INFLUENCE OF SUPPORT ON THE RELATION BETWEEN DEPRESSION AND INTIMATE PARTNER VIOLENCE IN A SAMPLE OF FAMILIES AT HIGH-RISK FOR CHILD ABUSE AND NEGLECT

By

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Abstract: Intimate partner violence (IPV) is a costly concern that affects millions of U.S. families per year. IPV cuts across socio-economic strata and occurs across various cultures, affecting individuals on many levels. In addition to experiencing other outcomes, many individuals affected by IPV report experiencing depressive symptoms. Consequently, the combination of IPV and depressive symptoms leads to problems within the family as well as poor child outcomes. Further, IPV and depression serve as two main risk factors for child abuse and neglect. Previous research suggests that certain protective factors exist to buffer against the harsh effects of IPV and depression, thereby decreasing the likelihood of child abuse and neglect. An additional factor that is positively associated with both IPV and depression is a history of child maltreatment (CM). CM history has been shown to serve as a risk factor for IPV and depression, and often places caregivers at risk for child abuse and neglect into adulthood. The purpose of the present study was to examine the longitudinal impact of protective factors—namely social support, family resources, and church attendance—and child maltreatment history on the relation between IPV and depression in a sample of families at high-risk for child abuse and neglect. It was first hypothesized that IPV victims with higher levels of supports (i.e., social support, family resources, and/or church attendance) would report lower depression symptoms over time, while IPV victims with a CM history would report higher depressive symptoms over time, controlling for other study variables. It was also hypothesized that distinct subgroups would exist within the study sample with respect to the presentation of depression status over time. Lastly, it was hypothesized that support variables and CM history would impact the relation between IPV and depression over time differently within each subgroup. Results of hypotheses one and three were not supported, although main effects of these variables on depression were significant over time. Results supported hypothesis two, as a two-group linear trajectory model best fit participant depression status. Future research should examine the impacts of differing categories of IPV on depression, and how support variables impact these relations.

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CHAPTER I

INTRODUCTION

Background

Intimate partner violence (IPV) is a physically and psychologically costly concern that reportedly affects up to twelve million U.S. couples and families per year (Black et al., 2011; Domestic Violence Resource Center, 2012; Tjaden & Thoennes, 2000). The incident of IPV cuts across socio-economic strata and occurs across various cultures (Jewkes, Levin, & Penn-Kekana, 2002; Klap, Tang, Wells, Starks, & Rodriguez, 2007; McCloskey, 2005; Sassetti, 1993). IPV goes beyond direct physical consequences and affects the psychological and physiological well-being of the individual (Campbell, 2002; Campbell, Kub, & Rose, 1996; Campbell & Lewandowski, 1997; Coker et al., 2002; Gleason, 1993; Mullen, Romans-Clarkson, Walton, & Herbison 1988; Pico-Alfonso et al., 2006; Resnick, Acierno, & Kilpatrick, 1997; Sackett & Saunders, 1999; Smith & Gittelman, 1994; Temple, Weston, & Marshall, 2005).

The presence of depressive symptoms is a common theme that emerges among individuals affected by IPV (Campbell, Sullivan, & Davidson, 1995; Ehrensaft, Moffitt, & Caspi, 2006; Fergusson, Horwood, & Ridder, 2005; Gleason, 1993; Romito & Grassi, 2007; Saunders, Hamberger, & Hovey, 1993; Slashinski, Coker, & Davis, 2003). In a meta-analysis on prevalence of mental health problems among women with a history of IPV, Golding (1999) found that the average prevalence of depression among IPV victims was 47.6% across eighteen studies. This meta-analysis also found that depression was one of the most prevalent mental disorders associated with IPV.

Within samples of individuals affected by IPV, research has demonstrated that certain protective factors help to defend against negative outcomes such as depression. Differing types of support serve as one category of protective factors thought to impact these negative outcomes. Perceived social support has been associated with a decrease in depressive symptoms among women who experienced IPV (Beeble, Bybee, Sullivan, & Adams, 2009; Fowler & Hill, 2004; Mburia-Mwalili, Clements-Nolle, Lee, Shadley, & Yang, 2010; Meadows et al., 2005). Beeble et al. (2009) found that IPV victims who reported higher levels of social support had higher quality of life and lower depression over a period of two years. This study provides insight into the longitudinal effects of IPV amidst the presence of social support (i.e., emotional support, companionship) in community samples of IPV victims. The pattern of risk and protective impacts may take on different characteristics when IPV occurs in families with young children. Other types of support may become important protective impacts in the context of IPV within these families.

In addition to social support, religiosity/church attendance has demonstrated a buffering role against depression among individuals affected by chronic illnesses (Bussing, Fischer, Ostermann, & Matthiessen, 2008; McCauley, Tarpley, Haaz, & Bartlett, 2008; Sherman, Simonton, Latif, Spohn, & Tricot, 2005) and war veterans (Tran, Kuhn, Walser, & Drescher, 2012). Gillum, Sullivan, and Bybee (2006) found that the extent of religious involvement was predictive of decreased depression and improved psychological well-being among IPV victims. However, it remains unclear whether church attendance moderates the relation between IPV and depression longitudinally among high-risk families.

Adequacy of family resources is also known to impact both IPV and depression. Family resources are defined to include constructs such as income, education, employment, insurance status, and self-esteem. In a study conducted by Gonzalez-Guarda, Peragallo, Vasquez, Urrutia, and Mitrani (2009) the impact of these constructs on the association between IPV and depression was examined. Higher self-esteem was predictive of lower IPV, while higher income predicted

higher levels of IPV. Regarding depression, participants who reported higher depression levels also reported lower education. These researchers suggest that the positive relation between IPV and income may be a function of cultural influences, as their sample consisted of Hispanic women. Other researchers such as Nurius and colleagues (2003) found that low income was one of the most significant predictors of depression in a sample of IPV victims. While these studies examine the impact of resources within a population of women exposed to IPV, it remains uncertain if similar results would be found in a different population or with an alternate definition of family resources.

Just as support attenuates the likelihood of negative outcomes among victims of IPV, other circumstances have demonstrated associations with IPV and depression. For instance, decades of research has revealed that history of childhood maltreatment is positively linked to both IPV exposure and mental health outcomes such as depression (Coid et al., 2001; Fergusson, Horwood, Lynskey, 1996; Roustit et al., 2009; Weaver & Clum, 1996; Widom, Dumont, & Czaja, 2007). Whitfield and colleagues (2003) found that the risk of IPV victimization increased with the number of types of childhood maltreatment (i.e., sexual abuse, physical abuse, and neglect) experienced. Moreover, research suggests that women with a history of childhood maltreatment were two times more likely to have had a major depressive episode during their lifetimes than women without a history of childhood maltreatment (Duncan, Saunders, Kilpatrick, Hanson, & Resnick, 1996). Child maltreatment does not occur in a vacuum. Collectively, stressed caused by limited resources including low income and a childhood history of maltreatment, as well as the presence of depression and IPV can create an environment conducive to child abuse and neglect. Thus, learning how key protective factors (e.g., types of support) and risk factors (e.g., low income, childhood history of child maltreatment) interact within a population of high-risk families impacted by depression and IPV is important for developing strategies to prevent child maltreatment.

Specific Aims

The present study aimed to (1) examine how and to what extent social support, family resources, and religiosity (church attendance) impact the association between IPV and depression among caregivers at high-risk of child maltreatment; (2) characterize and identify predictors of the depression symptom trajectories that exist among caregivers during the study follow-up period defined by three assessment time points (baseline, program exit and follow-up 6 months post program exit); and (3) examine whether the influences of social support, family resources and religiosity (church attendance) vary depending on identified trajectory group membership. Similar to a study by Beeble and colleagues (2009), the current study examined these effects longitudinally. However, the current study extends past research by utilizing a large sample of parents of young children considered at high risk for child abuse and neglect. Additionally, this study examined effects of support defined by perceived social support, church attendance, and family resources, as well as risk factors defined by history of childhood maltreatment on the relation between IPV and depression. It was hypothesized that IPV victims who report having support (i.e., social support, family resources, and/or church attendance) will report fewer depressive symptoms over time than those who did not report having support. It was also hypothesized that IPV victims who reported risk factors such as history of child maltreatment would report more depressive symptoms over time than those who did not report previous child maltreatment.

CHAPTER II

REVIEW OF THE LITERATURE

Intimate partner violence

Intimate partner violence (IPV), also referred to in the extant literature as domestic violence or DV, has been defined as "a pattern of coercive control consisting of a physical, sexual, and/or psychological assault against a current or former intimate partner" (Flitcraft, Hadley, Hendricks-Matthews, McLeer, & Warshaw, 1992; Warburton & Abel, 2006). IPV consists of a vast range of behaviors including threats, physical, sexual, verbal, emotional, and financial abuse (Warburton & Abel, 2006). Data provided by the Domestic Violence Resource Center (2012) suggests that one in four women has experienced IPV in her lifetime. Additionally, according to the National Violence Against Women Survey (NVAWS; Tjaden & Thoennes, 2000), each year about 1.5 million women report being raped and/or physically assaulted by an intimate partner. However, victims of IPV are not limited to women; between 100,000 and six million men are victims of IPV each year (Tjaden & Thoennes, 2000). It is probable that this number is an underestimate due to the intimate nature of the issue as well as the social desirability likely associated with responses (Bell & Naugle, 2007; Fernandez-Gonzalez, O'Leary, & Munox-Rivas, 2013; Frieze & Browne, 1989).

IPV is commonly defined in the literature by four overarching types of abuse—physical, sexual, threats of physical or sexual violence, and psychological/emotional. The National Center for Injury Prevention and Control of the Centers for Disease Control and Prevention defined each of these terms to elicit a greater understanding of each type of IPV (Saltzman, Fanslow, McMahon,

& Shelley, 2002). Saltzman et al. (2002) define physical IPV as "the intentional use of physical force with the potential for causing death, disability, injury, or harm" (p. 35). This type of abuse includes behaviors such as scratching, pushing, shoving, throwing, grabbing, biting, choking, shaking, slapping, punching, burning, weapon use, and using one's body, size, or strength against another person. The second type, sexual IPV, involves the use of physical strength to force an individual to perform a sexual act against his or her will. This type also includes abusive sexual contact, as well as any sexual act perpetrated against an individual who is unable to understand or comprehend the nature of the violence, to decline participation, or to express his or her unwillingness to engage in the sexual violence (Saltzman et al., 2002). The third type involves threats of physical or sexual IPV by use of "words, gestures, or weapons to communicate the intent to cause death, disability, injury, or physical harm" (p. 53).

The last type of IPV as defined by Saltzman and colleagues (2002) is psychological/emotional and refers to acts, threats of acts, or coercive tactics resulting in trauma for the victim. Examples of the perpetrator's tactics include humiliation, use of control, withholding information, stalking, deliberately causing the victim to feel diminished, isolation from loved ones, and withholding financial or basic resources from the victim. Saltzman et al. (2002) assert that these acts are classified as "psychological/emotional IPV" if they occur subsequent to physical, sexual, or threat of physical or sexual IPV.

The Revised Conflict Tactics Scale (Straus, Hamby, & Boney-McCoy, 1996), one of the most widely used instruments to measure IPV, includes subscales assessing negotiation, psychological aggression, physical assault, injury, and sexual coercion. Together these subscales are thought to adequately measure the differing types of IPV, thus providing a thorough assessment of the overarching construct of IPV. Moreover, research has been aimed at identifying differing impacts of each type of IPV separately (Beeble, Bybee, Sullivan, & Adams, 2009; Dutton, Goodman, & Bennett, 2001; Nathanson, Shorey, Tirone, & Rhatigan, 2012; Pico-Alfonso et al., 2006).

IPV can be further categorized as unidirectional or bidirectional. Unidirectional IPV occurs when one partner in the relationship reports being either a perpetrator or a victim of violence, while bidirectional IPV occurs when a partner reports being both a perpetrator and a victim of violence (Robertson & Murachver, 2007; Straus, 2008; Tyler, Melander, & Noel, 2009). Melander, Noel, and Tyler (2010) longitudinally examined predictors of bidirectional and unidirectional IPV in a sample of 6,563 young adults. Results show that 13% of participants reported bidirectional IPV and 12% reported unidirectional IPV, with 5% reporting victimization and 7% reporting perpetration. In an effort to understand who is at risk for unidirectional or bidirectional IPV, some research has investigated which risk factors make individuals more vulnerable to each type of IPV, as well as to IPV in general.

Risk Factors for IPV

IPV Perpetration. While there is no prototypical perpetrator or victim of IPV, certain demographic variables exist that distinguish these individuals from those who do not experience IPV. Though it is unclear which variable precedes the other, the literature indicates that perpetrators of IPV are more likely to suffer from psychopathology such as depression (Pan, Neidig, & O'Leary, 1994), borderline personality disorder (Dutton, Starzomski, & Ryan, 1996), substance abuse (O'Farrell & Murphy, 1995), and posttraumatic stress disorder (Jordan et al., 1992) compared to non-abusers. Stith et al. (2004) found that anger, hostility, depression, and substance abuse were related to IPV perpetration.

Additionally, the association between low socioeconomic status (SES) and IPV has also been indicated in the literature. Researchers conducted a study with a sample of 619 husbands living in Thailand assessing predictors of men's physical force against their wives (Hoffman et al., 1994). Specifically, this research was based on a model suggesting that lower SES and status inconsistency (i.e., lower SES at some times and higher SES at other times throughout their lives) are related to higher levels of stress and frustration. Stress and frustration, according to the proposed model, lead to negative marital and family interactions and relationship dissatisfaction.

It is further proposed that the poor marital and family interactions lead to IPV. Results indicate that higher SES decreases the likelihood of IPV, even while controlling for the husband's stress and other factors such as number of children in the home. Further, these results indicate an indirect effect of low SES on IPV, such that low SES leads to marital conflict, thereby increasing husbands' stress which, in turn, leads to IPV. This study illustrates the multiple influences of SES and marital conflict on IPV.

Additional research on stress and IPV has found that perpetrators who report higher levels of stress are more likely to commit violent acts against their partners. For example, perpetrators report being less satisfied with their relationships as compared to nonviolent individuals (Aldarondo & Sugarman, 1996), and the presence of distress within the relationship is associated with occurrence of IPV (Vivian & Malone, 1997). Repetti (1989) examined the interaction between workload and stress and discovered that husbands were more likely to engage in negative behaviors when they endured higher levels of stress at work. Similarly, Frye and Karney (2006) sampled 82 newlywed couples to examine the circumstances under which spouses are more likely to engage in physical aggression over time. The results of this study are congruent with studies like Repetti's (1989), suggesting that spouses who reported higher levels of both chronic and acute stress were more likely to engage in aggression toward their partners as compared to those who reported lower stress levels.

Cano and Vivian (2001) conducted a review of the research examining the relation between life stressors and husband-to-wife violence. Their review supported a direct association between life stressors (e.g., job loss, extramarital affairs, separations, relocation, arrests) and IPV perpetration, thus suggesting that life stressors may serve as predictors or correlates of IPV. Additionally, they found that marital satisfaction and depression mediated this association, whereas attitudes accepting of violence, violence in the family of origin, and alcohol dependence moderated the relation between life stressors and IPV perpetration. Stith et al. (2004) examined 85 studies concerning various risk factors for IPV perpetration, and found that marital

dissatisfaction and career or life stress revealed significant associations. This review accentuates the potential negative impact of life stressors, as they can serve as risk factors for IPV.

Studies have also found correlations between experiencing and/or witnessing family violence during childhood and perpetrating IPV later in life (Aldarondo & Sugarman, 1996; Dutton & Hart, 1992; Hotaling & Sugarman, 1986; Kalmuss, 1984; Sugarman & Hotaling, 1989). Renner and Whitney (2012) used a sample of 10,187 young adults to identify common and unique risk factors for both unidirectional (perpetration or victimization) and bidirectional (reciprocal) IPV. Results found that for males, childhood sexual abuse and/or neglect was significantly associated with perpetration of IPV. For females, childhood neglect and physical abuse served as risk factors for IPV perpetration. Similar risk factors for IPV perpetration have been demonstrated as factors that make individuals more vulnerable to IPV victimization.

IPV Victimization. Research has indicated a link between victims of IPV and psychopathology such as generalized anxiety, obsessive compulsive, posttraumatic stress, and depressive symptoms (Astin, Lawrence, & Foy, 1993; Cascardi & O'Leary, 1992; Gleason, 1993; Saunders, 1994; Vitanza, Vogel, & Marshall, 1995) and substance abuse (Kantor & Straus, 1989; Miller, Downs, & Gondoli, 1989). Results of an epidemiological study (Danielson, Moffitt, Caspi, & Silva, 1998) following participants from birth (1972-1973) until age 21 found that female victims of IPV had elevated rates of mood, eating, and substance abuse disorders as compared to non-victims. Stith et al. 2004 found that depression and fear of future abuse were related to IPV victimization. Due to the nature of the sample being studied, however, it remains unclear whether psychopathology predates or follows the occurrence of IPV.

Another specific risk factor that remains consistent across various ethnic and cultural groups is low SES (Allard, Albelda, Colten, & Cosenza, 1997; Bassuk et al., 2006; Bassuk, Weinreb, Buckner, Browne, Salomon, & Bassuk, 1996; Fagan & Browne, 1994; Feldman & Ridley, 1995; Kaufman et al., 1998; North, Thompson, Smith, & Kyburz, 1996; Riggs et al., 2000). For example, Russo et al. (1997) found that individuals with lower income are more likely

to experience IPV than those with higher levels of income. Other studies suggest that poverty is positively associated with IPV, with this finding replicated across different countries including the United States, India, Thailand, and Nicaragua (Gelles & Straus, 1998; Hoffman, Demo, & Edwards, 1994; International Clinical Epidemiologists Network, 2000; Ratner, 1993).

Results across studies also reveal a correlation between witnessing IPV during childhood and report of IPV victimization later in life (Hotaling & Sugarman, 1986; Jackson, 1996; Kalmuss, 1984; Kantor & Straus, 1989). Related, previous childhood maltreatment has been linked to IPV victimization (Banyard, Arnold, & Smith, 2000; Barnes, Noll, Putman, & Trickett, 2009; Coid et al., 2001; Renner & Whitney, 2012; Tjaden & Thoennes, 2000; Wekerle & Avgoustis, 2003; White & Widom, 2003; Whitfield, Anda, Dube, & Felitti, 2003; Wolfe, Scott, Wekerle, & Pittman, 2001). For instance, research suggests that compared to women who denied a history of childhood maltreatment, women who reported childhood physical abuse, sexual abuse, and/or witnessing IPV among their parents were significantly more likely to report current IPV (Whitfield et al., 2003). Results further suggest that the risk of IPV victimization increases with the number of types of childhood maltreatment experienced.

Weaver and Clum (1996) used a sample of forty-three IPV victims and found that 71% of women reported experiencing childhood physical abuse while 53% reported experiencing childhood sexual abuse. Renner and Whitney (2012) found that males who experienced childhood sexual abuse and/or neglect and females who experienced childhood neglect and/or physical abuse were more likely to be victims of IPV during adulthood as compared to individuals who did not experience childhood maltreatment. These studies indicate the important role that childhood maltreatment plays in victimization of IPV later in life. Just as childhood maltreatment has demonstrated a correlation to negative outcomes such as IPV, a multitude of effects of IPV exist that are critical in understanding the future functioning of individuals exposed to violence.

Effects of IPV

Although there are differences in the way individuals react to IPV, many of the effects and outcomes of this occurrence are quite similar on an aggregate level. For instance, IPV has been found to lead to and exacerbate depressive symptoms (Flicker, Cerulli, Swogger, Cort, & Talbot, 2012). Further, a meta-analysis examined the relations between IPV and elevated depressive symptoms, diagnosed major depressive disorder, and postpartum depression in studies conducted over a period of thirty years (Beydoun, Beydoun, Kaufman, Lo, & Zonderman, 2012). Results found that a large number of studies in the meta-analysis revealed a strong or moderate positive correlation between IPV and depression. Across these studies, women exposed to IPV were at a 2- to 3-fold increased risk of major depressive disorder and a 1.5- to 2-fold increased risk of elevated depressive symptoms and postpartum depression compared to non-abused women. Other research (Nathanson et al., 2012) examined the prevalence of mental health disorders in a community sample of IPV victims and found that the majority of women met criteria for a clinical diagnosis (e.g., PTSD, depression, substance abuse disorders). Results of this study also found that psychological abuse, not physical abuse, significantly predicted PTSD and depression.

In addition to depression, research suggests that many IPV victims report experiencing adverse outcomes such as heightened anxiety, posttraumatic stress symptoms, substance abuse, suicidal ideation, panic attacks, and eating problems (Anderson, 2002; Campbell & Lewandowski, 1997; Coker et al., 2002; Hanson Frieze, 2005; Slashinski, Coker, & Davis, 2003). Posttraumatic stress disorder (PTSD) in particular is commonly linked to IPV (Campbell, 2007; Ehrensaft, Moffitt, & Caspi, 2006; Golding, 1999; Sharhabani-Arzy Amir, Kotler, & Liran, 2003). In fact, some research indicates that, among women who have experienced IPV, prevalence rates of PTSD range from 31% to 84.4% (Golding, 1999; Jones, Hughes, & Unterstaller, 2001), while other research suggests prevalence rates as high as 74–92% (Campbell, 2002; Watson et al., 1997), thus emphasizing the traumatic impact of IPV.

Additional research has examined the impact of the type of IPV in predicting symptoms of PTSD. Specifically, in one study, PTSD was found to be more likely to follow psychological abuse than physical abuse in a population of female IPV victims (Dutton et al., 2001). Pico-Alfonso and colleagues (2006) compared a group of physically and psychologically abused women, a group of only psychologically abused women, and a control group of non-abused women to determine the differential impact of IPV types on mental health. Results indicate that no differences existed between the combined physical and psychological IPV group and the psychological IPV group regarding PTSD and other anxiety symptoms. However, women in each of these groups endorsed more severe symptoms compared to the non-exposed control group, suggesting that regardless of IPV type, victims experience more negative mental health consequences than non-victims.

IPV victims also report higher levels of stress as compared to those who do not report IPV (Dixon et al., 2007; Hoffman et al., 2004; Stith et al., 2004). Noel and Yam (1992) suggest that those who experience IPV subsequently experience excessive amounts of stress. Moreover, another study sampled 208 African-American women from low SES backgrounds to determine the relation between childhood maltreatment, life stress, and IPV (Patel, Bhaju, Thompson, & Kaslow, 2012). These researchers found that stress mediated the relation between childhood maltreatment (i.e., physical, emotional, and sexual child abuse) and IPV severity; in other words, women who were maltreated during childhood tended to experience higher levels of life stress and IPV as compared to women who reported no childhood abuse.

Stress is not the only response to IPV, with research also indicating detrimental long- and short-term effects on the victim's physical health (Campbell et al., 2002). In addition to immediate physical effects of IPV, such as obvious markings across the body, victims can suffer chronic syndromes as well (Campbell, 2002; Haber, 1985; Humphreys, Cooper, & Miaskowski, 2011; Kendall-Tackett, Marshall, & Ness, 2003; Koopman et al., 2007; Wuest et al., 2008). For instance, studies reveal that repeated physical abuse is related to an increase in chronic syndromes

such as pain, gastrointestinal conditions, and osteoarthritis (Campbell, 2002; Coker, Smith, Bethea, King, & McKeown, 2000). Victims of IPV also exhibit increased headaches and back pain (Diaz-Olavarrieta, Campbell, Garcia de la Cadena, Paz, & Villa, 1999; Plichta, 1996), viral infections (e.g., colds and flu; Kerouac, Taggart, Lescop, & Fortin, 1986; Letourneau, Holmes, & Chasendunn-Roark, 1999), and cardiac problems (e.g., chest pain and hypertension; Coker et al., 2000; Koss, 1992) when compared to populations who did not experience IPV.

Further, Campbell and colleagues (2002) compared the physical health problems of 201 IPV victims in a female health organization program to a sample of 240 women who had never been abused. Those who had been exposed to IPV reported experiencing more headaches, back pain, vaginal infections, and digestive problems as compared to the non-exposed control group. Additionally, those individuals experiencing IPV reported more sexually transmitted diseases, vaginal bleeding, painful intercourse, pelvic pain, urinary tract infections, loss of appetite, and abdominal pain. The women in this group further endorsed higher chronic stress-related problems and central nervous system problems, while also reporting significantly more total health problems than the control group of women who did not report IPV. It is evident that IPV leaves many detrimental effects on the victim. Within the family culture, oftentimes there are others who are affected by IPV as well.

Effects of IPV on the Family

Although IPV refers to violence between adults, children are often exposed to the violence, resulting in negative child impacts (Graham-Bermann & Levendosky, 1998; Maker, Kemmelmeier, & Peterson, 1998; Reinherz, Paradis, Giaconia, Stashwick, & Fitzmaurice, 2003; Sternberg et al., 1993). For example, Reinherz and colleagues (2003) investigated predictors of negative affect in children and adolescents tracked from age five who experienced or witnessed IPV. The results of this longitudinal study found that those who reported experiencing family violence in the home by age fifteen were four times more likely to report symptoms of depression between the ages of 18 and 26 as compared to those who did not report experiencing family

violence. These results suggest that IPV can have harsh, long-lasting effects on children and adolescents, as the studies indicate that internalizing problems often emerge later in children's lives.

Similarly, children exposed to IPV have been shown to exhibit increased symptoms of anxiety, depression, posttraumatic stress, and temperament difficulties as compared to children who were not exposed to family violence (Graham-Bermann & Levendosky, 1998; Hughes, 1988; Maker, Kemmelmeier, & Peterson, 1998; Reinherz et al., 2003; Sternberg et al., 1993). Research compared children exposed to IPV who were referred for mental health treatment to children from a population-based sample and found that children exposed to IPV had higher somatic complaints as compared to children in the general population (Lamers-Winkelman, De Schipper, & Oosterman, 2012). Specifically, results indicated that children exposed to IPV experienced more eating and bowel problems (e.g., nausea, overeating, constipation, overweight), sleeping difficulties, aches and pains (e.g., stomach aches, headaches, dizziness), and engaged in more self-injury and suicidal ideation than children who were not exposed to violence. It is evident from these studies that the effects of IPV on the family can be detrimental to children's emotional and physical well-being.

IPV also poses a risk for other dangerous circumstances within the family environment, such as child abuse and neglect (Chaffin et al., 1996; Shipman et al., 1999). Research indicates that the three main risk factors of child maltreatment are parental substance use, depression, and IPV (Chaffin et al., 2001; Duggan et al., 2004; Eckenrode et al., 2000). Carlson (1984) conducted a study with results indicating a link between IPV and child maltreatment. Specifically, in 40% to 60% of families where IPV was present, child abuse was simultaneously present. This collection of studies emphasizes IPV's abrasive effects on the family environment, serving as one of the three main risk factors for child abuse and neglect. Depression, another main risk factor for child maltreatment, has also been widely studied in relation to IPV.

Depression

Diagnoses of depression fail to discriminate against age, gender, or race (Burkhart, Svavarsdottir, Rayens, Oakley, & Orlygsdottir, 2009; Huang, Wong, Ronzio, & Yu, 2007; Turvey, Jogerst, Kim, & Frolova, 2012). According to the Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition, Text Revision (DSM-IV-TR), depression is characterized by depressed mood and diminished interest in most activities most of the day nearly every day, and is oftentimes marked by weight and/or appetite change, hypersomnia or insomnia, psychomotor agitation or retardation, fatigue, feelings of worthlessness, diminished concentration, and/or recurrent thoughts of death or suicide (American Psychiatric Association, 2000). Furthermore, depression is the fourth leading cause of disease burden worldwide (e.g., years of life lost due to depression, years lived with disability; Ustun, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004).

According to the National Institute of Mental Health (NIMH), 6.7% of the U.S. adult population suffers from depressive symptoms each year, while 16.5% of adults in the U.S. experience depressive symptoms during the course of their lifetimes with an average age of onset of 32 (NIMH, 2012). Further, the NIMH reports that women are approximately 70% more likely to experience depressive symptoms during their lifetime as compared to men. Specifically, research suggests that lifetime prevalence rates for Major Depressive Disorder (MDD) among women are around 21.3%, while rates for men are around 12.7% (Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993). Regarding differences in prevalence across ethnicity, non-Hispanic African Americans are 40% less likely than non-Hispanic Caucasians to experience these symptoms over their lifetimes (NIMH, 2012).

The course of depression has also been found to change over time and for different populations of people. For instance, research examining depression scores during pregnancy indicates that depression decreases from early pregnancy into the postpartum period (Banti et al., 2011; Bowen, Bowen, Butt, Rahman, & Muhajarine, 2012; Gavin et al., 2005). Differences in

depression trajectories among racial groups have been noted in the literature as well. Mossakowski (2008) explored the influence of race, ethnicity, and SES on depression among young adults who completed the National Longitudinal Survey of Youth over a period of thirteen years. Results suggest that Blacks and Hispanics reported significantly higher levels of depressive symptoms compared to Whites from ages 27-35 years. Moreover, this study also found that SES, family background (i.e., parental education and parental occupation), and poverty mediated the relation between ethnicity/race and depressive symptoms. Together, this research illustrating the prevalence and presentation of depressive symptoms provides a foundation for exploring the effects of the disorder.

Effects of Depression

Depression was found to be the leading cause of disability in the U.S. in terms of total years lost, as it affects approximately 350 million people, has a negative impact on people's functioning, and often starts at a young age (The World Health Organization, 2012). The annual costs associated with the disorder have also been shown to have a negative impact on society. According to the American Pharmacists Association Foundation (2006), cost estimates to the U.S. range from $30 to $44 billion, with approximately $12 billion resulting from lost workdays each year. Related, decreased productivity results from symptoms associated with decreased energy and concentration, memory, and decision-making difficulties, thus contributing to another $11 billion in costs to the nation (American Pharmacists Association Foundation, 2006). These negative impacts may be explained in part by cognitive impairment experienced by people with depression.

The leading cognitive model of depression emphasizes the role of dysfunctional cognitive structures and biased information processing in the development and maintenance of depression (Beck, 1976). This theory argues that individuals with depression are marked by negative schemas and biases affecting perception, attention, and memory, thus contributing to depressive symptomatology. This propensity for depressed individuals to attend to negative attentional

biases has been found across studies (Bradley, Mogg, & Lee, 1997; Gotlib, Krasnoperova, Yue, & Joormann, 2004). The difficulty that depressed individuals face in altering their distorted cognitions has been found across a number of samples, including those experiencing IPV (Magwaza, 1999; Ullman, 1997; Wickie & Marwit, 2000); the impact of depression is then bolstered by reticence to alter such cognitions.

Wells and Shelbourne (1999) examined the functioning and utility (i.e., patients' preference for a particular health outcome) of 17,558 individuals in outpatient care; outcomes were compared between patients with depression and patients with chronic medical conditions (e.g., asthma, diabetes, hypertension, arthritis, migraine headaches, and chronic lung, neurologic, heart, gastrointestinal tract, vision, and back problems). Overall, patients with depression reported significantly worse mental health, emotional and social functioning, and lower utility than patients with each chronic medical condition. Patients with depression also reported worse physical functioning than patients with asthma, hypertension, gastrointestinal tract problems, or migraines. The findings of this study illustrating the impact of depression compared to the impact of chronic medical conditions are consistent with the findings of an earlier study by Wells and colleagues (1989). The negative effects of depression outlined in these studies are often exacerbated by the presence of comorbid disorders as well.

It is not uncommon for individuals who suffer from depression to also exhibit clinically significant levels of another disorder or illness (Angst 1996; de Graaf et al. 2002; Kessler et al. 1994; Sartorius et al. 1996). Anxiety disorders, such as PTSD, obsessive-compulsive disorder, panic disorder, social phobia, and generalized anxiety disorder, often accompany depression (Devane, Chiao, Franklin, & Kruep, 2005; Regier, Rae, Narrow, Kaebler, & Schatzberg, 1998). In a study funded by the National Institute of Mental Health (NIMH), researchers found that more than 40 percent of people with PTSD also had depression when they were assessed four months after the occurrence of the traumatic event (Shalev et al., 1998). Additionally, alcohol and other substance abuse commonly co-occur with depression (Conway, Compton, Stinson, & Grant,

2006). Individuals who are dependent on substances such as alcohol or marijuana are three to four and a half times likely to also have a comorbid mood disorder, such as depression (Degenhardt, Hall, & Lynskey, 2001). This comorbid relation has been associated with a more chronic, problematic trajectory marked by a higher risk of relapse in each disorder, more severe social and occupational impairment, as well as a higher risk for suicidal ideation (Hasin et al., 2002; Sullivan, Fiellin, & O'Connor, 2005).

"Recurrent thoughts of death or suicide" act as one of the criteria for major depressive disorder (American Psychiatric Association, 2000; Shaffer et al., 1996). Between 37% and 58% of patients experience suicidal ideation while experiencing a depressive episode (Kessler, Berglund, Borges, Nock, & Wang, 2005; Sokero et al., 2003). Researchers found that among inpatients with depression who experienced their first depressive episode within five years, the risk of a suicide attempt was approximately 40% (Malone, Haas, Sweeney, & Mann, 1995). Suicidal ideation and attempts have been theorized to coexist with all levels of depression severity, as only a modest association between suicide risk and severity of depression has been found (Beck, Kovacs, & Weissman, 1979; Van Gastel et al., 1997; Witte, et al., 2006). While this information provides an informative overview of the influence of depression on the general population, it is also important to examine the prevalence of and effects of depression among high-risk mothers and their families.

Maternal Depression

As previously mentioned, depression in females is approximately 70% more likely to occur than depression in males in the U.S. (NIMH, 2012). Research suggests that the first episode of depression among women often peaks during childbearing years (Cox, Murray, & Chapman, 1993). In fact, the estimated prevalence rate of depression among women of reproductive age is 8-10% (Kessler et al., 1996). Maternal depression serves as a unique form of the disorder, as these symptoms affect victims who share one common theme across a number of other environmental features. Perhaps one subtype of maternal depression which has received the most

attention is postpartum depression. Postpartum mood disorders represent the most frequent form of maternal psychopathology following delivery (Stocky & Lynch, 2000). This syndrome is characterized by low self-esteem, inability to cope, feelings of incompetence and loss of self, and social isolation (Matthey, Barnett, Howie, & Kavanaugh, 2003).

Maternal depression is also marked by irritability, sadness, feelings of worthlessness and hopelessness, a lack of interest in activities mothers used to enjoy, changes in appetite, and fatigue (American Psychiatric Association, 2000). Further, the incidence of depression during pregnancy ranges from 10% to 25% of women (Cutrona, 1983; O'Hara, 1995). Studies have also indicated a positive link between mothers' reports of depressive symptoms and hostility and anxiety (Ballinger, 1982), lower levels of maternal-fetal attachment (Condon & Corkindale, 1997), and inconsistent and ineffective discipline practices (Gelfand & Teti, 1990). While these studies unmask the influence of depressive symptoms on mothers, additional research examines the effects of such symptoms on the family environment.

Effects of Maternal Depression on the Family

Regarding the impact of maternal depression on family functioning, studies indicate that higher levels of maternal depression are positively correlated with poorer communication styles and lower levels of family cohesion and organization (Fendrich, Warner, & Weissman, 1990; Timko, Cronkite, Berg, & Moos, 2002). Mothers with depression have also been found to display less sensitivity toward their children (Murray, Fiori-Cowley, Hooper, & Cooper, 1996) and use harsher discipline with their children (Kiernan & Huerta, 2008). Chronicity of depression also plays a crucial role in determining less optimal mother-infant interaction (Campbell, Cohn, & Meyers, 1995). Campbell et al. (1995) sampled a group of 70 new mothers diagnosed with depression and a comparison group of 63 new mothers without depression. Researchers administered a diagnostic interview and observed mother-infant interaction at 2, 4, and 6 months. Although the presence of depression at the 2-month follow-up was not associated with impaired mother-infant interaction, mothers who still met criteria for depression at 6 months were observed

to be less positive with their infants and less competent during feeding; infants were also less positive with their caregivers. These studies underscore the effects of maternal depression on both the child and caregiver.

Other research has found that maternal depression affects parent-child interaction. For instance, high levels of dysphoric mood (Hops et al., 1987), negative views of the child (Kochanska, Radke-Yarrow, Kuczynski, & Friedman, 1987), high rates of criticism (Jaenicke et al., 1987), and both under-and over-involvement with the child (Davenport, Zahn-Waxler, Adland, & Mayfield, 1984) have been identified as reactions toward children in mothers who have depression.

In addition to maternal depression's effects on parenting abilities and parent-child interaction, maternal depression is positively correlated with children's internalizing and externalizing behaviors, such as depression, anxiety, and aggression (England & Sim, 2009; Pilowsky et al., 2006; Robila & Krishnakumar, 2006). Garai et al. (2009) found that maternal sensitivity, the ability to identify and effectively respond to the distress and needs of one's child, was found to significantly impact children's internalizing symptoms. In a sample of 65 mothers with a history of depression, maternal sensitivity and mothers' depressive symptoms were significantly related to female youth's internalizing symptoms. Namely, high depressive symptoms, low maternal sensitivity, and a combination of these variables were associated with high internalizing symptoms among girls (Garai et al., 2009). While each of these studies informs the research regarding consequences of maternal depression, learning more about effects of maternal depression across different populations of families, such as high-risk families, is warranted to gain a clearer picture of the effects of depression.

For years studies have been conducted to examine the mental health of mothers who are at high risk for child abuse and neglect (Milner & Chilamkurti, 1991; Milner & Crouch, 1998; Milner & Dopke, 1997). Balge and Milner (2000) assessed for differences among high- and low-risk mothers attempting to recognize emotions in children and found that high-risk mothers made

more emotion recognition errors compared to low-risk mothers. Further, results found that high-risk mothers reported higher levels of depression and parenting stress than low-risk mothers. Just as it is theorized that individuals with depression exhibit negative cognitive schemas, cognitive-behavioral models propose that cognitive styles may be associated with child abuse (Milner, 1993). For example, Milner (1993) theorized that in the first stage of his social information processing model of child physical abuse, high-risk parents have preexisting cognitive schemata regarding their children's abilities and motivations (e.g., child-related intent) and their parenting skills (e.g., self-efficacy and control expectancies) which influence their perceptions of and responses to their children. Collectively, this research illustrates the ability of depressive symptoms to negatively impact the family environment, thereby emphasizing the need for methods aimed at decreasing maternal depression to improve family functioning. This association is further complicated by the presence of IPV in the family.

IPV and depression

Throughout the last few decades, an abundance of research has found a positive correlation between IPV and depression (Cascardi, O'Leary, & Schlee, 1999; Golding, 1999; Gleason, 1993; Stein & Kennedy, 2001; Watson et al., 1997; West, Fernandez, Hillard, Schoof, & Parks, 1990). This link is particularly common among women compared to men (Cascardi et al., 1999; Dienemann et al., 2000; Gleason, 1993; Stein & Kennedy, 2001).

Dienemann et al. (2000) reported that women who have been diagnosed with depression are two times more likely than the general population to report histories of IPV, as approximately 60% of these women report a previous experience of IPV. Further, as compared to another common disorder among IPV victims, PTSD, research has found that greater lifetime prevalence rates of major depression exist among these individuals (Gleason, 1993; Stein & Kennedy, 2001). Specifically, Scholle, Rost, and Golding (1998) utilized a sample of 303 women who had been diagnosed with depression and found that 55.2% reported experiencing IPV during adulthood. Other studies utilizing similar samples have discovered that those experiencing depressive

symptoms reported a decline in symptoms over time once the IPV ended (Astin, Lawrence, & Foy, 1993; Cascardi & O'Leary, 1992; Gleason, 1993; Jaffe, Wolfe, Wilson, & Zak, 1986). Thus, it is evident that a relation between IPV and depression exists, and various theories are proposed to help explain this relation.

One theory proposed which helps explain this relation stems from research conducted over two decades ago (Janoff-Bulman, 1989). This theory proposes that there are three basic assumptions that people have about the world: 1) the world is benevolent; 2) the world is meaningful; and 3) the self is worthy. However, when individuals are faced with traumatic events, it is thought that they must alter their assumptions about the world, adopt new ones, and/or create certain schemas in order to make sense of their "new" world (DePrince & Freyd, 2002a and DePrince & Freyd, 2002b; Martin & Kleiber, 2005). Janoff-Bulman (1992) asserts that different types of traumatic events often force people to espouse different world assumptions. For instance, interpersonal forms of trauma (e.g., rape) tend to have a more detrimental effect on people's assumptions of the world because the incident involves a perpetrator who intends to inflict harm. In these instances, it is argued that people's views of the benevolence and meaningfulness of the world, in addition to their views regarding their worth are shattered (Magwaza, 1999; Ullman, 1997; Wickie & Marwit, 2000). Additional research is necessary to identify which protective factors are beneficial in countering these attributions since negative outcomes such as depression may surface when protective factors are absent.

This "world assumptions theory" was tested in a study by Lilly, Valdez, and Graham-Bermann (2011) which examined the mediating role of world assumptions on the association between trauma exposure and depression severity. More specifically, this study utilized a sample of 97 women who had endured IPV to determine if the traumatic event diminished their assumptions of the world and/or of themselves, and how these diminished assumptions then affected their depressive symptoms. The results of the study found that diminished world assumptions mediated the relation between amount of trauma exposure and depression severity.

Specifically, depressive symptoms were more severe for those victims of IPV who altered their basic assumptions of the world and others, such that the world and other individuals were no longer thought of as benevolent, meaningful, or worthy. These findings serve as a possible explanation to help researchers better understand the relation between IPV and depression.

A second possible explanation for the relation between IPV and depression is related to an imbalance of power and perceived lack of control within the interpersonal relationship (Anderson & Umberson, 2001; Germain, 2001; Robinson, 2003). Several studies indicate that an association between gender power imbalance, control, and IPV exists, such that males abuse this power and perpetrate IPV (Anderson & Umberson, 2001; Connell, 1987; Germain, 2001; Jewkes et al., 2002; Kim & Emery, 2003; Murphy & Meyer, 1991; Pence & Paymar, 1993; Philpot, Brooks, Lusterman, & Nutt, 1997; Robinson, 2003; Ronel & Claridge, 2003; Rosenbaum & Leisring, 2003). Using this theory as a foundation for their study, Filson, Ulloa, Runfola, and Hokoda (2010) investigated the mediating role of powerlessness in the relation between IPV and depression in a sample of 327 female college students. The results of this study concluded that more violence within relationships tends to lead to higher severity of depressive symptoms. This study also found that victims of IPV report a lack of power within their relationships, leading to such depressive symptomology. While these theories provide a deeper understanding of what may account for the relation between IPV and depression, additional research proposes that protective factors exist to impact the strength of this relation.

Protective Factors

Though the aforementioned theories propose models explaining the positive correlation between IPV and depression, the literature also suggests that certain protective factors can aid in defending against depression. Namely, various types of support are thought to affect the severity of depressive symptoms across populations. For example, religion and spirituality have been found to reduce negative mental health outcomes such as depression. This trend has been demonstrated in samples of individuals exposed to traumatic experiences such as chronic illnesses

(Bussing, Fischer, Ostermann, & Matthiessen, 2008; McCauley, Tarpley, Haaz, & Bartlett, 2008; Sherman, Simonton, Latif, Spohn, & Tricot, 2005) and war (Tran, Kuhn, Walser, & Drescher, 2012).

Smith, McCullough, and Poll (2003) conducted a meta-analysis reporting 147 studies that have examined the relation between religiosity and depression. These researchers reported several theories as to why the two constructs tend to be inversely related such as genetic influences, developmental influences, lower substance use, increased social support, appraisal of life events, and coping abilities. Results of this meta-analysis suggest that depression is related to religiousness, and that this finding is maintained across gender, age, and ethnicity. Although these studies point toward the influence of religiosity in decreasing depressive symptoms, the literature is very limited regarding the role of religiosity in the relation between IPV and depression.

Another protective factor discussed in literature is the concept of "family resources" which includes income, education, employment, insurance status, and self-esteem (Gonzalez-Guarda et al., 2009). Alternate to previously discussed research indicating that income alone is a risk factor (Allard et al., 1997; Bassuk et al., 2006; Bassuk et al., 1996; Fagan & Browne, 1994; Feldman & Ridley, 1995; Kaufman et al., 1998; North et al., 1996; Riggs et al., 2000; Russo et al., 1997), researchers found that specific aspects of "family resources" serve as a type of support impacting the relation between IPV and depression. Specifically, research conducted in a sample of 82 Hispanic women investigated the role of family resources as defined by income, education, employment, insurance status, and self-esteem in the relation between IPV and depression (Gonzalez-Guarda et al., 2009). Results suggest that high self-esteem is negatively associated with IPV and depression, while high income was positively associated with IPV and depression; the other resources were not significantly linked to IPV or depression. The authors explain that the positive relation between income and IPV may be due to possible added stressors when a woman is generating income (e.g., expectation for more shared decision making, more hours designated for employment). They further explain the possibility that working women may affect

the power dynamics in a household occupying traditional egalitarian beliefs (i.e., men are viewed as the provider and women are financially dependent), particularly if she earns more than her spouse. Additional research is warranted in different populations to assess the role of income and other family resources (e.g., basic needs, time for family, etc.) in the correlation between IPV and depression.

Still another protective factor in the relation between IPV and depression is social support (Arias, 1999; Beeble, Bybee, Sullivan, & Adams, 2009; Carlson, McNutt, Choi, & Rose, 2002; Coker et al., 2002; Coker, Watkins, Smith, & Brandt, 2003; Fowler & Hill, 2004; Kaslow, 1998; Mburia-Mwalili, Clements-Nolle, Lee, Shadley, & Yang, 2010; Meadows et al., 2005; Rose, Campbell, & Kub, 2000). For example, a study by Coker and colleagues (2000) interviewed 1,152 women in family care clinics and assessed for IPV (e.g., type, timing, and frequency of the violence), mental health difficulties, and social support. Women who reported higher perceived social support were significantly less likely to report poor mental and physical health, anxiety, depression, PTSD symptoms, and suicidal ideation as compared to IPV victims who reported lower social support while controlling for frequency of abuse. These data suggest that in order to lessen adverse mental health outcomes, victims of IPV needed to disclose the abuse to a person whose reaction was consistently supportive. These results highlight the importance of social support in the reduction of poor mental health outcomes among abused women.

A more recent study examined the main, mediating, and moderating effects of social support on the relation between IPV and quality of life (QOL) and depression over a two-year period (Beeble et al., 2009). Specifically, these researchers assessed 160 survivors of IPV six times over a period of two years to determine the role social support plays within this association. This sample consisted of women receiving immediate support from a community-based agency following police intervention, women participating in a local domestic violence program, and referrals from the county prosecutor's personal protection order office. Measures included assessments for physical and psychological abuse, depression, QOL, and social support, and were

given every four months during the first year and every six months during the second year. The results showed that both physical and psychological abuse were linked to depression at baseline; however, QOL was inversely related only to psychological abuse. Women with higher social support reported higher QOL and lower depression at baseline, as well as greater improvement in depression over time.

Taken together, these data suggest a strong link exists between IPV, depression, and quality of life, while also highlighting the importance of considering social support as a means of shielding against the adverse effects of IPV. This is particularly evident in cases where psychological abuse is the primary existing form of IPV. Social support positively influences the perception of availability of help in the environment, the victims' emotional reactions to stressful stimuli, and the appraisal of the consequences of such stressors (Fortin, Guay, Lavoie, Boisvert, & Beaudry, 2012). Additionally, perceived social support fosters the process of finding rational solutions to victims' problems while abandoning inappropriate or distorted responses (Fortin et al., 2012). Thus, it is evident that the role of social support within this relation is often crucial for psychological enhancement.

Understanding more about the effects of support on depressive symptoms among victims of IPV is a particularly important area of research, as the co-occurrence of depression and IPV create an environment where child maltreatment is at an increased risk. Additionally, previous childhood maltreatment is associated with both IPV and depression (Coid et al., 2001; Fergusson et al., 1996; Roustit et al., 2009; Weaver & Clum, 1996; Widom et al., 2007), and previous maltreatment is also associated with abusive and neglectful parenting (Bartlett & Easterbrooks, 2012; Kaufman & Zigler, 1987; Lansford et al., 2007). In addition to the injurious effects on child functioning, Fang, Brown, Florence, & Mercy (2012) found that the estimated lifetime economic burden of child maltreatment in the United States is $124 billion, with an estimated cost of $210,012 per victim of nonfatal child maltreatment and $1,272,900 per victim of fatal child maltreatment. This collection of research emphasizes the importance of understanding protective

factors in such a population to aid in prevention of child abuse and neglect due to its devastatingly costly effects.

Current Study

The current study seeks to examine the longitudinal effects of support within a sample of high-risk families for child abuse and neglect. Research suggests that the three main risk factors for child abuse and neglect are substance abuse, IPV, and depression (Chaffin, Bonner, & Hill, 2001; Duggan et al., 2004; Eckenrode et al., 2000). Thus, it is thought that determining what protective factors moderate the relation between IPV and depression will not only benefit these victims, but may also have long-term positive effects for the children in these high-risk situations.

The current study will examine the association between IPV (defined by physical assault) and depression over time, while also longitudinally examining the roles of support (social support, family resources, and religiosity) on the relation between IPV and depression. Additionally, the impact of risk factors (child maltreatment history) on this relation will be examined as well. Specifically, consistent with previous research (e.g., Cascardi et al., 1999; Dienemann et al., 2000; Filson et al., 2010; Gleason, 1993; Stein & Kennedy, 2001), the first hypothesis is that IPV and depression will be significantly positively associated over time.

Secondly, research shows that depression exhibits a different presentation and course for different populations of people (Banti et al., 2011; Bowen et al., 2012; Gavin et al., 2005; Mossakowski 2008; Walsemann et al., 2011). For instance, as previously noted, the trajectory of depressive symptomatology has been shown to be different during the course of one's pregnancy (Banti et al., 2011; Bowen et al., 2012; Gavin et al., 2005**)** or for different ethnicities **(**Mossakowski, 2008; Walsemann et al., 2011**)**. Therefore, the second hypothesis is that distinct subgroups exist within the study sample with respect to demographic variables and presence of IPV, with each subgroup demonstrating a different trajectory of depressive symptoms over time. The third hypothesis is that support (social support, family resources, and religiosity), income, and previous childhood maltreatment will moderate the relation between IPV and depression over

time, such that those who endorse support and higher income will report lower depression and those who report previous childhood maltreatment will report higher levels of depression. Although previous research has found that factors such as social support, income, and childhood maltreatment moderate the relation between IPV and depression using mainly cross-sectional studies (e.g., Beeble et al., 2009, Bybee & Sullivan, 2002; Dunn & Hayes, 2000; Smith et al., 2003), the current study is unique in that the sample will consist of high-risk families who were assessed longitudinally. Additionally, the proposed study will investigate the importance of support defined in three different ways, thus extending extant research.

CHAPTER III

METHOD

Participants

This study was part of a randomized clinical trial (RCT) evaluating the effectiveness of SafeCare (SC), a child abuse and neglect prevention model, as compared to Services as Usual (home-based community mental health services). SC is an empirically supported child maltreatment prevention program designed to target families with children ages five and under. It is composed of three modules addressing home safety, child health, and parent-child interactions. Participants met criteria for the RCT if they were a caregiver of at least one child five years of age or younger and reported at least one of the three high risk factors for child abuse and neglect (IPV, depression, and/or substance abuse). Further, exclusion criteria were (a) caregivers younger than 16 years of age, (b) limited proficiency with English language, (c) active child protective services involvement at the time of the referral and (d) more than two previous referrals to child protective services.

Measures of Constructs

Demographics. Demographic information was collected from participants and included the following information: gender, ethnicity, age, marital status, education level, size of the town in which they live, information regarding government assistance, number and ages of children in the home, whether or not they are pregnant, and current work status.

Intimate Partner Violence. The Revised Conflict Tactics Scale (CTS2; Straus et al., 1996) was used in this study to measure IPV. This 78-item measure assesses both the respondent's experience as a perpetrator (39 items) as well as the respondent's experience as a victim (39 items). The CTS2 has been widely used to measure physical aggression in international studies (Krahe, Bieneck, & Moller, 2005). The CTS2 is a 78-item self-report measure which allows respondents to rate each item over the last year on an 8-point scale: 0 (this has never happened), 1 (1 time in past year), 2 (2 times in past year), 3 (3-5 times in past year), 4 (6-10 times in past year), 5 (11-20 times in past year), 6 (more than 20 times in past year), and 7 (not in the past year but it did happen before). This measure has shown good reliability, with coefficients ranging from .79 to .95 (Straus et al., 1996), and has also shown evidence of reliability and validity across 17 countries (Straus, 2004). Though this scale consists of subscales measuring five different constructs (Negotiation, Psychological Aggression, Physical Assault, Injury, and Sexual Coercion), the current study only utilized the Physical Assault subscale which consists of twelve items. Participants were categorically (i.e., yes/no) classified as having IPV if they responded positively to any of the twelve victim items on the Physical Assault subscale. Cronhach's alpha for the Physical Assault subscale was .95 at wave 1, .94 at wave 2, and .96 at wave 3.

Depression. The Beck Depression Inventory-2nd Edition (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report instrument designed to assess the existence and severity of depressive symptoms consistent with the DSM-IV-TR. Each item has a four-point scale ranging from 0 to 3, and items are summed to provide a single score of depression. A BDI-II score of 0–13 is categorized "minimal", 14-19 "mild", 20-28 "moderate severe", and 29-63 "severe" depression. For the current study, participants were classified into two groups—those with depression and those without depression based on a cutoff score of 19 (i.e., 0-19: without depression; 20-63: with depression). Depression was dichotomized in order to create a group of individuals with depression and a group of individuals without depression, based on the

guidelines by the developers of the measure (Beck et al., 1996). Dichotomizing this variable creates groups based on a clinically relevant cut-off point (Beck and colleagues,1996), thus allowing for a straightforward interpretation of regression coefficient estimates. The BDI-II has demonstrated good internal consistency (Jefferson, Powers, & Pope, 2000; Steer, Rissmiller, & Beck, 2000), convergent and discriminant validity properties (Segal, Coolidge, Cahill, & O'Riley, 2008). Cronbach's alpha was .91 at wave 1, .92 at wave 2, and .92 at wave 3.

Family Resources. The Family Resource Scale-Revised (FRS; Dunst & Leet, 1987) measures the availability of resources in families with young children. It includes 30 items assessing the adequacy of a family's resources, ranging from basic needs (e.g., food and shelter) to higher level needs (e.g., vacation and entertainment). Each item corresponds to a 5-point likert scale ranging from 1 ("not at all adequate") to 5 ("almost always adequate"). The authors' exploratory factor analysis of the scale determined that seven dimensions exist: food and shelter, financial resources, time for family, extra-family support, child care, specialized child resources, and luxuries. Dunst and Leet (1987) reported a Cronbach's alpha coefficient of .92 for the total scale. Another study found that the FRS demonstrated good validity and reliability properties, and worked well for families across a range of SES (Brannan, Manteuffel, Holden, & Heflinger, 2006). Cronbach's alpha was .92 at wave 1, .93 at wave 2, and .95 at wave 3.

Social Support. The Social Provisions Scale (SPS; Cutrona & Russell, 1987) was used in the current study to assess perceived social support. Six dimensions of support are captured on the SPS: attachment, social integration, reassurance of worth, reliable alliance, guidance, and opportunity for nurturance. The SPS (Cutrona, 1989) is a 12-item self-report measure used to assess perceived social support by asking respondents to evaluate the extent to which each dimension of social support was available from parents, friends, and partners. Responses include one ("no"), two ("sometimes"), and three ("yes"). This scale has shown evidence of validity (Roberts, Lepore, & Helgeson, 2006) and internal consistency (Ergh, Hanks, Rapport, & Coleman, 2003) across a variety of samples, including nursing home patients, cancer patients, and

economically-disadvantaged individuals across different cultures. Cronbach's alpha was .81 at wave 1, .85 at wave 2, and .86 at wave 3.

Church Attendance. Attendance of various 'houses' of worship (e.g., church, mosque, synagogue attendance) was used as an indicator of an individual's religiosity (a more comprehensive term that refers to aspects of religious activity, dedication, and belief system (Brink, 1993). Participants indicated how often they attended religious services (e.g., "Never," "Only on special occasions," "About once per month," "About once per week," "More than once per week") on an item within the demographics questionnaire.

Child Maltreatment History. Participants' child maltreatment history was assessed by items within the demographics questionnaire. Items asked participants how frequently (e.g., "Never," "Once or twice," "Occasionally," "Often," "All the time") they experienced physical, sexual, or psychological abuse and/or neglect during their childhood. Participants were characterized as having a history of child maltreatment if responded positively to any of these items.

Procedure

Approval from the appropriate Institutional Review Board was obtained prior to implementation of the study procedures. Participants who consented to participate in the RCT were randomly assigned either to SC or to Services as Usual (available community based treatment; SAU); services lasted approximately six to nine months. To test the effectiveness of SC, data was obtained by an independent data collector during the period 2002 to 2011 at three different time points: upon enrollment in the program (wave 1), upon completion of the program (wave 2), and at a six-month follow-up (wave 3). At each wave, participants completed a battery of measures on protective and risk factors associated with child maltreatment including the demographics questionnaire. Measures of interest to this study included: CTS2, BDI-II, FRS, and the SPS. To reimburse them for their time, participants received a $50 gift certificate to a local home needs establishment for each assessment. All data analyses were conducted based on the

intent-to-treat protocol since the data were for a RCT. All participants were randomly assigned to either SC or SAU. The GEE models used all available data on study participants and adjust for potential missing data bias under the assumption that data are missing completely at random (MCAR; Rubin, 1976). This assumption was found to be plausible using a simple test proposed by Park and Davis (1993). Briefly, we defined indicator variables for each missing data pattern and fit an extended model which includes the indicator variables and covariates of interest. Then, we performed the test for the missing data mechanism by testing whether or not the regression coefficients are associated with the indicator variables are zero. Since these estimators were not significantly different from zero, it is plausible the missing data mechanism is MCAR. Prediction of group membership using group based modeling was limited to participants with complete covariate information (under the assumption that missing data is missing completely at random) on covariates such as: age, employment, pregnancy status, medication usage, smoking status and CM history. Of the 562 study participants, 54 had missing values at any wave for at least one risk factor and were omitted from the group-based modeling.

CHAPTER IV

STATISTICAL ANALYSES

Descriptive Statistics

Descriptive statistics were used to summarize study participant characteristics at baseline (wave 1), at program exit (wave 2), and 6 months post study exit (wave 3); results are summarized in Table 1. The cross-sectional relationships between response variable (depression scores) and time independent (program assignment, ethnicity, etc.) and time dependent variables (IPV, social support, family resources, etc.) were examined using correlation, chi-square and where appropriate one-way ANOVA type analyses at each data collection time point (Table 2).

Generalized Estimating Equations (Hypothesis One)

Generalized estimating equations (GEEs; Ghisletta & Spini, 2004; Zeger & Liang, 1986) were used to examine how and to what extent social supports, family resources and religiosity (church attendance) impact the association between IPV and depression among caregivers at high risk of child maltreatment. All available study participant data (n=562) across the three assessment time points (waves 1, 2, and 3) were used in the investigated GEE models. GEE parameter estimates were obtained using quasi-likelihood estimators with robust standard errors calculated for the estimated model parameters. Hypothesis testing was based on the significance of Wald Statistic tests. Because time-dependent covariates are included in final chosen GEE models, we use an independent working correction structure to account for within subject

observation dependence to ensure consistency in estimation of covariate effects (Pepe & Anderson, 1998). The median number of days between assessments was 287 days for wave 1 to wave 2 (n=499), 234 days for wave 2 to wave 3 (n=399) and 593 days for wave 1 to wave 3 (n=381).

Group-Based Trajectory Modeling (Hypothesis Two)

Group-based trajectory modeling (Nagin & Land, 1993) was used to examine the second study hypothesis. Group based trajectory modeling assumes that there are a certain number of discrete underlying groups in the study population that have varying depression prevalence, and patterns of change over time. These sub-populations are not directly observable, but are estimated (latent) and are used to help us better understand the etiological underpinnings of different depression trajectories (Nagin et al., 2010).

Model selection involved an iterative estimation of (1) the number of trajectory groups and (2) the shape of each trajectory group using both statistical and non-statistical considerations. Statistical considerations included the use of Bayesian information criteria (BIC; Raftery, 1995, Schwarz, 1978) to determine the most appropriate number of groups. After selection of the number of groups, the trajectory shapes of each group were determined in a step-wise manner starting with all groups set to having a quadratic order, and again comparing change in BIC and the significance of parameters, as their orders are made less complex – quadratic, linear and intercept only. The resulting final 2-group model was assessed for goodness of fit based on standard criteria, that is, (1) the average posterior probabilities for each of the emergent subgroups, (2) odds of correct classification, and (3) comparison of actual (based on posterior probabilities) to model estimated group prevalence (Nagin, 2005). The non-statistical considerations included, reasonable sample sizes in each identified trajectory group, non-overlapping confidence intervals and distinct average posterior probabilities across groups to help achieve a clinically useful and parsimonious model (Nagin et al., 2010).

Predictors of the two final trajectory groups were examined using generalized logistic regression. The odds of belonging to group 2 relative to the reference group (Group 1) were based on selected time-invariant characteristics (e.g., child maltreatment history, baseline age, and program assignment).

GEE's within Identified Trajectory Groups (Hypothesis Three)

Separate GEE models were used to examine whether the influences of social supports, family resources and religiosity (church attendance) varied depending on identified trajectory group membership.

CHAPTER V

RESULTS

Sample characteristics of study participants at the three data collection time points (wave 1, wave 2, and wave 3) are summarized in Table 1. At baseline, participants consisted of 562 individuals ranging in age from 16-65 (M = 25.14; SD = 6.14). Participants included 548 (97.5%) females, with the majority reporting African American ethnicity (40.2%) or Caucasian ethnicity (39.7%). One hundred, forty-six (26%) individuals reported a 9th to 12th grade education, and one hundred, eighty-four (32.7%) reported a monthly income of less than $300.

Cross-Sectional (Bivariate) Analyses

Results of bivariate descriptive analyses are summarized in Table 2. The associations between both categorical as well as continuous depression and IPV variables with other study variables were examined in an effort to determine any potential differential impacts each may demonstrate. Correlational analyses examining the relation between depression and IPV as continuous variables showed a significant positive correlation at waves 1 (r = .28, p < .001), wave 2 (r = 0.12, p = 0.05) and wave 3 (r = .23, p < .01). As categorical variables, there was a significant association between being depressed and experiencing IPV at wave 1 ($\chi^2(1) = 11.95$, p < .01), a higher proportion of depressed participants 71% (77) versus non-depressed 51% (91) reported experiencing IPV. Consistent with wave 1 results, at wave 2 and 3, the proportion of depressed participants who experienced IPV was higher than the proportion of non-depressed participants who experienced IPV (Wave 2: 47% (29) vs. 26% (55) respectively; $\chi^2(1) = 9.78$, p < .01 and Wave 3: 50% (28) vs. 25% (40) respectively; $\chi^2(1) = 12.21$, p < .01).

Regarding correlations between support variables and depression, correlations were significant when examined cross-sectionally at each wave. Specifically, at wave 1, social support (r = -.431, p < .001), family resources (r = -.464, p < .001), and church attendance (r = -.131, p < .01) were significantly negatively correlated with depression. At wave 2, social support (r = -.374, p < .001), family resources (r = -.446, p < .001), and church attendance (r = -.181, p < .001) were significantly negatively correlated with depression. Similarly, at wave 3, social support (r = -.400, p < .001), family resources (r = -.423, p < .001), and church attendance (r = -.193, p < .001) were significantly negatively correlated with depression.

Longitudinal Analyses

Overall, depression symptoms visually declined over time as illustrated in Figure 1. This decline was linear in nature. Though not statistically significant, Figure 2 shows that participants with IPV visually have somewhat higher depression scores than those who did not have IPV, and depression symptoms decline faster (steeper slope) among participants who reported IPV at baseline. Participants who reported higher frequencies of religious house of worship attendance reported lower depression symptoms over time (Figure 3). Figure 4 shows that participants with high social support (3rd and 4th quartile) scores have visually lower depression scores than those with low social support. Depression symptoms decline faster (steeper slope) among participants who reported low social support than those with high social support at baseline. Figure 5 shows that participants with high family resource (3rd and 4th quartile) scores have visually lower depression scores than those with low family resources. The decline in depression symptoms over time is most pronounced among participants who reported low family resources than those with high family resources at baseline.

Regarding main effects of types of support on depression, a visual difference between the four church attendance groups (Never, Only on special occasions, About once per month, About

once per week, More than once per week) exists, though the effects were not statistically significant. Specifically, participants who reported never attending religious services had higher levels of depression than individuals in each of the other groups. This relation is illustrated in Figure 3. Figure 4 illustrates the finding that participants who reported less social support at baseline also reported higher levels of depression over time compared to participants who reported more social support. Finally, participants who reported having fewer family resources at baseline had higher depression scores at wave 1, though this trend decreased at waves 2 and 3. This trend is represented in Figure 5.

GEE Analyses (Hypothesis One)

GEE models were used to examine how and to what extent social supports, family resources and religiosity (church attendance) impact the association between IPV and depression among caregivers at high risk of child maltreatment. We also controlled for potential confounding effects of characteristics such as: program assignment, a history of childhood CM, and use of depression treatment related medications. The results of the analyses are summarized in Table 4.

It was hypothesized that IPV victims with higher levels of supports would have lower depression over time, and IPV victims with a CM history would have higher depression over time. However, this hypothesis was not supported by the results. Specifically, the association between IPV and depression did not vary depending on the levels of a participant's social support, family resources, or religiosity over time holding all other factors constant (IPV x social support, IPV x family resources, IPV x religiosity interaction terms: $\beta = -.31$, $p = 0.46$; $\beta = .07$, $p = 0.85$; and $\beta = 0.14$. $p = 0.44$, respectively). The odds of depression among caregivers who experienced IPV were 92% higher than the odds of depression among caregivers who did not experience IPV holding all other factors constant (adjusted OR: 1.92; 95% CI: 1.28-2.89). Caregivers who had above average levels social supports and family resources had lower odds of depression over time than caregivers with below average levels of supports (adjusted odds ratio: 0.41; 95% CI: 0.27-0.64; 0.29; 95%CI: 0.19-0.45, respectively). For every level increase in

church attendance, the odds of depression decreased by 14% over time, however, this result was not statistically significant (adjusted odds ratio: 0.86; 95% CI: 0.73-1.02). The association between IPV and depression did not vary depending on a participant's CM history ($\beta = 0.35$, $p = 0.49$).

Group-Based Modeling (Hypothesis Two)

It was hypothesized that distinct subgroups would exist within the study sample with respect to the presentation of depression status over time; this hypothesis was supported by the data. Namely, a two-group linear trajectory model best fit participant depression status (Figure 9; Table 5). The largest percentage of the sample, 73%, exhibited low and somewhat decreasing probability of depression over time (Group 1). The rate of decrease was greater between baseline and the follow-up assessment than between the first and second assessment. 27% of the study participants were classified as having a persistent depression status (Group 2); this group began with a high probability of depression that slightly decreased over time (persistent depression).

Accompanying probabilities of group membership are reported in Table 5. The sample individual group memberships were 76% for group 1 and 23% for group 2. The percentages of correct group membership are high, with 91% for group 1 and 84% for group 2. Since the misclassification in both groups is relatively small, the estimated population group proportions (73% for group 1 and 27% for group 2) are close to the sample membership proportions (76% for group 1 and 23% for group 2).

To predict group membership, significance of study time invariant covariates was examined based the significance of their association with depression using crude GEE models ($p < .15$). The risk factor parameters, standard errors, test statistics, and significance (p values) for these tests are presented in Table 6. The odds of belonging to group 2 (persistent depression group) versus group 1 (low depression) was higher among participants who had a childhood history of CM (odds ratio: 2.10, $p = 0.02$), no employment (odds ratio: 2.41, $p = 0.01$) and used

tobacco (odds ratio: 3.82, $p < .01$). Program assignment, pregnancy status and age were not significant predictors of group membership ($p > .05$).

GEE Analyses within Identified Trajectory Groups (Hypothesis Three)

To better understand the effects of IPV, social support and family resources on the emergent depression trajectories, separate GEE analyses were conducted within each trajectory group (Figures 11-14). Hypothesis three was that social support, family resources, church attendance, and CM history would impact the relation between IPV and depression over time differently within each subgroup.

Low depression group. Hypothesis three was not supported within the low depression group. Holding all other factors constant, the association between IPV and depression did not significantly vary depending on the levels of a participant's social support ($\beta = -0.06$, $p = 0.93$), family resources ($\beta = 0.23$, $p = 0.70$) or church attendance over time ($\beta = 0.15$, $p = 0.50$). Consistent with hypothesis one, participants with above average levels of social support and family resources had lower odds of depression over time than participants with below average levels of these supports (adjusted OR: 0.48; 95% CI: 0.22-1.09 and 0.42; 95% CI: 0.19-0.97, respectively). The odds of depression among caregivers who experienced IPV were higher than the odds of depression among caregivers who did not experience IPV over time holding all other factors constant (adjusted OR: 1.87; 95% CI: 1.06-3.31). An illustration of observed relationships is shown in Figures 10 and 11. The relation between IPV and depression also did not vary depending on a participant's CM history ($\beta = 0.31$, $p = 0.65$).

Persistent depression group. Hypothesis three was not supported within the persistent depression group. Holding all other factors constant, the association between IPV and depression did not vary by either participant social support or family resource score or religiosity (IPV x social support, IPV x family resources, IPV x religiosity interaction terms: $p > .05$). An illustration of observed relationships is shown in Figures 12 and 13. In comparison to the low depression group, the protective effects of above average levels of social support and family

resources were accentuated in this group. Participants with above average levels of social support and family resources had much lower odds of depression over time than participants with below average levels of these supports (adjusted OR: 0.36; 95% CI: 0.14-0.92 and 0.27; 95% CI: 0.09-0.75, respectively). The odds of depression among participants who experienced IPV were not significantly different from the odds of depression among participants who did not experience IPV (adjusted OR: 1.08; 95% CI: 0.43-2.71).

In both the low and persistent depression groups, the odds of depression over time were not impacted by different levels of church attendance among participants ($p > .05$). Additionally, the relation between IPV and depression did not vary based on participants' report of CM history ($\beta = 0.59$, $p = 0.52$).

Exploratory Analyses

Additional variables found to be significant in GEE analyses were examined as part of hypotheses one and three. These variables are as follows: program effects (SafeCare versus Services as Usual), pregnancy, and psychotropic medication. These variables were controlled in analyses conducted for hypotheses one through three. Results of the exploratory analyses are illustrated in Table 4.

Hypothesis one. The odds of depression declined faster among participants enrolled in SC compared to SAU participants (interaction term-program x wave: $\beta = -0.45$, $p = 0.03$). On average, SC participants had a 30% (adjusted OR: 0.70; 95% CI: 0.51-0.95) decrease in the odds of depression over time while SAU participants had a 19% (adjusted OR: 1.19; 95% 0.87-1.60, not statistically significant) increase in the odds of depression over time. This finding further underscores the depression trend observed in Figure 8.

On average, pregnant women had 56% lower odds of depression than non-pregnant during the study period (adjusted OR: 0.44; 95%CI: 0.25-0.78). The odds of depression among participants who reported taking psychotropic medications were 3.94 times higher than the odds of depression among participants who did not report use of psychotropic medications holding all

other factors constant (adjusted OR: 3.94; 95% CI: 2.27-6.83). Regarding the impact of CM history on depression, there was a steeper decline in the odds of depression among participants with a history of CM history compared to those without a CM history (interaction term-program x wave: $\beta = -0.59$, $p < 0.01$).

Hypothesis three. Among those in the low depression group, there was a significant program effect on the odds of depression over time ($\beta = -0.78$, $p = 0.05$); SC participants had a greater decline in odds of depression than SAU participants over. The odds of depression were 80% lower among pregnant women than non-pregnant women over time holding all other factors constant (adjusted OR: 0.20; 0.05-0.74). The odds of depression among depression medication users were 2.00 times the odds of depression among participants who did not use medication (adjusted OR: 2.00; 95%CI: 0.95-4.2, not statistically significant). Though the interaction between IPV and CM history did not have a significant impact on depression, there was a significant interaction between child maltreatment history and wave ($\beta = -1.43$, $p < 0.01$) suggesting that participants with a history of child maltreatment had lower odds of depression over time compared to participants without a history of maltreatment.

In contrast to the low depression group, in the persistent group, program effects (favoring SC) were marginally significant (program x wave interaction term: b=-0.97, p=0.09). Consistent with results observed in the low depression group, the odds of depression among psychotropic medication users were 3.15 times the odds of depression among participants who did not use medication (adjusted OR: 3.15; 95% CI: 1.14-8.72).

CHAPTER VI

DISCUSSION

The present study longitudinally examined the impact of various types of support (defined by social support, family resources, and church attendance), on the relation between IPV and depression among a sample of high-risk families for child abuse and neglect. Population average model (GEE) results suggest that the odds of depression are influenced by a participant's level of social support and family resources. On average, participants with above average social support and family resources tended to have lower odds of depression over time compared to their counterparts with below average social support and family resources irrespective of their reported IPV status. Religiosity defined by church attendance did not modify or confound the relationship between IPV and depression. Further, compared to SAU participants, SC participants had a faster decline in the odds of depression over time, though not statistically significant.

The potential for unobserved heterogeneity within this study sample was examined using group based models. Consistent with our hypothesis, there were identifiable distinct depression trajectory groups in the study sample. One group of participants had persistent depression throughout study follow-up, while another group displayed low levels of depression. Further examination of the association between IPV and depression within these latent groups did not show significant moderating effects for either social support or family resources or church attendance; these findings were not significant with hypothesis three. It is important to note that the mean depression score was approximately 16.5 at baseline, 13 at the end of services, and approximately 13 at the six-month follow-up. Therefore, on average, participants reported

depression levels below the cut-off score of 19. However, the results of group-based modeling analyses indicate that a group of participants reported significantly higher, persistent depression over time. The effects of this group's persistent depression patterns are of particular importance to the sample of high-risk families given the findings of previous research on the impact of depression on parenting and child outcomes. For instance, mothers with depression have been found to display less sensitivity toward their children (Murray, Fiori-Cowley, Hooper, & Cooper, 1996) and use harsher discipline with their children (Kiernan & Huerta, 2008). Further, chronic depression can determine problems related to mother-infant interaction (Campbell, Cohn, & Meyers, 1995). The current study's findings regarding the impact of supports on caregivers' depression point toward areas of intervention for these high-risk families with persistently high depression over time.

The protective effects of social support and family resources were accentuated among the persistently depressed participants versus those with lower depression episodes (Table 4). Graphical illustrations of these relationships showed evidence of the protective effects for above average social support scores and family resource scores in both latent groups over time irrespective of IPV status. It is important to note that in a sample of 562 participants, a particularly small number of individuals in the persistently depressed trajectory group reported being victims of IPV in addition to having above average social support. Additional research using samples of IPV victims reporting higher depression as well as high social support is warranted to determine if these findings would be replicated.

Consistent with hypothesis one, SC participants had a steeper decline in the odds of depression over time than SAU participants in both the two identified latent depression trajectory groups. However, the differences in program effects over time were marginally significant in the persistent depression group. These results suggest that SafeCare may be effective when used as an intervention among high-risk families.

These results are consistent with those of Beeble and colleagues (2009) where IPV victims who reported higher levels of social support had higher quality of life and lower depression than the control group over a period of two years. Other research has also found that victims of IPV who report more social support are less likely to have depression compared to IPV victims with less social support (Fowler & Hill, 2004; Mburia-Mwalili et al., 2010; Meadows et al., 2005).

Similarly, the finding that IPV victims with more family resources reported lower depression over time than participants without IPV has been found in previous research as well. Nurious et al. (2003), for example, found that low income was one of the most significant predictors of depression among IPV victims. However, the current study is unique in that it assessed family resources in high-risk families for child abuse and neglect, with dimensions ranging from basic needs (e.g., food and shelter) to higher level needs (e.g., vacation and entertainment). Research testing the effectiveness of family support programs for high-risk families suggests that programs aimed at helping families meet basic needs and immediate crises were more effective at preventing child maltreatment compared to programs without this initial focus (Chaffin et al., 2001). In a study evaluating the effectiveness of a home visiting program aimed at child maltreatment prevention, Duggan and colleagues (1999) found that identifying and addressing immediate crises may be necessary before families are able to address lack of support and emotional difficulties (e.g., depression). Thus, the current study's findings that more access to family resources was associated with decreased depression among IPV victims is congruent with findings in the extant literature examining needs of high-risk families.

SC participants had visually lower odds of depression compared to SAU participants within the two groups; however, this result was not statistically significant in any of the latent groups. Compared to the low depression group, program (SafeCare) effects were more pronounced among the persistent depression group versus the low depression group (program

effects: -0.82 vs. -0.25, non-significant). These results suggest that SafeCare may be more beneficial when used as an intervention among more high-risk families.

Having a history of child maltreatment, use of tobacco products, and unemployment were significant predictors of belonging to the persistent depression group. Existing research indicates that individuals with a maltreatment history experience depressive symptoms into adulthood (Duncan et al., 1996), which is congruent with the finding that these participants are more likely to belong to the persistent depression group than the low depression group. Additionally, it is possible that participants who reported smoking were using tobacco as a means to cope with persistent depressive symptoms and thus, were more likely to belong to this group than the low depression group. However, it is possible that tobacco use is a marker variable, as other factors associated with tobacco use may be contributing to these individuals' persistent depression symptoms.

Other Covariates Examined

Population average model results showed that pregnant participants had lower odds of depression than non-pregnant participants over time. However, this associated varied when examined within the identified trajectory groups. Pregnancy was associated with high odds of depression in the low depression group over time. However, in the persistent depression group, pregnancy was associated with lower odds of depression over time. Research suggests that prevalence of depression during pregnancy ranges from approximately 8.3% to 12.7% in the U.S., with mixed findings regarding depression prevalence among pregnant versus non-pregnant women (Gavin et al., 2005; Le Strat, Dubertret, & Le Foll, 2011; Vesga-Lopez et al., 2008). Additionally, participants with a history of childhood maltreatment had higher odds of depression than participants without such a history. This finding is consistent with previous research suggesting that women who experienced child maltreatment were two times more likely to have a major depressive episode during their lifetimes compared to women who did not experience maltreatment (Duncan et al., 1996). The odds of depression were also higher over time for

participants taking depression-related medications compared to participants who were not taking medication. It is thought that medication-users reported higher depression than non-users because of the likelihood that their depression scores are elevated at each wave, thus necessitating medication to diminish these symptoms.

Participants who reported a history of childhood maltreatment had higher depression odds over time than participants who did not report experiencing child maltreatment. This finding is consistent with hypothesis one results, where analyses were conducted for the overall study sample. This emphasizes the effect of childhood maltreatment on functioning during adulthood, a finding which is evident in the literature (Coid et al., 2001; Fergusson, Horwood, Lynskey, 1996; Roustit et al., 2009; Weaver & Clum, 1996; Widom, Dumont, & Czaja, 2007). Depression-related medication users ("nerve medication") in the low depression group reported lower depressive symptoms than non-users, a reverse finding compared to hypothesis one results. This suggests that these participants were experiencing lower depression levels over time, and medication was associated with a steeper decline in depression compared to participants with persistent depression.

Study Strengths

The present study was unique in that it is one of few studies examining the impact of supports on the relation between IPV and depression over time. The longitudinal nature of the study allows for a better understanding of causal interpretations of this relation. Additionally, this study highlights the needs of families at high-risk for child abuse and neglect. Specifically, results indicate the important role of social support and availability of family resources on decreasing caregivers' depression statuses over time. These findings can help guide interventions aimed at preventing child abuse and neglect by mitigating the harsh effects of high-risk factors such as depression and intimate partner violence.

Further, the use of group-based modeling in the current study suggests the existence of two groups with respect to latent depression patterns over time. This finding adds to extant

literature as it indicates the differential impacts of support variables on each depression pattern over time, as opposed to examining the impacts of support on a homogeneous sample. Overall, these results highlight the importance of both risk factors (e.g., IPV, depression, child maltreatment history) as well as protective factors (e.g., social support, family resources) among high-risk families.

Study Limitations

Some limitations to the study findings should be noted. First, though the fact that this study examines the association between IPV and depression longitudinally allows for a better understanding of the impact of these variables over time, it is limited by the fact that only three assessment time points were used. Determining the pattern of trajectories for depression was limited by this constraint. Further, though cutoff scores for constructs such as depression are often used in clinical settings, the study's use of categorical variables to measure depression, IPV, and support variables serves as a limitation to the study, as variance was likely restricted as a result. Additionally, the current study results assume missing data is missing completely at random, while this assumption was found to be plausible with our data future analyses are planned based on imputed data for missing observations to better account for missing data bias. Further, because the original study was not designed to assess the impact of religiosity on any outcomes, the current study is limited to frequency of church/mosque attendance as a surrogate indicator of religiosity.

Additionally, this study's findings may be limited by the self-report method used to collect data on sensitive topics, such as IPV, previous child maltreatment history, and depression. Given that the current study sample consisted of high-risk families for child abuse and neglect, participants may have underreported rates of IPV due to fears of involvement with child protective services.

Clinical Implications and Future Directions

In summary, study findings emphasize the importance of support, particularly social support and availability of family resources, among high-risk families for child abuse and neglect. The study also confirms the hypothesis that the association between IPV and depression varies based on identifiable distinct depression trajectories among high-risk caregivers targeted by home visitation services. This study also provides some insights regarding multiple risk factors associated with membership in these distinct groups. Identification and targeting of these risk factors as potential intervention points among targeted participants could help clinicians enhance home visiting program effectiveness.

Future research should take into consideration different categories of IPV (psychological and sexual) when examining its impact on depression to determine if differing depression trajectories exist with respect to each category. Additionally, research is warranted comparing these results among high-risk families for child abuse and neglect to a community sample of IPV victims to examine differences regarding depression patterns and/or impact of support variables. A closer examination of types of social support is also warranted to determine if support from certain people (e.g., friends versus family versus partner) is considered more meaningful depending on the source of such support. Future research should also consider including more assessment time points to better illustrate the pattern of each depression trajectory over time. Finally, in order to better capture the construct of religiosity, future studies should include a valid measure of this variable to determine its moderating effect on the relation between IPV and depression among high-risk families. Together, these paths will enable researchers and clinicians to gain a clearer understanding of the needs and target areas of high-risk families for child abuse and neglect, thus strengthening prevention efforts for these families.

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APPENDICES

Appendix A: Tables

Table 1
Study sample demographic characteristics for participants who completed each wave

Variables	**Wave 1 (n= 562) Frequency (%)**	**Wave 2 (n= 449)**	**Wave 3 (n = 381)**
Age (SD)	M=25.14 (SD=6.42) Range: 16-65	M=26.33 (SD=6.34) Range: 17-66	M=27.63 (SD=6.79) Range: 17-66
Gender			
Male	14(2.5%)	11(2.4%)	9(2.4%)
Female	548 (97.5%)	438(97.6%)	372(97.6%)
Ethnicity			
Hispanic or Latino	72(12.8%)	61(13.6%)	51(13.4%)
American Indian or Alaska Native	34(6.0%)	29(6.5%)	20(5.2%)
Asian	3(0.5%)	2(0.4%)	2(0.5%)
Native Hawaiian or Other Pacific Islander	2(0.4%)	2(0.4%)	1(0.3%)
Black or African American	226(40.2%)	175(39.0%)	156(40.9%)
White or Caucasian	223(39.7%)	180(40.1%)	151(39.6%)
Missing	1(0.2%)	0	0
Education			
Less than 9th grade	37(6.6%)	25(5.6%)	21(5.5%)

9th to 12th grade	146(26.0%)	117(26.1%)	97(25.5%)
High school diploma	128(22.8%)	99(22.0%)	84(22.0%)
G.E.D.	65(11.6%)	54(12.0%)	48(12.6%)
Attended some college classes but do not have a degree	116(20.6%)	101(22.5%)	83(21.8%)
Vo-tech school	41(7.3%)	32(7.1%)	29(7.6%)
Associate's Degree (about 2 years)	14(2.5%)	7(1.6%)	7(1.8%)
Bachelor's Degree, (about 4 years) or a Graduate degree	11(2.0%)	10(2.2%)	8(2.1%)
Missing	4(0.7%)	4(0.9%)	4(1.0%)
Monthly Income			
Less than $300	184(32.7%)	110(24.5%)	91(23.9%)
$300-$599	118(21.0%)	70(15.6%)	64(16.8%)
$600-$1249	145(25.8%)	137(30.5%)	114(29.9%)
$1250-$2099	57(10.1%)	78(17.4%)	71(18.6%)
$2100-$3349	22(3.9%)	27(6.0%)	26(6.8%)
More than $3350	22(3.9%)	19(4.2%)	11(2.9%)
Missing	14(2.5%)	8(1.8%)	4(1.0%)
Depression (>19 on BDI)	Yes-188(33%) No-367(65%)	Yes-104(23%) No-335(75%)	Yes-84(22%) No-291(76%)
Missing	7(1.3%)	10(2.2%)	6(1.6%)
Depression (continuous)	M=16.45 (SD=11.8)	M=13.16 (SD=11.4)	M=12.94 (SD=11.4)
IPV (yes/no)	Yes-168(40.5%)	Yes-84(30.1%)	Yes-68(30.8%)

	No-121(29.2%)	No-186(66.7%)	No-149(67.4%)
Missing Of missing, those who refused to answer	126(30.4%) 98 (77.8%)	9(3.2%)	4(1.8%)
IPV chronicity (continuous)	M=18.00 (SD=45.4)	M=5.03 (SD=22.81)	M=5.82 (SD=27.10)
At least one partner in the last year	415(73.8%)	279(49.6%)	221(39.3%)
Social Support	M=37.7 (SD = 5.6)	M=39.1 (SD=5.9)	M=39.18 (SD=5.8)
Family Resources	M=133.64 (SD=22.8)	M=137.81 (SD=22.6)	M=141.23 (SD=23.2)
Church Attendance			
Never	158 (28.1%)	102 (22.7%)	90 (23.6%)
Only on special occasions	96 (17.1%)	99 (22.0%)	74 (19.4%)
About once per month	104 (18.5%)	97 (21.6%)	83 (21.8%)
About once per week	132 (23.5%)	93 (20.7%)	84 (22.0%)
More than once per week	65 (11.6%)	55 (12.2%)	49 (12.9%)
Missing	7(1.2%)	3(0.7%)	1(0.3%)

Table 2

T-test, ANOVA, and correlational analyses for continuous depression and IPV with demographic variables, social support, family resources, and church attendance at waves 1, 2, and 3

	Wave 1 (N=562)	**Wave 2 (N=449)**	**Wave 3 (N=381)**
T-Test Analyses			
Depression x Gender	*t(553) = -1.407*, $p > .05$	*t(430)* = -2.005, $p < .05$	*t(373)* = -.988, $p > .05$
IPV x Gender	*t(224)* = -.423 , $p > .05$	*t(262)* = -.305, $p > .05$	*t(215)* = -.358, $p > .05$
ANOVA Analyses			
Depression x Ethnicity*	$F(6, 547) = 0.83$, $p > .05$	$F(5, 425) = 1.00$, $p > .05$	$F(4, 370) = 2.06$, $p > .05$
Depression x Education**	$F(7, 545) = 1.77$, $p > .05$	$F(7, 431) = .53$, $p > .05$	$F(7, 367) = 1.69$, $p > .05$
IPV x Ethnicity	$F(6, 218) = .67$, $p > .05$	$F(5, 258) = 1.54$, $p > .05$	$F(4, 212) = .421$, $p > .05$
Correlational Analyses			
Depression x IPV	$r = .279$, $p < .001$	$r = .119$, $p > .05$	$r = .234$, $p < .01$
Depression x Age	$r = .073$, $p > .05$	$r = .044$, $p > .05$	$r = .111$, $p < .05$
Depression x Soc. Support	$r = -.431$, $p < .001$	$r = -.374$, $p < .001$	$r = -.400$, $p < .001$
Depression x Fam. Resources	$r = -.464$, $p < .001$	$r = -.446$, $p < .001$	$r = -.423$, $p < .001$
Depression x Church Attendance	$r = -.131$, $p < .01$	$r = -.181$, $p < .001$	$r = -.193$, $p < .001$

*Ethnicity: 1=Hispanic or Latino; 2=American Indian or Alaska Native; 3=Asian; 4=Native Hawaiian or Other Pacific Islander; 5=African American; 6=Caucasian

**Education: 1=Less than 9th grade; 2=9th to 12th grade; 3=High school diploma; 4=G.E.D.; 5=Attended some college classes but do not have a degree; 6=Vo-tech school; 7=Associates Degree (about two years); 8= Bachelor's Degree (about four years) or a Graduate degree

Table 3

Chi-square and t-test analyses for categorical depression and IPV with demographic variables, social support, family resources, and religiosity at waves 1, 2, and 3

	Wave 1 (N=562)	**Wave 2 (N=449)**	**Wave 3 (N=381)**
Crosstabs			
Depression (yes) x IPV (yes)	**77(13.7%)**	**29(6.5%)**	**28(7.3%)**
Depression (yes) x Gender	**Male: 3(1.6%)** **Female: 185(98.4%)**	**Male: 0(0%)** **Female:100(100%)**	**Male: 1(1.2%)** **Female: 83(98.8%)**
IPV (yes) x Gender	**Male: 8(4.8%)** **Female: 160(95.2%)**	**Male: 4(4.8%)** **Female: 79(95.2%)**	**Male: 1(1.5%)** **Female: 67(98.5%)**
Chi-Square Analyses			
IPV (1=yes, 0=no) x Depression (1=yes, 0=no)	$\chi^2(2)= 16.01$, $p <$ .001	$\chi^2(2) = 9.97$, $p < .01$ .05	$\chi^2(1) = 12.22$, $p <$ .001
IPV x Education	$\chi^2(14) = 38.62$, $p <$ .001	$\chi^2(14) = 18.63$, $p >$ .05	$\chi^2(7) = 12.06$, $p >$ .05
IPV x Income*	$\chi^2(10) = 8.58$, $p > .05$	$\chi^2(10) = 19.05$, $p <$ .05	$\chi^2(5) = 10.16$, $p >$ .05
T-Test Analyses			
Depression x Soc. Support	$t(552) = -9.245$, $p <$ .001	$t(437) = -6.579$, $p <$ .001	$t(373) = -6.933$, $p <$ .001
Depression x Family Resources	$t(552) = -10.321$, $p <$ .001	$t(437) = -8.256$, $p <$ .001	$t(373) = -6.937$, $p <$ .001
IPV x Age	$t(287) = .093$, $p > .05$	$t(264) = -1.259$, $p >$ .05	$t(206) = -1.723$, $p >$ .05

IPV x Social Support	*t(286)* = -2.616, *p* > .05	*t(268)* = -3.205, *p* > .05	*t(215)* = -1.778, *p* > .05
IPV x Family Resources	*t(286)* = -1.645, *p* > .05	*t(268)* = -2.336, *p* > .05	*t(215)* = -.861, *p* > .05

*Income: 1=Less than $300; 2=$300-$599; 3=$600-$1249; 4=$1250-$2099; 5=$2100-$3349; 6=More than 3350.

Table 4

Results of GEE Analyses for Depression across Waves 1, 2, & 3.

	Model 1 (Hypothesis 1)		**Model 2 (Hypothesis 3:**		**Model 3 (Hypothesis 3: Group 2)**	
Variable	β (95% CI)	*p-value*	β (95% CI)	*p-valu*	β (95% CI)	*p-value*
Wave	0.38(0.03, 0.74)	0.04	0.51(0.0, 1.02)	0.05	0.06(-1.07,1.20)	0.91
IPV‡	0.65(0.25,1.06)	<.01	0.63(0.06,1.19)	0.03	0.08(-0.83,1.00)	0.86
Relationship‡	0.39(0.02,0.76)	0.04	0.44(-0.04,0.92)	0.07	0.37(-0.24,0.97)	0.23
SafeCare	0.33(-0.23,0.89)	0.25	0.53(-0.24,1.29)	0.17	1.18(-0.59,2.96)	0.19
Church Attendance‡	-0.15(-0.31,0.02)	0.09	-0.18(-0.41,0.05)	0.12	-0.04(-0.36,0.27)	0.80
Social support‡	-0.88(-1.32,-0.45)	<.01	-0.75(-1.35,-0.16)	0.01	-1.03(-1.98,-0.09)	0.03
Family resources‡	-1.22(-1.65,-0.79)	<.01	-0.74(-1.32,-0.16)	0.01	-1.33(-2.36,-0.29)	0.01
Child maltreatment history	0.80(0.23-1.36)	<.01	0.60(-0.19,1.39)	0.14	1.39(-0.60,3.37)	0.17
Pregnant participants‡	-0.82(-1.39,-0.25)	<.01	-1.61(-2.92,-0.30)	0.02	-0.87(-2.10,0.36)	0.17
"Nerve medication" ‡	1.37(0.82,1.92)	<.01	0.69(-0.05,1.44)	0.07	1.14(0.13,2.16)	0.03
SafeCare x Wave	-0.45(-0.85,-0.05)	0.03	-0.78(-1.56,-0.00)	0.05	-0.97(-2.12,0.18)	0.10
CM History x Wave	-0.59(-0.99,-0.19)	<.01	-1.43(-2.47,-0.38)	<.01	-0.84(-2.15,0.48)	0.21

‡Time dependent variables

Table 5
Probability of trajectory group membership, sample membership classification, and estimated population proportions (N=562)

	Group 1 (n=429)	Group 2 (n=133)
Group 1	0.91	0.09
Group 2	0.16	0.84
Sample membership classification	76%	23%
Estimated population proportion (graphed)	73%	27%
Estimated population proportion with time invariant covariates	75%	25%

Table 6

Risk factor parameter estimates, Standard Errors, Test statistic, and p values

Group	Parameter	Estimate	Standard Error	Test statistic	P value
Group 1	Reference				
Group 2	Intercept	-2.76	0.81	-3.42	< .01
	Age (years)	0.03	0.02	1.69	0.09
	CM History	0.74	0.30	2.44	0.02
	Smoking	1.34	0.30	4.45	< .01
	Program	-0.25	0.30	-0.83	0.41
	Pregnant (baseline)	0.18	0.56	0.33	0.74
	Medication use	0.64	0.41	1.60	0.11
	Unemployed	0.88	0.30	2.93	0.01

Note: CM History (1=yes, 0=no); Smoking (1=yes, 0=no); Program (1=SC; 0=SAU); Pregnant (1=yes, 0=no); Medication use (1=yes, 0=no); Employed (1=yes, 0=no).

Appendix B: Figures

Figure 1

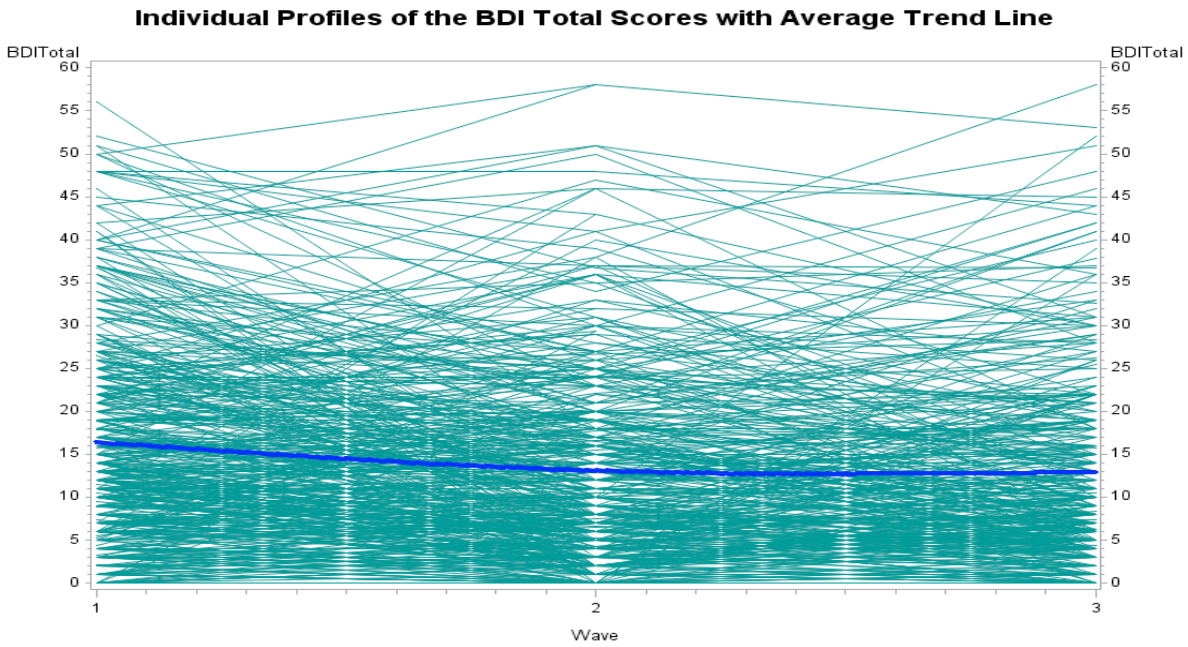


Figure 2

Individual Profiles of BDI Total Scores with Average Trend Lines by Baseline IPV Status

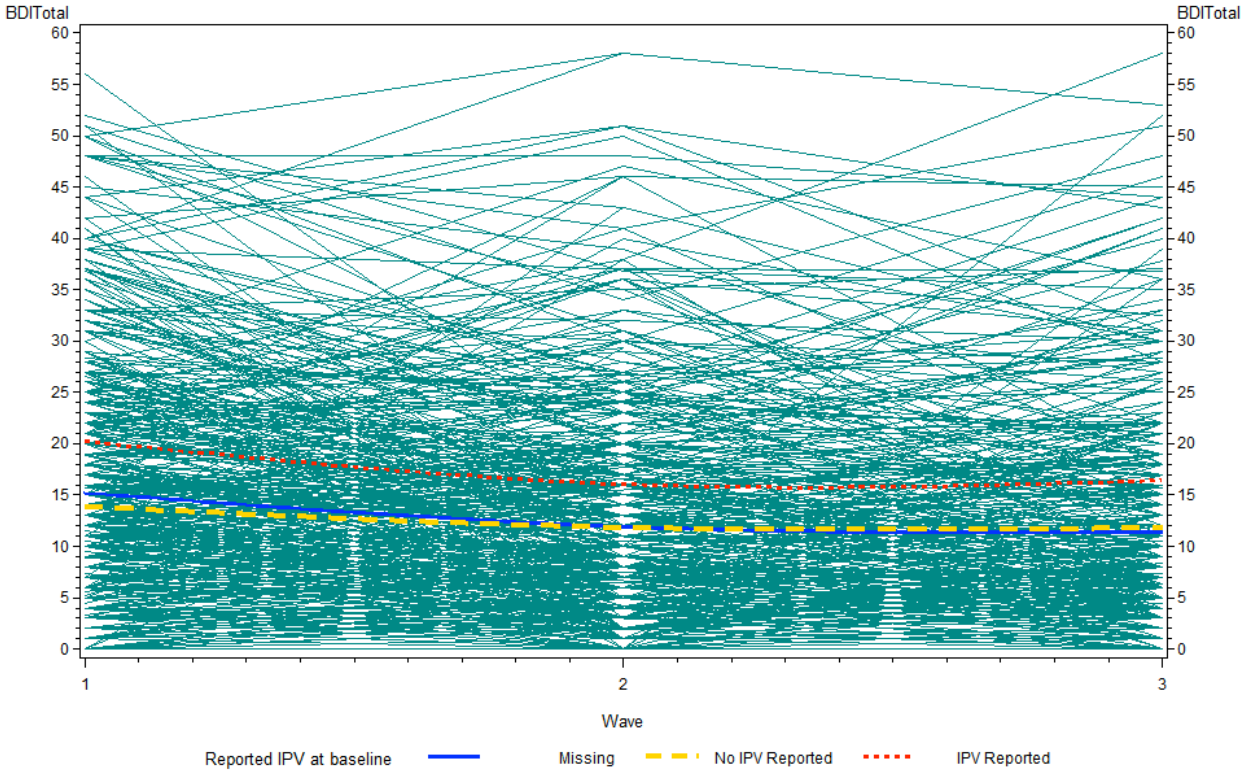


Figure 3

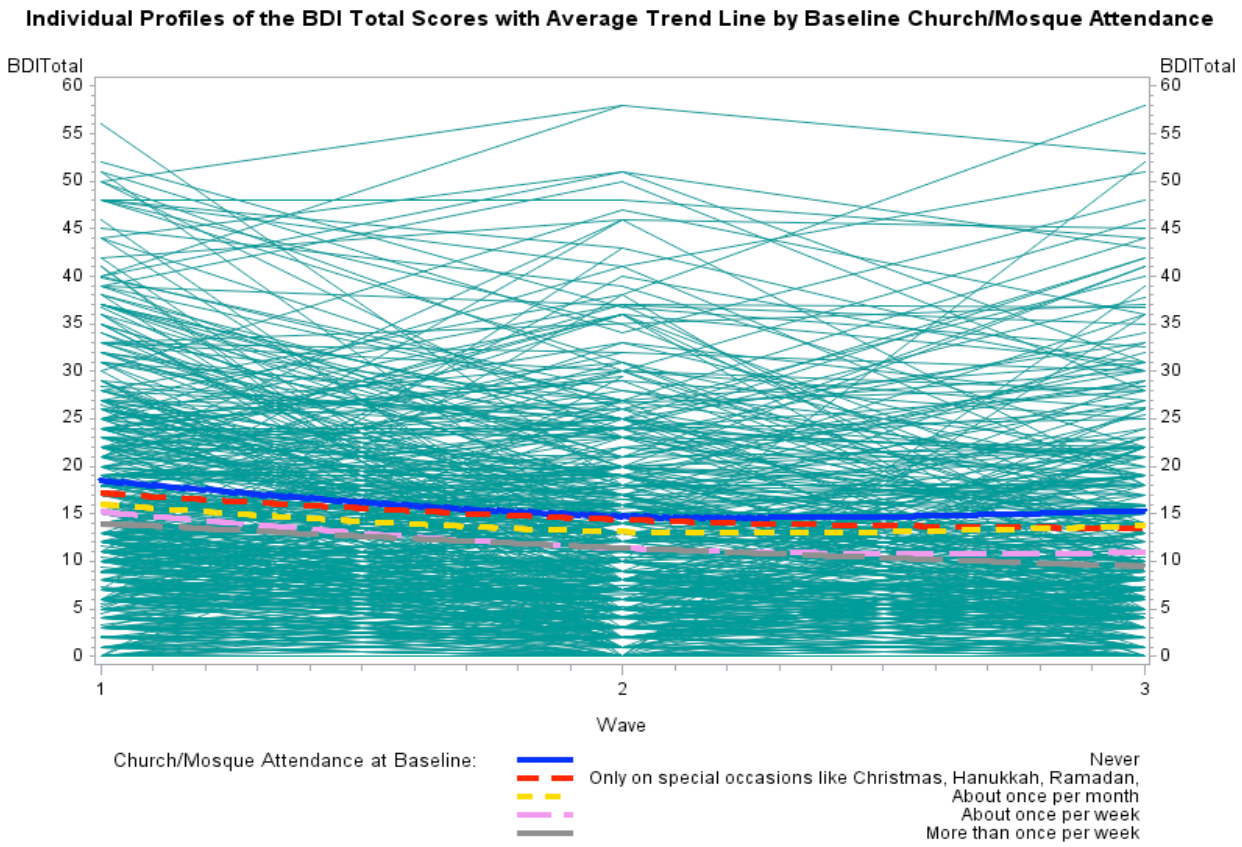

Individual Profiles of the BDI Total Scores with Average Trend Line by Baseline Church/Mosque Attendance
BDITotal
BDITotal
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
Wave
Church/Mosque Attendance at Baseline:
Never
Only on special occasions like Christmas, Hanukkah, Ramadan,
About once per month
About once per week
More than once per week

Figure 4

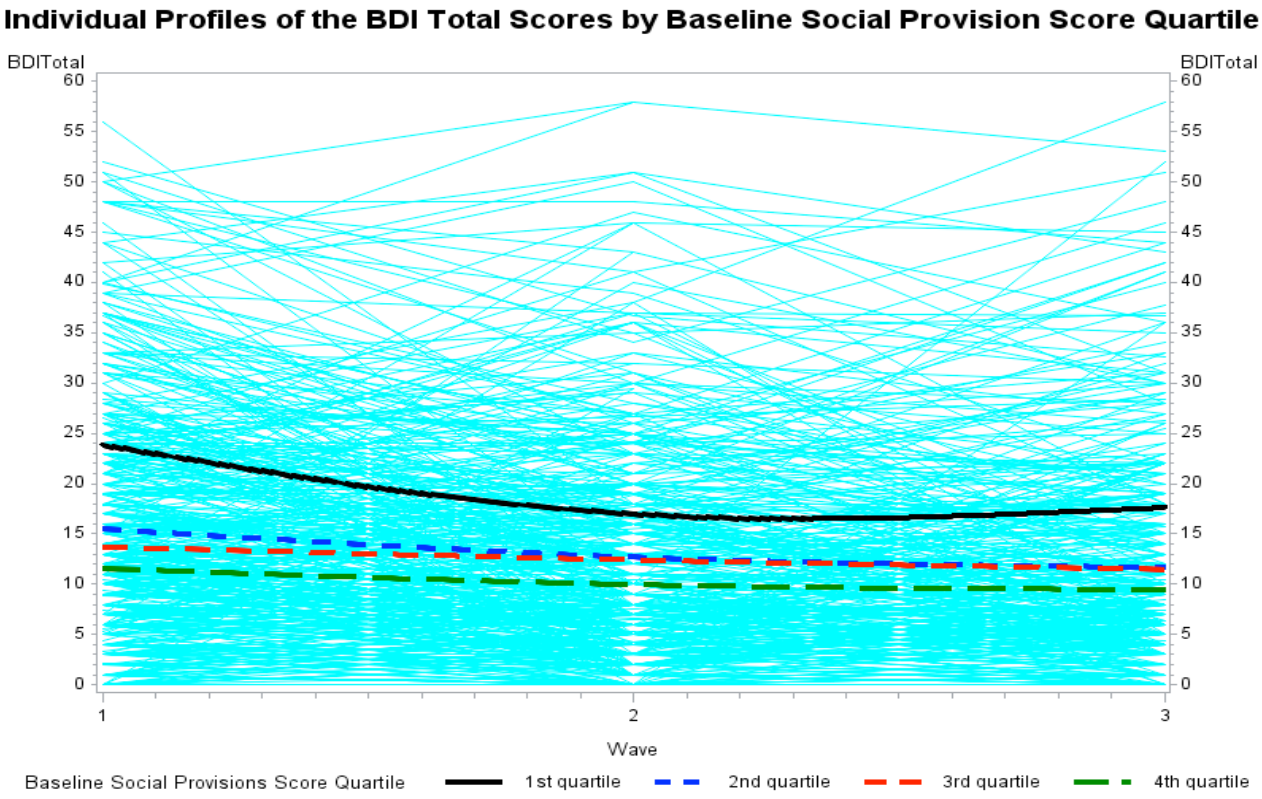

Individual Profiles of the BDI Total Scores by Baseline Social Provision Score Quartile
BDITotal
BDITotal
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
Wave
Baseline Social Provisions Score Quartile
1st quartile
2nd quartile
3rd quartile
4th quartile

Figure 5

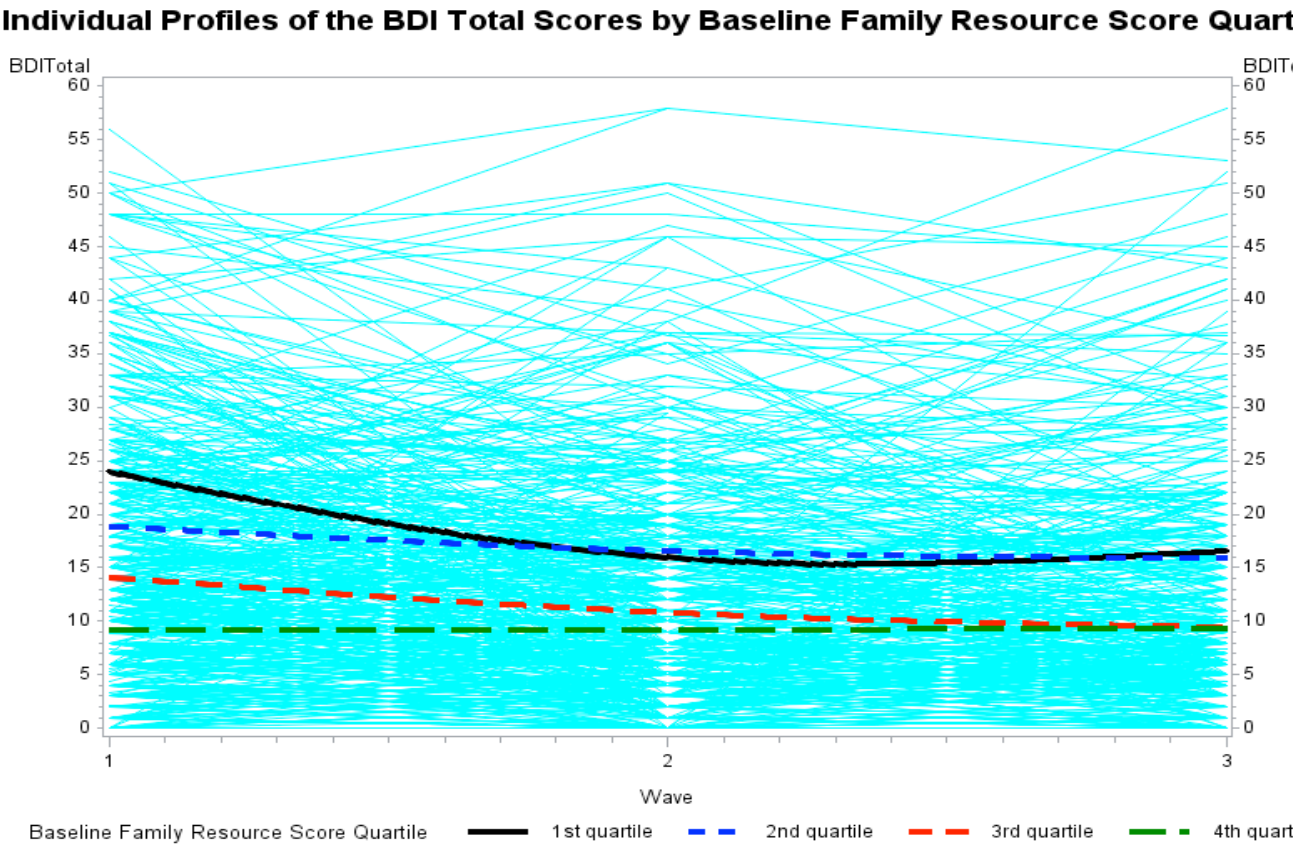

Individual Profiles of the BDI Total Scores by Baseline Family Resource Score Quart
BDITotal
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
Wave
Baseline Family Resource Score Quartile
1st quartile
2nd quartile
3rd quartile
4th quart

Figure 6

Impact of Social Support on IPV and Depression (Hypothesis One)

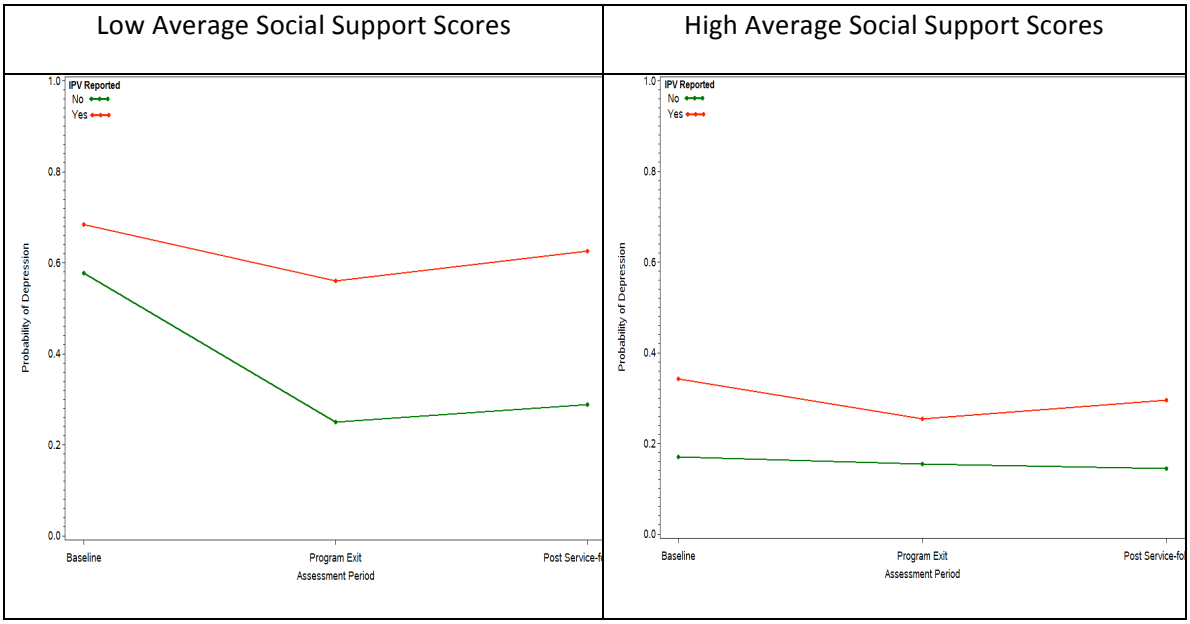


Figure 7

Impact of Family Resources on IPV and Depression (Hypothesis One)

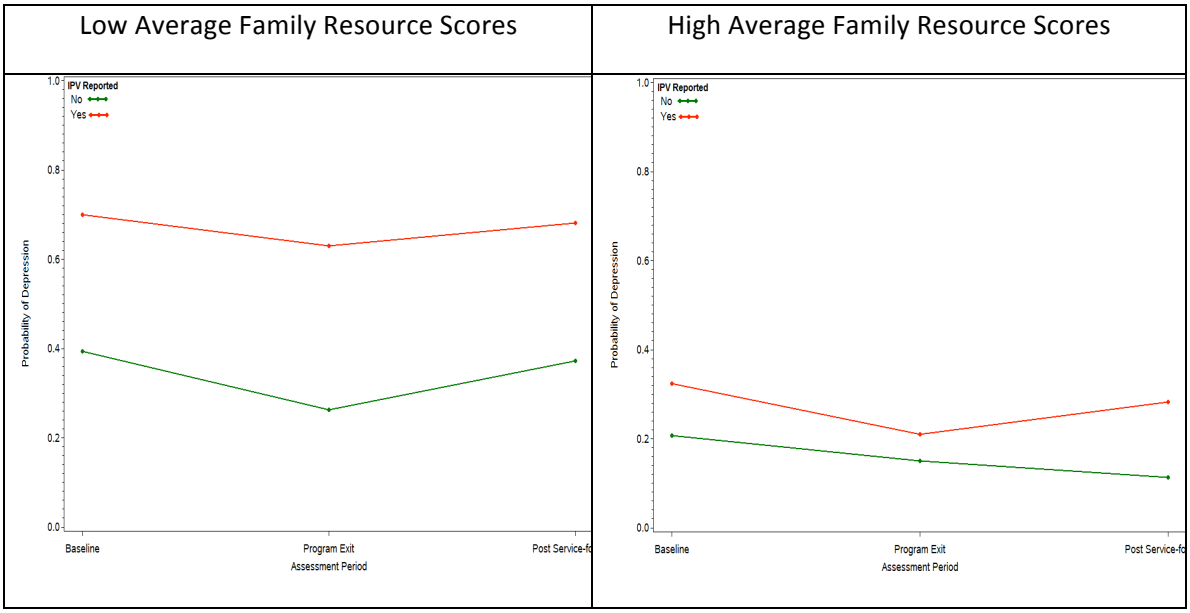


Figure 8

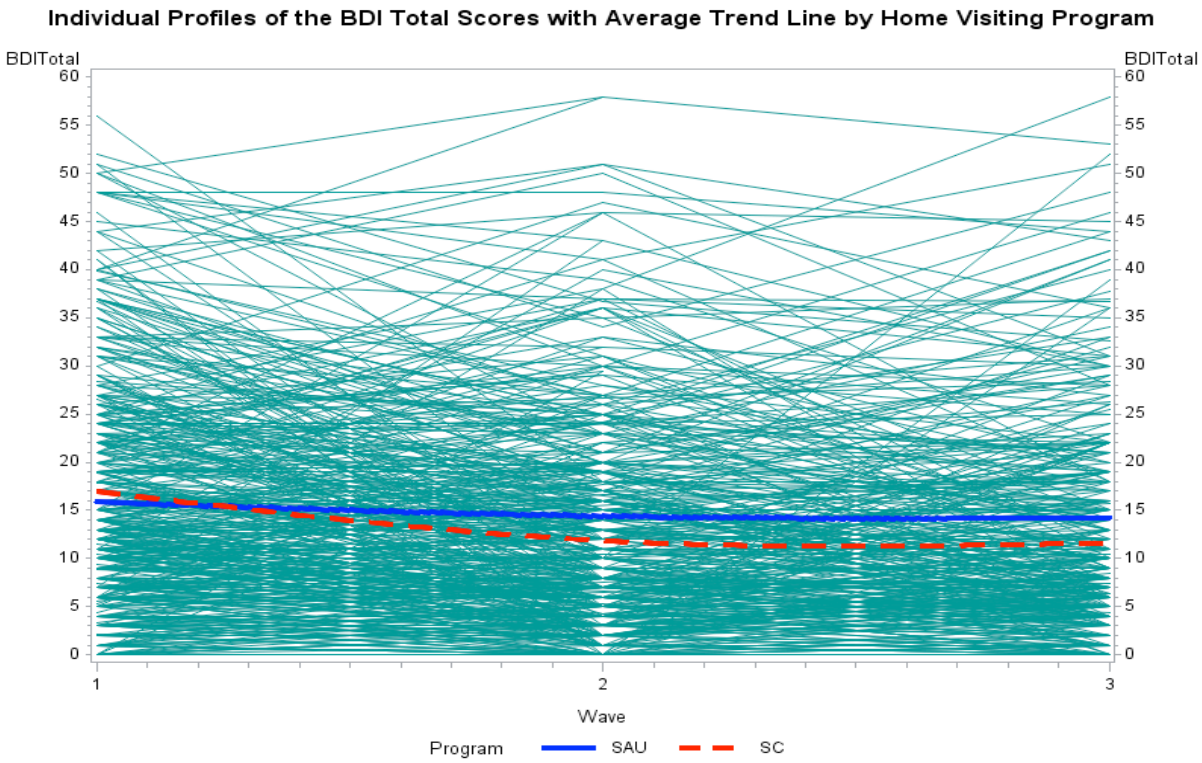
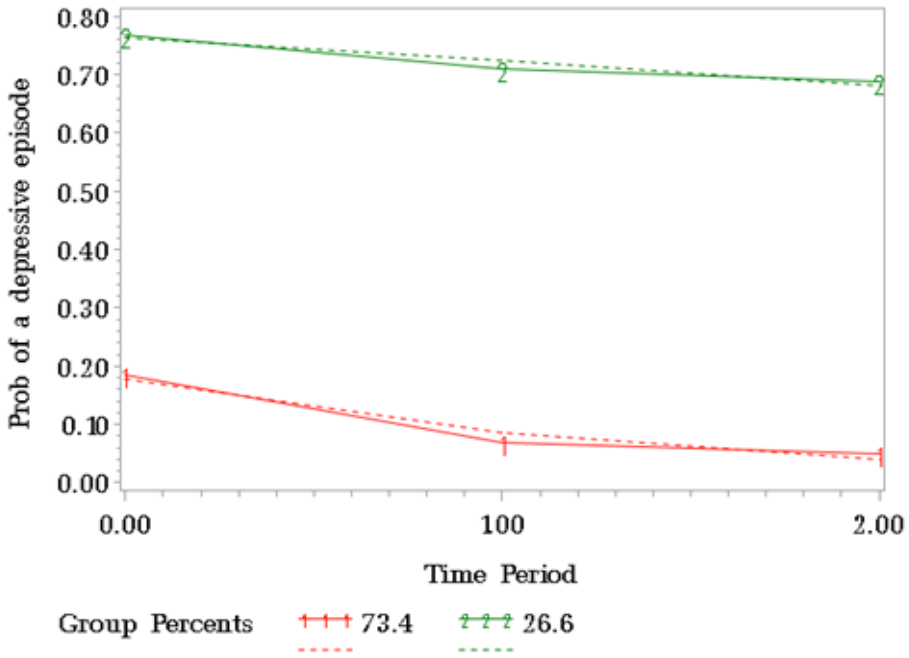

Individual Profiles of the BDI Total Scores with Average Trend Line by Home Visiting Program
BDITotal
BDITotal
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
Wave
Program
SAU
SC

Figure 9

Depression prevalence over time by group membership



Expected (dashed lines) versus Observed (solid line) trajectories

Figure 10

Impact of Social Support on IPV and Depression (Low Depression Group)

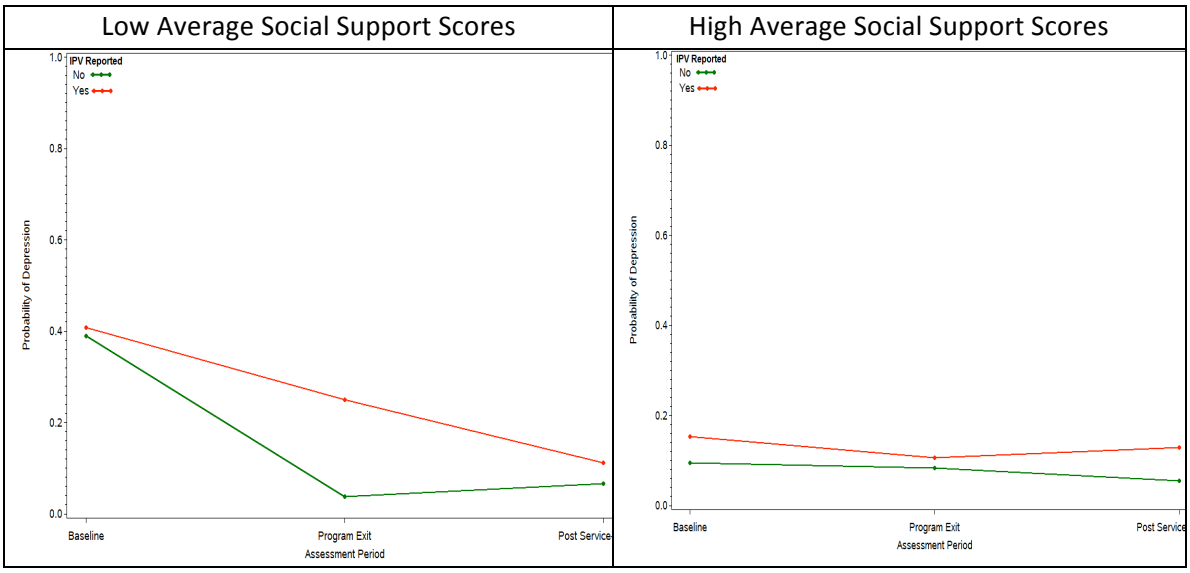


Figure 11

Impact of Family Resources on IPV and Depression (Low Depression Group)

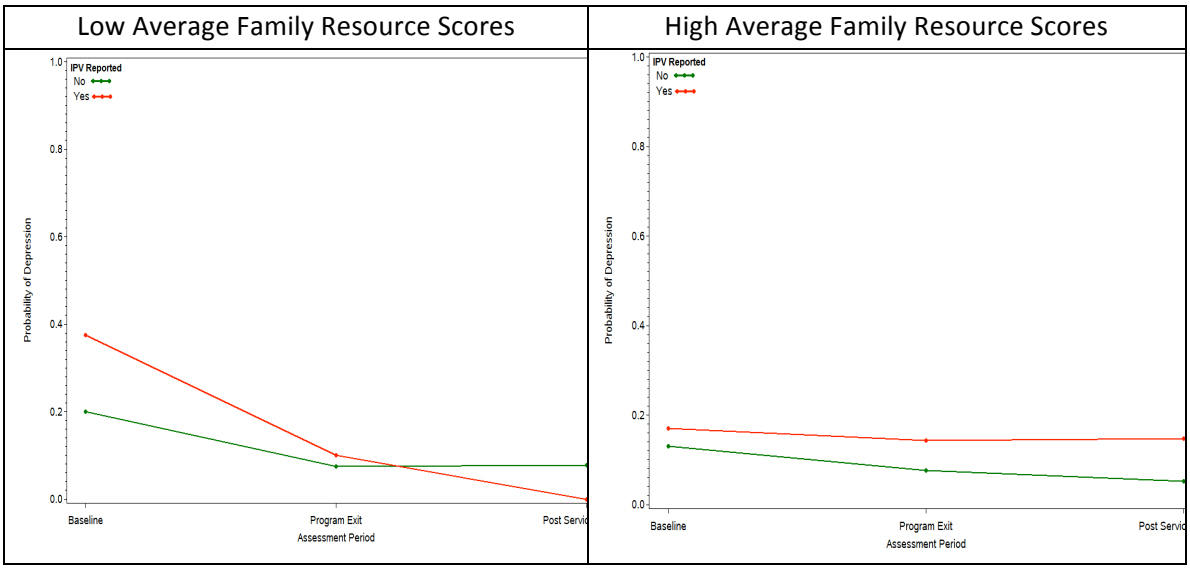


Figure 12

Impact of Social Support on IPV and Depression (Persistent Depression Group)

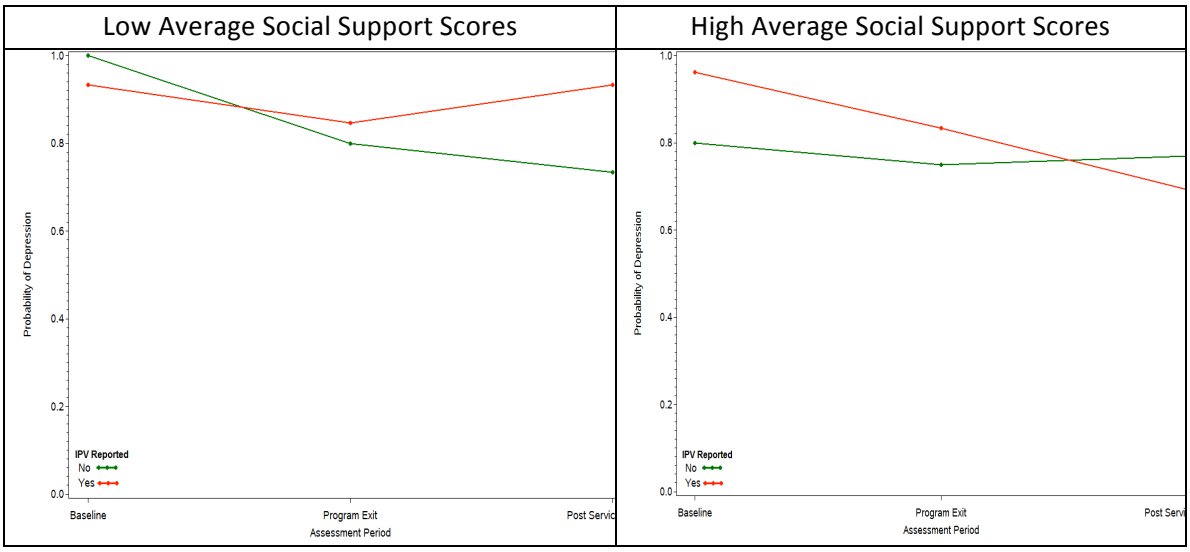
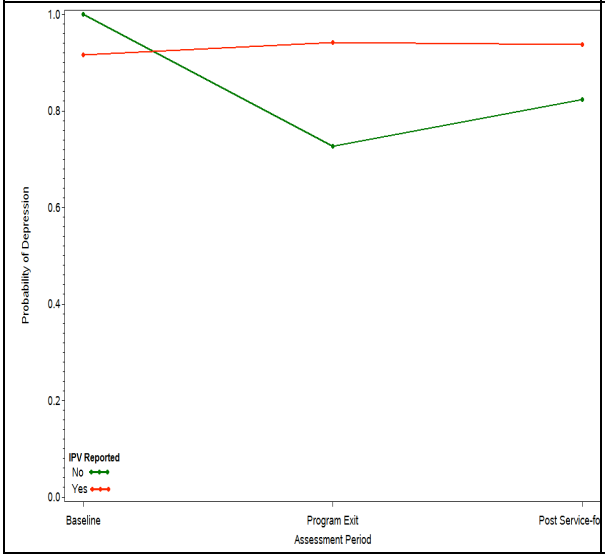
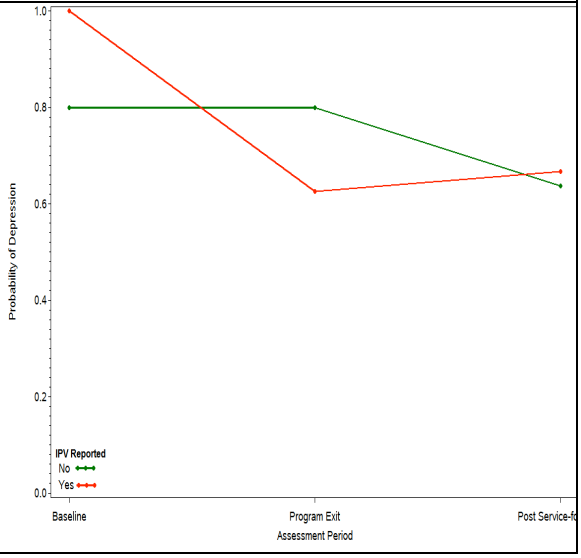


Figure 13

Impact of Family Resources on IPV and Depression (Persistent Depression Group)

Low Average Family Resource Scores	High Average Family Resource Scores
	

VITA

Leigh E. Ridings

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Ridings, L. E., & Lutz-Zois, C. J. (2013). Emotional dysregulation and Borderline Personality Disorder: Explaining the link between secondary psychopathy and alexithymia. *Personality and Individual Differences, 57,* 14-19.

Lutz-Zois, C. J., Dixon, L. J., Smidt, A. M., Goodnight, J. A., Gordon, C. L., & **Ridings, L. E.** (2013). An examination of gender differences in the construct validity of the Silencing the Self Scale. *Personality and Individual Differences, 55,* 35-40.

Rosenthal, S. R., Montoya, R. M., **Ridings, L. E.**, Rieck, S. M., & Hooley, J. M. (2011). Further evidence of the Narcissistic Personality Inventory's validity problems: A meta-analytic investigation—response to Miller, Maples, and Campbell. *Journal of Research in Personality, 45,* 408-416.

Professional Memberships: Association for Behavioral and Cognitive Therapies (ABCT); ABCT Child Maltreatment and Interpersonal Violence Special Interest Group; American Psychological Association; American Psychological Association Division 53, Society of Clinical Child and Adolescent Psychology