colletta & Gregg, 1981; Mackler et al., 2015). The influence parents have on each other concerning their parenting
ability has been studied less, though there does seem to be some empirical evidence supporting this relationship. Past literature has found that mothers are more likely to be positive (e.g., use consistent praise) with their young children when fathers display higher levels of supportiveness and positive regard toward the mother (Pedersen, 1982). Similarly, Peterson and Zill (1986) suggested that supportive behavior by mothers toward fathers leads these fathers to report a higher sense of parental competence, regardless of the temperamental difficulty of their child. Positive and supportive behavior by one parent during infancy therefore seems to positively influence the behavior of the other parent.

Investigations linking parent behavior with child adjustment during elementary and adolescent years is consistent with research examining these correlations with infants. Jekielek (1998) observed that mothers who reported less warmth and affection from the father of their children were more likely to engage in negative parenting behaviors (e.g., scolding, nagging, and coercive requests) toward their child. Complementing these findings are data indicating that mothers’ positive behavior and praise toward the fathers was positively associated with the amount of praise and support that they directed toward their elementary-aged children (Hipwell et al., 2008). During the adolescent years, high interspousal hostility has been linked to higher rates of harsh punishment and coercive parenting practices, as well as lower rates of educating the child on what they should have done differently and other corrective discipline strategies (Fletcher, Elder, & Mekos, 2000). Because an increase in negative parenting behavior and a decrease in positive parenting behavior predict less than optimal child adjustment, it can be inferred that there is a process of mutual influence, in which marital interactions influence parenting behavior, which then influences the development and adjustment of the child (Crouter, Belsky, & Spanier, 1983).
More recent research has supported the findings of past literature in regard to spousal influence on co-parenting behavior and child adjustment. Conflict and discord in marital relationships has continued to be linked to an increase in negative parenting practices (Sears et al., 2015). For example, parents’ negative behavior toward each other predicts an increase in parents’ harshness, inconsistency, and psychological control of their children, and also predicts a reduction in parents’ acceptance of their children (Benson, Buehler, & Gerard, 2006; Klausli & Owen, 2011). Researchers have described this process as somewhat of a “spillover,” in that stress from negative interactions between spouses then influences their behavior when parenting their children (Sears et al., 2015). Child adjustment may consequently be directly related to this negative spillover from spouse interaction that seems to impact ability to positively co-parent.

Research on co-parenting has increased in the previous two decades. Conceptually, co-parenting pertains to the shared responsibilities parents hold in raising and caring for their children (Feinberg, 2003). Co-parenting is often more “successful” when parents are able to be supportive and collaborative in terms of their parenting efforts (Margolin et al., 2001). Both marital satisfaction and the co-parenting relationship appear to be distinct and clear predictors of child adjustment (Feinberg, Kan, & Hetherington, 2007; Frosch et al., 2000). When co-parents are not as successful in their ability to support one another’s parenting, children are more likely to display internalizing symptoms (Buehler & Welsh, 2009; Stright & Neitzel, 2003) and externalizing behaviors (Baril et al., 2007; Feinberg et al., 2007). Thus, interventions targeting co-parenting behavior may reduce internalizing and externalizing symptoms in children, resulting in family-wide improvement.

This review of the literature on family interaction has shown that mental illness, spousal interaction patterns, and co-parenting are all important factors that contribute to the overall well-
being of the family. This may be particularly true in military families, who are exposed to greater levels of stress and unpredictability (Chandra et al., 2010). Both service members and their spouses are diagnosed with mental illness at rates higher than is seen in the general population (Eaton et al. 2008; Thomas et al., 2010). Previous research has linked mental illness with a number of challenges, including more negative interaction patterns and increased negativistic influence over the other spouse. Parenting behavior may be particularly affected by mental illness in the military population as service members and spouses must collaborate as the service members attempt to reintegrate to the civilian role following deployment (MacDermid, 2006). If the service member and spouse are unable to effectively co-parent during this time of reintegration, children are more likely to experience mental illness, as well (Baril et al., 2007; Buehler & Welsh, 2009). More recently, researchers and clinicians have placed a greater focus on the development of postdeployment family treatment programs, which may help create a smoother reintegration process. The present study will investigate the effectiveness of one particular family treatment program in increasing positive parenting behavior following deployment.

**Postdeployment Family Treatment Programs**

In 2007, the American Psychological Association Presidential Task Force on Military Deployment Services for Youth, Families, and Service Members concluded that there is a paucity of family-based interventions for families following major military operations. Of even greater concern, there is a lack of research explicitly examining the mental health and effective functioning of families following deployment (MacDermid et al., 2008; Park, 2011). Fortunately, initiatives to support service members are broadening their focus from solely treating individuals to military families as a whole because of the research highlighting the stress of deployment and
reintegration on the family system (e.g., Faber et al., 2008). More recently, researchers have worked to adapt established interventions to more specifically target military families in order to address the scarcity of family-based interventions for military families during reintegration. The present research will investigate the effects of one intervention on the co-parenting relationship in military families following their return from deployment.

The After Deployment, Adaptive Parenting Tools (ADAPT) intervention is an adaptation of a 14-week parent management training prevention intervention (PMTO: Forgatch & DeGarmo, 1999) that has been modified for use with military families (Gewirtz et al., 2014.) This web-enhanced, group-based parent training intervention is designed to increase the frequency of five positive parenting practices and techniques: (a) skill encouragement, (b) positive involvement, (c) family problem-solving, (d) monitoring, and (e) effective discipline (Forgatch & Patterson, 2010). Three specific additions were included in the ADAPT curriculum based on literature about military families. These additions were included to address (a) military culture and context, specifically needs akin to the reintegration process, such as co-parenting; (b) how stress reactions following combat may affect the family system and parenting ability; and (c) barriers to participation in a group intervention setting (Gewirtz et al., 2014). Thus, ADAPT is a PMTO program with additions to the curriculum consistent with literature detailing helpful strategies and information to use with military families.

The first addition of the ADAPT program is aimed at needs specific to the process of family reintegration following deployment. Feedback from National Guard and Army Reserve parents has suggested that one of the most challenging aspects of a parent returning from deployment is redeveloping a united co-parenting relationship (Gewirtz et al., 2011). To help parents with this significant challenge, the ADAPT program helps parents reconnect in their co-
parenting roles through developing joint goals for their children, problem solving co-parenting challenges, and agreeing on discipline strategies (Gewirtz et al., 2014).

The second addition of ADAPT addresses difficulties associated with parenting following return from combat. While in combat, service members are required to be vigilant and to expect danger, making emotional suppression an adaptive function of military training. However, while at home, they are required to engage in emotional responding without reactivity and hyper-vigilance, which may be difficult given their military training that encouraged emotional suppression (Samper, Taft, King, & King, 2004). In order to coalesce these two processes of responding in a way that is more adaptive for the home, ADAPT includes mindfulness exercises aimed at increasing capacity to be present and pay attention to children. Parents are further taught to respond to children’s emotions using emotion coaching techniques (Gewirtz et al., 2014).

The final adaptation to the ADAPT program discusses potential barriers this population may experience to participating in group sessions, due to the simultaneous balancing of home, work, and military obligations. In order to help with this challenge, a series of web tools was developed along with the ADAPT program that may be accessed from home for family members unable to attend one or more of the 14 in-person sessions. Online resources include videos showing military families practicing key positive parenting practices and mindfulness exercises that are downloadable to cell phones. Home practice and study sheets were also made available online that corresponded to the skill taught each week (e.g., if mindfulness skills are taught during week 2, teaching materials and home practice sheets for mindfulness skills would be made available online.) While the online materials were not meant as an alternative to completing the program in-person, they were able to supplement material taught during the
It was thought that by focusing on three military specific additions, the ADAPT program would be effective for this population.

Early research on the effectiveness of the ADAPT program with military families has shown positive results. Data from the first cohorts of the ADAPT intervention suggested a high degree of feasibility and acceptability in a postdeployment sample. The retention rate for families completing the ADAPT program was high – 79% of families attended at least 7 out of 14 sessions, where data on participation rates for parenting prevention programs are often much lower (e.g., Heinrichs, Bertram, Kuschel, & Hahlweg, 2005; Spoth & Redmond, 2000). Furthermore, families self-reported satisfaction with the treatment and a reduction in symptoms and target behaviors (e.g., greater reported parenting self-efficacy, decrease in maternal depression, increased positive parenting; Gewirtz et al., 2014). Parents who participated in the ADAPT program further demonstrated improved parenting locus of control (LOC; Gewirtz, DeGarmo, & Zamir, 2016), indicating an increase in the amount of control that parents feel that they have over the behavior of their child. Strong parenting LOC has been linked to child personality characteristics, such as an easy-going temperament, agreeableness, an increased ability to inhibit behavior (Ollendick, 1979), and improved communication patterns between children and parents (Bugental, Caporael, & Shennum, 1980). Parents in the ADAPT sample who developed an improved parenting LOC also displayed strengthened emotion regulation skills and reductions in psychological distress (Gewirtz et al., 2016).

Further research on the effectiveness of the ADAPT program has suggested that the increase in parenting LOC and positive parenting serve as mediators to an improvement in child adjustment and outcomes, as well. The increase in positive parenting seen in families going
through the ADAPT program has resulted in enhancement of psychosocial functioning and positive adaptation in children of these families (Gewirtz & Gliske, 2016). Specifically, children demonstrate a reduction in both internalizing and externalizing symptoms and show greater overall ability to cope with stress (Gewirtz & Gliske, 2016). Additional research has also supported an increase in children’s resilience following their parents’ completion of the ADAPT program (Nerenberg & Gewirtz, 2016). The present research will attempt to further investigate the effectiveness of the ADAPT program by examining the influence of the completion of the ADAPT program on the co-parenting relationship in military families following the service member’s return from deployment.

Present Study

In summarizing the above information, a number of points become clear. First, overseas deployment and subsequent reintegration of the service member into the family is a difficult process for both the service member as well as the spouse. This is evidenced by elevated rates of mental illness in both returning service members and their spouses. Second, families experiencing reintegration undergo a number of other problems not directly linked to mental health. These problems include higher rates of marital dissatisfaction, problematic interaction patterns (e.g., behavioral withdrawal, emotional unavailability, or coercion and reactivity), and difficulty with the co-parenting relationship compared to families in the general population. Third, reintegrating families have increased problems in co-parenting relationships and the coordination of the co-parenting relationship is strongly associated with child development, psychosocial adjustment, and future child psychopathology. Despite the depth of research examining each of these individual points, there is no study that has examined all three factors (parental mental illness, family interaction, and the co-parenting relationship) in the same model.
The present study aims to empirically evaluate the relationship between parental adjustment, family interaction, and the co-parenting relationship with a sample of military service members and their spouses. This study may contribute to understanding the link between these three constructs, which may then be able to inform the development of further family interventions for military families postdeployment. This study also aims to examine whether completion of a parent training program (the ADAPT program) will improve the co-parent relationship. Given previous literature on parental psychological distress, family interaction, and co-parenting, the following hypotheses will be tested. Measures utilized in the hypotheses include the Posttraumatic Stress Disorder-Military Checklist (PCL-M; Weathers, Litz, Herman, Huska, & Keane, 1994) and the Hopkins Symptom Checklist-25 (HSCL-25; Hesbacher, Rickels, Morris, Newman, & Rosenfield, 1980; Winokur, Winokur, Rickels, & Cox, 1984).

**H1a (Figure 1):** Increased levels of anxiety and depression symptomatology, as measured by the HSCL-25, in the service member will be associated with more frequent negative interaction patterns (e.g., coercion, withdrawal) with their spouse, as measured by coded observed interaction.

**H1b (Figure 1):** Increased levels of anxiety and depression symptomatology, as measured by the HSCL-25, in the spouse will be associated with more frequent negative interaction patterns (e.g., coercion, withdrawal) with the service member, as measured by coded observed interaction.

**H1c (Figure 2):** Increased levels of PTSD symptoms, as measured by the PCL-M, in the service member will be associated with more frequent negative interaction patterns (e.g., coercion, withdrawal) with their spouse, as measured by coded observed interaction.
**H1d (Figure 2):** Increased levels of PTSD symptoms, as measured by the PCL-M, in the spouse will be associated with more frequent negative interaction patterns (e.g., coercion, withdrawal) with the service member, as measured by coded observed interaction.

![Figure 1: Hypotheses 1a and 1b](image1)

![Figure 2: Hypotheses 1c and 1d](image2)

**H2a (Figure 3):** More frequent negative interaction patterns on the part of the service member during interaction with the spouse will be associated with a greater incidence of negative parenting behaviors (e.g., criticizing) and lower incidence of positive parenting behaviors (e.g., providing praise) as measured by Family Interaction Tasks (FITs).

**H2b (Figure 3):** More frequent negative interaction patterns on the part of the spouse during interaction with the service member will be associated with a greater incidence of negative parenting behaviors (e.g., criticizing) and lower incidence of positive parenting behaviors (e.g., providing praise) as measured by Family Interaction Tasks (FITs).
H3a (Figure 4): It is hypothesized that higher reported anxiety and depression symptomatology by both the service member and the spouse will contribute to increased negative interaction patterns, as assessed at baseline. Further, it is hypothesized that higher reported anxiety and depression symptomatology and increased negative interaction at baseline will be associated with negative parenting behavior by both partners at 1-year follow-up.

H3b (Figure 5): It is hypothesized that higher reported PTSD symptoms by both the service member and the spouse will contribute to increased negative interaction patterns, as assessed at baseline. Further, it is hypothesized that higher reported PTSD symptoms and increased negative interaction at baseline will be associated with negative parenting behavior by both partners at 1-year follow-up.
H4 (Figure 6): It is hypothesized that families in the treatment group will display more positive parenting behaviors at 1-year follow-up, after they have completed the ADAPT intervention program.
CHAPTER III

METHOD

Participants

The participants were 184 male National Guard or Reserve military service members who served in OIF/OEF conflicts, along with their significant others and children. All families lived and were recruited in the Minneapolis/St. Paul area. The male service members were primarily Caucasian with 85% of the men endorsing a non-Hispanic ethnicity. Service members were an average of 37.2 years old ($SD = 6.5$ years, range = 25-55 years). The majority of families, 67.4%, reported incomes greater than $60,000, with 25.8% of families reporting incomes between $30,000 and $60,000, and a small minority, 6.8%, reporting incomes lower than $30,000. The middle to upper-middle class status of the participants may be related to the relatively high education levels of the service members, with 41.7% having some college education and 52.2% having a four-year or advanced college degree.

A majority of service members reported serving as Army Reservists or National Guard members (72.6%), while the remaining 27.4% reported serving in the Navy National Guard or Reserves, Air Force, or other branches of the military. Approximately 17% of service members indicated that they were currently in the Reserve branch of the military, while the remaining service members classified themselves as being in the National Guard. Military rank as reported by the service members indicated that 24.2% held ranks of second lieutenant or above, indicating officer status, and 75.8% were enlisted service members or warrant officers. At the time in which data were collected, the service members had been deployed an average of two times ($SD = 1.1$, range = 1-8 times). Deployment history of the present sample is comparable to deployment patterns of National Guard and Reservists’ OIF/OEF more generally, with a mean length of total
deployment history of 24 months ($SD = 11$ months, range = 0-37 months; Department of Defense Task Force on Mental Health, 2007) at the time of data collection.

Spouse demographics were similar to those of the service members. Spouses were an average of 35.6 years of age ($SD = 6$ years, range = 23-51 years) and were highly educated. 39.3% of partners had some college education, 37.2% had completed college, and 14.1% had obtained advanced degrees (e.g., Masters, Ph.D.). A requirement for participation in the study was that couples have a target child between the ages of 4 - 13. The mean age of the target children was 8.3 years ($SD = 2.4$ years, range = 4-13 years). The gender breakdown was close to even, with 53.3% of children being female and 46.7% being male. While only one child was designated as “the target child,” many families had other children - the mean number of children per family was 2.4 ($SD = 0.9$, range = 1-5 children). A large majority of the couples in the study were currently married (94.4%), with an average length of marriage of 9.6 years. Only 1.9% had never been married, and 3.8% were separated or divorced at the time of the baseline assessment. This demonstrates a lower divorce rate percentage than is commonly seen within military relationships, likely because a majority of participants were members of the Army Reserve. Divorce rates for service members who have been deployed more than once are higher, ranging between 8% and 14% (Hogan & Furst Seifert, 2010).

**Procedure**

The data used in this study represent a subsample of military families participating in a larger randomized control trial of a behavioral parenting skills training intervention designed specifically for military populations. After Deployment: Adaptive Parenting Tools (ADAPT; Gewirtz et al., 2014) was developed by Abigail Gewirtz and her team at the University of Minnesota to provide postdeployment assistance to service members and their families. A
number of methods were utilized to recruit participants, with key administrative military service
officers and Veterans Affairs staff helping to facilitate recruitment. These methods include: (a)
mailings from the Minneapolis Veterans Affairs Medical Center to all local veterans of the
OIF/OEF conflict, (b) presentations at predeployment and reintegration events for National
Guard and Reserve personnel, (c) general community events and family picnics hosted for and
by the military, and (d) announcements via fliers, radio, and social media.

Families interested in participating were invited to go online to consent or to request
contact with program staff. Consenting families were directed to a Health Insurance Portability
and Accountability Act (HIPAA)-compliant web site to complete initial online assessments to
ensure qualifications for participation in the study were met. After completion of the initial
assessments and criteria for inclusion were met, project staff scheduled an in-home assessment
with family members. The purpose of this in-home assessment was to collect additional self-
report data and obtain video footage of the interactions among service members, their
spouses/partners, and children. Families were compensated for their time - $25 for each online
assessment completion and $50 for completion of each in-home assessment.

Following the in-home assessment, families were randomized to a services-as-usual
condition or to the ADAPT intervention. While families in the services-as-usual condition were
not eligible to participate in the intervention, they received resource sheets and online parenting
resources similar to the material presented in the ADAPT group. This included mindfulness
exercises and parent management training lessons (e.g., on effective communication, effective
use of reinforcement and punishment to obtain compliance from children). Families completed
in-home and online assessments at baseline prior to being assigned to a treatment group, as well
as at a 6-month, 1-year, and 2-year follow-up. This report uses cross-sectional data collected at baseline prior to intervention assignment, as well as data collected during the 1-year follow-up.

**Measures**

Mean scores, standard deviations, and distributional properties of baseline measures can be found in Table 1. Correlations among psychological distress variables can be found in Table 2.

**Hopkins Symptom Checklist-25 (HSCL-25).** The HSCL-25 (Appendix A; Hesbacher, Rickels, Morris, Newman, & Rosenfield, 1980; Winokur, Winokur, Rickels, & Cox, 1984) is a 25-item self-report symptom inventory used to measure psychological symptoms of anxiety and depression during the past 7 days. Participants are asked to rate how much they have been bothered by each symptom on a 4-point Likert-type scale, ranging from 1 (*not at all*) to 4 (*extremely*). The HSCL-25 has good internal consistency (α = .83 - .88) as well as good convergent validity with the Beck Depression Inventory (.76) and Beck Anxiety Inventory (.81) (Rosen et al., 2000). Three scores can be calculated from the HSCL-25: (a) the total score is the average of all 25 items, (b) the anxiety score is the average of the 10 anxiety items, and (c) the depression score is the average of the 15 depression items. The total score was utilized in the present study to assess service member and spouse overall levels of distress. The mean HSCL-25 score in the current sample at baseline was 36.81 (SD = 11.03, maximum possible score of 100) for service members and 36.77 (SD = 10.41) for spouses. Previous research has established an individual item score of 1.95, or a total score of 48.75 as a clinical cut-off, where individuals who score above this on the HSCL-25 should be further screened for a depressive disorder (e.g., Carlson & Rosser-Hogan, 1991; Mollica et al., 1987 Ventevogel et al., 2007). The internal
reliability of the HSCL-25 was $\alpha = .90$ for the combined scale. The internal reliability of the anxiety subscale was $\alpha = .87$, and the internal reliability of the depression subscale was $\alpha = .92$.

**Posttraumatic Stress Disorder-Military Checklist (PCL-M).** The PCL-M (Appendix B; Weathers, Litz, Herman, Huska, & Keane, 1994) is a 17-item self-report questionnaire that measures service members’ and their nondeployed spouses’ PTSD symptoms over the past 30 days. The PCL-M utilizes a 5-point Likert-type scale ($1 = not at all, 5 = extremely$), with items paralleling *Diagnostic Statistical Manual – IV (DSM-IV;* American Psychological Association, 2000) symptoms associated with Criteria B (reexperiencing – 5 items), C (avoidance/numbing – 7 items), and D (hyperarousal – 5 items) for the diagnosis of PTSD. The PCL-M does not examine symptoms related to Criterion A (exposure to a traumatic stressor) due to asking questions specifically related to stressful military experiences. The PCL-M has been repeatedly demonstrated to have good internal reliability ($\alpha = .92 - .97$) and convergent validity with other measures of PTSD in prior research (Weathers et al., 1994; Wilkins, Lang, & Norman, 2011). For example, it had a kappa of .64 with the PTSD section of the SCID and a .70 kappa with the Clinician Administered PTSD Scale, indicating that the PCL-M measures the intended construct (Weathers et al., 1994). PCL-M data from service members and their spouses at baseline were used in the present study. The mean PCL in the current sample at baseline was 28.96 ($SD = 11.03$; maximum potential score = 85) for service members and 26.98 ($SD = 8.45$) for spouses. Previous research has demonstrated means between 62 and 66 for participants with PTSD and means between 29 and 35 for participants without PTSD (e.g., McDevitt-Murphy et al., 2010; Weathers et al., 1993). The internal reliability of the scale in this sample ranged from $\alpha = .87 - .93$. 
**Family interaction tasks.** Video samples of interactions between service members and their spouses were coded using the macro-level and micro-level coding system described below. The specific task used in the present study was 5 minutes long, videotaped during baseline data collection at the University of Minnesota, and included both the service member and spouse without their child present. Partners were instructed to discuss an identified issue that both had rated as problematic during earlier self-report assessment and to develop a solution during the course of the task. Most identified issues by service members and spouses pertained to co-parenting and the reintegration of the service member. Examples of issues or concerns discussed in this task include reestablishing roles and routines following deployment, disciplinary strategies, reintegrating the service member back into the family routine, and relationship building between service member and child and/or service member and spouse. Divorced partners participated either with their ex-spouse or current partner. This was determined depending on the partner that co-parented with the service member following deployment and practicality. Ideally in divorced couples, the female partner whom stayed home with the children while the service member was deployed and co-parented with the service member following deployment was present during interaction in the present study, regardless of whether this female partner was the service member’s ex-spouse or current partner. Single parent families were not included in the current study because their interactions did not include a service member/spouse sample.

**Family Interaction Macro Code (FIMC).** The FIMC (Snyder, 2013) is comprised of 55 Likert scale items that range from 1-5 (1 = not true, not occur; 5 = clearly evident, very descriptive, NA = may not be observed), logically designed using an a-priori, face valid approach to assess the occurrence of the behaviors of parents during dyadic interaction. FIMC items can be
observed in Appendix C. Behavior/affect codes are designed to record behavior that contributes to key family interaction patterns. Three of these patterns – reactivity-coercion, withdrawal-avoidance, and distress avoidance – would be considered maladaptive. Positive engagement, a fourth more adaptive pattern of interaction, was measured to capture positive interpersonal functioning. The present study used the items assessing reactivity-coercion and distress avoidance when assessing negative interaction patterns within the present sample. Positive engagement was not included as it measured positive aspects of interaction, which was not a focus of the present study. Additionally, withdrawal-avoidance items were not utilized in analysis because these items seem to reflect a different construct. As discussed in the literature review, previous research suggests that both behavioral withdrawal and negative interaction patterns can cause tension and affect dynamics within a family, though in different ways. The present research will examine how negative interaction patterns bidirectionally affect reported psychological distress and co-parenting behaviors in military families. Reactivity-coercion and distress-avoidance items are highly correlated (see Table 3) and are reflective of a negative interaction construct.

Reactivity-coercion items RC was comprised of 17 items reflecting irritability, bossiness, nattering, and persistent negativity that may be accompanied by anger and contempt and escalate to threats (e.g., is volatile and easily reactive; is critical and negative). All 17 items describing RC loaded reliably on a single factor on each task for service members (factor loading > .65) and spouses (factor loading > .65).

Distress-avoidance (DA) was comprised of four items characterizing the rapid soothing responses to others’ distress (e.g., quick to reassure or sooth when one indicates distress) and the five items characterizing wariness (e.g., tentative, wary when others are distressed) and a lack of
empathy (e.g., minimizes one’s distress). The nine items loaded reliably onto the single factor named distress-avoidance for service members (factor loading > .46) and spouses (factor loading > .56). DA appears to reflect discomfort with one’s own feelings regarding the distress of others and therefore, an unwillingness to engage others during displays of their emotional distress. In the present study, DA may be reflective of a service member who changes the subject when his spouse becomes emotional or of a spouse who minimizes the trauma suffered by the service member while deployed. The DA factor is consistent with research indicating a correlation between fearfulness, discomfort, low empathy, and social behavioral avoidance when faced with others’ distress (Davis, 1983; Palladino et al., 2013).

The four observers who made ratings of the video samples were first trained until each reached an item level reliability kappa > .70 on 35-minute samples of interaction for four consecutive families. Procedurally, observers first watched each video sample prior to making ratings to develop a sense of the family members’ expressive and behavioral style. Then, ratings of the behavior and affective displays of each family member were made at the end of each of the seven tasks. Biweekly recalibration meetings were used to minimize observer drift and continue training. Reliability of observer ratings was assessed for 25% of the family video samples, without observer awareness of which samples were used to assess reliability. The average ICCs for service members’ reactivity-coercion was .47 and distress avoidance was .63. The average ICCs for spouses’ reactivity-coercion was .92 and distress avoidance was .68.

Relationship Affect Coding System (RACS). The RACS (Peterson, Winter, Jabson, & Dishion, 2010) provides guidelines for coding the onset and offset of each member’s observable behavior during ongoing interaction. The observable actions of service members and spouses were coded in real time and reflected three separate, continuous streams of behavior: (a) verbal,
(b) physical, and (c) affective. Within each stream, there are hierarchical rules for which code takes precedence, as outlined in the RACS manual. The interrelationship among behaviors of different people can be ascertained as all data are coded in real time. Verbal codes in the RACS include Negative Directive, Negative Verbal, Positive Verbal, Positive Structure, Directive, Talk, and No Talk. Affect codes include Anger/Disgust, Distress, Ignore, Validation, Positive Affect, and Neutral Affect. Physical codes include Negative Physical, Positive Physical, Physical Contact, and No Physical.

Three observers who coded the video samples using RACS were first trained until each reached an average reliability kappa of > .80 on specific coding categories for four consecutive families. Coders then met on a twice per month basis to reinforce information learned during training and ensure agreement on coding practices. Reliability of observer ratings was assessed for 25% of the family video samples, without observer awareness of which samples were used to assess reliability. Average kappa reliability for coders throughout baseline assessment was .89 (range = .73 to .96).

Relevant codes were converted to a rate per minute metric. A series of exploratory and confirmatory factor analyses were then used to identify, separately for service members and spouses, and for each task, those code categories reflecting reactivity-coercion and distress avoidance. Based on these analyses, the code categories of Negative Directive, Negative Verbal, Directive, Anger/Disgust, and Negative Physical were found to converge (each code loading > .52 for spouses and > .47 for service members on each task) to comprise a RACS micro-social summary code comparable in content to the macro-social reactivity-coercion factor derived from FIMC. This summary code was used in the present study as a measure of negative interaction between service members and spouses.
**Parenting behaviors.** Parenting behaviors were measured with five previously validated indicators: (a) problem solving outcome, (b) harsh discipline, (c) positive involvement, (d) skill encouragement, and (e) monitoring. Scores were obtained from observation of parent-child interactions during structured Family Interaction Tasks (Forgatch & DeGarmo, 1999; FITs). FITs lasted approximately 40 minutes and included three problem-solving tasks, which required parent(s) and the child to verbally discuss current conflicts. FITs in the present study also included a monitoring task and two teaching tasks. In prior studies, FIT codes demonstrated construct validity, and sensitivity to change with at-risk families (Forgatch & DeGarmo, 1999; Gewirtz, DeGarmo, Plowman, August, & Realmuto, 2009).

Trained coders scored FITs using the Coder Impressions System (Forgatch, Knutson, & Mayne, 1992), a macro-coding system designed to assess parenting behaviors, including both verbal and nonverbal displays. Coders individually watched each FIT and made an overall rating based on frequency, duration, and intensity of observed behavior. The Coder Impressions System evaluates five global core parenting practices. Intercorrelations among core parenting practices can be observed in Table 4.

*Problem solving outcome* was scored with a 9-item scale (α = .75) that evaluated the quality of solution reached by parent and child, the observed satisfaction at the end of the discussion, and the perceived likelihood that the solution would be utilized in the home. Items were rated on a 5-point Likert scale from 1 (*untrue*) to 5 (*very true*), and the average inter-coder correlation (ICC) for problem solving outcome was .88. The most common problem discussed between parent(s) and child was completion of chores. Ratings assessed collaboration between parent and child when reaching the solution, the feasibility of the solution, how satisfied the parent and child appeared with the solution, etc.
*Harsh discipline* was measured with an 8-item scale ($\alpha = .75$) that looked for overly strict, punitive, authoritarian, or quick-to-judgment parenting behaviors. Items were rated based on the entire interaction from 1 (*never*) to 6 (*always*), and the average ICC for harsh discipline was .78. For example, if a parent shuts down attempts at collaboration by the child, he may be rated higher in the category of harsh discipline.

*Positive involvement* was assessed with a 10-item scale ($\alpha = .75$) that measured parent’s empathy, encouragement, and warmth toward their child. Items were rated from 1 (*untrue*) to 5 (*very true*), and the average ICC for positive involvement was .72. In contrast to harsh discipline, a parent who praises a suggestion given by the child would be observed to be positively involved.

*Skill encouragement* was evaluated with an 8-item scale ($\alpha = .83$) reflecting the parent’s ability to promote the development of the child’s skills through encouragement and effective teaching strategies. Items were rated from 1 (*untrue*) to 5 (*very true*), and the average ICC for skill encouragement was .72.

*Monitoring* was scored by a 4-item scale ($\alpha = .71$) assessing parents’ supervision and knowledge of their children’s daily activities. Items were rated from 1 (*untrue*) to 5 (*very true*), and the average ICC for monitoring was .74. A parent who could thoroughly describe the child’s current routine would likely be rated higher on the monitoring subscale. All scales were averaged to create summary scores, such that higher scores indicated higher positive overall parenting behavior. Observed parenting behaviors that will be utilized in the present study were assessed 1-year after the initial baseline assessment.

**Analytic Approach**
A single negative communication construct was created for service members and spouses by combining macro-social rating codes reactivity-coercion and distress avoidance and micro-summary codes comprising negative interactions (RC, DA, RACS negative). This construct was created by computing the z-score of each individual negative interaction code for service members and spouses. These standardized scores were then combined and averaged for each partner. Final aggregate scores measuring negative interaction were calculated for both (a) service members with their spouse and (b) spouses with the service member by taking the average of the FIMC + RACS factor score. Previous research has supported the use of combined constructs (e.g., Gefen, Straub, & Boudreau, 2000; Snyder, Bank, & Burraston, 2005; Snyder et al., 2016). This was done in the present study to reduce the number of models run, to reduce Type I error, and for parsimony. By aggregating these behaviors into a single underlying concept, the model can provide a lot of information while still being easily understandable. The current study seeks to examine the general level of relational reactivity and interpersonal conflict between service members and spouses as opposed to specific, observable negative interaction patterns (e.g., nagging, arguing, undermining one’s spouse). In doing so, results will speak to the overall presence of negative interactions between service members and spouses.

To meet the statistical assumptions of SEM, a statistical threshold for internal reliability must be met (Anderson & Gerbing, 1988). Internal consistency above .6 is considered acceptable in SEM (Tavakol & Dennick, 2011). The internal reliability for service member negative interaction patterns was $\alpha = .65$ and for spouse negative interaction patterns was $\alpha = .70$, both of which represent acceptably high levels of internal consistency. Composite variables were also used to examine parenting behavior for the same reasons as listed above. Parenting behavior was assessed using a combined total effective parenting score based on the FIT measure, which
combines positive involvement, skills encouragement, monitoring, and reverse-scored harsh discipline. Internal reliability for service member parenting behavior was $\alpha = .63$ and for spouse parenting behavior was $\alpha = .62$, which again demonstrates an acceptable level of internal consistency.

**Structural Equation Modeling.** Structural Equation Modeling (SEM) was the primary statistical method of analysis. SEM is a collection of statistical techniques allowing for the examination of a set of relationships between one or more independent variables and one or more dependent variables. These techniques were developed for the hypothesis testing of causal relationships between latent variables. SEM is preferable to other statistical methods when the phenomena of interest are complex and multidimensional, which is true of the present study. The developers and current proponents of SEM encourage confirmatory over exploratory analyses (Schreiber et al., 2006). This is because confirmatory analyses test the hypothesis that a relationship between observed variables and the underlying latent constructs exist while exploratory analyses just explore the possibility of an underlying factor structure (Schreiber et al., 2006). The process of conducting analyses with SEM starts with a hypothesis that can be represented as a model, operationalizes the construct through an identified model, and tests the hypothesis through this chosen model (Anderson & Gerbing, 1988; MacCallum & Austin, 2000). Thus, the first step in SEM is identifying a model to depict hypothesized relationships among variables. After a model has been identified, the construct can be defined through the chosen model, and the hypothesis can be tested.

The fit of the data to the path models was described using an expanded version of the Actor-Partner Interdependence Model (APIM; Kashy & Kenny, 1999; Kenny, 1996). The APIM is a specific application of SEM and provides a model of dyadic relationships designed to reflect
the concept of interdependence within two-person relationships. This differs from other SEM applications that examine factor analysis or latent growth curve analysis (Olsen & Kenny, 2006). Relationships are mutually interdependent in that one partner’s emotion, cognition, and/or behavior affects that of a partner (Kelly et al., 2003; Kelly & Thibaut, 1978). Consequently, two individuals who exhibit interdependence are linked such that knowledge of one person provides information about the other person (Cook & Kenny, 2005). Commonly used statistical methods, such as ANOVA and multiple regression, assume that observations in the dependent variable are uncorrelated and thus do not accurately capture the interdependence displayed by members of a dyad. APIM retains individuals’ unit measures, but also treats them as being within the dyad. This technique thus allows exploration into variable relationships between members, which while useful, can have the effect of increasing multicollinearity. Figure 5 presents a visual depiction of the APIM model, along with a description of its components.

Figure 5: Path Diagram for Essential Version of APIM. The actor-partner interdependence model (APIM). $X =$ data for person 1; $Y =$ other data for person 1; $X’ =$ data for person 2; $Y’ =$ other data for person 2; $U =$ unexplained portion of person 1’s score on $Y$; $U’ =$ unexplained portion of person 2’s score on $Y’$. Single-headed arrows indicate predictive paths and double-headed arrows indicate correlated paths. Paths labeled as $a$ indicate actor effects and paths labelled as $p$ indicate partner effects. (Cook & Kenny, 2005)

There are four main variables in the APIM model, as depicted in Figure 1. The two dependent variables ($Y$ and $Y’$) represent the outcomes for each member of the dyad (e.g., communication patterns of service member and spouse). The two predictor variables ($X$ and $X’$) are measures of dyad members that are expected to predict $Y$ and $Y’$ (e.g., service member and spouse mental health). The two most central components of the APIM are the actor and partner
effects, which are used to investigate the relationship between dependent and predictor variables. An actor effect ($a$) measures the relationship of constructs on an individual level (e.g., how a service member’s mental illness affects his own interaction pattern). Partner effects ($p$), on the other hand, measure how much the outcome variable of one partner is influenced by the predictor variable of the other (e.g., how a service member’s mental illness affects the interaction pattern of his spouse). These actor and partner effects provide an illustration of both the individual and interdependent factors present in a dyadic relationship. Given these components, APIM will be used in the present study to analyze the interdependent relationship between service members’ and spouses’ psychological distress and negative communication patterns at baseline and parenting behavior at 1-year follow-up. The APIM for this specific study will be tested using SEM with the following model:

![Path Diagram for APIM used in Present Study](image)

**Figure 6 Path Diagram for APIM used in Present Study.** Basic APIM model through which relationships between service members’ and spouses’ mental health, negative interaction, and parenting behavior will be explored.

As in the standard APIM model depicted in Figure 5, all endogenous variables within the analyzed models will include covarying error terms. This will be done to demonstrate that the
residuals measure something in common other than the constructs that are represented in the model. The practice of correlating error terms is utilized in SEM when there is a common method of measurement (e.g., when two variables are based on self-report measures), there is measurement of a variable not directly represented in the model (e.g., variables are multi-dimensional), or when additional explanations for correlations within the model are possible (Kenny, 2011). These examples illustrate instances in which third variables are likely to be present, so correlating the error term accounts for these additional possible explanations within the model.

In the visual depiction of the APIM model, the extent to which the Y variables are not explained by either of the X variables is represented by U and U’ (the error terms for Y and Y’). If the partner effects in the model were removed, then these variables would not be correlated if the actor and partner effects are the only reason for the correlation between Y and Y’. However, because it is likely that there are other reasons for the correlation between Y and Y’, especially in a model which examines dyadic relationships, U and U’ are necessary to account for additional explanations for the correlation of Y and Y’. These error terms then must be covaried to control for these additional sources of nonindependence. Specifically, if the two individuals observed in the APIM model come from the same family, a family-level factor aside from the latent variable may cause their scores to covary. For example, marital satisfaction between partners may be linked to the correlation between their interaction patterns and would be covaried between individuals because it is unlikely that one spouse will have high marital satisfaction while the other has low satisfaction (Cook & Kenny, 2005).

Goodness of fit refers to the ability of a model to recreate the data, usually via a variance-covariance matrix. A good-fitting model is one that is reasonably consistent with the data and
does not require respecification (Kenny, 2011). Goodness of fit will be tested in the current study using several model fit indexes described in the SEM literature (e.g. Kenny & McCoach, 2003; Marsh, Ball, & Hau, 1996). The minimum fit divided by its degrees of freedom (CMIN/DF) is considered the most basic fit statistic, with the minimum fit being equivalent to the chi-square statistic of the model. When assessing model fit, acceptable values of the CMIN/DF should fall in the 3/1 or 2/1 range. The root mean square error of approximation (RMSEA) is a parsimony-adjusted index in that its formula includes a built-in correction for model complexity. It does not require a true null hypothesis and thus does not assume the researcher’s model in the population is perfect. RMSEA values of 0.05 or less are considered a good fit, while values between 0.05 and 0.1 demonstrate a moderate fit. The comparative fit index (CFI) compares the fit of the model being tested to the fit of a model in which the variables are assumed to be uncorrelated – this model is labeled the independence model. CFI values that approach 1 indicate acceptable fit.

Covariates may also be important to consider in this sample, as mental health, communication patterns, and parenting behaviors are complex variables. Treatment effects will be the primary covariate tested within this model – these effects will be considered at the 1-year follow-up, following completion of the ADAPT program or treatment as usual and are expected to impact the frequency of positive parenting behaviors at 1-year follow-up. Covariates on more of a dyadic level may include length of marriage, number and age of children, and the number of deployments the family has endured, as these factors may be influential of both mental illness and interaction patterns.

**Nonnormally distributed data.** Like many other multivariate analytic techniques, one assumption of SEM is multivariate normality. Investigations of data from the present study revealed non-normality within the data set. Visual depictions of individual variable distributions
can be seen in Appendix D. There are several common methods for dealing with nonnormality, including Winsorizing, deleting outliers, and trimming the data. Winsorizing is an option typically selected for reducing the effects of outliers in order to normalize data distribution. Winsorizing involves the transformation of extreme values in the data to reduce the effect of outliers. Specifically, outliers are transformed to a specified value so that they are closer to being within the normal distribution curve (Lusk, Halperin, & Heilig, 2011). Thus, data that fall outside of a certain cutoff point (typically the 90th or 95th percentile cutoff, based on theoretical justification) is brought down to the largest value selected that would not be considered an outlier. Generally, when using the process of Winsorizing, only a minimal number of values should be corrected (Hellerstein, 2008).

When deciding if Winsorizing is an appropriate data transformation method for a dataset, two assumptions need to be considered. First, Winsorizing is typically utilized on datasets in which outliers are thought to be a function of measurement error. Second, Winsorizing is designed to be utilized to correct a slightly platykurtic distribution, in which the peak of the distribution is more similar to the tails when compared to a normal or Gaussian distribution (Tukey, 1977). Review of the data in the present study suggests that neither of these assumptions are met. The outliers are not believed to be caused by measurement error but instead are an accurate reflection of the low levels of distress indicated by the service members and their spouses. The data in the present study are not arranged in a true platykurtic distribution but instead show a positively skewed distribution. Therefore, Winsorizing the data may require the correction of more values than is typically recommended by this process. Because of these reasons, Winsorizing does not appear to be an appropriate method to deal with the non-normality in this data set (Hellerstein, 2008).
The use of SEM with extremely nonnormal, censored scores results in the attenuation of effect sizes (Mutthen, 1989; Stoolmiller, Eddy, & Reid, 2000; van den Oord & Rowe, 1997). There is an overall lack of consensus in the SEM literature regarding how to deal with nonnormality. Some researchers suggest that use of transformation techniques like Winsorization and others suggest that SEM is a robust technique that is not easily susceptible to the effects of nonnormality. Largely, research regarding nonnormality with SEM suggests that it is not generally a large issue unless the departure from normality is very severe (e.g., Barnes et al., 2001; Bentler & Chou, 1987). SEM is a robust technique in that when the skewness of data distribution is moderate and the theory behind the model is strong, good results can still be achieved (Bollen, 1989; Byren, 2010; Hair et al., 2010; Hsu, Chen, & Hsieh, 2008). Monte Carlo experiments are a common corrective technique for skew; research examining these experiments found no major differences in SEM analysis results on samples of different sizes and with different kurtosis and skewness levels (Boomsma, 2013; Reinartz, Haenlein, & Henseler, 2009). Additionally, large sample size leads to reduction of the problem of multivariate non-normality (Hair et al., 2010). A commonly proposed ratio of acceptable sample size is 6:1 based on the ratio of participants to variables within a model, which is seen in the proposed models in the present study (Tanaka, 1987). The positively skewed distributions seen in variables in these data suggest an overall level of under-reporting in the present sample, which might be expected based on the characteristics of the participants. Because of the robustness of SEM as an analytic technique, lack of consensus regarding dealing with nonnormality in the SEM literature, and the theoretical consistency of the positively skewed data, the data in the present study were not transformed.
**Multicollinearity.** A second assumption of Structural Equation Modeling is that multicollinearity does not lead to Type II error between the latent exogenous variables. Despite this assumption, little is known about the exact effects of multicollinearity in SEM, and researchers do not always attend to the difficulties associated with multicollinearity. A survey of 42 articles that utilized SEM techniques found that although 31 of the studies had potentially high multicollinearity problems, explanations regarding the effects were generally not present (Grewal, Cote, & Baumgartner, 2004; Jarvis, MacKenzie, & Podsakoff, 2003). This demonstrates that the field has not reached a consensus regarding the exact effects of multicollinearity in SEM and how best to handle the presence of multicollinearity in structural equation modeling.

Exploratory analyses of the data revealed a degree of multicollinearity in the present study. Correlations between service member and spouse mental illness \((r = .38)\) and service member and spouse parenting behaviors \((r = .47)\) are considered acceptable. The highest correlation is seen between service member and spouse negative interaction patterns \((r = .66)\). A high correlation between partner negative interaction is consistent with the literature, which states that if one member in a relationship is reactive, the other is likely to be just as reactive (e.g. Patterson, 1982; Ro & Lawrence, 2007). Although there is some question about how multicollinearity impacts the results in SEM, research has specified some parameters that decrease the risk of unacceptable levels of Type II error. When multicollinearity is between 0.6 and 0.8, Type II error rates can be substantial if composite reliability is weak, explained variance is low, and sample size is relatively small. However, as reliability improves (0.8 or higher), sample size exceeds a 3:1 ratio, and explained variance reaches 0.75, Type II error rates and problems associated with multicollinearity become negligible (Grewal, Cote, & Baumgartner,
Two of these three parameters were met in the current data set. Reliability levels fall at or above 0.80, and the sample size has a ratio better than 6:1 observations per comparison. Although there might be some potential effects associated with multicollinearity due to a shared variance level lower than 0.75, chances of unacceptable Type II error rates are lessened by high reliability rates and sufficient sample size (Grewal, Cote, & Baumgartner, 2004).

The relationship between endogenous variables, even those that exhibit a higher degree of multicollinearity, is not covaried in any models in the present study. Instead, error terms for each of the endogenous variables are covaried, which represents the residual nonindependence of these variables (Fitzpatrick et al., 2016). This is a common practice used in SEM because endogenous variables cannot directly correlate with one another. This is because if two predicted variables covary, then the predictors are essentially predicting one variable and not two. Thus, it would be difficult to determine the effects of each individual variable within the model. As such, the correlations between the error terms of the dependent variables take into account the correlations of the dependent variables that are not accounted for by the predictors. Additionally, covarying the error terms describes the effect over and beyond what can be explained by the partner and actor effects included in the model (Fitzpatrick et al., 2016). It represents the correlation between the scores of the two partners on the dependent variables.
CHAPTER 4

RESULTS

Hypothesized Bivariate Relationships

See Table 2 for the correlations among service member and spouse psychological distress as measured by the HSCL-25 and PCL. Service member reported PTSD symptomatology was reliably associated with Depression ($r = .67$) and Anxiety ($r = .76$). Spouse self-reported symptomatology was also reliably correlated with reported Depression ($r = .63$) and Anxiety ($r = .53$). Some correlations were seen between service member and spouse self-reported psychological distress. Spouse Depression was reliably correlated with service member PTSD ($r = .21$), Depression ($r = .29$), and Anxiety ($r = .19$). No significant correlations were found between service member and spouse PTSD and Anxiety.

See Table 3 for the correlations among service member and spouses’ behavioral observations utilizing the FIMC and RACS. Negative interaction patterns were reliably intercorrelated when describing observed social behavior of service members and spouses in the co-parenting problem-solving task. Service members’ RC was correlated with service members’ DA ($r = .52$) and RACS negative ($r = .48$). Service members’ DA was correlated both with RACS negative ($r = .25$). Spouses’ RC was moderately correlated with spouse DA ($r = .57$) and RACS negative ($r = .48$). Spouses’ DA was correlated with RACS negative ($r = .34$).

Significant correlations were seen between service member and spouse behavior. Service member RC was correlated with spouse RC ($r = .80$), DA ($r = .72$), and RACS negative ($r = .37$). Service member DA was correlated with spouse DA ($r = .72$) and RACS neg ($r = .34$). Spouse RC was correlated with service member RC ($r = .80$), DA ($r = .63$), and RACS negative ($r = .40$). Spouse RACS negative was correlated with service member RACS negative ($r = .66$).
These correlations suggest that RC, DA, and RACS negative social behavior scores for service members and spouses are independent though correlated variables, sharing 1-25% common variance. These variables were standardized and combined for further analyses.

See Table 4 for correlations among service member and spouse parenting behavior as observed in the Family Interaction Tasks (FITs). Parenting behaviors among and between spouses were reliably intercorrelated. On average, positive co-parenting behavior on the part of one spouse was correlated with specific positive parenting behaviors (e.g., encouragement) and negatively correlated with negative parenting behaviors (e.g., harsh discipline). Additionally, parenting behavior of one partner was generally highly correlated with parenting behavior of the other partner, in that if one spouse displayed a higher frequency of positive parenting behavior, the other parent was more likely to display higher levels of positive parenting behavior and vice versa.

A significant negative correlation was seen between service member reported PTSD symptoms and spouse positive co-parenting behavior at 1-year follow-up ($r = -20$). Spouse psychological distress was not related to co-parenting behavior, nor was service member psychological distress correlated with co-parenting behavior. Significant correlations were seen between service member and spouse co-parenting behavior ($r = .71$), suggesting that each partner’s ability to positively co-parent is influential on their partner’s co-parenting behavior.

**Model #1: Psychological Distress and Negative Interaction.** The analysis modeled in Figure 1a assessed the relationship among service members’ and spouses’ self-reported ratings of anxiety and depressive symptoms and the negative interaction patterns between them. The model fit the data well: $X^2(2) = 3.41, p = .18, X^2/df = 1.71, CFI > .995, RMSEA < .055$. A direct association was observed between psychological distress and negative interaction patterns for
spouses \( r = .23, p < .01 \), but an association was not observed for service members. Additionally, there were no significant associations found between one partner’s reported psychological distress and the other partner’s behavior during interaction. In other words, higher reported anxiety and depressive symptomatology in the service member did not increase the likelihood that the spouse would interact negatively and vice versa.

The model in Figure 1b assessed the relationship among service members’ and spouses’ self-reported ratings of PTSD and negative interaction patterns between them. The model fit the data well: \( \chi^2(2) = 3.80, p = .15, \chi^2/df = 1.90, CFI > .993, RMSEA < .062 \). Modest, yet direct associations were observed between spouse reported PTSD symptoms and negative interaction behavior \( r = .17, p < .05 \) and between service member reported PTSD symptoms and increased levels of negative interaction toward him by his spouse \( r = .16, p < .05 \). This suggests that spouse behavior during interaction with the service member is influenced by the presence of PTSD symptoms in both partners. The same results were not found for service members – there were no significant correlations found between service member and spouse reported PTSD and an increase in negative interaction by the service member.

Hypothesis 1a and 1b were only partially supported by the data. While some associations were found between psychological distress and negative interaction, the relationship was not seen globally within and between partners.

**Model #2: Negative Interaction and Co-parenting Behavior.** The model in Figure 2 assessed the relationship among partners’ negative interaction behaviors with each other at baseline and observed co-parenting behavior at time 3, 1-year following the baseline assessment. The model fit the data well: \( \chi^2(2) = 3.13, p = .21, \chi^2/df = 1.56, CFI > .997, RMSEA < .049 \). No significant associations were observed between negative interaction and co-parenting behavior.
within this model. Correlational analyses revealed a significant negative correlation between service member negative interaction toward the spouse and spouse’s co-parenting behavior one year later ($r = -0.19, p < .05$), but this relationship did not remain significant when included in the multivariate model. No other significant relationships were found, suggesting that in this sample, interactions between service member and spouse at baseline largely did not influence their co-parenting abilities at a 1-year follow-up. Thus, hypothesis 2 – that increased negative interaction would be linked to less positive parenting behavior - is not supported by the data.

**Model #3: Psychological Distress, Negative Interaction, and Co-parenting Behavior.**

The analysis modeled in Figure 3a assessed the relationship among partners’ reported psychological distress, negative interaction patterns, and co-parenting behavior. The model fit the data well: $X^2(5) = 9.55, p = .09, X^2/df = 1.91, CFI > .987, RMSEA < .062$. There were significant direct associations between higher reported psychological distress in the service member and increased negative interaction patterns in the service member ($r = .17; p < .05$) and in the spouse ($r = .18; p < .05$). This suggests that anxious and depressive symptomatology in the service member influences both interactions with the spouse and the way in which the spouse interacts with the service member. No other significant relationships were observed in this model – significant correlational relationships became nonsignificant when tested within the multivariate model, indicating that each variable on its own did not account for an adequate amount of variance needed to reach significance.

The hypothesized model in Figure 3b assessed the relationship among service member and spouse reported PTSD symptoms, negative interaction patterns, and co-parenting behavior. The model fit the data well: $X^2(5) = 7.82, p = .17, X^2/df = 1.57, CFI > .992, RMSEA < .049$. There was a direct association between spouse’s PTSD symptoms and negative interaction patterns
with the service member ($r = .17, p < .05$). There was also a direct association observed between service member PTSD symptoms and spouse’s negative interaction patterns ($r = .16, p < .05$). In other words, spouses were more likely to be negative toward service members during interaction if they or the service members reported higher levels of PTSD symptoms. No direct associations between psychological distress and co-parenting behavior or negative interaction and co-parenting behavior were observed in this model.

Hypothesis 3a and 3b were only partially supported by the data. While some associations were found between psychological distress and negative interaction, the relationship was not seen globally within and between partners. Additionally, no relationships between all three variables in the model were found to be significant, suggesting that within this sample, there is no consistent connection between psychological distress, negative interaction, and co-parenting behavior.

**Model #4: Treatment Group and Parenting Behavior.** The model depicted in Figure 4 assessed the relationship between treatment status (either completion of the ADAPT program or control group) and co-parenting behavior at 1-year follow-up. The model fit the data well: $X^2(2) = 3.27, p = .20$, $X^2/df = 1.63$, $CFI > .986$, $RMSEA < .052$. In the treatment group, the mean of parenting behavior for the service members was 2.90 (SD = 0.68), and the mean of parenting behavior for spouses was 2.97 (SD = 0.69). In the services as usual group, the mean of parenting behavior for the service members was 2.62 (SD = 0.56), and the mean of parenting behavior for the spouses was 2.76 (SD = 0.66). There was a direct relationship observed between treatment status and service member co-parenting behavior ($r = .21, p < .05$), which indicates that service members who completed the ADAPT program in this sample were more likely to display positive co-parenting behaviors at follow-up. The relationship between treatment status and
spouse co-parenting behavior was marginally significant \((r = .18, p < .10)\). Hypothesis 4 was partially supported, in that the completion of treatment was significantly associated with increased positive parenting behavior in service members but not spouses.

Several covariates were tested within the model to assess whether other factors influenced how successful the ADAPT treatment program was in increasing positive co-parenting behavior. Service members’ total number of months deployed approached significance as a covariate \((r = .13, p < .08)\), suggesting that service members who have been deployed a greater number of months may demonstrate less positive co-parenting behavior, even after completing treatment. Other covariates were tested including: total number of deployments, time since the last deployment, length of marriage, child age, and child gender, yet none were significantly correlated with treatment status or co-parenting behavior. This indicates that the efficacy of the ADAPT program was likely not affected by these tested covariates.
CHAPTER 5
DISCUSSION

Three sets of models were tested in the current study to examine the relationship between service member and spouse psychological distress, negative interaction patterns, and co-parenting behavior. The first set of models tested the association between service member and spouse psychological distress and PTSD symptoms and negative interaction patterns. The second set of models tested the relationship between service member and spouse negative interaction patterns and the effect this had on their parenting behavior. The third set of models combined variables tested in the first two set of models by examining the relationships between service member and spouse psychological distress, PTSD symptoms, negative interaction patterns, and parenting behavior within the same model. A fourth model was tested examining the effects of a military-focused parent management training program on co-parenting behavior. The results of each of the models are discussed in turn, followed by a general summary discussion, which includes strengths and limitations of the present study. The demographically homogenous and relatively advantaged status of the sample contributed to limited variance in the models that were tested. Further, because participants were exclusively recruited in the Minneapolis/St. Paul area at mandatory National Guard and Reserve military events, sample demographics were generally nonrepresentative of military families that have experienced deployment to OEF/OIF conflicts. It is likely that because of these sample characteristics, some traditional assumptions of structural equation modeling were not met, including the assumptions of normality and multicollinearity. Finally, implications of the findings for further research and intervention are discussed. Future research should examine these relationships in a more heterogeneous sample and should include active duty military populations to increase the generalizability of the data.
Psychological Distress and Negative Interaction

The first two models focused on the degree to which symptoms of psychological distress and PTSD in service members and spouses predicted negative interaction patterns during a problem-solving communication task completed by the partners. The first model tested the hypotheses that psychological distress in service members would be associated with more frequent negative interaction patterns with the spouse (Hypothesis 1a) and that increased levels of psychological distress in the spouse would be associated with more frequent negative interaction patterns with the service member (Hypothesis 1b). The second model tested the hypotheses that PTSD symptoms in service members would be associated with more frequent negative interaction patterns with the spouse (Hypothesis 1c) and that increased levels of PTSD symptoms in the spouse would be associated with more frequent negative interaction patterns with the service member (Hypothesis 1d). Results partially supported hypotheses 1a – 1d. Symptoms of PTSD in spouses were predictive of increased rates of service members’ negative interaction patterns. However, service member psychological distress was not predictive of negative interaction patterns of either partner. These results suggest that in this sample, mental health symptoms in spouses were more influential on the communication patterns of both partners than mental health symptoms in service members.

The connection between spouse mental illness and increased levels of negative interaction toward service members is consistent with extant literature, which suggests that mental illness can disrupt patterns of communication between partners (Baucom et al., 2007; Patterson, 1982; Reupert & Mayberry, 2007). Mental illness in general has been linked with an increase in nagging, discourtesy during conversation, and an overall lack of communication between spouses (Harper & Sandberg, 2009). Furthermore, the relationship between spouse
reported trauma symptoms and service member negative interaction patterns is also consistent with previous research. Research has suggested that the expectations and behavior of one spouse influences the behavior of the other spouse (Berger et al., 1977; Correll & Ridgeway, 2006). In the present study, service members exhibited more frequent examples of negative communication when spouses reported more symptoms of PTSD, suggesting potential spousal influence on service member behavior.

Exposure to combat and other traumatic stressors increases the possibility that service members may demonstrate experiential avoidance. This has been defined as occurring when an individual is unwilling to remain in contact with certain experiences and contexts and takes steps to alter these experiences or other environmental factors, even when this avoidance causes harm to the individual or others (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Service members married to partners reporting a higher level of PTSD symptoms may be more likely to experientially avoid negative thoughts or emotions that are brought up during conversation with their spouse. This avoidance may be portrayed as a minimization of the spouse’s distress or may elicit reactivity in the service member in his attempt to avoid uncomfortable feelings (MacDermid, 2006; Riggs, Byrne, Weathers, & Litz, 1998). Thus, an increase in negative interaction patterns seen by service members who have spouses with higher reported levels of PTSD symptoms may be related to service member distress as well as to problematic communication patterns seen in couples who are experiencing symptoms of mental illness. Having said this, effect sizes are small ($r$ is between 0.15 and 0.2), suggesting that this pattern may not be easily noticed in partners in the present study.

In contrast, service member reports of psychological distress were not predictive of negative interaction patterns in service members or spouses, which did not support the
Hypotheses 1a or 1c that predicted a relationship between service member psychological distress and negative interaction patterns. Previous research has suggested that in addition to reactivity and coercion, individuals experiencing mental illness may be more likely to withdraw from conversation and be less likely to engage in active listening (Baucom et al., 2007). It is possible that service members did not demonstrate increased negative interactions with spouses but instead withdrew from communication, which contributed to nonsignificant results. Further, increased reports of psychological distress in service members was not significantly related to spouse interaction. While in traditional relationships the male partner may typically be more influential and assertive, this common pattern may be altered in military families (Ridgeway & Smith-Lovin, 1999). The female spouse is often required to serve as head of the household while the service member is deployed and may maintain her more influential status postdeployment, as the service member needs to spend time reintegrating to civilian life (Cast, Stets, & Burke, 1999; Karney & Crown, 2007). This may explain why reported symptoms of PTSD by the spouse influenced service member interaction patterns but the reverse was not found to be true in the present sample.

Also observed in the model was that symptoms of psychological distress in spouses were predictive of increased rates of spousal negative interaction. While there were no specific hypotheses regarding the impact of psychological distress on negative interaction within individuals, the relationship observed between increased reports of anxiety and depressive symptoms and an increased tendency to interact negatively is consistent with previous literature (e.g., Harper & Sandberg, 2009; Santini et al., 2015).

**Negative Interaction and Co-parenting Behavior**
The second model tested examined the relationship between negative interaction patterns and co-parenting behavior. This model tested the hypothesis that more frequent negative interaction patterns by the service member toward the spouse would be associated with a greater incidence of negative parenting behaviors and a lower incidence of positive parenting behaviors (Hypothesis 2a) and that more frequent negative interaction patterns by the spouse toward the service member would be associated with an increase in negative parenting behaviors and decrease in positive parenting behaviors (Hypothesis 2b). Results were not supportive of hypothesis 2, as no significant associations were observed within this model. Correlational analyses did reveal a significant bivariate negative correlation between service member negative interaction toward the spouse and spouse’s co-parenting behavior one year later, but the relationship was not significant in the model. Previous research has demonstrated a significant relationship between conflict in the co-parenting relationship and parenting practices (e.g., Dorsey, Forehand, & Brody, 2007; Krishnakumar & Buehler, 2000). Spouse co-parenting behavior may have been more likely to be affected by service member negative interaction patterns in this sample because of the increased role many of the spouses had undertaken while the service members were deployed or completing other military responsibilities. Their increased parental role can lead to higher levels of stress, especially if also coping with conflict with the service member (Sheppard, Malatras, & Israel, 2010).

When relationships were tested within the multivariate model, even bivariate relationships were no longer significant. This was surprising, considering that previous literature has demonstrated a relationship between partner interaction and parenting behavior (Klausli & Owen, 2011; Sears et al., 2015). A similar relationship may not have been found in the present study because the model examined negative interaction between partners at baseline and
compared it to parenting behavior at 1-year follow-up. Over half of the families participated in the ADAPT parent management training intervention, and specific goals of this program were to increase positive involvement and family problem-solving (Forgatch & Patterson, 2010) and to address military needs akin to the reintegration process, such as co-parenting (Gewirtz et al., 2014). Successful participation in the ADAPT program may have allowed families to improve interaction patterns with each other and to maintain effective communication within the co-parenting relationship, despite any negative communication present within their own relationship.

**Psychological Distress, Negative Interaction, and Co-parenting Behavior**

The third set of models examined the relationship among partners’ reported psychological distress, negative interaction patterns, and co-parenting behavior. The first model tested the hypothesis that psychological distress in service members and spouses would contribute to increased negative interaction patterns assessed at baseline, which would then be related to negative parenting behavior by both partners at 1-year follow-up (Hypothesis 3a). The second model tested the hypothesis that higher reported symptoms of PTSD by both service member and spouse would contribute to increased negative interaction patterns assessed at baseline, which would then be associated with negative parenting behavior by both partners at 1-year follow-up (Hypothesis 3b). Several direct associations within this model were significant, suggesting partial support of Hypotheses 3a and 3b. However, relationships were not seen globally within and between partners, nor were relationships between all three variables found to be significant. This suggests that within this sample, there was no consistent connection between psychological distress, negative interaction, and co-parenting behavior.
Several direct relationships were observed between psychological distress and negative interaction. Service member depression and anxiety symptoms were predictive of negative interaction patterns for both the service member and the spouse, while service member symptoms of PTSD were predictive of spouse negative interaction but not for service members. Thus, unlike in the first set of tested hypotheses, psychological distress in service members was shown to be more influential than spouse psychological distress in eliciting negative interaction patterns in both partners. It is possible that the addition of co-parenting behavior in this model neutralized the impact of spouse psychological distress but not service member psychological distress on communication patterns due to the spouse’s primary parental role while the service member is deployed. A direct relationship was also observed between spouse’s PTSD symptoms and negative interactions patterns with the service member. Altogether, these results are consistent with previous literature. When one partner is afflicted with mental illness, patterns of communication can be disrupted, particularly in regard to effectively communicating personal and parental issues (Reupert & Mayberry, 2007). When both partners are experiencing symptoms of mental illness, there is an even higher likelihood that maladaptive communication patterns, such as reactivity, coercion, and behavioral withdrawal, will be present during interactions (Eldridge & Christensen, 2002; Harper & Sandberg, 2009).

There were no direct relationships observed between psychological distress and co-parenting behavior or negative interaction patterns and co-parenting behavior. As was postulated regarding Hypotheses 2a and 2b, a lack of significant results regarding predictors of co-parenting behavior may be related to the fact that parenting behavior data were collected 1-year later than were the data for psychological distress and negative interaction. Some families participated in the ADAPT program, which may have improved communication and parenting skills (Gewirtz,
Additionally, while symptoms of psychological distress can impact parenting behavior, families with higher levels of support and resources are typically more likely to shield their children from many of its ill effects (Billings & Moos, 1981; Schleider et al., 2015). Because the majority of families in the present study were relatively well-educated and of a higher social economic status, parenting behavior may have been less impacted than it could have been if the families had fewer resources.

**Treatment Group and Parenting Behavior**

Hypothesis 4 tested the relationship between treatment status and co-parenting behavior at 1-year follow-up and predicted that participation in the ADAPT intervention program would be related to increased positive parenting behavior at 1-year follow-up. Hypothesis 4 was partially supported by the data. A significant, direct association was observed between treatment status and service member co-parenting behavior, while the relationship between treatment status and spouse co-parenting behavior was marginally significant. These results suggest that service members who completed the ADAPT program were more likely to display positive co-parenting behaviors at 1-year follow-up. This relationship was also observed in spouses to a lesser extent. Initial descriptive comparisons revealed that spouses displayed a higher frequency of positive parenting behavior at baseline relative to the service members. Thus, service members had more improvement that could have been made to their parenting behavior, which may partially explain why service members who completed the ADAPT program showed a greater gain than spouses.

Previous literature examining the efficacy of the ADAPT program has demonstrated positive effects. Families participating in the ADAPT program showed higher participation rates than are commonly seen in typical parent training programs. Gewirtz et al., (2014) examined data on participants of the ADAPT program and found that 79% of participants attended at least
7 out of 14, weekly, 2-hour sessions. Data on participation rates have been documented to be as low as 30% for parenting training programs (Spoth & Redmond, 2000; Heinrichs et al., 2005). The high rates of participation by families in the present study likely contributed to the significant improvements noted in the fourth set of models. Group attendance did not differ by gender or by deployment status. In the larger parent training literature, far more data are available on participation rates for women than men, suggesting that typically, women attend parent training programs in far larger numbers (Reyno & McGrath, 2006). The participation rates of both partners were critical given the population of deployed service members that the ADAPT program was intending to reach and may further explain the greater improvement seen in service members parenting behavior in the present study (Gewirtz et al., 2014).

Further research that has examined effects of the ADAPT program show that assignment to the parenting program was associated with improved parenting locus of control. Improved parenting locus of control was concurrently associated with strengthened emotion regulation, which predicted reductions in psychological distress (Gewirtz, DeGarmo, & Zamir, 2016). Parental locus of control is the degree to which parents believe that they have control over the outcome of events related to their children, which in turn, can be linked to improved parenting practices (Roberts, Joe, & Rowe-Hallbert, 1992). This provides further evidence regarding the increase of positive parenting behavior found in the present study. Reductions in psychological distress related to improved parental locus of control may also help to explain the relatively low reports of psychological distress in service members and spouses in the present sample.

Several covariates were tested within this model to assess whether other factors influenced how successful the ADAPT treatment program was in increasing positive co-parenting behavior. No covariates that were tested (e.g., total number of deployments, time since
last deployment, length of marriage) were significantly associated with treatment status or co-parenting behavior, indicating that the efficacy of the ADAPT program was likely not affected by these covariates. The ADAPT program was created specifically for military families and therefore factors such as total deployment length and time were considered when designing the program. Because it was made for this particular population, the ADAPT program is likely more robust to potential third variables specific to military families than a nonmilitary specific parenting program would be.

**General Conclusions**

Overall, results were only partially supportive of the original hypotheses, potentially due to lower than expected reports of psychological distress and minimal levels of observed negative interaction patterns during communication samples. Lower than anticipated rates may be inherently related to the sample that was selected for the present study. Despite the high percentages of service members and military spouses that experience psychological distress, a minority of this population expresses interest in seeking treatment and an even smaller minority follows through with seeking psychological treatment (Hoge et al., 2004). Research suggests that service members experience both public stigma and self-stigma related to mental illness, which can reduce the likelihood of their seeking treatment or even disclosing experiences of psychological distress (e.g., Cooper, Corrigan, & Watson, 2003; Corrigan & Watson, 2002). This can happen in both service members and spouses who are trying to display strength and fortitude as they work through the postdeployment and reintegration process. Because of a tendency toward nondisclosure due to stigma surrounding mental illness in military populations, symptoms were likely underreported, which could have skewed results and increased insignificance.
Strengths and Limitations

These findings should be interpreted with caution due to several limitations. First, data analyzed in Model 1 are cross-sectional and as such the direction of the relationships among the variables cannot be determined with certainty. For example, given the correlational nature of the data, it cannot be determined whether high levels of psychological distress lead to increased reactivity during interaction or whether increased negative interaction with one’s partner heightens psychological distress. It is also likely that other variables that were not included in the models contributed to the results. For example, marital satisfaction could contribute to either psychological distress or to negative interaction, and Model 1 did not rule-out effects from all potential confounding variables.

A second limitation is the homogenous, relatively advantaged, and nonrepresentative nature of the sample. Participants were primarily White, non-Hispanic, exclusively male National Guard and Reserve service members and their female partners. The average age of service members in the present study was 37-years-old, and the average age of spouses was 35-years-old. The general representation has become more diverse and individuals who enlist in the military have become increasingly younger, with almost half of the males who initially enlist under the age of 25 (Segal & Segal, 2004). Because participants in the present study were considerably older than the average age of service members, it is possible that results from the present study would not generalize to a more representative military population. Older service members may be more established in their careers, have a greater family support system, and experience less psychological distress (Segal & Segal, 2004). There has also been a diversification in the racial make-up of the military, with approximately 35% of service members classifying themselves as non-White, and the socioeconomic classes most represented in the
military have been lower-middle and middle-class individuals (Bachman et al., 2000). The present study only examined families in which the male had been previously deployed, meaning that results may have differed if families with female service members or families in which both partners have been deployed were included, particularly as the number of women currently enlisting in the military has continued to increase (Segal & Segal, 2004). Additionally, participants in this study were relatively well-resourced, which may not be reflective of the average service member deployed to the OEF/OIF conflicts (Bachman et al., 2000). Male and female partners were relatively well educated, earned household incomes that placed them primarily in the upper-middle class social economic status, and were more likely to have established social support and work opportunities.

While the use of video tapes to capture negative interaction between partners and to assess parenting behavior is a strength of this study, it can also be considered a weakness. Previous research has suggested that being observed can result in the reduction of socially undesirable interactions, such as those that were being assessed in the present study (e.g., reactivity-coercion, negative affect, harsh discipline with children) (Jacob et al., 1994). Moreover, observation by researchers could have further resulted in an increase in positive interaction behaviors (e.g., positive parenting) that is not wholly indicative of the family’s typical behavior. By only observing families during 5-minute interaction and parenting tasks, observational data in the present study may not provide a sufficient amount of time to fully capture the communication patterns and parenting tendencies that were explored.

Observer effects likely contributed to the limited variance found in sample observations of negative interaction patterns and parenting behavior. Further factors that may also be related to the limited variance include the homogenous nature and relatively advantaged status of the
sample – participants were primarily well-educated, married, and of higher socioeconomic status – and the stigma associated with sharing familial and psychological issues especially among service members. Limited variance within measures utilized in a multivariate model makes it difficult to find significant effects, such as those proposed in the model. Thus, it is likely that some of the non-significant results relate to the limited variance, making it another limitation of the present study.

Analyses revealed a lower frequency of psychological distress and negative interaction than anticipated. Average scores on the HSCL-25 fell almost twenty points below the clinical cut-off, and average scores on the PCL-M fell several points below even the community norm. This is surprising given that military populations generally experience at minimum an average degree of psychological distress (Khaylis et al., 2011), suggesting that there was likely a significant level of under-reporting of symptoms in the present study. This may have influenced the overall validity of the models because the low degree of endorsed psychological distress led to positive skew. When psychological distress and negative interaction were observed within a family, it was much more likely that these were observed in both service member and spouse. While this led to a high degree of multicollinearity in the models, this pattern is consistent with previous literature. When one partner exhibits mental health symptoms, the likelihood of the other partner also exhibiting mental health symptoms is increased (Harper & Sandberg, 2009; Monson, Taft, & Fredman, 2009). Similarly, if one partner is reactive or coercive in interactions, the other partner is also more likely to behave in a reactive or coercive way (Cozza, Holmes, & Van Ost, 2013; MacDermid, 2006). In general, research with couples tends to demonstrate a high degree of multicollinearity due to the influential and reciprocal nature of the relationships between partners.
Overall, several common assumptions of structural equation modeling were not met within the current study. The data set utilized did not follow a normal distribution but rather was positively skewed. This was likely the result of a lower than anticipated endorsement of psychological distress and a low frequency of observed negative interaction patterns, and negative parenting behaviors. Further, analyses revealed a degree of multicollinearity in the present study with the largest correlation between service member and spouse negative interaction patterns. A high correlation between partner negative interaction is consistent with the literature, which states that if one member in a relationship is reactive, the other is likely to be just as reactive (e.g. Patterson, 1982; Ro & Lawrence, 2007). However, because the interdependence is not specifically modeled in the present study, it is possible that the models are mis-specified, which is indicated by the fact that the strongest relationship is found in the unexplained variance. These problems appear to be common in literature that utilizes SEM as a statistical technique, and there are very few authors that have utilized these specific interdependence models. The field has not reached a consensus regarding the exact effects of multicollinearity in SEM and how best to handle the presence of multicollinearity in structural equation modeling. For example, a survey of 42 articles that utilized SEM techniques found that 31 of the studies had potentially high multicollinearity problems (Grewal, Cote, & Baumgartner, 2004; Jarvis, MacKenzie, & Podsakoff, 2003). Nine of these 31 studies reported high correlations \((p = .75 \text{ to } .95)\) among latent constructs. Despite these high correlations, there were no explanations regarding how multicollinearity may have impacted the data. Many researchers believe that SEM is robust against multicollinearity (e.g., Malhotra et al., 1999; Verbeke & Bagozzi, 2000), and other researchers may not consider multicollinearity in SEM due to practical considerations (Grapentine, 2000). More recent research has not led to definitive conclusions.
(e.g., Anyan, Bizumic, & Hjemdal, 2018; Niemelä-Nyrhinen, & Leskinen, 2014). This demonstrates that the field has not reached a consensus. Continued research regarding the effects of nonnormality and multicollinearity on SEM analyses is warranted to reach a consensus regarding the best practices for dealing with assumption violations.

The present study has several strengths. Rather than relying solely on self-report data, the current study included observational coding of recorded interactions between service member and spouse and recording parenting interactions between each parent and the child. Observations were examined by trained coders on both a macro-level, which examined more global patterns throughout interaction, and a micro-level, which provided specific second-by-second information on each partner’s behavior while interacting with their spouse. Observational data may potentially provide a less biased report of interaction patterns and parenting behavior than through self-report by service member and spouse. In addition to the observational data used in the present study, self-report measures were also utilized. By using different methods and multiple sources to assess the behavior of service members and spouses, shared method variance as an explanation for observed findings is minimized.

Second, the present study utilized longitudinal data for the analyses in Models 2, 3, and 4. Participants were observed at a baseline time point and then observed for a second time 1-year following baseline, allowing for causal inferences to be made about the relationship between negative interaction and parenting behavior, and treatment condition and parenting behavior. Because much of the research done in these areas is cross-sectional and based on self-report measures, the present study offers novel findings by examining both observational and longitudinal data.

**Summary and Implications**
Initiatives to support service members are broadening their focus from solely treating individuals to military families as a whole because of the research highlighting the stress of deployment and reintegration on the family system (e.g., Faber et al., 2008). Findings from the current study can provide implications for individual, couple, and parenting interventions, highlighting that military families may best be served in a holistic way. Literature has demonstrated a relationship between psychological distress and negative communication between partners. From an individual intervention perspective, targeting symptoms of psychological distress may best be done via teaching effective coping skills, increasing psychological flexibility and learning to tolerate distressing events. In addition to minimizing experiences of psychological distress, this individual work may also increase both partner’s ability to validate and support the other, thereby leading to improvements within the partner relationship.

From a couple’s intervention perspective, targeting individual psychological distress may be helpful in improving overall communication between partners. Further, efforts to promote mindfulness and acceptance of the other partner’s experiences may also work to reduce coercion and withdrawal in partner interaction. The minimization of negative interaction is likely to lead to an overall increase in positive engagement and validation between partners. This may be linked to higher marital satisfaction and more effective co-parenting (e.g., Burleson & Denton, 1997; Janjani et al., 2017). Also, because there is a demonstrated connection between partners’ psychological distress and interaction, addressing this influence each partner has over the other in a couple’s format may help partners to target the actual cause of these challenges. From a parenting intervention perspective, increasing parental locus of control may be important in reducing negative parenting behavior and heightening confidence of parents. In turn, increased
confidence in their parenting may reduce parent psychological distress. This may then serve to improve communication patterns between parents and their children, which can minimize conflict and improve relationships within the home. Specifically targeting these communication patterns in families may also be a helpful source of family intervention, as reducing reactivity, withdrawal, and distress avoidance can also lead to increased feelings of closeness within families.

There are further clinical implications specifically for military families in regard to broadening the scope of treatment. Results from the current study suggest that participation in a parenting training program can help increase positive parenting behavior in military families following deployment. Completion of any parent training program may be helpful in improving the co-parenting relationship, but interventions that specifically target military families such as the ADAPT program can provide additional assistance with challenges specifically related to the military lifestyle. For example, they can help partners reach consensus on household roles and discipline, provide support during the stressful transition, and aid in more effective reintegration following deployment. It is the hope that parent training programs specifically for military families will become more common as research demonstrating their efficacy is disseminated.

More research is warranted to fully understand the relationship between psychological distress, negative interaction, and parenting behavior. Examining these relationships in active duty military populations could provide information regarding the generalizability of these relationships in the military setting or clarify if this is unique to National Guard and Reserve service members and spouses. Additionally, future research should examine these relationships in a more heterogeneous sample, which could allow for greater variance among responses and further inferences about interaction and parenting behavior during the postdeployment time.
period. It would also be useful to examine the relationship between psychological distress and negative interaction/parenting behavior in a more sophisticated longitudinal design. By doing so, research may be able to provide key information for specific couple and parenting intervention targets and in deciding timing for prevention and intervention efforts.

In summary, results of the present study provided some support for the relationship between psychological distress and negative interaction behavior but did not provide support for the relationship between negative interaction patterns and co-parenting behavior. Completion of the ADAPT preventive parenting program was predictive of increased levels of positive parenting behavior during a 1-year follow-up. The well-resourced status of families in the present study was likely supportive for these families and protective against negative feelings and interaction patterns commonly seen in military families. Researching military families with fewer resources will be important when examining the generalizability of the current findings. Further when there were high reports of psychological distress or high frequencies of negative interaction patterns in one partner, the likelihood that the other partner displayed similarly high levels was common. This strengthens the argument that partner behavior can be reciprocally influential, in that the behavior of one partner influences future actions by the other partner.

Extant research is clear that service members and their spouses often struggle after deployment. The present study indicated that by reducing symptoms of psychological distress and improving communication patterns between partners, improved outcomes may be seen for service members, spouses, and their families. The ADAPT program has demonstrated some positive results in improving communication patterns and parenting behavior in service members and spouses postdeployment. An expansion of this program to other areas of the country and for use with active military populations and samples more representative of the current military
make-up may be helpful. Further, by teaching some of the ADAPT parenting and
communication strategies predeployment, further psychological distress and family difficulties
postdeployment may be lessened. The current study provides evidence that continued support of
not only service members but also their families both pre- and postdeployment should be a
continued focus of the military and policy makers.
REFERENCES


CDC. Current Depression Among Adults --- United States, 2006 and 2008 (MMWR 2010;59(38);1229-1235).


APPENDICES
<table>
<thead>
<tr>
<th>Measure/Scale</th>
<th>M (SD)</th>
<th>Skewness</th>
<th>Kurtosis</th>
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<tbody>
<tr>
<td>Psychological Distress – Service Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCL</td>
<td>28.96 (11.03)</td>
<td>1.47</td>
<td>1.97</td>
</tr>
<tr>
<td>HSCL – anxiety</td>
<td>14.45 (4.60)</td>
<td>1.49</td>
<td>2.07</td>
</tr>
<tr>
<td>HSCL – depression</td>
<td>22.25 (7.06)</td>
<td>1.44</td>
<td>2.21</td>
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<tr>
<td>Psychological Distress - Spouse</td>
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<tr>
<td>PCL</td>
<td>26.98 (8.45)</td>
<td>1.45</td>
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<tr>
<td>HSCL-anxiety</td>
<td>14.07 (4.03)</td>
<td>1.65</td>
<td>2.99</td>
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<td>HSCL-depression</td>
<td>22.74 (7.20)</td>
<td>1.48</td>
<td>2.17</td>
</tr>
<tr>
<td>Neg. Int. – Service Member</td>
<td>0.0001 (0.79)</td>
<td>1.21</td>
<td>1.39</td>
</tr>
<tr>
<td>RC</td>
<td>1.24 (0.48)</td>
<td>1.81</td>
<td>3.51</td>
</tr>
<tr>
<td>DA</td>
<td>0.79 (0.47)</td>
<td>1.03</td>
<td>-0.40</td>
</tr>
<tr>
<td>RACS negative</td>
<td>0.14 (.20)</td>
<td>2.15</td>
<td>5.37</td>
</tr>
<tr>
<td>Neg. Int. – Spouse</td>
<td>-0.005 (0.80)</td>
<td>1.50</td>
<td>2.50</td>
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<tr>
<td>RC</td>
<td>1.35 (0.55)</td>
<td>2.07</td>
<td>4.84</td>
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<tr>
<td>DA</td>
<td>0.78 (0.45)</td>
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<td>RACS negative</td>
<td>0.22 (0.28)</td>
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<td>5.42</td>
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<tr>
<td>Parenting – Service Member</td>
<td>2.79 (0.65)</td>
<td>0.14</td>
<td>-0.30</td>
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<tr>
<td>Parenting – Spouse</td>
<td>2.88 (0.68)</td>
<td>-0.16</td>
<td>-0.31</td>
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</table>

*Note. M = mean; SD = standard deviation.*
Table 2: Correlations Among Service Member and Spouse Psychological Distress Variables Using the HSCL-25 and PCL-M

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<tr>
<td>1. PCL – Service Member</td>
<td>--</td>
<td></td>
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<tr>
<td>2. HSCL – Anxiety, Service Member</td>
<td>.76**</td>
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<td>3. HSCL – Depression, Service Member</td>
<td>.67**</td>
<td>.76**</td>
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<tr>
<td>4. PCL – Spouse</td>
<td>.06</td>
<td>.12</td>
<td>.11</td>
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<tr>
<td>5. HSCL – Anxiety, Spouse</td>
<td>.08</td>
<td>.08</td>
<td>.12</td>
<td>.53**</td>
<td>--</td>
<td></td>
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<tr>
<td>6. HSCL – Depression, Spouse</td>
<td>.21**</td>
<td>.19*</td>
<td>.29**</td>
<td>.63**</td>
<td>.72**</td>
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*p < .05; **p < .01
Table 3: Correlations Among Interaction Variables using the FIMC and RACS

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<tr>
<td>1.RC – Service Member</td>
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<tr>
<td>2.DA – Service Member</td>
<td>.52**</td>
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<tr>
<td>3.RACS Neg – Service Member</td>
<td>.48**</td>
<td>.25**</td>
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<td>4.RC – Spouse</td>
<td>.80**</td>
<td>.63**</td>
<td>.40**</td>
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<td>5.DA – Spouse</td>
<td>.70**</td>
<td>.72**</td>
<td>.35**</td>
<td>.57**</td>
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<tr>
<td>6.RACS Neg – Spouse</td>
<td>.37**</td>
<td>.34**</td>
<td>.66**</td>
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<table>
<thead>
<tr>
<th></th>
<th>1.24</th>
<th>0.79</th>
<th>0.14</th>
<th>1.35</th>
<th>0.78</th>
<th>0.22</th>
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<td>Mean</td>
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<tr>
<td>SD</td>
<td>0.48</td>
<td>0.47</td>
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<td>0.55</td>
<td>0.45</td>
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*p < .05; **p < .01
Table 4: Correlations Among Parenting Variables Observed in Family Interaction Tasks (FIT)

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<th>9</th>
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<tbody>
<tr>
<td>1. Dad – Problem Solving</td>
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<tr>
<td>2. Dad – Harsh Discipline</td>
<td>-.28**</td>
<td></td>
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<tr>
<td>3. Dad – Positive Involvement</td>
<td>.56**</td>
<td>-.54**</td>
<td></td>
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<tr>
<td>4. Dad – Skill Encouragement</td>
<td>.27**</td>
<td>-.28**</td>
<td>.52**</td>
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<tr>
<td>5. Dad - Monitoring</td>
<td>.09</td>
<td>-.30**</td>
<td>.33**</td>
<td>.28**</td>
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<tr>
<td>6. Dad – Overall Parenting</td>
<td>.61**</td>
<td>-.64**</td>
<td>.81**</td>
<td>.69**</td>
<td>.69**</td>
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</tr>
<tr>
<td>7. Mom – Problem Solving</td>
<td>.71**</td>
<td>-.32**</td>
<td>.49**</td>
<td>.12</td>
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<td>8. Mom – Harsh Discipline</td>
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<td>-.21*</td>
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<td>9. Mom – Positive Involvement</td>
<td>.46**</td>
<td>-.32**</td>
<td>.66**</td>
<td>.34**</td>
<td>.25**</td>
<td>.57**</td>
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<td>10. Mom – Skill Encouragement</td>
<td>.16</td>
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<td>.61**</td>
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<td>.36**</td>
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<td>.05</td>
<td>.51**</td>
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<tr>
<td>11. Mom - Monitoring</td>
<td>.08</td>
<td>-.17</td>
<td>.15</td>
<td>.17</td>
<td>.54**</td>
<td>.38**</td>
<td>.09</td>
<td>-.03</td>
<td>.19*</td>
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<td>12. Mom – Overall Parenting</td>
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<td>-.38**</td>
<td>.56**</td>
<td>.46**</td>
<td>.39**</td>
<td>.67**</td>
<td>.64**</td>
<td>-.38**</td>
<td>.77**</td>
<td>.64**</td>
<td>.60**</td>
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</table>

*p < .05; **p < .01
$X^2(2) = 3.41, p = .18, \frac{X^2}{df} = 1.71, CFI > .995, RMSEA < .055$

FIGURE 1A
PSYCHOLOGICAL DISTRESS AND NEGATIVE INTERACTION
\[ X^2 = 3.80, \ p = .15, \ X^2/df = 1.90, \ CFI > .993, \ RMSEA < .062 \]

**FIGURE 1B**
PTSD SYMPTOMS AND NEGATIVE INTERACTION
$X^2_{(3)} = 3.13, p = .21, \chi^2/df = 1.56, CFI > .997, RMSEA < .049$

FIGURE 2
NEGATIVE INTERACTION AND CO-PARENTING BEHAVIOR
$X^2(5) = 9.55$, $p = .09$, $X^2/df = 1.91$, $CFI > .987$, $RMSEA < .062$

FIGURE 3A
PSYCHOLOGICAL DISTRESS, NEGATIVE INTERACTION, AND CO-PARENTING BEHAVIOR
$X^2_{(5)} = 7.82, p = .17, X^2/df = 1.57, CFI > .992, RMSEA < .049$

FIGURE 3B
PTSD SYMPTOMS, NEGATIVE INTERACTION, AND CO-PARENTING BEHAVIOR
$X^2_{(3)} = 3.27, p = .20, X^2/df = 1.63, CFI > .986, RMSEA < .052$

**FIGURE 4**
TREATMENT STATUS AND CO-PARENTING BEHAVIOR
APPENDIX A
HOPKINS SYMPTOM CHECKLIST-25 (HSCL-25)

Instructions: Listed below are some symptoms or problems that people sometimes have. Please read each one carefully and decide how much the symptoms bothered or distressed you in the last week, including today. Place a check in the appropriate column.

| Not at all | A little | Quite a bit | Extremely |
APPENDIX B
POSTTRAUMATIC CHECKLIST- MILITARY VERSION (PCL-M)

Instructions: Below is a list of problems and complaints that veterans sometimes have in response to a stressful military experience. Please read each one carefully, put an “X” in the box.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little bit</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Repeated, disturbing memories, thoughts, or images of a stressful military experience?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Repeated, disturbing dreams of a stressful military experience?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Suddenly acting or feeling as if a stressful military experience were happening again (as if you were reliving it)?</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Feeling very upset when something reminded you of a stressful military experience?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Having physical reactions (e.g., heart pounding, trouble breathing, or sweating) when something reminded you of a stressful military experience?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Avoid thinking about or talking about a stressful military experience or avoid having feelings related to it?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7</td>
<td>Avoid activities or talking about a stressful military experience or avoid having feelings related to it?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td>Trouble remembering important parts of a stressful military experience?</td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td>Loss of interest in things that you used to enjoy?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Feeling distant or cut off from other people?</td>
<td></td>
<td></td>
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<tr>
<td>11</td>
<td>Feeling emotionally numb or being unable to have loving feelings for those close to you?</td>
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</tr>
<tr>
<td>12</td>
<td>Feelings as if your future will somehow be cut short?</td>
<td></td>
<td></td>
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<tr>
<td>13</td>
<td>Trouble falling asleep or staying asleep?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14</td>
<td>Feeling irritable or having angry outburst?</td>
<td></td>
<td></td>
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<tr>
<td>15</td>
<td>Having difficulty concentrating?</td>
<td></td>
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<tr>
<td>16</td>
<td>Being “super alert” or watchful on guard?</td>
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<tr>
<td>17</td>
<td>Feeling jumpy or easily startled?</td>
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</tbody>
</table>

Has anyone indicated that you’ve changed since the stressful military experience?  Yes  No
APPENDIX C
FAMILY INTERACTION MACRO CODING SYSTEM

Reactivity-Coercion:
There are three facets to this category. (1) Reactivity refers to a heightened sensitivity to routine nonaversive as well as to aversive social events. This is indicated by irritability and negative reactivity. (2) Coercion is characterized by nattering, threats, aversive physical actions, by verbal criticism, denigration and demands, and by nonverbal displays of displeasure and rejection - a use of “force” to control others or to “get one’s way.” (3) Reactivity and coercion are often accompanied by angry, contemptuous and disdainful affect.

1- not at all, did not occur, not true at all
2- 1 or 2 weak occurrences, a little descriptive
3- 1-2 clear occurrences, somewhat descriptive
4- 3-5 clear occurrences, fairly descriptive
5- clearly evident > 5 occurrences, very descriptive
NA – no opportunity to observe the behavior

Reactivity-Coercion Items:

1) Is volatile and reactive – easily “set off,” “has a “short fuse.”
2) Is irritable and grumpy.
3) Is bossy.
4) Doesn’t “let things go” without reacting.
5) Reciprocates aversive actions of others.
6) “Takes over” tasks or interrupts others, is impatient.
7) Is critical of and negative toward others.
8) Is demanding and threatening.
9) Natters, wangles, manipulates.
10) Engages in physical threats or actions.
11) Refuses to back down, stays at it until (s)he gets his/her way.
12) Anger and negative behavior escalate, “blows up.”
13) Takes a stand against but then capitulates to others’ demands.
14) Actively dismisses, invalidates or denies the emotion displays of others.
15) Actively dismisses, invalidates or overrides the ideas, actions and opinions of others.
16) Is angry, belligerent.
17) Treats other family members with contempt or disdain.

Withdrawal-Avoidance is comprised of two subcategories, distress-avoidance and withdrawal-disengagement. These two subcategories may be combined depending on their empirical co-variation and functional equivalence.

Avoidance(of Distress)
Avoidance of distress entails verbal and non-verbal behaviors which actively avoid attending and responding to ongoing and direct social bids and opportunities. This non-responsiveness is apparent in two ways. (1) There is a non-responsiveness to explicit social events and normative opportunities directed at the target which may be positive or negative in tone – a kind of
The response to positive and negative bids for attention and engagement is a key aspect of reactive avoidance. (2) There is an explicit communication of NOT wishing to be involved with the rationale of involvement would be too taxing or demanding – a kind of proactive avoidance.

NA – no opportunity to observe the behavior
1 – not at all, did not occur, not true at all
2 – 1 or 2 weak occurrences, a little descriptive
3 – 1-2 clear occurrences, somewhat descriptive
4 – 3-5 clear occurrences, fairly descriptive
5 – clearly evident, >5 occurrences, very descriptive

**Avoidance Individual Items:**

1.) Is grudging in response to bids for attention and engagement.
2.) Is non-responsive to positive behavioral bids for engagement.
3.) Ignores other members’ negative affect displays. (NA)
4.) Ignores others members’ positive affect displays. (NA)
5.) Is non-responsive to negative behavior. (NA)
6.) Shows little interest or empathy in others’ ideas, feelings and activities.
7.) Passively lets other family members take over tasks and activities.
8.) Lacks energy and engagement in fun activities.
9.) Indicates verbally or non-verbally wanting to be “left alone.”
10.) Is wary and tentative, “walks on eggshells” to not upset other family members.
11.) Uses being “tired” or “in a bad mod” to avoid bids for involvement.
12.) Verbally indicate inability to respond to the needs of another.
13.) Acquiesces inability to respond to the needs of another. (NA)
14.) Shows fear or hurt in response to others’ criticism or complaints. (NA)

Items 1-14 are rated separately to reflect the observed behavior of the service member and spouse.
APPENDIX D
DISTRIBUTIONS OF VARIABLES

Service Member PCL

Histogram

Spouse PCL

Histogram
Spouse HSCL-25 Total Distress

Service Member HSCL-25 Total Distress
Spouse Reactivity-Coercion

Histogram

Frequency

Mom RC with dad task 4 BL mean item

Mean = 1.41
SD Dev = 6.46
N = 62

Spouse Distress Avoidance

Histogram

Frequency

Mom DA with dad task 4 BL mean item

Mean = .78
SD Dev = .445
N = 62

118
Spouse RACS Negative Interaction

Service Member Reactivity-Coercion
Service Member Distress Avoidance

Histogram

Service Member RACS Negative Interaction

Histogram
Service Member Co-parenting Behavior

Spouse Co-parenting Behavior