THE MODERATING ROLE OF INFORMAL SOCIAL SUPPORT

ON THE RELATION BETWEEN CHILD DEVELOPMENTAL

DELAY AND PARENTAL DEPRESSION

A Thesis Presented to the Faculty
of
California State University, Stanislaus

In Partial Fulfillment
of the Requirements for the Degree
of Master of Science in Psychology

By
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May 2020

CERTIFICATION OF APPROVAL

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DEDICATION

      This thesis is dedicated to my mother, Nora, and my father-in-law, Junior. They provided unconditional social support when they were able, and continued to do so until they no longer could. They are both deeply missed.

      I would also like to dedicate this thesis project to my husband, Jared. You have provided me with unmatched support, and instilled the internal fortitude I needed to pursue this educational feat. The support you have provided for me and our boys will be forever appreciated.

ACKNOWLEDGEMENTS

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ABSTRACT

Decades of research have shown that parent depression has serious implications for the entire family, as depression can negatively impact parents' relationships with their partners and their children. Parents of children with developmental delays frequently report high levels of depression, but less is known about differences between mothers' and fathers' experiences of depression. Identifying intervening variables that buffer or worsen parent depression could help identify points of intervention to support parents experiencing stressful events. Social support is one resource that may buffer parents' experience of depression, though less is known about how mothers and fathers may perceive social support differently. This cross-sectional, observational study examined whether social support served as a moderator in the relation between child developmental group and parent depression symptoms in parents of 3-5-year-old children with and without developmental delays. Results confirmed that depression scores of parents of children with developmental delays were significantly higher than depression scores of parents of typically developing children. No support was found for the hypothesis that informal social support would moderate parent depression scores. Also, no significant differences were found between mothers' and fathers' perceived social support, or depression scores.

INTRODUCTION AND LITERATURE REVIEW

Approximately fifteen million people in the United States are affected by clinical depression every year (Hasin, Goodwin, Stinson, & Grant, 2005). When an individual has depression, it often affects those closest to him or her. For example, maternal depression is estimated to affect the lives of over seven million American children (Ertel, Rich-Edwards, & Koenen, 2011). Maternal depression is also a strong predictor of paternal depression, with up to 50% of fathers experiencing depression when their spouse has depression (Goodman, 2004). Parents who have depression are also more likely to behave negatively toward their children (Lovejoy, Graczyk, O'Hare, & Neuman, 2000; Turney, 2011; Wilson & Durbin, 2010). Additionally, parental depression is considered a predictor of childhood social dysfunction (Biederman et al., 2001), psychopathology (Sfärlea et al., 2019; Weissman et al., 2016), and behavior problems (West & Newman, 2003).

There are a variety of risk factors that contribute to parental depression, such as economic adversities, co-occurring psychiatric diagnoses (Ertel et al., 2011), and marriage quality (Siman-Tov & Kaniel, 2011). Additionally, parents of children with developmental delays (e.g., Autism Spectrum Disorder, Intellectual Disability, or Down Syndrome) have an increased risk of experiencing depression when compared with parents of children without developmental delays (Cohrs & Douglas, 2017). This could be due to differences in caregiving for children with developmental delays, because children with developmental delays often show more adverse behaviors and

psychological instability when compared with children without developmental delays (Eisenhower, Baker, & Blacher, 2005). While mothers and fathers of children with developmental delays have an increased risk of experiencing depression, they have shown differences in how they exhibit depression symptoms (Kim & Swain, 2007, Rejani & Ting, 2015). This could be due to different coping methods used by mothers and fathers, such as the use of social support (Siklos & Kerns, 2006). Indeed, there is evidence indicating mothers of children with developmental delays report needing more social support than fathers (Hartley & Schultz, 2015).

Social support is considered a resource for parents that helps them cope with parenting difficulties, and is especially important for parents who have children with developmental delays (Siklos & Kerns, 2006). Data suggest that low social support is related to depression symptoms for parents of children with developmental delays (Falk, Norris, & Quinn, 2014). Consequently, high social support may serve as a protective factor against depression for parents who have children with developmental delays (Falk, Norris, & Quinn, 2014; Ingersoll & Hambrick, 2011; Rathore & Mather, 2014).

Depression has an impact on the family and society, and parents may experience higher depression when they have a child with developmental delays. Coping resources such as social support can help parents manage difficulties in their lives. Thus, it is essential to examine the relation between child developmental delays and parental depression, and how social support influences this relationship. It is equally important to investigate whether these relationships differ for mothers and

fathers. This knowledge can help provide clarity about the importance of social support for parents during years that are critical for child development, helping shape interventions to support families at risk for depression.

Literature Review

Conceptualizing Parental Depression

According to the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (*DSM–5*; American Psychiatric Association [APA], 2013), depression is categorized into eight different disorders that differ in symptom duration, frequency, or presumed cause of the disorder. The symptoms of these depressive disorders are generally characterized as negative affect (e.g., feeling sad, empty, hopeless), disinterest in typical activities, weight changes, sleep difficulties, feelings of restlessness, low energy, feelings of guilt or worthlessness, difficulty thinking, or suicidal thoughts and/or behaviors. While these characteristics help define depression, there are additional facets of depression that should be considered when conceptualizing the disorder (Koukopoulos & Sani, 2014).

A limitation of the DSM's defining symptoms of depression is they may not be reflective of the lived experience of people who have depression (Marsella, 2003). Empirical evidence supports the concept that depression can be defined by either a person's mood (i.e., unhappy, discouraged, or hopeless; Zonderman, Herbst, Schmidt, Costa, & McCrae, 1993), somatic symptoms (i.e., fatigue, body and head aches or pains, or gastrointestinal discomfort; Kroenke, 2003), or both.

Given the different manifestions of depressive symptoms, consideration should be given to the use of valid and reliable assessments that measure depression as a multi-faceted construct. For example, screening for depression using a measure such as the Center for Epidemiologic Studies Depression Scale Revised (CESD-R; Eaton, Smith, Ybarra, Muntaner, & Tien, 2004) may be beneficial because, in addition to screening for classic depression symptoms, it comprehensively measures negative affect, somatic symptoms, interpersonal problems, and positive affect (Shafer, 2006). Additionally, the measure was developed to be used with the general population and has the ability to assess the different manifestations of depressive symptoms in a wide range of people (Shafer, 2006). The CESD-R is comparable with gold standard measures, such as the Hamilton Rating Scale for Depression (HAM-D; Hamilton, 1960), or the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Choi, Schalet, Cook, & Cella, 2014; Shafer, 2006). Given this evidence, using such a measure when studying depression in a non-clinical sample allows for a variety of depressive symptoms to be recognized within the general population.

Depression Sequelae

Depression has lasting effects on individuals as well as economic and societal impacts that are considered to be critical areas to study. Annual economic costs associated with United States depressive disorders are approximately $210 billion, which include medical costs, suicide prevention, and work related costs (i.e., missing work and decreased productivity while at work; Greenberg, Fournier, Sisitsky, Pike,

& Kessler, 2015). These costs are certain to increase along with the rising number of individuals diagnosed with depression, which is projected to be 46 million adults by the year 2050 (Heo, Murphy, Fontaine, Bruce, & Alexopoulos, 2008). Given these estimates, depression will continue to be a critical issue, especially because of the impact it has on family members (England & Sim, 2010), as seen in the transgenerational effects of depression between parents and their children (Weissman, 2016). Furthermore, if parents are unable to maintain their mental stability, depression may reoccur across the lifetime (Mergl, 2007).

Adverse effects on the family can begin during the postpartum period, as depression symptoms affect the amount of positive learning interactions (reading, singing, talking) that mothers and fathers have with their newborn and other children (Paulson, Dauber, & Leiferman, 2006). Depressed parents who are less engaged with their children may be more likely to engage in verbal and physical aggression toward their children, neglect the needs of their children, and act hostile or coercive (Lovejoy et al., 2000; Turney, 2011; Wilson & Durbin, 2010). Relatedly, parents' symptoms of depression are associated with children's insecure attachment, with magnified effects for families with dual parental depression (Ridgeway, 2015).

Negative parenting behaviors that result from depression can have adverse effects on childhood behaviors. These childhood behaviors have certain characteristics, such as internalization (anxiety/depression, somatization, and withdrawal from activities), or externalization (whining, hitting, grabbing, and general increased physical activity; Biederman et al., 2001; Sfärlea et al., 2019;

Weissman et al., 2016; West & Newman, 2003). Furthermore, when children of parents with depression reach adulthood, they are at risk for major depression, anxiety, and substance-use disorders (Nomura, Wickramaratne, Warner, Mufson, & Weissman, 2002).

Predictors of Parental Depression

Given the multitude of maladaptive sequelae of depression, it is essential to identify predictors of depression to prevent its occurrence or lessen its severity. Certain factors have been shown to predict depression, such as an individual's temperament, environment, and genetics (American Psychiatric Association, 2013). These risk factors for depression have been widely studied, which has increased awareness of predictors such as demographic, parent, child, and social factors (Ertel et al., 2011; Falk et al., 2014; Lee, Anderson, Horowitz, & August, 2009; Olsson & Hwang, 2001; Siman-Tov & Kaniel, 2011).

Socioeconomic factors. Socioeconomic variables, such as education level (e.g., less than a high school education) and family income (e.g., poverty level) are factors of socioeconomic status (SES) that are often considered risk factors for depression (Bergström, 2013; Ertel et al., 2011; Lee, Anderson, Horowitz, & August, 2009). Generally, parents of low SES have fewer chances of receiving resources and information about depression, which decreases the probability of receiving effective treatment or having access to adequate prevention (von dem Knesebeck et al., 2013). Mothers who are unemployed, single, and have less than a high school education, have an increased risk for depression (Ertel et al., 2011). Moreover, recurrence of

depression during parenthood is more likely for mothers of low SES, because low SES decreases the chance of receiving treatment for depressive episodes (Kettunen & Hintikka, 2017; von dem Knesebeck, et al., 2013).

Parents of a low SES often have a family structure (e.g., single parent) that is more stressful on each parent (Crnic & Low, 2002), which puts them at risk for depression. For example, single mothers have much higher rates of depression as compared to mothers living with a partner (Cairney, Boyle, Offord, & Racine, 2003). Additionally, single fathers with young children have increased stress and depression levels when compared with married fathers (Kong & Kim, 2015). Thus, a family structure with the mother and father living at home may have lower levels of depression symptoms than other family structures (e.g., single parent families and stepfamilies; Barrett & Turner, 2005).

Gender differences in depression. Symptoms of depression are typically more prevalent in women than men (Adewuya et al., 2018; American Psychiatric Association, 2013), with comorbid symptoms of depression and anxiety recognized as equally prevalent in males and females (Wynter, Rowe, & Fisher, 2013). For mothers, lingering depression symptoms is a risk factor of additional maternal health problems (e.g., anxiety) and somatic symptoms (Farr, Dietz, O'Hara, Burley, & Ko, 2014). Additionally, mothers who have experienced depression symptoms after pregnancy are at a greater risk of experiencing depression during subsequent pregnancies (Ertel et al., 2011; Nagy, Molnar, Pal, & Orvos, 2011). Maternal depression can also put

fathers at risk for depression, which in turn, has an even greater effect on the entire family (Kim & Swain, 2007).

While maternal depression appears to be more prevalent than paternal depression, this disparity could be due to the unique challenges of assessing depression in men (Rabinowitz & Cochran, 2008). Men with dysthymia (e.g., mild, chronic depression symptoms) are more likely to externalize emotions, manifesting their depression symptoms as anger or irritability (Magovcevic & Addis, 2008; Nadeau, Balsan, & Rochlen, 2016). Data also suggest that men exhibit anxiety-related symptoms before the onset of depression (Wee, Skouteris, Richardson, McPhie, & Hill, 2015). While men's symptoms are often indicative of anxiety related disorders, the symptoms should not negate the possibility they are also related to depression (Dozeman et al., 2011).

Child factors. Many child-specific factors are associated with parental depression, such as child temperament (West & Newman, 2003), behavior problems (Firth & Dryer, 2013; West & Newman, 2003), and developmental delay (Falk, Norris, & Quinn, 2014; Olsson & Hwang, 2001). Children with a "difficult" temperament who are of preschool age often struggle with regulating their emotions and reactions, and tend to show increased negative mood and high aggressiveness ("surgency"; Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006; Jessee, Mangelsdorf, Shigeto, & Wong, 2012). Difficult temperaments are also considered predictors of behavior problems in children (Gilliom & Shaw, 2004). Difficult child temperament and behaviors problems can be exhibited in any child, however these traits are more

often associated with children who have developmental delays than typically developing children, increasing the risk of depression for parents of children with developmental delays (Firth & Dryer, 2013).

Children with Developmental Delays

Developmental delays may be defined in multiple ways, but often includes children who have Down Syndrome (DS), Autism Spectrum Disorder (ASD), or intellectual disability (ID; Feldman et al., 2007; Firth & Dryer, 2013; Siklos & Kerns, 2006). Other definitions include children with borderline intellectual functioning, which is a classification involving IQ that is significantly below average, but not as low as children with intellectual disability (Fenning, Baker, Baker, & Crnic, 2007). In general, children with developmental delays often have differing challenges than children without delays (Ingersoll & Hambrick, 2011). Additionally, challenges associated with having a developmental delay generally become more severe when a child has concurrent diagnoses, as seen in children with Down Syndrome and co-occurring ASD (Molloy et al., 2009).

Examples of challenges in children with developmental delays include social deficits, communication deficits, and behavior problems (Fodstad, Matson, Hess, & Neal, 2009; Ozturk, Vivanti, Uljarevic, & Dissanayake, 2016; Jessee, Mangelsdorf, Shigeto, & Wong, 2012). Social deficits might include difficulty sharing experiences with others, developing social relationships, and participating in social games (Fodstad et al., 2009). Other challenges of children with developmental delays include communication deficits such as difficulty using language to communicate

with others, as well as delayed language development (Fodstad et al., 2009; Ozturk et al., 2016).

Behavior problems in children with developmental delays have been widely studied. Data suggest that when children have developmental delays, it is probable they will exhibit adverse behaviors (Baker et al., 2003; Falk, Norris, & Quinn, 2014). The adverse behaviors of children with developmental delays include conduct problems, being insecure or anxious, hyperactivity, harming oneself or others, being isolated or ritualistic, and being overly sensitive (Firth & Dryer, 2013). Many of these behavioral factors are associated with the type of developmental delay. Children with ASD are often more cognitively impaired and lack social and communication skills when compared with children with Down Syndrome (Konst, Matson, Goldin, & Williams, 2014). Furthermore, children with ASD are also more socially isolated and have fewer peer relationships than children without ASD, which decreases their opportunities to improve social and communication deficits (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011). Generally, parents of children with developmental delays face more child communication, behavior, and social challenges which could affect parental mental health stability.

Developmental delays and parental depression. Having a child with a developmental delay has been shown to be an important predictor of parental depression and other closely related disorders (e.g., anxiety; Feldman et al., 2007; Gallagher, Phillips, Oliver, & Carroll, 2008; Kelly, Garnett, Attwood, & Peterson, 2008; Olsson & Hwang, 2001; Rejani & Ting, 2015), especially when compared with

children without developmental delays (Ingersoll & Hambrick, 2011). Specifically, behavior problems (e.g., social and communication deficits) commonly related to children with developmental delays are associated with parental depression (Jessee et al., 2012).

In addition to noted differences in depression between parents of children with developmental delays and parents of typically developed children, there are also noted diffferences between mothers' and fathers' experience of depression. Research indicates that having a child with developmental delays is associated with maternal depression more so than paternal depression (Olsson & Hwang, 2001), and paternal anxiety more so than maternal anxiety (Rejani & Ting, 2015). This could be due to specific factors of developmental delays affecting mothers' and fathers' mental health differently. For instance, aggressive behavior was shown to predict depression in mothers and anxiety in fathers (Falk, Norris, & Quinn, 2014). Consideration should also be given to caregiving differences, as mothers are often the parents who do the majority of caregiving, with increased caregiver demands for children with developmental delays (Feldman, et al., 2007). Although research has clarified that mothers and fathers of children with developmental delays are at risk of depression and other closely related disorders, there is also evidence that resiliency and the ability to handle difficulties related to having a child with developmental delays can significantly reduce the chance of adverse psychological problems (Greeff & van der Walt, 2010).

Conceptualizing Social Support

Social support is considered a resource that can increase resiliency in parents facing adverse situations (Greeff & van der Walt, 2010). Social support is a broad term that has many facets, but can be generally described as access to resources for those in need, provided by formal support services or informal relationships (Gottlieb & Bergen, 2010). The resources available may also depend on the individual's social network, defined as interactions with those closest to the individual (Gottlieb & Bergen, 2010). Received support is provided by a person's social network, while perceived support is the perception of availability and satisfaction with that support (Sarason, Sarason, & Pierce, 1990). Generally, larger social networks result in a positive perception of support and an increased chance of receiving support (Gottlieb & Bergen, 2010; Haber, Cohen, Lucas, & Baltes, 2007).

Types of social support. Many services exist for parents to find relief from the everyday demands of parenting, which can serve as a protection for parents at risk of developing depression (Schury et al., 2017). These services include both formal and informal methods of support, both of which are considered valuable. (Hartley & Schultz, 2015). Formal social support is comprised of professionals and/or services provided in an institutionalized or business-like setting (i.e., child-care, church, and social services). Informal social support is comprised of individuals and groups (i.e., family members, friends, and clubs) who are part of the individual's social circle (Gottlieb, 1983; Rodrigo, Martín, Máiquez, & Rodríguez, 2007). Informal social support is often considered the main source of emotional support (e.g., someone who

listens or is empathetic), although formal supports (e.g., professional psychological services) are also considered a source of emotional support (Gottlieb & Bergen, 2010; Heiman & Berger, 2008).

The type of social support and its availability can influence whether or not an individual pursues support (Gottlieb & Bergen, 2010). For instance, practical support (e.g., help with childcare duties) is needed, but it is sometimes difficult to obtain, or the need is not necessarily being met (Sheppard, 2004). Perhaps this is due to practical and formal support services being costly, and not always as effective as informal support (Byford et al., 2015). When availability of practical and formal social support is limited, informal social support can help relieve parents from the everyday demands of parenting.

Informal social support and depression. Decades of research have validated social support as a valuable resource for those suffering from affective disorders such as depression (Achat et al., 1998; Barker et al., 2011; Wang, Mann, Lloyd-Evans, Ma, & Johnson, 2018). There are many dimensions of social support that have been correlated with depression, including emotional and practical support (White & Hastings, 2004). These types of support are associated with an individual's improved emotional well-being, as in cases of those with depression symptoms and other affective disorders (Barker et al., 2011; Gottlieb & Bergen, 2010). In addition to the different types of social support, it is also important to consider how social support is both received and perceived. Typically, received social support refers to an individual's report of services used, and perceived social support refers to an

individual's beliefs about the social support available to them (Gottlieb & Bergen, 2010). Symptoms related to depression show pronounced improvement in situations where social support is received (Wei et al., 2012). For first-time mothers, received informal social support influences the experience of motherhood in a positive way and serves to protect mothers from experiencing postnatal depression (Leahy-Warren, McCarthy, & Corcoran, 2012; Pao, Guintivano, Santos, & Meltzer-Brody, 2019). However, just because parents receive social support does not mean they perceive their support needs are being met (Haber, Cohen, Lucas, & Baltes, 2007). In some cases, parents who report receiving social support still perceive social support as low, in addition to reporting high levels of depression (Ibarra-Rovillard & Kuiper, 2011). Perhaps this is because parents believe they need more social support, or a different type of social support than they receive (Hartley & Schultz, 2015). Additionally, social support can be negatively perceived, with a high amount of social support associated with psychological distress when there are negative interactions between the distressed person and the support person (Liang, Krause, & Bennett, 2001).

Research indicates that when an individual perceives that adequate support is available, he or she is more resilient in adverse situations (Cohen & Wills, 1985). For first-time mothers and fathers, low levels of depression were associated with higher perceived availability of social support (Castle, Slade, Barranco-Wadlow, & Rogers, 2008)**.** Furthermore, parents with low levels of perceived social support have increased levels of depression symptoms (Lee, Anderson, Horowitz, & August, 2009), especially for mothers in the postpartum period (Falah-Hassani, Shiri, Vigod,

& Dennis, 2015). Generally, when parents perceive that social support is available to them, it can serve to protect them from experiencing distress (i.e., depression and anxiety; Lindsey & Barry, 2018).

Differences in social support for mothers and fathers. Mothers and fathers may perceive their social support needs differently from one another, because certain factors that are important to mothers might not be as important to fathers, and vice versa (Siklos & Kerns, 2006). Perhaps the support needs for mothers and fathers are different because mothers often take on the role as primary caregiver (Willie, 1995). If this is the case, it stands to reason that mothers report a higher need for spousal support when compared to fathers (Pao, Guintivano, Santos, & Meltzer-Brody, 2019). Furthermore, mothers with low spousal support have shown more depression symptoms and an increased need for support from other sources as compared to mothers with increased spousal support and fathers (Fagan, 2009). Specifically, informal social support is needed, as seen in mothers who actively seek out emotional support from friends, family, and educational resources (Kwon, Han, Jeon, & Bingham, 2013).

Attention should also be given to the type of support needed by parents, because the support needs for parents tend to vary depending on factors such as the type of parental distress (Falk, Norris, & Quinn, 2014), child's behavior, and developmental level (Siklos & Kerns, 2006). For parental distress (i.e., depression and anxiety) both mothers and fathers report the need for social support (White & Hastings, 2004). However, mothers report more overall needs (e.g., help with child

care, home tasks, and respite care) and fewer needs being met (e.g., respite care and emotional counseling) as compared to fathers (Hartley & Schultz, 2015). Moreover, fathers report a higher need for practical support (e.g., information about coping with their and their partner's depression; Letourneau et al., 2012). Generally, research indicates that perceived social support for mothers and fathers is a benefit to parental mental health.

   Social support and depression in parents of children with developmental delays. Social support from friends, family, and spouses has been known to influence the severity of depression symptoms and subsequent parenting behaviors for parents with young children (especially those with developmental delays; Heller, Hsieh, & Rowitz, 2000; Lee, Anderson, Horowitz, & August, 2009; Schury et al., 2017). When families receive informal social support from family and friends, they have an easier time adapting to having a family member with developmental delays (Greeff & van der Walt, 2010). However, the chances of parental depression greatly increases when families of children with developmental delays have difficulty adapting and have limited social support options (Falk, Norris, & Quinn, 2014). Indeed, studies have shown that families of children with more severe delays need more social support, due to the increased caregiving demands and lower social functioning levels of children with developmental delays (Heiman & Berger, 2008; Kelly, Garnett, Attwood, & Peterson, 2008).

   To provide adequate care, parents report a desire for consistent year-round professional services to meet the needs of their developmentally delayed child (Siklos

& Kerns, 2006). The type of parental care needed may include constant involvement in the education and mental health of their child, with availability to be present at frequent appointments and to immediately respond to unexpected calls from schools and care facilities (Kenny & McGilloway, 2007; Murphy, Christian, Caplin, & Young, 2007). Increased caregiver demands (e.g., physical, emotional, and financial responsibilites) and a smaller social network (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011; Murphy, Christian, Caplin, & Young, 2007; Seltzer, Greenberg, Floyd, Pettee, & Hong, 2001) can lead to increased risk of mental health problems.

Given the evidence that parents (mothers more than fathers) of children with developmental delays have higher levels of depression than parents of children without developmental delays, and given the amount of support needed in caring for child with developmental delays, parents (mothers more than fathers) are in more need of social support than parents of children without developmental delays (Hartley & Schultz, 2015; Siklos & Kerns, 2006). Furthermore, low social support is a predictor of depression in parents of children with developmental delays (Falk, Norris, & Quinn, 2014) and high social support is a protective factor against depression in parents of children with developmental delays (Halstead, Griffith, & Hastings, 2018). While social support also serves as a protective factor for parents of typically developing children, it has shown to have a greater effect on depression symptoms for parents of children with developmental delays (Cantwell, Muldoon, & Gallagher, 2015). Understanding how social support moderates the magnitude of the

relation between developmental group and parental depression will provide insight into how social support influences parental depression for many families.

The Present Study and Hypotheses

The purpose of the present study was to examine whether a child's developmental group predicts depression symptoms in his or her parents. Additionally, the study examined whether social support moderates the relationship between a child developmental group (either typically developing or developmentally delayed) and parental depression. Finally, given the different facets of social support and the differences in perceived needs between mothers and fathers, it examined moderating effects separately for mothers and fathers.

Therefore, based on existing research that children with developmental delays are a predictor of depression in parents, specifically, mothers more than fathers (Olsson & Hwang, 2001; Rejani & Ting, 2015), it was hypothesized that there was a significant relationship between child developmental group and mother and father depressive symptoms, such that mothers and fathers of children with developmental delays would have higher depressive symptoms than mothers and fathers of children without developmental delays (hypothesis 1).

Given the research that low social support is a predictor of distress in parents of children with developmental delays (Gallagher, Phillips, Oliver, & Carroll, 2008; Falk, Norris, & Quinn, 2014), it was hypothesized that social support would significantly moderate the relationship between child developmental group and parental depression (See Figure 1), such that parents who reported high social support

would report significantly lower depression than parents who reported lower social support, and that this relation would be stronger for parents of children with developmental delays. (hypothesis 2).

Regarding differences between mothers and fathers, it was hypothesized that overall, mothers would report lower perceived social support than fathers (hypothesis 3), and fathers would report fewer depression symptoms than mothers (hypothesis 4).
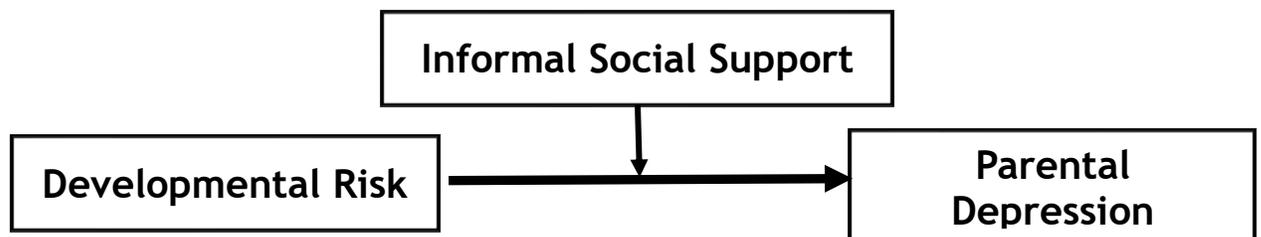
Figure 1. A model of the moderating role of informal social support in the relationship between child developmental group and parental depression.

METHOD

Participants

Participants for this study were taken from a larger study on family interaction patterns which included families of a preschool aged "focal child" (aged 3-5 years) and all other members of the focal child's household (e.g., mother, father, siblings). For the current study, families with a mother and father currently living in the home ($n = 48$) were included, as well as several families in which only the mother currently lived in the home ($n = 11$). For the typically developing (TD) group ($n = 29$), the focal child had an IQ of 85 or greater on the Wechsler Preschool and Primary Scale of Intelligence, 4th edition (WPPSI-IV), and no developmental disability diagnosis, per parent report. Children in the developmental delay group ($n = 30$) met criteria for this group in one of several ways: they had an identified cognitive delay as defined as an IQ of less than 85 on the WPPSI-IV (with or without an identified developmental disability diagnosis), or they had an IQ higher than 85, but had a diagnosis or a suspected diagnosis of a developmental delay or disability per parent report (e.g., Autism Spectrum Disorder, sensory processing disorder, Down Syndrome, intellectual disability, speech delay, etc.) To participate, focal children had to be physically mobile, had to have full use of their arms and hands, and had to use at least single words to communicate.

A variety of methods were used to recruit participants, including flyers (containing detailed information about the research study) distributed to preschools

and local agencies providing services for children with special needs, flyers posted at various public locations throughout the Central Valley, and information about the research study posted on social media websites such as Facebook. Families received 3 forms of incentives to encourage participation in the study. Families received gift cards for participation in each phase of the study: $40 for participation in the initial intellectual assessment, $20 for completion of parent questionnaires, and $40 for participation in the family visit. In addition to monetary incentives, a brief written summary of the child's intellectual functioning (written by supervised and trained research assistants and/or the primary investigator) was provided, and focal children and their siblings were allowed to pick from a "prize bin" of small toys or stickers (each with a value of less than $1) each time they visited the university. As no deception was involved, debriefing was minimal, and only provided to families who did not agree to continue in potential future phases of the study (because the full study is predicted to be a longitudinal study). The procedure for this study was approved by the Stanislaus State University Psychology Internal Review Board (IRB Approval #P-16-24).

Measures

Wechsler Preschool and Primary Scales of Intelligence, 4th Edition (WPPSI-IV; Wechsler, 2012)

The WPPSI-IV is a test of intelligence used in children ages 2 years, 6 months to 7 years, 7 months. Specifically, the WPPSI-IV measures cognitive development for preschoolers and young children. There are two age bands; (2:6-3:11 and 4:0-7:7) and

three levels of interpretation for each age band (Full scale, Primary Index scale, and Ancillary Index). To obtain a Full-Scale IQ, children are administered a series of subtests pertaining to verbal skills (e.g., identifying words when provided with a series of pictures, answering questions such as "what animal has feathers") and non-verbal cognitive skills (e.g., recognizing patterns, making puzzles) as well as processing speed (e.g., quickly and accurately completing grapho-motor tasks) and working memory (e.g., accurately identifying shapes shown to the child a few seconds before). Correct responses by the child are used to obtain raw scores for subtests (e.g., "Information," "Bug Search"), which are then converted to scaled scores using norms for same-aged peers. Scaled scores range from 1-19, have a mean of 10, and a standard deviation of 3, with scores between 7-13 considered average. Scaled scores are then summed and compared to peer norms in order to obtain a full-scale IQ (FSIQ) score. FSIQ scores range from 40 to 160, have a mean of 100, and have a standard deviation of 15 points, indicating that scores between 85 and 115 are considered average.

The WPPSI-IV has been shown to be both reliable and valid according to multiple research studies (Wechsler, 2012). Internal consistency of the Full-Scale IQ score is high (Cronbach's $\alpha = .88$), indicating adequate reliability (Canivez, 2013). This measure has also shown strong validity ($r = .86$) when compared to earlier versions of the measure, and strong validity ($r = .81$) when compared with other measures such as the Differential Ability Scales (DAS-II; Wechsler, 2012).

In the current study, the WPPSI-IV Full-Scale IQ (FSIQ) test results were used, along with parent report of disability, to group children into either the "developmental delays" or "typically developing" group. WPPSI-IV scores of less than 85 grouped a child into the "developmental delays" group, though a child may also have met criteria for this group if they had an IQ at or above 85, but their parent reported a diagnosed or suspected condition such as ASD, intellectual disability, Down Syndrome, sensory processing disorder, speech delay, or other developmental delay or disability. For reasons of test security, the WPPSI record form is not appended to this document. However, if desired, copies of the examiner record form can be made available for review.

Center for Epidemiologic Studies Depression Scale (CESD-R, Radloff, 1977; CESD-R, Eaton, Smith, Ybarra, Muntaner, & Tien, 2004)

The CESD-R is an assessment used to measure depression symptoms in the general population (See Appendix A). The measure includes 20 items and nine subscales that specifically measure sadness (dysphoria), loss of interest (anhedonia), appetite, sleep, thinking/concentration, guilt (worthlessness), fatigue, agitation, and suicidal ideation. To obtain a score, participants had to report answers to questions, such as "I felt depressed," "I felt sad," and "I felt fidgety." The response values for each question are: not at all or less than one day = 0; 1-2 days = 1; 3-4 days = 2; 5-7 days = 3; nearly every day for 2 weeks = 3. This measure contains no reverse scored items. The total score is calculated as a sum of all 20 questions. The range of possible scores is between 0 and 60, with a cutoff score of 16 or higher across all 20 questions.

The higher the score, the higher the depression symptoms. It is possible to create up to nine subscale scores from this measure. However, for purposes of this study the total score will be used to measure depression. The total score, rather than scores from specific subscales, has the capability of measuring the different manifestations of depressive symptoms as one unit of measure.

The CESD-R has shown to be a reliable and valid measure. It has high internal consistency (Cronbach's α = .92 - .93) indicating good reliability (Van Dam & Earleywine, 2011), and this measure has also shown strong validity when compared to earlier versions of the measure (Eaton, Smith, Ybarra, Muntaner, & Tien, 2004). The measure has strong psychomoetric properties that are comparable with the Hamilton Rating Scale (HAM-D; (Hamilton, 1960), Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996), and Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001), and some say it is more representative of depression than the other measures (Choi, Schalet, Cook, & Cella, 2014; Shafer, 2006). The CESD-R also had high internal consistency in the present sample of mothers (α= .93) and fathers (α=.88).

Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988)

The MSPSS is a self-report scale that assesses perceived social support from friends, family and significant others (See Appendix B). It includes 12 questions that the participant will answer based on their feelings about statements, such as "My family really tries to help me," "I get the emotional help and support I need from my

family," and "I can talk about my problems with my friends." The participants answered the questions using a Likert-type scale ranging from 1 to 7 (e.g., 1= very strongly disagree, 7= very strongly agree). The MSPSS is scored by summing across items related each type of support and dividing by 4 (significant other subscale = items 1, 2, 5, & 10, friends subscale = items 6, 7 9, & 12, family subscale = items 3, 4, 8, & 11). This measure contains no reverse scored items. For the current study, a global social support score will be calculated by summing all 12 items, then dividing by 12 (global score can range from 1-7), with high scores on this scale indicating high levels of perceived social support. The global social support score encompasses various social support facets that are all important for measuring informal social support. Measuring specific subscales would yield results that partially encompass social support.

The MSPSS shows good internal consistency for the three subscales (α = .91 for significant other, α = .87 for family, and α = .85 for friends) and for the total scale (α = .88; Zimet et al., 1988). Good test-retest reliability has also been shown for the subscales (α = .72 for significant other, α = .85 for family, and α = .75 for friends) and for the total scale (α = .85; Zimet et al., 1988). The MSPSS also showed good concurrent validity when compared with the Social Support Behaviors Scale (SS-B), with correlation coefficients ranging from .13 to .77 (Kazarian & McCabe, 1991). When measured against the BDI for construct validity, an inverse correlation with depression scores (r = -.25) was found, verifying the constructs validity (Kazarian &

McCabe, 1991). The global social support scale demonstrated good internal consistency in the present sample of mothers ($\alpha = .96$) and fathers ($\alpha = .95$).

Demographic Questionnaire

The Family Information Form is a demographic questionnaire with common demographic elements such as: age, gender, race/ethnic background, household income, and education level (See Appendix C). The questionnaire was created for use in the current study.

Child Behavior Checklist (CBCL; Achenbach, 2000)

Mothers and fathers rated their child's behavior using the Child Behavior Checklist 1 ½ - 5 (CBCL 1 ½ - 5; Achenbach, 2000). The CBCL is used to provide ratings of child problem behaviors (e.g., anxiety, withdrawal, depression, aggression, rule-breaking, attention problems, etc.) for their children aged 18 months to 5 years. The measure has 99 items, using a 3-point scale to measure how true the particular behavior listed in each item is for the focal child (0 = not true, 2 = often true). Raw scores are calculated by summing all items that are scored for each of the subscales (internalizing, externalizing, and total behavior). Raw scores can then be compared to average scores based on child age to create t-scores for internalizing, externalizing and total behavior. For the present study, the t-score for total child behavior was used as a covariate in relevant analyses. Based on previous research, the CBCL has consistently demonstrated good reliability and validity in measuring parent perceptions of child behavior (e.g., Baker et al., 2003).

Design

The study was a correlational and cross-sectional study. The participant variables were gathered from the demographic questionnaire. Specifically, participant family role (e.g., mother or father) was used for the purposes of this study. One predictor variable was developmental group, a categorical variable determined by either the WPPSI-IV or parent report. There were two levels of the developmental group variable: Developmental Delay (DD) and Typically Developing (TD). Children with an IQ less than 85 or whose parent reported suspected or diagnosed developmental disability or delay were in the DD group. Children with an IQ higher than 85 were in the TD group if parent has not reported a suspected or diagnosed developmental disability or delay. Perceived social support, measured by scores on the MSPSS, was a second predictor variable that was tested as a moderator of the relation between child developmental delay and parental depression. This variable was continuous. The outcome variable of parental depression was continuous and was measured using summary scores on the CESD-R.

Procedure

The current study was drawn from a larger study of family interaction patterns in families of children with or without developmental delay. Data collection from the larger study consisted of three parts; 1) Intellectual assessment of the "focal child" (a child aged 3-5 years) using the Wechsler Preschool and Primary Scales of Intelligence, 4th Edition WPPSI-IV; 2) Video recorded observation of the family; and 3) Completion of questionnaires by each parent and the oldest sibling living in the

home (if the child was aged 7 or older). The current study used only a subset of the

parent questionnaires, and did not use the family observation data. The procedure of

the current study is described below.

After receiving IRB approval for all aspects of the study, participants were

recruited using flyers with detailed information about the study. These flyers were

distributed to preschools, local service agencies for children with developmental

needs, other public venues in the Central Valley, and were posted on social media

websites such as Facebook. After expressing interest in the research study by

contacting the laboratory by phone or email, a research assistant screened the family

for appropriateness, then set-up the initial visit with one parent and the focal child. In

order to participate in the study, children were required to be between 3-5 years old.

Children were required to use at least single words to communicate, and were

required to have use of their hands and limbs, such that they could physically

complete a large-format puzzle or put together a block tower. Families were required

to speak English during the family visit, and all questionnaires were provided in

English, due to limited availability of bilingual research staff.

Incentives were used to encourage families to participate in the study. The

incentives included $100 in gift cards, a written summary of the child's intellectual

functioning (written by a trained research assistant), and a toy or sticker (less than $1

in value) of the child's choice upon each visit, for any children participating in the

study.

During the initial visit, the research assistant or principal investigator obtained formal consent from the parent and informal assent from the child. After consent was obtained, the child was assessed either by the principal investigator (a licensed clinical psychologist) or a research assistant (masters-level graduate student of psychology) who was trained by the principal investigator. The assessment was conducted using the WPPSI-IV. After assessment, the parent(s) were given a packet of questionnaires to complete regarding family well-being, of which three were used for the present study. Questionnaires that were used for the present study include a demographic questionnaire, the Multidimensional Scale of Perceived Social Support (MSPSS), and the Center Epidemiologic Studies Depression Scale Revised (CESD-R). The parent(s) were instructed to fill out the questionnaires separately from one another, and return the completed measures at their second visit. The parent received a $40 Target gift card for participating in the developmental assessment, and the child chose an item from the "prize bin."

At the second visit, parents brought their completed questionnaire packets, and the family observation took place. The research assistant checked for any incomplete or unclear questionnaire items, and addressed them immediately with the parents to obtain a completed measure. The parent received a $40 gift card upon completion of the second visit, and the children chose an item from the "prize bin." If any items from the questionnaires were left incomplete after the second visit, the research assistant attempted to complete remaining questions via telephone. Once the

questionnaires were complete, the participants received another $20 gift card and the

written summary of the child's intellectual functioning.

<div align="center">**Data Analysis Plan**</div>

Initial zero-order correlations were run to determine relevant covariates (such

as socioeconomic status, parent age, parent race, level of education, etc.) The

"developmental group" variable was dummy-coded, with 0 representing "typically

developing" and 1 representing "developmentally delayed." Missing data were

excluded pairwise, to minimize loss of statistical power. Data were examined for

outliers; it was found that outliers had little statistical impact, so outliers were

included in the analyses. To test hypothesis 1 (developmental group will predict

parental depression), paired samples t-tests were run with developmental group as the

predictor, and either mother or father-rated depression scores as the outcome

(measured using their score on the CESD-R). Mothers' and fathers' results were run

separately. To test hypothesis 2 (that social support moderates the relationship

between child developmental group and parental depression), moderation analyses

were conducted using the PROCESS macro for SPSS (Hayes, 2013). The PROCESS

macro utilizes regression to test for moderation, which involved entering the main

predictor variable (developmental group), moderator variable (MSPSS total score),

dependent variable (CESD-R total score), and relevant covariates into the model. The

PROCESS macro created an interaction term which was included as a separate

variable in the regression by multiplying the main predictor variable and moderator

variables together after the variables were mean-centered. The dependent variable of

the regression was parent-rated depression. If the interaction was significant, moderation was supported. To test hypothesis 3 and 4, paired samples t-tests were used to examine reported social support and depression differences between mothers and fathers.

RESULTS

The sample consisted of 59 families, with 29 families of typically developing children, and 30 families of children with developmental delays. Descriptive statistics for the main variables in the study are presented in Table 1, and selected demographic information related to the sample is presented in Tables 2, 3 and 4. The average FSIQ score for children in the typically developing group was 106, and the average FSIQ score for children with developmental delays was 84. For children with developmental delays, 27 children were diagnosed with or had a suspected diagnosis of Autism Spectrum Disorder (ASD; according to parent self-report), of which 5 had a co-occurring diagnosis (such as ADHD, emotional disorder, and a language disorder). Additionally, 2 children had low FSIQ scores (between 54 and 84) with no co-occurring developmental disability diagnosis, and one child had an IQ in the normal range but had a speech delay.

Thirty mothers (primary caregivers) and 24 fathers (secondary caregivers) of children with developmental delays completed parent questionnaires, as well as 29 mothers (primary caregivers) and 26 fathers (secondary caregivers) in the typically developing group. Primary caregivers were all biological mothers, and secondary caregivers were primarily biological fathers, though 4 of the fathers were step-fathers or boyfriends of the biological mothers. Of the 59 families who completed questionnaires, 48 reported mother and father living in the same house as the focal child, and 11 reported being single-parent homes with only the mother living with the

focal child. The average age for mothers in the present sample was about 33 years, 34 years for fathers, and the average age of all focal children was about 4 years. Both mothers and fathers reported having approximately 15 total years of education, with a median yearly family income of $66,500. Regarding participant race, the sample was predominately white or Hispanic, with most of the mothers identifying as stay at home caregivers. The majority of the children were male.

Table 1
Descriptive Statistics for Main Study Variables

Variable	Typically Developing Children				Children with Developmental Delays			
	N	*M*	*SD*	Range	*N*	*M*	*SD*	Range
Mother CESD-R	29	6.10	4.56	17	30	13.03	12.76	43.00
Mother MSPSS	29	5.82	1.17	6	30	5.34	1.49	6.00
Father CESD-R	26	7.88	7.82	33	24	13.00	9.38	36.00
Father MSPSS	26	5.81	0.94	4	24	5.02	1.45	5.25

Table 2
Selected Demographic Descriptive Statistics for Present Sample

Characteristic	*M*	*SD*	Range
Mother Age	32.71	6.26	21
Mother Total Years of Education	15.37	2.95	15
Mother CBCL T-score total	52.74	13.90	62
Father Age	34.26	6.17	33
Father Total Years of Education	14.83	2.84	13
Father CBCL T-score total	53.76	11.20	46
Yearly Family Income (in dollars)	66,500		

Note. Yearly Family Income is median value.

Table 3
Descriptive Statistics for Focal Children by Developmental Group

Variable	Typically Developing Children				Children with Developmental Delays			
	N	*M*	*SD*	Min.-Max.	*N*	*M*	*SD*	Min.-Max.
FSIQ Score	30	105.93	10.46	86-121	32	83.78	19.32	53-127
Age in Years	29	3.82	0.72	3-5	30	3.85	0.79	3-5

Note. FSIQ score = Focal Child's Full Scale IQ Score according to WPPSI-IV.

Table 4
Selected Categorical Descriptive Statistics for Present Sample

Characteristic	*N*	Total %
Mother Race		
Hispanic/Latino	17	28.8
African-American	3	5.1
Asian	2	3.4
White (Non-Hispanic)	31	52.5
Other	6	10.2
Father Race		
Hispanic/Latino	20	35.1
African-American	4	7.0
Asian	1	1.8
White (Non-Hispanic)	32	56.1
Mother Employment Status		
Full-Time	19	32.2
Part-Time	9	15.3
Stay at Home Caregiver	27	45.8
Unemployed	4	6.8
Child Gender		
Male	34	57.6
Female	25	42.4

Note. Total % columns do not add to 100% due to missing data and rounding.

Before testing the hypotheses, data were examined to identify outliers using the outlier labeling rule (Hoaglin & Iglewicz, 1987). Outliers were detected, so the

data were analyzed separately, both with and without outliers included in the data set.

Results did not differ significantly when outliers were excluded from the sample,

therefore the reported final data analyses comprise all participants, including outliers.

No multivariate outliers were found.

Zero-order correlations were initially run to begin to characterize relations

between key variables of interest (see tables 5 and 6). Correlations were run

separately for mothers and fathers. For mothers, analyses indicated a statistically

significant relationship between developmental group and mother's CESD-R score

(see Table 5), such that mothers of DD children showed higher CESD-R scores. For

mothers, results indicated no correlation between MSPSS and developmental group

or CESD-R. For fathers, results indicated a statistically significant relationship

between developmental group and father's CESD-R scores (see Table 6), such that

fathers of DD children showed higher CESD-R scores. Also, a significant correlation

was found between developmental group and MSPSS score, indicating that fathers of

DD children reported lower MSPSS scores. Finally, a significant correlation was

found between MSPSS and CESD-R, such that fathers with lower MSPSS scores

reported higher CESD-R scores (see Table 6).

To determine which demographic and participant variables served as

significant covariates to the dependent variable (CESD-R total score), correlation

analyses were conducted separately for mothers and fathers (Tables 5 & 6). For

mothers, analyses revealed that mothers' total years of education was significantly

correlated with mothers' CESD-R score, such that fewer years of education was

associated with higher depression scores. Mothers' rating of the child on the CBCL was also highly correlated with mothers' CESD-R scores, such that higher ratings of child behavior problems were associated with higher CESD-R scores. Based on prior research (Bergström, 2013; Cairney, Boyle, Offord, & Racine, 2003; Ertel et al., 2011; Lee, Anderson, Horowitz, & August, 2009), mother's age, race (white vs. non-white), marital status (partnered vs. unpartnered), employment (employed vs. unemployed), and yearly family income were also included as covariates, although correlation analyses in the current study indicated none of these variables were significantly correlated with mothers' CESD-R scores.

For fathers, correlation analyses revealed that fathers' ratings of their child on the CBCL were correlated with fathers' CESD-R scores, such that higher child behavior problems were associated with higher father depression. Also, a significant correlation was found between the mothers' and fathers' CESD-R scores, such that higher depression in mothers was associated with higher depression in fathers. Based on prior research (Bergström, 2013; Ertel et al., 2011; Lee, Anderson, Horowitz, & August, 2009), father's age, race, years of education, and yearly family income were also included as covariates, although correlation analyses in the current study indicated none of these variables were significantly correlated with fathers' CESD-R scores.

Table 5

Results of Correlation Analyses for Mothers

	1	2	3	4	5	6	7	8	9	10
1. Dev. Group[a]	-									
2. MSPSS Score	-.18	-								
3. CESD-R Score	.34**	-.18	-							
4. Mother Age	-.08	.10	-.22	-						
5. Mother Race[b]	-.19	.33*	.02	.24	-					
6. Yrs of Education	-.47**	.27*	-.33*	.32*	.19	-				
7. Marital Status[c]	.33*	-.01	.02	-.03	-.13	-.38**	-			
8. Employment[d]	.17	.11	.11	-.01	-.15	-.28*	-.02	-		
9. CBCL Rating	.50**	-.16	.61**	-.09	-.07	-.28*	.29*	.06	-	
10. Yearly Family Income	-.33*	.27*	-.24	.34	.18	.66**	-.43**	-.24	-.21	-

Note. Dev. Group = Developmental Group.
[a]0 = typically developing and 1 = developmental delay. [b]0 = non-white and 1 = white.
[c]0 = partnered and 1 = unpartnered. [d]0 = unemployed and 1 = employed.
*p < .05. **p < .01.

Table 6
Results of Correlation Analyses for Fathers

	1	2	3	4	5	6	7	8	9
1. Dev. Group[a]	-								
2. MSPSS Score	-.31*	-							
3. CESD-R Score	.29*	-.38**	-						
4. Father Age	.16	.30*	-.15	-					
5. Father Race[b]	.02	-.04	.08	.12	-				
6. Yrs of Education	-.29*	.33*	-.25	.45**	.17	-			
7. CBCL Rating	.54**	-.47*	.35*	-.14	-.15	-.35*	-		
8. Mother CESD-R	.34**	-.18	.40**	-.25	.27*	-.23	.35*	-	
9. Yearly Family Income	-.33*	.25	-.24	.36**	.05	.57**	-.14	-.24	-

Note. Dev. Group = Developmental Group.
[a]0 = typically developing and 1 = developmental delay. [b]0 = non-white and 1 = white.
*p < .05. **p < .01.

To test the first hypothesis, independent samples t-tests were conducted separately for mothers and fathers to determine whether or not depression scores for parents of children with developmental delays differed from parents of children without developmental delays. Homogeneity of variances was not assumed for mothers $F(1, 57) = 20.39, p < .001$, but was assumed for fathers $F(1, 48) = 1.48, p = .23$. For mothers, analyses (for equal variances not assumed) revealed statistical significance between the two groups ($t(36.52) = -2.80, p = .01$) suggesting that for this sample, mothers of children with developmental delays ($n = 30, M = 13.03, SD = 12.76$) reported significantly greater depression scores than mothers of typically

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developing children ($n = 29$, $M = 6.10$, $SD = 4.56$). The Cohen's d was -.93, which is a large effect size. For fathers, analyses revealed statistical significance between the two groups (t (48) = -2.10, $p = .04$) suggesting that for this sample, fathers of children with developmental delays ($n = 24$, $M = 13.00$, $SD = 9.38$) reported significantly greater depression scores than fathers of typically developing children ($n = 26$, $M = $ 7.88, $SD = 7.82$). The Cohen's d was -.61, which is a medium effect size.

Multiple regression analyses using the PROCESS macro were conducted to test the second hypothesis (that social support would moderate the relationship between child developmental group and parent depression scores). Prior to conducting the analyses, the predictor variables (developmental group and mother or father's total score on the MSPSS) were mean-centered to reduce the influence of multi-collinearity between variables. To test the moderating role of social support on the relation between child developmental group and mother and father depression scores, an interaction variable was created by multiplying the centered developmental group variable by the centered MSPSS variable for both mothers and fathers. Data for mothers and fathers were run separately, with the developmental group variable entered as the predictor variable, mother or father MSPSS score entered as the moderator variable, mother or father CESD-R total score entered as the dependent variable, and relevant covariates included. Contrary to the hypothesis, results of the regression revealed that the interaction between child developmental group and social support did not significantly predict depression scores for mothers, $\Delta R^2 = 0.0003$, $F(1, 43) = 0.02$, $p = .89$ or fathers, $\Delta R^2 = 0.02$, $F(1, 43) = 1.17$, $p = .29$, providing no

support for the hypothesis that social support moderated the relationship between child developmental group and mother and father depression (Table 7 & 8).

Despite lack of evidence for moderation, regression analyses indicated several relevant relations between variables. Mothers' ratings on the Child Behavioral Check List (CBCL) were found to significantly predict mothers' CESD-R score (Table 7), indicating that as child behavior problems increased so did the mother's total CESD-R score. For fathers, mothers' score on the CESD-R was found to significantly predict fathers' CESD-R score, indicating that as mother depression symptoms increase, so do father depression symptoms. Additionally, the relation between fathers' MSPSS and CESD-R score showed a trend toward significance, indicating that as fathers' social support decreases, fathers' depression score increases. Results of the regression analyses are depicted in Table 7 for mothers and Table 8 for fathers.

Table 7

Results of Regression Analysis for Moderation to Test Hypothesis 2 for Mothers

Model & Variable	B	SE	t
Developmental Group	0.53	2.90	0.18
Mother MSPSS Total Score	-0.55	0.94	-0.59
Interaction: Dev. Group x MSPSS	-0.26	1.79	-0.14
Mother Total Years of Education	-0.31	0.47	-0.67
Father CESD-R Total Score	0.24	0.14	1.67
Child CBCL score (mother-report)	0.31[*]	0.10	2.93

Note: Dependent Variable = Mother CESD-R Total Score (N = 50)
R^2 For Entire Model = .36
[*]$p < .05$.

Table 8

Results of Regression Analysis for Moderation to Test Hypothesis 2 for Fathers

Model & Variable	B	SE	t
Developmental Group	0.28	2.77	0.10
Father MSPSS Total Score	-2.24[†]	1.11	-2.02
Interaction: Dev. Group x MSPSS	2.20	2.04	1.08
Mom CESD-R Total Score	0.29[*]	0.13	2.23
Child CBCL Score (father-report)	0.03	0.14	0.23
Child Gender	-2.82	2.53	-1.12

Note: Dependent Variable = Father CESD-R Total Score (N = 50)

R^2 For Entire Model = .31

[*]$p < .05$. [†]$p < .10$

Paired samples t-tests were used to test the third hypothesis that overall, mothers ($M = 5.64$, $SD = 1.35$) would report lower perceived social support than fathers ($M = 5.43$, $SD = 1.26$). Results indicated that mothers' and fathers' social support scores did not significantly differ ($t (49) = .95$, $p > .05$).

Paired samples t-tests were also used to test the fourth hypothesis that overall, fathers ($M = 10.34$, $SD = 8.90$) would report fewer depression symptoms than mothers ($M = 9.10$, $SD = 9.60$). Results indicated no significant differences between mother and father depression scores ($t (49) = -.86$, $p > .05$).

DISCUSSION

The purpose of the present study was to examine whether having a child with developmental delays predicted parent depression, and whether informal social support would serve to moderate the relation between a child's developmental group and parent depression. Additionally, the study investigated potential differences in mothers' and father's perceived social support and depression symptoms. The results of the present study provided support for one, but not all of the proposed hypotheses. For hypothesis 1, mothers and fathers of children with developmental delays reported significantly greater depression scores than mothers and fathers of typically developing children. Hypotheses 2, 3, and 4 were not supported. Despite the lack of support for other hypotheses in the present study, correlation analyses revealed relevant relationships between variables, and factors which may contribute to parent depression for parents with developmental delays. Further, the results of the present study add to the current body of literature regarding depression for both mothers and fathers of children with developmental delays, and also raise important questions as to the function of social support in protecting parents from depression.

The first hypothesis of the current study was that parents of children with developmental delays would report higher depression scores than parents of typically developing children. This was supported for both mothers and fathers, suggesting that parents of children with developmental delays have significantly higher depression than parents of typically developing children. This finding is understandable, since

parents of children with developmental delays experience more caregiving demands (e.g., physical, emotional, and financial responsibilites) than parents of typically developing children (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011; Murphy, Christian, Caplin, & Young, 2007; Seltzer, Greenberg, Floyd, Pettee, & Hong, 2001).

Children with developmental delays pose unique challenges (e.g., different patterns of behavior problems) for parents (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011; Konst, Matson, Goldin, & Williams, 2014), which could influence the risk of depression experienced by parents. Diagnoses of developmental delay are often associated with differing severities of behavior problems (Molloy et al., 2009; Olsson & Hwang, 2001). For instance, children with ASD typically have more severe behavior problems than children with Down Syndrome, which increases the risk of depression for parents of children with ASD (Molloy et al., 2009; Olsson & Hwang, 2001). Furthermore, children with Down Syndrome typically have more severe behavior problems than typically developing children, which increases risk of depression for parents of children with Down Syndrome (Molloy et al., 2009; Olsson & Hwang, 2001) as compared to children without developmental disorders. The developmental delay diagnosis of children in the current study was primarily ASD, indicating that the parents of the present study are exposed to a high rate of caregiving demands, behavior problems, and associated stress (Falk, Norris, & Quinn, 2014). Indeed, results of regression analyses in the current study indicated that child behavior problems significantly predicted parent depression for mothers (see Table 7). Thus, the results of the present study are consistent with previous research on the

predictive relationship between ASD and parent depression (Firth & Dryer, 2013;

Ingersoll & Hambrick, 2011; Kelly, Garnett, Attwood, & Peterson, 2008).

A large body of research exists supporting the predictive relation between

child developmental group and maternal depression (Bromley, Hare, Davison, &

Emerson, 2004; Feldman, et al., 2007; Halstead, Griffith, & Hastings, 2018).

However, for fathers, due to the paucity of research on paternal depression (Phares,

Lopez, Fields, Kamboukos, & Duhig, 2005), there was little evidence to indicate

whether or not the hypothesis linking child developmental delay and depression

would be supported. Given the previously mentioned evidence that child

developmental delay is a significant predictor of maternal depression, it was predicted

in the current study that fathers of children with developmental delays would also

experience higher depression. Furthermore, other research has found significant

relationships between child developmental group and other paternal mental health

distress. For instance, fathers of children with developmental delays often experience

significantly higher levels of stress than fathers of typically developing children

(Huang, Chang, Chi, & Lai, 2013). When fathers are highly stressed, they are more

likely to exhibit depression symptoms than are fathers with lower levels of parenting

stress (Windle & Dumenci, 1997). Additionally, studies have shown that fathers of

children with developmental delays have higher anxiety than fathers of typically

developing children (Rejani & Ting, 2015). Anxiety and depression are highly related

disorders, with anxiety symptoms often being indicative of depression (Endler,

Denisoff, & Rutherford, 1998; Endler & Macrodimitris, 2003; Hranov, 2007). Fathers

are often understudied and overlooked when examining variables such as depression (Kim & Swain, 2007), perhaps because depression is considered an emotional disorder that focuses on more internalizing than externalizing behaviors, and expression of internal behaviors is considered less socially acceptable for men than for women (Nadeau, Balsan, & Rochlen, 2016). Indeed, men often exhibit more externalizing behaviors than women (Rabinowitz & Cochran, 2008); however, focusing only on these behaviors will neglect other possible emotional behaviors (e.g., internalizing) that have serious implications for a father's mental health. Examining depression in men, and specifically men who are fathers, will provide valuable information about a father's experience of depression.

While the present study adds to existing research on how parent depression is greater for parents of children with developmental delays, it also examined how social support is associated with depression in parents of children with and without developmental delays. The present study examined informal social support as a moderator of parental depression when parents do or do not have a child with developmental delays. Prior research indicated that social support may influence the relationship between a child's developmental group and parental depression (Heller, Hsieh, & Rowitz, 2000; Lee, Anderson, Horowitz, & August, 2009; Schury, et al., 2017). In the current study, it was hypothesized that informal social support would serve to moderate the relationship between child developmental group and parent depression, such that, for parents of children with developmental delays, high social support would mitigate parental depression symptoms more than for parents of

children without delays. Results of the current study failed to support the hypothesis, showing no evidence that informal social support was a moderator of the relation between child developmental group and parent depression. Therefore, for this particular population of parents, it would appear that social support did not serve to buffer parents of children with developmental delays from higher depression symptoms. This may suggest that the variables are related to each other in a different way than what was predicted.

A large body of research exists examining the predictive relationship between child developmental delays, social support, and parental depression (Biederman, et al., 2001; Falk, Norris, & Quinn, 2014; Halstead, Griffith, & Hastings, 2018; Leahy-Warren, McCarthy, & Corcoran, 2012). However, little is known about social support as a moderator variable, especially when influencing the relationship between child developmental group and parent depression, making it difficult to predict the outcome when examining these variables. It is possible that, as indicated by the current study's results, social support does not moderate the relation between developmental delay and parent depression symptoms. Instead, social support may serve as a moderator for other variables that are closely related, but not the same as those in the current study. Developmental delays and behavior problems are closely related, as behavior problems have shown to be representative of developmental delays, and more severe behavior problems are often predictors of parental depression (Eisenhower, Baker, & Blacher, 2005). Perhaps, then, child behavior problems are a stronger predictor of parent depression than child developmental delay, and perhaps that relation, in turn,

may be moderated by social support. As previously mentioned, the covariate of child behavior problems in the current study significantly correlated with depression symptoms, such that an increase in child behavior problems was associated with an increase in mother depression, which is supported by previous research (Eisenhower, Baker, & Blacher, 2005). Social support has been shown to predict improvement in child behavior problems (Tichovolsky, Arnold, & Baker, 2013). In this way, social support may not moderate the relation between child developmental group and parent depression, but may still play an important role in predicting parent depression or other related family variables.

There may be other variables that serve a more powerful role in buffering parental depression for families of children with delays. Perhaps, rather than social support, marital satisfaction (Hollist, Miller, Falceto, & Fernandes, 2007), a parent's resiliency, or parent coping skills (Greeff & van der Walt, 2010), serve as an intervening variable between developmental delays and parental depression, given the evidence that all have been shown to lessen parent depression. There is little evidence of these factors being used as moderators, as in the current study, but they have been shown to help families adapt to having a child with developmental delays (Greeff & van der Walt, 2010). Overall, moderation studies are limited when examining the relation between child developmental group and parent depression, making this an important area for future research.

Despite the limited evidence of social support being used as a moderator, and the possibility that there was truly no moderation effect in the current study, it is also

possible that the present study may have missed a true moderation effect because of

the small sample size and associated low statistical power. It is understood that

sample size plays a crucial role in the ability to detect main effects, and large main

effects are noted to be an important factor in detecting moderation (Whisman &

McClelland, 2005). Based on existing research, moderate to large effect sizes have

been found when examining the relation between social support and depression

(Cohen's d = .54; Feldman, et al., 2007). In the current study, small effect sizes were

observed for the interaction between developmental group and social support when

predicting parent depression. Mothers' (Cohen's d = -0.03) and fathers' (Cohen's d =

0.25) results indicated small effect sizes for the interaction of developmental group

and social support predicting depression. Given the small effect sizes observed, it is

likely that a larger sample would allow for greater power to detect a true effect, at

least for fathers. Interestingly, fathers' analyses also showed a nearly significant (p =

.05) association between social support and depression. Though this is not the same

as significant moderation, it could be considered an important "building block" for

the moderation pathway (along with the observed significant correlation between

developmental group and depression). Effect sizes observed in the current study

suggest that increasing sample size may help detect a moderation effect for the

observed variables, especially for fathers.

It is also possible the current study's sample may not have demonstrated an

adequate range of depression scores needed to detect moderation. It is important for a

wide range of scores to be present for both the moderator and outcome variables

when trying to detect interactions (McClelland & Judd, 1993), which was not the case for the current study. In fact, results in the current study indicated a floor effect for CESD-R scores for parents of typically developing children, and for parents of children with developmentally delays (see Table 1). The CESD-R has a cutoff score of 16; any score lower than 16 would not be considered a clinical level of depression, and a score within the range 16-60 would be considered indicative of a potentially clinical level of depression. Based on previous research, when examining the relation between social support and depression, it has been noted that higher clinical levels of depression often need higher levels of social support to lessen the associated mental distress (Verbakel, Metzlthin, & Kempen, 2018). Parents in the current study sample had primarily sub-clinical levels of depression, regardless of the child's developmental group ($M = 9.63$, $SD = 10.18$ for mothers, and $M = 10.34$, $SD = 8.90$ for fathers). Though this is reasonable to expect from a non-clinical sample such as that of the current study, this restricted range may have made it unlikely to detect a moderation effect. In addition to a floor effect, a ceiling effect was detected for MSPSS scores for parents of typically developing children, and for parents of children with developmentally delays (see Table 1). This indicates that, in general, parents of children with and without delays in the current study generally perceived themselves as having quite high social support. This is not consistent with past literature, which indicates parents of children with delays will report significantly less social support (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011). Consequently, since parents with and without children with developmental delays displayed

generally sub-clinical levels of depression and high levels of informal social support, it is possible that the moderating role of such support on parent depression could not be detected due to a lack of sufficient variability.

Another possible reason for the lack of moderation could be that other forms of social support, which were not examined in the current study, may have a stronger relation to both child developmental group and parent depression. The MSPSS measure used in the current study is a measure of informal social support that focuses primarily on emotional support from friends, family, and significant others. Indeed, the overall high scores in the current study indicate that parents in the current study perceive that emotional support is available to them. Perhaps, parents' scores on the separate subscales would provide a closer examination of variability of social support in the current study. In fact, previous research has shown that the "friend" subscale of the MSPSS measure is more closely related to parent depression and child developmental delays than the other subscales (Al-Gamal & Long, 2013). While social support subscales were not examined in the current study, consideration should be given to different facets of social support, such as "friend" support, that are possibly more influential on the relation between children with developmental delays and parental depression, than a total social support score. Another facet of informal social support to be considered is instrumental support, which is providing practical help, such as money, in-kind assistance, childcare, and other explicit interventions during times of need (Choi & Pyun, 2014). Given the caregiving demands that parents of children with developmental delays often experience, instrumental support

may play a pivotal role in raising a child with developmental delays, and may protect the parents from experiencing depression.

Perhaps, a measure that includes factors of formal social support could influence parental depression more than informal social support (which was measured in the current study), especially for parents of children with developmental delays. To better understand the influence formal social support has on parental depression and child developmental delays, consideration should be given to the caregiving differences between parents of children with developmental delays and parents of typically developing children. As previously discussed, parents of children with developmental delays have increased caregiver demands (e.g., physical, emotional, and financial responsibilites) as compared to families of children without developmental delays (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011; Murphy, Christian, Caplin, & Young, 2007; Seltzer, Greenberg, Floyd, Pettee, & Hong, 2001). These parents may need more professional help that formal social support provides, such as professional services that increase parent awareness and understanding of children with developmental delays (Gottlieb B. H., 1983; Rodrigo, Martín, Máiquez, & Rodríguez, 2007). Additionally, formal support can include professional psychological care for children as well as parents, which could potentially decrease the level of depression that is experienced by parents. Thus, the type of social support, specifically formal social support, is a potential factor that could influence the relationship between parent depression and child developmental group. While there is evidence supporting the moderating effects of both informal and formal social

support relieving caregiving burden and improving well-being, it is important to note that past research suggests formal social support had greater effects on well-being than informal social support (Verbakel, Metzlthin, & Kempen, 2018). However, the aforementioned study included different sample characteristics (e.g., geriatric focal group) which were not found in the present sample. Knowing that the type of support has different moderation effects, it could be informative to include a measure of formal social support in future moderation studies. In this way, social support may still be considered a moderator, despite lack of evidence in the current study.

In addition to the type of social support, the heterogeneous method of grouping participants may have impacted the relation between child developmental group and parent depression. Grouping participants by delay vs. no delay (as in the current study), and not by specific developmental disability diagnosis (as used in some other studies), may have impacted the predictive potential of the developmental group, limiting its ability to significantly predict the outcome (CESD-R). Grouping children by their specific diagnosis may provide more clearly defined differences between children with and without developmental delays. Developmental delays have often been delineated based on characteristics of the delay, thus grouping individuals into differing diagnostic groups (e.g., typically developing, undifferentiated developmental delays, Down syndrome, autism, cerebral palsy; Eisenhower, Baker, & Blacher, 2005). Differing characteristics of the delays include combinations of a child's IQ, behavior problems, communication behaviors, and physiological demands (Eisenhower, Baker, & Blacher, 2005; Fodstad, Matson, Hess, & Neal, 2009).

However, there are inconsistencies in defining and distinguishing developmental delays based on the various combinations of characteristics that constitute a delay, which is why the current study chose to examine developmental delay based on two dichotomous groups. In addition, a heterogenous sample is more reflective of the diverse and varied real-world population of individuals with developmental delays. Moreover, in the current study, the majority of children with developmental delays (90%) met the criteria for ASD diagnoses, and the small number of other participants who met the criteria for other types of developmental delays did not allow for separation into differing developmental categories due to concerns of low power in statistical analyses.

When considering potential problems with measurement of the predictor variable, it is also relevant to note that the current study used parent self-report of developmental delay as a main component of grouping a child into the typically developing or developmentally delayed group. It could be argued that this may not be as accurate as using assessment by a mental health or medical provider. Parent report is a frequently used definition of developmental delay in research on these families, however (Falk, Norris, & Quinn, 2014; Ingersoll & Hambrick, 2011), and parents have daily interactions with their child that allow for a thorough understanding of their child's idiosyncracies, perhaps even more so than professionals whose time with the child is limited. Additionally, the majority of these children were reported to have a diagnosis of a specific developmental disability which was presumably provided by a medical, educational or mental health provider.

Another aim of the current study was to analyze social support separately for mothers and fathers, exploring whether social support scores differ between mothers and fathers. Results failed to support hypothesis 3, that mothers will report lower perceived social support than fathers, which indeed, differs from previous research (Hartley & Schultz, 2015; Kwon, Han, Jeon, & Bingham, 2013). Perhaps, the finding in the current study is accurate, that perceived amounts of social support do not actually differ between mothers and fathers. It could be that mothers and fathers need different types of social support (e.g., informal or formal; Hartley & Schultz, 2015; White & Hastings, 2004). This notion is supported by previous research that mothers often report needing informal social support (e.g., spousal and family support; Pao, Guintivano, Santos, & Meltzer-Brody, 2019), and fathers report needing practical support (e.g., psychological and educational services; Letourneau et al., 2012). Given these apparent differences between mother and father needs of differing types of social support, it stands to reason that different types of social support affect mothers and fathers differently. Thus, needing different types of social support may be more influencial on parents than different levels of social support.

Research implicating preferred types or amounts of social support contribute valuable information regarding differences between mothers and fathers, especially for parents experiencing depression (Lindsey & Barry, 2018; Siklos & Kerns, 2006). Furthermore, studies with a wide range of social support scores will undoubtedly provide more insight regarding social support differences between mothers and fathers. However, the current sample had a limited range of social support scores,

with parents reporting primarily high levels of perceived social support, regardless of parent gender or the child's developmental group. The limited range of scores made it difficult to discern whether there could, indeed, be significant differences between mothers' and fathers' level of social support that were simply undetectable in the current study. Despite the non-significant finding, it is remarkable and reassuring that informal social support was consistently high in the current study, as prior research indicates informal social support serves to protect families of children with or without developmental delays from many adversities.

Lastly, another aim of the current study was to examine depression separately for mothers and fathers, exploring whether CESD-R scores differ between mothers and fathers. Results failed to support hypothesis 4, which posited that mothers would report higher depression scores than fathers. This finding may, in fact, be accurate, especially given existing evidence that a significant positive correlation exists between mothers' and fathers' depression (Goodman, 2004). Indeed, the present study confirmed that mother and father depression are positively correlated (see Table 6), such that as mother depression increases, father depression increases as well. While this finding was significant, it is important to note that the present sample reported overall low depression scores. The limited range in depression scores in mothers or fathers may have made it difficult to discern a difference between scores. Indeed, there is evidence from past research that mothers report higher depression scores than fathers (Falk, Norris, & Quinn, 2014). Extensive research exists on maternal depression, specifically postpartum depression (Nagy, Molnar, Pal, &

Orvos, 2011; Paulson, Dauber, & Leiferman, 2006), but postpartum depression is a condition that is more often studied in mothers than fathers (Kim & Swain, 2007). Overall, research on paternal depression is lacking, limiting what conclusions can be made about differences between mothers and fathers (Phares, Lopez, Fields, Kamboukos, & Duhig, 2005). Certainly, if the results of the current study are accurate in that mother and father depression scores do not differ, but are positively correlated, this would have serious implications for families of children with developmental delays, as depression in both parents can certainly impact the ability to care for children who already pose unique challenges for parents.

Although no differences were found between mother and father depression or social support scores, the current study revealed other notable differences between mothers and fathers. Fathers' social support scores were correlated with their depression scores, such that higher social support scores were associated with lower depression scores, whereas these variables were not significantly correlated for mothers. Additionally, for fathers but not for mothers, social support differed by developmental group, such that fathers of children with developmental delays reported lower social support. If, in fact, low social support is related to children with developmental delays and higher depression scores for fathers, then it is possible that social support could play a pivotal role in the well-being for fathers of children with developmental delays.

There is one limitation that has not yet been mentioned, but is relevant to consider in the discussion of the results of the present study. A cross-sectional design

does not allow for a thorough understanding of the relationships across time.

Certainly, child development occurs over time for children with and without

developmental delays, and the different developmental stages could impose different

caregiving demands and challenges for parents over time. Additionally, the

correlational results of a cross-sectional design limits generalizability and reduces

ability to infer causality. Though this type of study does not provide as in-depth an

understanding as longitudinal research, the current study and findings offer a snapshot

of a parent's experience in parenting young children. Additionally, it offers their

perceptions of informal social support and their experience of depression symptoms

during this particularly challenging child developmental stage.

Implications and Future Directions

The current study confirms prior research that many parents of children with

developmental delays report increased depression. Interestingly, it also confirms that

paternal depression is related to maternal depression. Most research only includes the

primary caregivers, which is often the mother. Including fathers, as in the current

study sample, provides further insight to parents' experience of depression, especially

for parents of children with developmental delays. The findings of the present study

also indicate the need for more research on paternal depression, particularly for

fathers who have children with developmental delays. Given the known prevalence of

maternal depression (Ertel, Rich-Edwards, & Koenen, 2011), its influence on paternal

depression (Goodman, 2004), and the correlation between mother and father

depression in the current study, it would be advantageous to continue including

fathers in future research on parent depression. This would deepen our understanding of men's experience with depression in themselves, with their spouse's depression, as well as their experience of depression in the context of fatherhood. Specifically, it would be helpful to know more about how mother and father depression symptoms are similar or different, hopefully uncovering new insights regarding internalizing behaviors in men.

Though, in the current study, parents of children with developmental delays reported significantly higher depression scores than parents of typically developing children, the depression scores for most parents were at sub-clinical levels. Thus, it would be helpful for future research to include parents with clinical levels of depression. A larger sample or a sample with a larger variance of depression scores could potentially make differences between mothers and fathers more discernable. Furthermore, a longitudinal study could provide a more thorough understanding of parents' depression throughout their child's development, providing clarity about child developmental level predictive factors for parents at risk for depression.

The consistent finding that parents of children with developmental delays experience increased depression symptoms when compared with parents of typically developing children underscores the importance of providing support for parents of children with developmental delays. Parents of children with developmental delays have differing challenges than parents of typically developing children, so it would be beneficial to decrease these challenges by providing more instrumental support for these families. As previously noted, a specific predictor of depression in parents of

children with developmental delays is behavior problems (Eisenhower, Baker, & Blacher, 2005; Feldman, et al., 2007; Fodstad, Matson, Hess, & Neal, 2009). Perhaps parents of children with developmental delays need more support with child behavior problems to decrease their risk of depression. Based on previous research, support such as parent education about behaviors problems and training to manage the behavior problems has been successful in decreasing behaviors problems in children with developmental delays, as well as decreasing distress in their parents (Kuravackel, et al., 2018). Future longitudinal research is warranted to provide a more thorough understanding of the type of support needed during different times in their child's development, and to understand how these perceptions change across time.

When a child has a developmental delay, support tools such as the aforementioned interventions are considered formal support methods offered by trained professionals. The present study measured parents' informal social support, which in previous research has also shown to decrease depression in parents of children with developmental delays (Lindsey & Barry, 2018). Given the evidence that both formal and informal social support interventions decrease depression, it would be informative to include both informal and formal support measures in a study of social support as a protective factor. Furthermore, research on informal and formal social support interventions for parents experiencing depression could provide additional insight to the types of support that are most beneficial for parents of children with developmental delays.

Though social support did not serve as a moderator for parents of children with developmental delays in the current study, it is still an important factor that has been shown in previous studies to protect parents from experiencing depression (Lindsey & Barry, 2018). Given the relatively high social support scores for mothers and fathers in the current sample, families may be receiving adequate amounts of social support. Also, mothers and fathers did not differ in their social support scores, implicating similarities in their perceptions of social support. Though these findings are reassuring, given the protective qualities of social support, it would be advantageous to gather a sample with wider ranges of perceived social support scores. Perhaps, with a wider range of scores, differences between mothers and fathers of children with and without developmental delay could be detected. Research is still needed to understand protective factors in families of children with developmental delays, but it is apparent that while many parents do indeed experience depression as a result of a child with developmental delays, some parents and families are perceiving that they have the support they need. Perhaps informal social support can be further explored as an existing resource to build upon for parents of children with delays.

Conclusions

In summary, the present study highlights important differences and similarities between mothers and fathers of typically developing children and children with developmental delays. Past literature indicates that parents of children with developmental delays experience greater depression than parents of typically

developing children, and the present study confirmed these findings. Indeed, future research should consider the complexity of raising a child with developmental delays and how a child's developmental delay affects parent depression, as we continue to examine how to help parents decrease their risk of depression. Also, including fathers in the present study adds to the existing, yet generally lacking, research on paternal depression. As more research includes fathers, more will be discovered about the differences in how mothers and fathers experience parenting differently, particularly when they have a child with developmental delays.

There are many contributing factors to parent depression, so it is imperative to approach depression with multifaceted resources such as social support. While the results of the present study did not find informal social support to be a moderator between child developmental group and parent depression, there may be other ways of measuring social support that may show a clearer link between these variables. Additionally, a thorough examination of social support will help professionals connect families with the type of support that will be most beneficial for them. Exploring the protective capabilities of social support is crucial, since families of children with developmental delays are at risk of experiencing a multitude of challenges, including parental depression.

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APPENDICES

APPENDIX A

CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE - REVISED

ID#:_____

CESD-R

Below is a list of the ways you might have felt or behaved. Please check the boxes to tell me how often you have felt this way in the past week or so.	Last Week				Nearly every day for 2 weeks
	Not at all *or* Less than 1 day	1 - 2 days	3 - 4 days	5 - 7 days	
My appetite was poor.	0	1	2	3	4
I could not shake off the blues.	0	1	2	3	4
I had trouble keeping my mind on what I was doing.	0	1	2	3	4
I felt depressed.	0	1	2	3	4
My sleep was restless.	0	1	2	3	4
I felt sad.	0	1	2	3	4
I could not get going.	0	1	2	3	4
Nothing made me happy.	0	1	2	3	4
I felt like a bad person.	0	1	2	3	4
I lost interest in my usual activities.	0	1	2	3	4
I slept much more than usual.	0	1	2	3	4
I felt like I was moving too slowly.	0	1	2	3	4
I felt fidgety.	0	1	2	3	4
I wished I were dead.	0	1	2	3	4
I wanted to hurt myself.	0	1	2	3	4
I was tired all the time.	0	1	2	3	4
I did not like myself.	0	1	2	3	4
I lost a lot of weight without trying to.	0	1	2	3	4
I had a lot of trouble getting to sleep.	0	1	2	3	4
I could not focus on the important things.	0	1	2	3	4

APPENDIX B

MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT (MSPSS)

ID#:_____

MSPSS

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you **Very Strongly Disagree**
Circle the "2" if you **Strongly Disagree**
Circle the "3" if you **Mildly Disagree**
Circle the "4" if you are **Neutral**
Circle the "5" if you **Mildly Agree**
Circle the "6" if you **Strongly Agree**
Circle the "7" if you **Very Strongly Agree**

1.	There is a special person who is around when I am in need.	1	2	3	4	5	6	7
2.	There is a special person with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
3.	My family really tries to help me.	1	2	3	4	5	6	7
4.	I get the emotional help and support I need from my family.	1	2	3	4	5	6	7
5.	I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7
6.	My friends really try to help me.	1	2	3	4	5	6	7
7.	I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8.	I can talk about my problems with my family.	1	2	3	4	5	6	7
9.	I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
10.	There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7
11.	My family is willing to help me make decisions.	1	2	3	4	5	6	7
12.	I can talk about my problems with my friends.	1	2	3	4	5	6	7

APPENDIX C

FAMILY INFORMATION FORM

Family Information Form
(To be completed by the primary caregiver)

Note: In this survey, "focal child" means your preschool-aged child who is the focus of the research study.

Regarding Mother (Parent 1, Primary Caregiver)

1. Gender (circle one):
   a. Female
   b. Male
   c. Other: _____

2. Caregiver status (circle one):   Primary Caregiver   Other: _____

3. Relation to child (circle one):
   a. Biological parent
   b. Step-parent
   c. Adoptive parent
   d. Foster parent
   e. Other: _____

4. Age (in years): _____

5. Date of Birth (MM/DD/YYYY): _____

6. Race/ethnicity (circle one):
   a. Hispanic/Latino, any race
   b. African-American
   c. Asian
   d. Native American/Pacific Islander
   e. White (non-Hispanic)
   f. Other: _____

7. Marital status (circle one):
   a. Married to biological father

    b. Separated/Divorced from biological father
    c. Widowed by biological father
    d. Cohabitating (living together) with biological father but never married

8. Married or in a long-term relationship with a partner other than the biological father:
(circle one)
    a. Yes
    b. No

9. Length of time lived in the home with the focal child (in years): _____

Regarding Mother (Parent 1, Primary Caregiver), continued

10. Years of education (total years): _____
Note: High School = 12 years; College = 16 years; Masters ± 18 years, Ph.D ±

20 years

11. Highest degree earned (circle one):
    a. None
    b. HS Diploma/GED
    c. AA/Vocational Degree
    d. Bachelor's degree (BA, BS)
    e. Graduate degree (Master's, Doctoral, MD, JD)

12. Employment Status (circle one):
Note: "Employed" includes self-employment as well as employment outside the home
    a. Employed full-time (approx. 40 hrs/week)
    b. Employed part-time (approx. 20 hrs/week)
    c. Stay-at-home caregiver
    d. Unemployed

13. General health (circle one):
    a. Excellent
    b. Good
    c. Fair
    d. Poor

14. Psychiatric diagnosis (circle one):
Note: please answer "yes" if a doctor or mental health professional has diagnosed Parent 1 with a current psychiatric disorder (depression, anxiety, bipolar disorder, schizophrenia, etc.)

a. Yes   Please specify: _____

b. No

Regarding Father (Parent 2, Secondary Caregiver)

15. Gender (circle one):
    a. Female
    b. Male
    c. Other: _____

16. Relation to child (circle one):
    a. Biological parent
    b. Step-parent
    c. Adoptive parent
    d. Foster parent
    e. Other: _____

17. Age (in years): _____

Regarding Father (Parent 2, Secondary Caregiver), continued

18. Date of Birth (MM/DD/YYYY): _____

19. Race/ethnicity (circle one):
    a. Hispanic/Latino, any race
    b. African-American
    c. Asian
    d. Native American/Pacific Islander
    e. White (non-Hispanic)
    f. Other: _____

20. Marital status (circle one):
    a. Married to biological mother
    b. Separated/Divorced from biological mother
    c. Widowed by biological mother
    d. Cohabitating (living together) with biological mother but never

        married

21. Married or in a long-term relationship with a partner other than the biological mother:
    (circle one)
    a. Yes

      b. No

22. Length of time lived in the home with the focal child (in years): _____

23. Years of education (total years): _____
    Note: High School = 12 years; College = 16 years; Masters ± 18 years, Ph.D ±

    20 years

24. Highest degree earned (circle one):
      a. None
      b. HS Diploma/GED
      c. AA/Vocational Degree
      d. Bachelor's degree (BA, BS)
      e. Graduate degree (Master's, Doctoral, MD, JD)

25. Employment Status (circle one)
Note: "Employed" includes self-employment as well as employment outside the
home
      a. Employed full-time (approx. 40 hrs/week)
      b. Employed part-time (approx. 20 hrs/week)
      c. Stay-at-home caregiver
      d. Unemployed

Regarding Father (Parent 2, Secondary Caregiver), continued

26. General health (circle one):
      a. Excellent
      b. Good
      c. Fair
      d. Poor

27. Psychiatric diagnosis (circle one):
Note: please answer "yes" if a doctor or mental health professional has diagnosed
Parent 2 with a current psychiatric disorder (depression, anxiety, bipolar disorder,
schizophrenia, etc.)
      a. Yes   Please specify: _____
      b. No

Regarding focal child (the preschooler who is the focus of the research study)

28. Child's gender (circle one):

    a. Female
    b. Male
    c. Other: _____

29. Child's age (in years): _____

30. Child's date of Birth (MM/DD/YYYY): _____

31. Child's race/ethnicity (circle one):
    a. Hispanic/Latino, any race
    b. African-American
    c. Asian
    d. Native American/Pacific Islander
    e. White (non-Hispanic)
    f. Other: _____

32. Was the child exposed to toxins during the mother's pregnancy?
Note: this includes (but is not limited to) alcohol, illegal drugs, cigarette smoke, etc.
    a. Yes   Please specify: _____
    b. No

33. Were there complications during the child's birth?
    a. Yes   Please specify: _____
    b. No

Regarding focal child (the preschooler who is the focus of the research study),

continued

34. Did the child meet developmental milestones on time (sitting, crawling, walking, talking)
    a. Yes
    b. No   Please specify: _____

35. Does the child currently receive special services at home or outside the home?
    a. Yes
        Please length of time services have been/were provided, and type of service provided:
        _____

b. No

36. Child's psychiatric or developmental diagnosis (circle one):
Note: please answer "yes" if a doctor or mental health professional has diagnosed the focal child with a current psychiatric or developmental disorder (autism, intellectual disability, Down Syndrome, depression, anxiety, ADHD, etc.)
   a. Yes   Please specify:
      _____
   b. No

37. Child's general health (circle one):
   a. Excellent
   b. Good
   c. Fair
   d. Poor

38. What is the child's school placement? (circle one)
   a. Elementary School
   b. Preschool (not Headstart)
   c. Headstart or Early Headstart
   d. Daycare or home childcare
   e. None

Additional Questions

39. Estimated yearly family income (before taxes and other expenses):

   $_____

40. Number of biological, adopted or step-siblings living in the home:
   _____
   Note: do not include the focal child, and do not include foster children

41. Psychiatric or developmental diagnosis in one or more siblings (circle one):
Note: please answer "yes" if a doctor or mental health professional has diagnosed one or more siblings [NOT the focal child] with a current psychiatric or developmental disorder (autism, intellectual disability, Down's Syndrome, depression, anxiety, ADHD, etc.)
   a. Yes   Please specify sibling birth order (1st, 2nd, 3rd, etc.) and
      diagnosis:
      _____
   b. No