THE ROLE OF PARENTAL CLOSENESS AND FAMILY CHAOS IN THE INTERGENERATIONAL TRANSMISSION OF DEPRESSION

by

MORGAN ALEXANDER

(Under the Direction of Kalsea Koss)

ABSTRACT

Parental depression, in part through intergenerational transmission, is one of the strongest predictors of psychopathology in offspring. Risk notwithstanding, the parent-child relationship, household chaos, and variations in duration and timing of parental depression can impact the development of adolescent depression. Using data from the Fragile Families and Child Wellbeing Study, this study examines the presence, chronicity, and recency of parental depression on depressive symptoms in adolescent offspring, as well as the moderating role of parental closeness and family chaos. Results show that chronic and recent depression are associated with adolescent depressive symptoms above and beyond the presence of depression alone, especially for maternal caregivers. Parental closeness and family chaos demonstrated main effects, but no moderating effects, on adolescent depressive symptoms, supporting their role as promotive factors. Findings highlight the importance of variability in timing and chronicity of parental depression on the transmission and development of depressive symptoms during adolescence.

INDEX WORDS: Depression; Adolescence; Parental warmth; Family chaos; Intergenerational transmission

THE ROLE OF PARENTAL CLOSENESS AND FAMILY CHAOS IN THE INTERGENERATIONAL TRANSMISSION OF DEPRESSION

by

MORGAN ALEXANDER

B.S., University of Georgia, 2021

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF SCIENCE

ATHENS, GEORGIA

2022

THE ROLE OF PARENTAL CLOSENESS AND FAMILY CHAOS IN THE INTERGENERATIONAL TRANSMISSION OF DEPRESSION

by

MORGAN ALEXANDER

Major Professor: Kalsea Koss

Committee: Assaf Oshri
Maria Bermudez

Electronic Version Approved:

Ron Walcott
Vice Provost for Graduate Education and Dean of the Graduate School
The University of Georgia
May 2022

ACKNOWLEDGEMENTS

I would like to express my deepest appreciation for Dr. Kalsea Koss, my major professor, whose consistent support and guidance has been invaluable throughout this process. I attribute my success to her unwavering dedication to helping me achieve my goal of graduating in May, despite it seeming unattainable at times. I would also like to thank my committee members, Dr. Assaf Oshri and Dr. Maria Bermudez, for their insightful feedback. Finally, I would like to acknowledge Rachel Brown for her willingness to assist me in every step of this process and for providing encouragement along the way.

TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines major depressive disorder as a period of at least two weeks in which a person experiences depressed mood or a loss of interest in daily activities, impaired social, occupational, and educational function (American Psychiatric Association, 2013). It is also characterized by almost daily occurrence of specific symptoms including, but not limited to, feelings of worthlessness, fatigue, decreased concentration, and changes in sleep and appetite (American Psychiatric Association, 2013). A study conducted by the National Survey on Drug Use and Health in 2019 estimated that 19.4 million adults in the United States have had at least one major depressive episode within the past year, which is a substantial increase from the 14.2 million adults who had experienced at least one major depressive episode in 2006 (Substance Abuse and Mental Health Services Administration, 2020).

Major depressive disorder is among the most prevalent mental disorders in the United States, with prevalence of onset in the population increasing beginning in late childhood or adolescence, but individual onset may occur in early adulthood, as well (Kessler et al., 2005). As such, its implications can be seen across many domains, including additional psychiatric problems, family relationships, parental functioning, social isolation, and poor health outcomes (Cuijpers et al., 2015; Gelfand & Teti, 1990; Kessler et al., 2005). Furthermore, the occurrence of parental depression is one of the strongest predictors and risk factors of the development of psychopathology in offspring, partly by means of intergenerational transmission (Cuijpers et al.,

2015; Garber & Cole, 2010; Goodman, 2020; Hammen et al., 2004; Lieb et al., 2002; Mars et al., 2012). According to Gelfand and Teti (1990), parental depression constitutes both an environmental and genetic risk to youth. However, children experience variable responses to parental depression in part because "depression differs in subtype (e.g., unipolar, bipolar, dysthymic, etc.), time of onset, chronicity, and severity of the depressive episodes" eliciting myriad outcomes (Gelfand & Teti, 1990). Therefore, it is crucial to study these differences in parental depression to better understand the broad range of impacts it has on offspring throughout their development.

1.1 Effect of Parental Depression on Child Outcomes

Multiple studies have documented the effects of parental depression on child outcomes, all supporting the conclusion that offspring of parents with depression are at an increased risk of developing psychopathology, including depression (Polderman et al., 2015; Tirumalaraju et al., 2020). A study by Tirumalaraju and colleagues (2020) found that offspring of mothers with perinatal depression were 70% more likely to develop depression than offspring of mothers who did not experience depression during pregnancy. In addition to the development of psychopathology in offspring, parental depression is also associated with negative academic achievement outcomes in school, increased behavioral difficulties, impaired cognitive ability, and decreased emotional functioning (Claessens et al., 2015; Tirumalaraju et al., 2020). The mechanisms through which these child outcomes occur have also been studied extensively. These possible mechanisms include, but are not limited to, negative parenting behaviors associated with depression, impaired parent-child relationships, learning processes, and genetic transmission of risk (Brophy et al., 2021; McAdams et al., 2015; Tirumalaraju et al., 2020).

Since depression can be unpredictable and cyclical, it "may vary in length from days to months, and it may be persistent or episodic, recurrent or nonrecurrent" (Hammen & Brennan, 2003). Variations in the duration and timing of parental depression have unique effects on offspring, and therefore lead to possible differences in the risk of the development of psychopathology in adolescents.

1.1.1 Duration of Parental Depression on Child Outcomes

Extant research supports the influence of variability in duration and chronicity of parental depression on the resulting outcomes of offspring (Brophy et al., 2021; Claessens, et al., 2015; Hammen & Brennan, 2003) More specifically, research shows that children who are exposed to parental depression that persists over time or parental depressive episodes that occur multiple times throughout childhood are more likely to experience maladaptive outcomes than children who were exposed to a single episode of parental depression or not exposed at all (Claessens et al., 2015). In congruence with this research, a study by Hammen & Brennan (2003) found that longer durations of maternal depression were associated with increased risk of development of depression in youth. Additionally, scholars assert that even after receiving treatment and recovering from depression, individuals can still experience residual symptoms, some of which include impaired social functioning, family discord, and anxiety (Gelfand & Teti, 1990). Therefore, despite not being actively depressed, children may still be subjected to risk through inadequate parenting and other stressors as a result of residual symptoms of maternal depression.

The development of symptoms of child psychopathology, including depression, may be best explained by the accumulation of exposure to adversity and stressful events, such as exposure to parental depression, with chronic adversity having a greater impact on youth's own psychopathology (Dunn et al., 2018). Furthermore, more chronic or longer durations of

depression would become more disruptive to effective parenting than would less chronic or a shorter duration. This provides support for cumulative risk and the hypothesis that longer durations of parental depression will increase the likelihood of the development of psychopathology in adolescents. Additional studies support this conclusion, finding that chronic or cumulative exposure to adversity is more harmful to a child's mental health than acute exposure (Evans et al., 2013).

1.1.2 Timing of Parental Depression on Child Outcomes

The timing at which a child is exposed to parental depression and its associated outcomes has been researched extensively. Several studies suggest that earlier exposure to parental depression will have a greater effect on offspring than exposure to parental depression in later years due to the notion that early experiences are particularly influential in the developmental outcomes of children (Claessens et al., 2015; Cummings & Davies, 1994). A meta-analysis by Goodman et al. (2011) supported the conclusion that sensitive periods lead to increased vulnerability, stating that "children who are younger when first exposed to their mother's depression may be more vulnerable to the development of psychopathology than children not exposed until later." Additionally, children who first encounter maternal depression later in development may experience fewer adverse outcomes due to healthy, normative development prior to exposure, greater amounts of social support outside of the home, and higher efficacy of emotion regulation and information processing enabling children to have a better understanding of the symptoms and consequences of depression (Goodman et al., 2011).

However, there are conflicting conclusions as to when exposure has the most adverse effects on offspring. While some research supports early exposure having the greatest effect on offspring, other studies suggest that more recent parental depressive episodes are associated with

greater adverse outcomes and higher levels of child depressive symptoms (Dunn, et al., 2018; Mars et al., 2012). A literature review by Cummings and Davies (1994) revealed that children become more susceptible to the development of psychopathology as they age, with children of depressed mothers over the age of eleven exhibiting notably higher levels of dysphoria than children of depressed mothers under the age of eleven. Additionally, research shows that a mother's current diagnosis of depression has a higher correlation to the development of psychopathology in children than a mother's previous history of depression (Gelfand & Teti, 1990; Mars et al., 2012). Since the duration and timing of parental depression can greatly influence the associated outcomes in children, it is important to focus on how these factors predict psychopathology in children when considering the effects of parental depression.

1.2 Adolescent Depression

While negative outcomes due to parental depression may be present in offspring throughout childhood, the adolescent developmental period is of particular interest when examining the impact of parental depression, as the clinical onset of mental illnesses peak during this time (Lee et al., 2014). Specifically, depressive symptoms and depression diagnoses substantially increase during adolescence compared to a relatively low prevalence throughout childhood with the highest incidence occurring between the ages of fifteen and twenty, predominately in females (Cummings & Davies, 1994; Weissman et al., 2006). This increase is primarily explained by the fluctuation in hormone levels that adolescents experience when going through puberty and, therefore, is independent of exposure to parental depression (Hankin et al., 2015). Consequently, since adolescence acts as a sensitive period for the onset of mental illnesses, depression may be particularly evident for offspring who experienced parental depression at any time throughout childhood, largely as a result of intergenerational transmission

and the genetic and environmental risk factors that are often associated with depressive symptoms (Goodman, 2020; Hankin et al., 2015).

1.2.1 Variation in Adolescent Outcomes

In addition to the cyclical nature of depression and its variability causing adolescent outcomes to differ, additional factors have the ability to directly, or indirectly, influence adolescent outcomes leading to further variation. Most notably, and despite limited research on the topic, exposure to maternal depression versus paternal depression has been found to impact offspring in differing ways. For example, maternal depression was found to be more closely associated with internalizing outcomes in youth, while paternal depression was more closely associated with externalizing outcomes in youth (Brennan et al., 2002). Additionally, Brennan and colleagues (2002) concluded that in the presence of maternal depression, the additional presence of paternal depression was associated with increased levels of youth externalizing disorders but was not associated with increases in youth diagnoses of depression. These findings demonstrate the importance of distinguishing between maternal and paternal depression when examining adolescent outcomes.

Protective factors and risk factors can also lead to variation in adolescent outcomes by modifying the strength of the association between parental depression and the development of depressive symptoms in offspring (MacKinnon, 2011; Wu & Zumbo, 2008). Protective factors work to attenuate the risk of an adolescent developing depression in the presence of parental depression, while risk factors exacerbate this risk. Therefore, parental closeness, a protective factor, and family chaos, a risk factor, have the potential to act as moderators that may influence the development of psychopathology in children of those who are depressed (Gelfand & Teti, 1990; Kurstjens & Wolke, 2003). As such, the role of these two moderators in the

intergenerational transmission of depression can either further enhance or compromise a parent's ability to provide their children with structure, guidance, and a nurturing environment. This constitutes a framework linking depression and its symptoms to maladaptive parenting behaviors, potentially impacting the child's development of depression (Hammen et al., 2004).

1.3 Parental Closeness

Parental closeness can be defined as "the overall sense of strength of the relationship between parent and child including factors such as relationship satisfaction, feeling comfortable with, and/or feeling understood by one's parents" (Yu & Chang, 2018). In this study, parental closeness will be designated as a protective factor that may reduce the likelihood of a child developing psychopathology due to the presence of parental depression. A close parent-adolescent relationship is an important source of support for adolescents, which can work as a buffer for the development of maladaptive outcomes in adolescents (Cohen & Wills, 1985).

Butterfield and colleagues (2021) concluded that greater levels of parental warmth predicted lower levels of depressive and anxiety symptoms in adolescence, while Ge et al (2009) found that a reduction in levels of depressive symptoms in adolescents was associated with a close maternal and paternal relationship. Additional studies have found a similar buffering effect of parental closeness and have further concluded that a decrease in the level of parent-adolescent closeness is associated with increased depressive symptoms in male and female adolescents (Ge et al., 2009; Mak et al., 2021; Marsh et al., 2020). This is likely because parents who exhibit high levels of warmth and responsiveness enable children to effectively regulate their arousal and other emotions which has been associated with lower levels of child depressive symptoms, while parents who exhibit high levels of hostility and insensitivity inhibit children's ability to modulate

their arousal increasing the risk for the development of adverse outcomes (Butterfield et al., 2021; Cummings & Davies, 1994).

Even during adolescence, parents continue to play a crucial role in their child's social environment and emotional development, including emotion processing and regulation (Butterfield et al., 2021). Therefore, parental closeness has the possibility of acting as an important buffer for the development of depressive symptoms in offspring. Due to parental depression negatively affecting the parent-child relationship, parental depression may be associated with reductions in parental closeness. However, if a parent can uphold positive aspects of parenting despite depressive symptoms, the effects may be particularly beneficial.

1.4 Family Chaos

Unlike parental closeness, family chaos is associated with a multitude of adverse child outcomes, such as negative cognitive and academic outcomes, poorer socioemotional functioning, and behavioral problems, and disruption to typical developmental pathways (Marsh et al., 2020). Family chaos, often also referred to as household chaos, can be defined as homes with "high levels of stimuli (crowdedness, people moving in and out of the home inconsistently, and noise) and high levels of unpredictability (lack of routine, rules and expected behavior patterns)" (Marsh et al., 2020). Within this study, family chaos will be identified as a risk factor that may increase the likelihood of psychopathology in offspring due to the presence of parental depression. In conjunction with the role of family chaos as a main effect, research has also established its role as a moderator between risk exposure and maladaptive outcomes (Marsh et al., 2020). Supporting this notion, a study by Shelleby and colleges (2014) concluded that higher levels of family chaos were associated with high levels of children's emotional issues and maternal depression. The presence of chaos during childhood is particularly influential to

emotional development, as emotion regulation skills are typically developed during this period (Shelleby et al., 2014).

Family chaos has also been found to enhance the effects of negative parenting behaviors due to the lack of stability and predictability and hinder a child's socio-emotional, cognitive, and behavioral development (Coldwell et al., 2006; Marsh et al., 2020). This research provides a significant basis to conclude that family chaos may negatively moderate the association between parental depression and the development of psychopathology in adolescents. Due to the cumulative risk model, the presence of family chaos in households with parental depression can further exacerbate the risk of children to develop depressive symptoms in adolescence.

1.5 The Current Study

Despite adequate research on the association between parental depression and the development of psychopathology in offspring, the extent to which the presence, chronicity, and recency of both maternal and paternal depression plays a role in this development, specifically in adolescents, is understudied. Additionally, no research to our knowledge has studied parental closeness and family chaos in relation to each other as possible moderators of this association. By incorporating parental closeness and family chaos as moderators in this study, while considering the presence, chronicity, and recency of parental depression, this study will further contribute to the understanding of the current literature and the association that these specific variables have with the development of depressive symptoms in adolescents. In the context of the current study, presence will be conceptualized as a parent having experienced depression at, at least, one time point, while recency will be conceptualized as a parent experiencing depression within the past year. Chronicity will be conceptualized by the number of time points in which

caregivers meet criteria for a diagnosis of depression and can be further identified as the duration and/or recurrence of a depressive episode.

The research question being posed in this study is: Does parental depression, considering presence, chronicity, and recency, predict the development of depressive symptoms in adolescent offspring? We hypothesize that children who are exposed to parental depression during childhood will have higher levels of depressive symptoms in adolescence than those who were not exposed. We also hypothesize that children who are exposed to parental depression across more developmental time periods throughout childhood and that children who are exposed to parental depression most recent to the adolescent developmental period will have higher levels of depressive symptoms in adolescence than those who were exposed over fewer periods or less recently. An additional research question posed in this study is: Does parental closeness and family chaos moderate the association between parental depression and adolescent depressive symptoms? We hypothesize that children exposed to higher levels of parental closeness will have lower rates of depressive symptoms in adolescence, while children exposed to higher levels of family chaos will have higher rates of depressive symptoms in adolescence. The proposed conceptual model for the current study is displayed in Figure 1.

CHAPTER 2

METHOD

2.1 Participants

Participants for this analysis come from the Fragile Families and Child Wellbeing Study (FFCWS), which consists of 4898 children born in large U.S. cities between the years of 1998 and 2000 (Reichman et al., 2001). The study oversampled for births of children with unmarried mothers and consists of a large proportion of Black, Hispanic, and low-income families. Data was initially collected at birth, age 0, for the baseline and waves have been conducted at ages 1, 3, 9, and 15 thus far. Core surveys of the FFCWS focus on the biological mother, biological father, primary caregiver, and focal child. At baseline, the race/ethnicity of participants consisted of 21.08% White, 47.61% Black, 27.34% Hispanic, and 3.97% other. Household income at baseline ranged from \$0 to \$133,750 (M_{income} = \$31,994; *SD* =\$ 31,567). Due to the study design of oversampling for unmarried parents, 76% of the mothers participating in this study are unmarried, while 24% are married. The focal children were comprised of 2556 males and 2341 females, or 52.18% and 47.8%, respectively. Child age at wave 6, when the outcome variable will be measured, ranged from 14 to 19 years old (M_{age} = 15.6; *SD* = 0.77). Additionally, 87.88% of primary caregivers are the biological mother, 7.18% are the biological father, and 4.94% of primary caregivers are someone other than the biological mother or father. Participant demographics are displayed in Table 1.

2.2 Measures

2.2.1 Parental Depression

Parental depression for presence and chronicity was measured at years 1, 3, 5, and 9 (waves 2-5) through the use of mother and father surveys. Depression for recency was measured at year 15 (wave 6) in reference to the past year and was reported by the primary caregiver. Survey questions were taken from the Composite International Diagnostic Review – Short Form (CIDI-SF), Section A (Kessler et al., 1998). The short form version of the CIDI uses a subset of questions from the full-length version and produces the probability that the respondent would be positively diagnosed for depression if given the full set of CIDI questions. Items addressed if the respondent had feelings of dysphoria or anhedonia that lasted for a period of two or more weeks within the past year. If the respondent experienced one or both of these feelings, they were asked if they experienced symptoms every day over the duration of two weeks and if symptoms were present for the majority of the day. If the respondent positively answered these questions, they were then asked more in-depth questions about topics, including losing interest, feeling tired, change in weight, trouble sleeping, trouble concentrating, feeling worthless, and thinking about death. In order to meet the diagnostic criteria for major depression, respondents must either affirm all questions pertaining to having dysphoric mood for a duration of two weeks or affirm all questions pertaining to having anhedonia for a duration of two weeks. Respondents who stated that they were currently taking medication for depression were counted as depressed. A dichotomous variable was constructed at each wave and released by the FFCWS and depression was indicated if the respondent affirmed at least three CIDI-SF items.

In the present study, we constructed the presence, chronicity, and recency of depression by utilizing the dichotomous variable for the mother and father report from waves 2-5 and the

primary caregiver report from wave 6. The presence of parental depression was constructed as a dichotomous variable with 1 indicating that either parent (mother or father) met the criteria for depression at any point throughout waves 2-5. The presence of maternal and paternal depression was constructed similarly, with 1 indicating that the mother or father met the criteria for depression at any point throughout waves 2-5, respectively. Chronicity for maternal depression was coded to reflect the total number of waves that she met criteria for depression. Thus, 1 indicated that the mother met the criteria for depression at one wave within waves 2-5, 2 indicated that the mother met the criteria for depression at two waves, 3 indicated that the mother met the criteria for depression at 3 waves, and 4 indicated that the mother met the criteria for depression at all 4 waves. Chronicity for paternal depression was constructed the same way but used the father report. The constructed maternal and paternal chronicity variables were then summed to calculate chronicity for parental depression (mother and father combined, range=0 to 7). Lastly, the FFCWS constructed dichotomous variable for primary caregiver depression in reference to the past year at wave 6 was utilized to construct recency.

2.2.2 Adolescent Depressive Symptoms

A modified version of the Center for Epidemiologic Studies Depression Scale (CES-D) adapted from the National Longitudinal Study of Adolescent Health (Add Health), Wave 6, was utilized to measure teen depressive symptoms at year 15 (Radloff, 1977). The survey contained 5 items that addressed the teen's feelings over the past four weeks, including "I feel I cannot shake off the blues, even with the help of my friends," "I feel sad," "I feel happy," "I feel life is not worth living," and "I feel depressed." Responses were measured on a 4-point Likert scale, with 1 = "strongly agree" and 4 = "strongly disagree." Items were recoded so that 0 = "strongly disagree" and 3 = "strongly agree." One item ("I feel happy") was not reverse coded. Items were

then averaged to calculate a mean score. This measure had adequate internal reliability (α = 0.76). Radloff (1991) demonstrated the CES-D has been found suitable for addressing depressive symptoms in adolescence.

2.2.3 Parental Closeness

Closeness within the caregiver-child relationship was measured at year 9 and reported by the child. One item was taken from the Family Functioning and the Middle Childhood and Adolescent section of the National Survey of Child Health to assess the perceived closeness between the caregiver and child (*National Survey of Children's Health*, 2003). The item was measured on a Likert scale ranging from 1 = "extremely close" to 4 = "not very close" (Bendheim-Thoman Center for Research on Child Wellbeing and Columbia Population Research Center, 2013; Blumberg et al., 2005). The item was reverse coded so that a high score indicated higher levels of closeness.

2.2.4 Family Chaos

Family chaos was measured at year 9 using an adapted version of the Confusion, Hubbub, and Order Scale (CHAOS). The original CHOAS scale was created by Matheny et al (1995) and includes 15 true/false items that assess environmental confusion in the home reported by the parent. Environmental confusion can be defined as "high levels of noise, crowding, and home traffic pattern" (Matheny et al., 1995). The FFCWS utilizes five of six items from a shorter version of the CHAOS scale, originally used by Petrill et al., in which a 5-point Likert scale is used for responses with 1 = "definitely untrue" to 5 = "definitely true" (Petrill et al., 2004). At year 9, the shorter version of the CHAOS scale was completed solely by the primary caregiver and included the 5-point scale. The items on the CHAOS scale by Petrill et al (2004), include "can't hear yourself think in your own home," "it's a real zoo in your home," "children have a

regular bedtime routine," "usually able to stay on top of things," and "atmosphere in your house is calm." In the current study, three of the five items ("children have a regular bedtime routine," "usually able to stay on top of things," and "atmosphere in your house is calm") were reverse coded so that 1 = "definitely true" and 5 = "definitely untrue." The five items were averaged to calculate a mean score and had adequate internal reliability ($\alpha = 0.63$). Matheny et al (1995) demonstrates that the CHAOS scale has been found acceptable for measuring environmental confusion in the home.

2.3 Data Analytic Plan

Analyses were conducted in three parts. First, descriptive statistics and correlations were examined among study variables and a one-way analysis of variance (ANOVA) was conducted to examine differences in child sex among adolescent depressive symptoms, parental closeness, and family chaos. A paired samples t-test was also conducted to compare differences in maternal and paternal rates of depression for presence and chronicity. Second, hierarchal regression analyses were conducted to examine main and interaction effects for the presence, chronicity, and recency of parental depression with each moderator, parental closeness and family chaos, as predictors of depressive symptoms in adolescents at year 15. Parental closeness and family chaos were centered before creating the interaction terms. Separate models were fit for each parental depression parameter and outcome. Unique main effects of maternal and paternal depression were also examined. Lastly, an exploratory analysis was conducted also using hierarchical regression analysis to investigate the role of child sex as a moderator of the above associations as depressive symptoms are more prevalent in females. Covariates included child sex, marital status at birth, family income at birth, maternal education at birth, child age at wave 6, and race/ethnicity. Child sex and marital status were recoded so that 0=boy; 1=girl and 0=unmarried;

1=married, respectively. A Bachelor's degree was used as the reference category for maternal education and White was used as the reference category for race/ethnicity. All analyses were conducted in SPSS.

CHAPTER 3

RESULTS

3.1 Descriptive Statistics

Means, standard deviations, and ranges for all study variables are displayed in Table 2. Bivariate correlations are displayed in Table 3. There was a significant correlation between the presence of maternal depression and the presence of paternal depression (r=.10, p<.01). The presence of any parental depression (maternal or paternal) throughout childhood (e.g., at any wave) was 48.90%. Analysis of frequencies for chronicity showed that 20.85% of mothers experienced depression at one time point, 9.07% of mothers experienced depression at two time points, 4.67% of mothers experienced depression at three time points, and 1.93% of mothers experienced depression at all four waves (waves 2-5). Fathers experienced lower rates of depression throughout childhood, with 17.80% of fathers experiencing depression at one time point, 5.85% of fathers experiencing depression at two time points, 2.20% of fathers experiencing depression at three time points, and only 0.56% of fathers experiencing depression at all waves. With regard to data at age 15, 17.17% of primary caregivers experienced depression within the past year (primary caregiver depression is reported rather than for each parent due to the change in data collection in which only the child's primary caregiver was interviewed). The presence and chronicity of parental depression were equally weakly correlated with adolescent depressive symptoms (r=.10, p<.01), but maternal presence and chronicity had a stronger correlation with adolescent depressive symptoms than did paternal presence and chronicity (maternal presence: r=.09, p<.01; maternal chronicity: r=.10, p<.01; paternal presence: r=.05,

p<.01; paternal chronicity: r=.04, p<.05). Family chaos was significantly correlated with all depression variables. Lastly, there was a weak negative correlation between parental closeness and adolescent depressive symptoms (r= -.12, p<.01).

A one-way between-subjects analysis of variance (ANOVA) was conducted to examine differences in child sex among adolescent depressive symptoms, parental closeness, and family chaos. There was no significant difference among boys (M=1.79, SD=0.74) and girls (M=1.78, SD=0.74) in parent-report of family chaos (F(1,3623)=0.22, p=0.64). However, there were significant differences among boys and girls in depressive symptoms and parental closeness. Girls (M= 0.66, SD= 0.63) had higher levels of adolescent depressive symptoms compared to boys (M= 0.53, SD= 0.56; F(1,3435)= 40.68, p<.01). Girls (M= 3.66, SD= 0.73) also had higher levels of child-report of parental closeness compared to boys (M= 3.61, SD= 0.74; F(1,3268)= 4.30, p<.05).

A paired samples t-test was run to compare differences in maternal and paternal rates of depression for presence and chronicity. Results showed significant differences for both presence and chronicity, with mothers experiencing greater presence (M= 0.37, SD= 0.48) and higher levels of chronicity (M= 0.62, SD= 0.97) compared to fathers presence (M= 0.26, SD= 0.44) and chronicity (M= 0.39, SD= 0.75) of depression (presence: t(4050)= 10.51, p<.001; chronicity: t(4050)= 12.61, p<.001; see Table 3).

3.2 Parental Depression and Adolescent Depressive Symptoms

Multiple hierarchical regression analyses were conducted to examine the main effects of parental depression with respect to presence, chronicity, and recency, as well as the two-way interactions between parental depression and each moderator, family chaos and parental closeness. Step 1 included all study covariates including family income, child age, child sex,

marital status, race/ethnicity, and maternal education. Step 2 included the main effect of parental depression. Step 3 included the main effect of the moderator (either family chaos or parental closeness). Step 4 included the interaction between parental depression and the moderator. Results are displayed in Tables 4-9. Separate analyses were conducted examining chaos and closeness as moderators.

3.2.1 Presence of Parental Depression

The presence of parental depression significantly predicted elevated adolescent depressive symptoms (β=.08, p<.001). Family chaos and parental closeness both had significant main effects on adolescent depressive symptoms, with higher levels of chaos predicting higher levels of adolescent depressive symptoms (β=.06, p<.001) and lower levels of parental closeness predicting higher levels of adolescent depressive symptoms (β= -.12, p<.001). However, results showed that there was no interaction effect between presence of parental depression and family chaos or presence of parental depression and parental closeness. Therefore, there is no significant moderating effect. Complete results for the hierarchical regression with parental closeness are displayed in Table 6 and with family chaos are displayed in Table 5.

Covariate findings showed that higher family income at birth was significantly associated with lower adolescent depressive symptoms in the model for family chaos (β= -.04, p<.05), but not in the model for parental closeness. Across all four models, females had significantly higher adolescent symptoms (β=.11, p<.001). Additionally, lower maternal education (high school diploma/equivalent or less) was associated with higher adolescent depressive symptoms (less than H.S. degree: β=.08, p<.05; H.S. diploma/equivalent: β=.07, p<.05). However, once parental depression was entered into the model at step 2, family income and maternal education were no longer significant.

3.2.2 Parental Depression Chronicity

Chronicity of parental depression was significantly associated with adolescent depressive symptoms (β=.09, p<.001) such that more chronic parental depression was associated with higher adolescent depressive symptoms. Additionally, higher levels of family chaos and lower levels of parental closeness were associated with higher levels of adolescent depressive symptoms (chaos: β=.05, p<.001; closeness: β= -.12, p<.001). There was no significant interaction between chronicity of parental depression and family chaos or chronicity of parental depression and parental closeness, indicating no moderation (see Table 7 and Table 8, respectively).

Covariate findings for chronicity models also showed that higher family income at birth was significantly associated with lower adolescent depressive symptoms in the model with family chaos (β= -.04, p<.05), but not in the model with parental closeness. Again, females had significantly higher adolescent symptoms across all models (β= .11, p<.001). Lower maternal education (high school diploma/equivalent or less) was also associated with higher adolescent depressive symptoms (less than H.S. degree: β= .08, p<.05; H.S. diploma/equivalent: β= .07, p<.05), but once parental depression was entered into the model at step 2, family income and maternal education were no longer significant.

3.2.3 Parental Depression Recency

Analyses for recency revealed that recent depression of the primary caregiver (e.g., within the past year) significantly predicted increased adolescent depressive symptoms (β=.07, p<.01). Results also showed that there was a significant positive association between family chaos and adolescent depressive symptoms (β=.06, p<.001), as well as a significant negative association between parental closeness and adolescent depressive symptoms (β= -.12, p<.001).

Similar to previous results, no interaction effects were found. Complete results with parental closeness are displayed in Table 10 and with family chaos are displayed in Table 9.

Replicating covariate findings from previous regression analyses, higher family income at birth was significantly associated with lower adolescent depressive symptoms in the analysis for family chaos (β= -.04, p<.05). Females still had significantly higher adolescent symptoms (β= .11, p<.001). Additionally, specific to the analysis with family chaos, lower maternal education (high school diploma/equivalent or less) was associated with higher adolescent depressive symptoms (less than H.S. degree: β= .08, p<.05; H.S. diploma/equivalent: β= .07, p<.05). Once parental depression was entered into the model at step 2, maternal education at the H.S. diploma level was not significant, but family income remained significant until family chaos was entered into the model at step 3 and less than a H.S. degree for maternal education remained significant across all 4 models (β= .07, p<.05). In the analysis with parental closeness, only less than a H.S. degree for maternal education was significantly associated with higher depressive symptoms (β= .08, p<.05) until parental closeness was added at step 3, it was no longer significant.

3.3 Unique Effects of Presence, Chronicity, and Recency

A two-step hierarchical regression analysis was conducted to examine differences in the unique main effects of parental depression presence, chronicity, and recency controlling for one another. Step 1 included all study covariates including family income, child age, child sex, marital status, race/ethnicity, maternal education, and paternal education. Step 2 included the main effects of presence of parental depression, chronicity of parental depression, and recency of PCG depression. Results showed that higher levels of chronicity and more recent depression were significantly associated with higher levels of depressive symptoms, while presence was not

(chronicity: β= .06, p<.05; recency: β= .05, p<.001; presence: β=.03, p=.24). Females had significantly higher adolescent depressive symptoms across both models (β= .10, p<.001). Additionally, lower paternal education (high school diploma/equivalent or less) was associated with higher adolescent depressive symptoms (less than H.S. degree: β= .09, p<.05; H.S. diploma/equivalent: β= .08, p<.05). Complete results are displayed in Table 11.

3.4 Unique Effects of Maternal and Paternal Depression

Additional hierarchical regression analyses were run to examine the unique effect of maternal or paternal depression in association with adolescent depressive symptoms. Results for the presence of maternal and paternal depression and chronicity of maternal and paternal depression are displayed in Table 12 and Table 13, respectively. The presence of maternal depression was significantly associated with adolescent depressive symptoms (β=.08, p<.001), but the presence of paternal depression was not significantly associated. Similarly, there was a significant association between chronicity of maternal depression and adolescent depressive symptoms (β= -.09, p<.001), but no significant association between chronicity of paternal depression and adolescent depressive symptoms. Bivariate correlations (Table 3) demonstrate that both presence and chronicity of paternal depression were significantly correlated with adolescent depressive symptoms; however, when controlling for maternal depression, there were no unique effects of paternal depression (presence or chronicity). Covariate findings revealed that females had significantly higher adolescent symptoms across both analyses for presence and chronicity for maternal and paternal depression (β= .11, p<.001).

In the analysis for presence, paternal education was not significant until maternal and paternal depression was added, at which point lower paternal education (high school diploma/equivalent or less) was associated with higher adolescent depressive symptoms (less

than H.S. degree: β= .08, p<.05; H.S. diploma/equivalent: β= .08, p<.05). Conversely, in the analysis for chronicity, lower paternal education (high school diploma/equivalent or less) was associated with higher adolescent depressive symptoms (less than H.S. degree: β= .10, p<.05; H.S. diploma/equivalent: β= .00, p<.05) until maternal and paternal chronicity was entered into the model at which point it was no longer significant.

3.5 Child Sex as a Moderator

Six separate three-way interactions were conducted to examine whether previous results significantly differed by the sex of the child. The three-way interactions were as followed: 1) presence of parental depression x family chaos x child sex, 2) presence of parental depression x parental closeness x child sex, 3) chronicity of parental depression x family chaos x child sex, 4) chronicity of parental depression x parental closeness x child sex, 5) recency of PCG depression x family chaos x child sex, and 6) recency of PCG depression x parental closeness x child sex. Results showed that there was no significant three-way interaction across any of the models. However, there was a significant 2-way interaction between PCG recency and child sex (β= 2.06, p<.05). Simple slope analyses demonstrate recent parental depression was associated with significantly higher levels of adolescent depressive symptoms among females (t=5.76, p<.001) but not among males (t=1.39, p=0.17; see Figure 2).

CHAPTER 4

DISCUSSION

The current study sought to examine the impact of presence, chronicity, and recency of parental depression on adolescent depressive symptoms, as well as the moderating role of parental warmth and family chaos. Consistent with prior research, our findings indicate that the occurrence of parental depression at any point throughout childhood is a significant predictor of adolescent depressive symptoms. Similarly, more chronic parental depression and more recent primary caregiver depression had independent, significant associations with higher levels of adolescent depressive symptoms. These findings support our primary hypothesis and further build on research broadly linking parental depression to psychopathology in offspring (Gelfand & Teti, 1990).

Building on these findings, results from this study show that, when controlling for presence, chronicity, and recency together, only more chronic depression and more recent depression were significant predictors of adolescent depressive symptoms. This indicates that making a distinction between the occurrence of any parental depression and chronicity or recency is important when considering the effects parental depression may have on youth psychopathology. Caregivers with more chronic depression exhibit longer durations of symptoms that may be accompanied with deficits in parenting, impaired social functioning, family discord, and anxiety (Gelfand & Teti, 1990). Thus, for the adolescent, the accumulation of exposure to depression and its ramifications may increase the risk of developing psychopathology, with longer durations of parental depression further adding to the adolescent's

cumulative risk (Dunn et al., 2018). Similar findings by Evans et al (2003) support this notion, documenting that chronic exposure to adversity, as opposed to acute exposure, is more harmful to a child's mental health.

Furthermore, results revealed that recent depression of the primary caregiver was predictive of increased adolescent depressive symptoms above and beyond the effects of presence of parental depression and chronicity. This indicates that, during adolescence, a recent parental depressive episode may be especially influential on the development of depressive symptoms in offspring than is a past history of parental depression. These findings contradict prior research by Goodman et al (2011) suggesting that children are less susceptible to more recent parental depression due to having a longer period of healthy development, thus allowing children more time to develop effective coping mechanisms and gain access to greater amounts of social support prior to experiencing the adverse effects of exposure to depression. It should be noted, however, that existing research on the significance of recent parental depressive episodes is inconsistent, and the findings in this study align with literature supporting the notion that offspring become more susceptible to depressive symptoms as they age (Cummings & Davies, 1994). Since recency was measured at year 15 in the current study, these findings can likely be attributed to sensitive periods that occur during adolescence, in which youth are especially vulnerable to adverse experiences, such as parental depression, and therefore are more likely to experience higher levels of depressive symptoms themselves (Dunn, et al., 2018; Mars et al., 2012).

The present study found that the presence and chronicity of maternal depression significantly predicted adolescent depressive symptoms, while the presence and chronicity of paternal depression showed no unique association above and beyond maternal depression. Our

findings align with previous research that maternal depression may be uniquely associated with adolescent depression, as maternal depression was found to be more closely associated with internalizing youth disorders, while paternal depression was found to be more closely associated with externalizing youth disorders (Brennan et al., 2002). As such, since the present study only focused on adolescent depression, an internalizing disorder, this may account for paternal depression not being a significant predictor of adolescent depressive symptoms. These findings build on prior findings within this study, further supporting the idea that longer periods of depression or more depressive episodes throughout childhood, specifically for the mother, pose a significant risk to the adolescent through impaired parent-child relationships, increased isolation, and negative parenting behaviors and highlighting the notion that maternal well-being is paramount to the socio-emotional development of offspring. (Gelfand & Teti, 1990). This is consistent with research by Netsi et al (2018) revealing that more chronic and persistent depressive episodes for mothers are not only related to greater adverse outcomes for offspring but are also associated with greater issues in parenting and related behaviors. Additionally, females exhibit a higher prevalence of depression within the general population, which would impact rates of depression within this study and strengthen the association between maternal depression and adolescent depressive symptoms (Weissman et al., 2006).

With regard to the lack of unique findings for paternal depression in the present study, participants are overwhelmingly unmarried and primary caregivers are predominantly the biological mother. Given the family structure of unmarried parents, children within these families are less likely to live with their father. As such, many have less exposure to paternal depression, weakening its association to adolescent depressive symptoms. These findings may not generalize to adolescents who live most of the time with their fathers. Future research is

needed to disentangle the effects of parental depression among residential and non-residential fathers.

Contradictory to our second hypothesis, parental closeness did not function as a buffer and, instead, had a direct, negative association with adolescent depressive symptoms. This provides evidence that parental closeness acts as a promotive factor, rather than a protective factor, indicating the unique importance of the parent-child relationship. The distinction between protective and promotive factors is primarily explained by a resilience framework, which emphasizes the ability to overcome risk exposure through assets and resources (Fergus & Zimmerman, 2005). Whereas protective factors offset or buffer against negative developmental outcomes in those who are already at risk, promotive factors directly influence outcomes regardless of level of risk (Fergus & Zimmerman, 2005). Throughout childhood and adolescence, parents contribute to youth's development of emotion processing and regulation (Butterfield et al., 2021). As such, a close parent-child relationship would be beneficial in further social and emotional development. This increase in emotion regulation skills and support provided by the parent will likely directly affect the development of depressive symptoms in adolescence, as they will be better able to process their emotions and reduce related symptoms. Therefore, as opposed to offsetting the risk of adolescent depressive symptoms, the functions of parental closeness work to directly shape this risk. Extant research supports the direct effects of parental closeness, as a study by Ge and colleagues (2009) documented a direct association between close mother-adolescent relationships and reductions in adolescent depressive symptoms.

Findings in the current study revealed that family chaos also had direct effects on adolescent depressive symptoms, with higher levels of family chaos significantly predicting

adolescent depressive symptoms. This indicates that family chaos did not exacerbate the association between parental depression and adolescent depressive symptoms, but rather acted as a unique risk factor. The presence of chaos throughout childhood and adolescence, notably the lack of stability and predictability, can hinder a child's socio-emotional, cognitive, and behavioral development (Coldwell et al., 2006; Marsh et al., 2020). Consequently, chaos may be detrimental the development of emotion regulation skills that can directly lead to an increase in depressive symptoms, as adolescents will not be able to effectively manage or cope with their feelings. The inability to cope with negative emotions may drive youth to maladaptive behaviors, such as alcohol and substance use, which can further lead to the development of depressive symptoms. Consistent with the findings in this study, Marsh et al (2020) reported a significant association between household chaos and adverse socio-emotional, behavioral, and cognitive outcomes in both children and adolescents.

There was no evidence of a significant three-way interaction between parental depression (either presence, chronicity, or recency), either of the proposed moderations (family chaos or parental closeness), and child sex in predicting adolescent depressive symptoms. However, there was a significant two-way interaction between recent depression and adolescent sex such that for females, recency of primary caregiver depression in the past year was associated with an enhanced risk of depressive symptoms. This indicates the possibility females may become more susceptible to parental depression with age, since recency was studied at year 15, while presence and chronicity were only studied from birth through age 9. This finding is also consistent with research demonstrating that sex differences in depressive symptoms become more robust throughout childhood, with females exhibiting a high preponderance of depression in adolescence (Cummings & Davies, 1994; Weissman et al., 2006). Furthermore, females showed

significant main effects across all analyses that were conducted, extending the already well-known findings of a heightened depressive symptoms and other related internalizing symptoms in females (Cummings & Davies, 1994; Weissman et al., 2006).

The present study is not without limitations. The sample utilized in the present study was largely composed of unmarried couples and low-income minority families limiting the generalizability to all youth and families. As such, certain populations, such as homosexual couples, were excluded during the recruitment of the initial sample, suggesting that findings of this study may not be representative of these populations. Further, as a result of the high proportion of unmarried couples, there was a large amount of missing father reports resulting in lower estimates of paternal depression, which may have impacted the findings related to paternal depression. The measures utilized in this study also posed some limitations. First, we constructed the variables of presence, chronicity, and recency. Therefore, they may not be reliable measures of the constructs since depression was only assessed at various points throughout childhood providing a conservative estimate of chronicity. Additionally, the construct of chronicity cannot distinguish between continuous depression and multiple depressive episodes, limiting the validity of the findings. Lastly, since only the primary caregiver was surveyed for depression at year 15, this may present inconsistencies in the main effects of unique maternal and paternal effects that were examined for other constructs of depression.

Despite these limitations, the current study has notable strengths, as well. The data utilized the Fragile Families and Child Wellbeing Study which covers a large portion of childhood, from birth through age 15, enabling the investigation of parental depression across several developmental time periods. The data also reflects a large, diverse sample, increasing the reliability of findings in this study. Furthermore, the current study extends research that only

looks at the occurrence of depression alone or at a single timepoint of depression by incorporating measures of chronicity to examine the cumulative effects of depression on offspring.

The findings in the present study provide substantial support for the importance of distinguishing between variations in depression when examining adverse outcomes in offspring. Furthermore, the identification of parental closeness and family chaos as promotive and risk factors have the potential to inform research regarding further exploration as to what factors can buffer the development of adolescent depressive symptoms as opposed to directly affecting it and inform practice for those working to alleviate the adverse effects of parental depression. Future research is needed to expand upon the differences in maternal and paternal depression along with the specific effects that paternal depression has on offspring beyond adolescent depressive symptoms. Additionally, since the present study only examined parental closeness between the mother and the child, future research should focus on the parent-child relationship between both the mother and the father to determine if the relationship with the father has a significant impact on the development of adolescent psychopathology.

4.1 Conclusion

Findings from the present study further build on an already rich literature documenting the associations between parental depression and psychopathology in offspring through intergenerational transmission. The present study furthers our understanding of the variability of parental depression and the unique effects it has on offspring by examining the presence, chronicity, and recency of maternal and paternal depression on the development of adolescent depressive symptoms. These results provide further support for the greater impact of chronic and recent depression on offspring, particularly for mothers. While the present study further

delineates the effects of maternal versus paternal depression on adolescent depressive symptoms, these findings also provide support for the need to further examine the variability of depression and the impact it has on offspring.

Works Cited

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). Washington, DC: American Psychiatric Association; 2013.

Bendheim-Thoman Center for Research on Child Wellbeing & Columbia Population Research Center (2013). Scales documentation and question sources for the Nine-year wave of the Fragile Families and Child Wellbeing Study. Retrieved from http://www.fragilefamilies.princeton.edu/documentation/year9/ff_9yr_scales_2013.pdf

Blumberg SJ, Olson L, Frankel MR, Osborn L, Srinath KP, Giambo P. Design and operation of the National Survey of Children's Health, 2003. National Center for Health Statistics. Vital Health Stat 1(43). 2005.

Brennan, P. A., Hammen, C., Katz, A. R., & Le Brocque, R. M. (2002). Maternal depression, paternal psychopathology, and adolescent diagnostic outcomes. *Journal of consulting and clinical psychology*, *70*(5), 1075.

Brophy, S., Todd, C., Rahman, M. A., Kennedy, N., & Rice, F. (2021). Timing of parental depression on risk of child depression and poor educational outcomes: A population based routine data cohort study from Born in Wales, UK. *PloS one,* 16(11), e0258966. https://doi.org/10.1371/journal.pone.0258966

Butterfield, R. D., Silk, J. S., Lee, K. H., Siegle, G. S., Dahl, R. E., Forbes, E. E., Ryan, N. D., Hooley, J. M., & Ladouceur, C. D. (2021). Parents still matter! Parental warmth predicts adolescent brain function and anxiety and depressive symptoms 2 years later.

Development and psychopathology, 33(1), 226–239. https://doi.org/10.1017/S0954579419001718

Claessens, A., Engel, M., & Curran, F. C. (2015). The effects of maternal depression on child outcomes during the first years of formal schooling. *Early Childhood Research Quarterly, 32*, 80-93.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310–357. https://doi.org/10.1037/0033-2909.98.2.310

Coldwell, J., Pike, A., & Dunn, J. (2006). Household chaos–links with parenting and child behaviour. *Journal of Child Psychology and Psychiatry, 47*(11), 1116-1122.

Cuijpers, P., Weitz, E., Karyotaki, E., Garber, J., & Andersson, G. (2015). The effects of psychological treatment of maternal depression on children and parental functioning: a meta-analysis. *European child & adolescent psychiatry, 24*(2), 237–245. https://doi.org/10.1007/s00787-014-0660-6

Cummings, E. M., & Davies, P. T. (1994). Maternal depression and child development. *Journal of child psychology and psychiatry, 35*(1), 73-112.

De Luca, S. M., Yan, Y., & Johnston, C. (2020). “Can we talk?”: A longitudinal analysis of Latino & non-Hispanic parent-child connectedness & adolescent ideation. *Children and youth services review*, *110*, 104775.

Dunn, E. C., Soare, T. W., Raffeld, M. R., Busso, D. S., Crawford, K. M., Davis, K. A., ... & Susser, E. S. (2018). What life course theoretical models best explain the relationship between exposure to childhood adversity and psychopathology symptoms: recency, accumulation, or sensitive periods?. *Psychological Medicine, 48*(15), 2562-2572.

Evans, G. W., Li, D., & Whipple, S. S. (2013). Cumulative risk and child development. *Psychological bulletin, 139*(6), 1342–1396. https://doi.org/10.1037/a0031808

Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annual review of public health*, *26*, 399–419. https://doi.org/10.1146/annurev.publhealth.26.021304.144357

Garber, J., & Cole, D. A. (2010). Intergenerational transmission of depression: a launch and grow model of change across adolescence. *Development and psychopathology, 22*(4), 819–830. https://doi.org/10.1017/S0954579410000489

Ge, X., Natsuaki, M., Neiderhiser, J., & Reiss, D. (2009). The longitudinal effects of stressful life events on adolescent depression are buffered by parent–child closeness. *Development and Psychopathology, 21*(2), 621-635. doi:10.1017/S0954579409000339

Gelfand, D.M., & Teti, D.M. (1990). The effects of maternal depression on children. *Clinical Psychology Review, 10*(3), 329–353. https://doi.org/10.1016/0272-7358(90)90065-I.

Goodman, S. H. (2020). Intergenerational transmission of depression. *Annual Review of Clinical Psychology*, *16*, 213-238.

Goodman, S. H., Rouse, M. H., Connell, A. M., Broth, M. R., Hall, C. M., & Heyward, D. (2011). Maternal depression and child psychopathology: a meta-analytic review. *Clinical child and family psychology review, 14*(1), 1–27. https://doi.org/10.1007/s10567-010-0080-1

Hammen, C., & Brennan, P. A. (2003). Severity, chronicity, and timing of maternal depression and risk for adolescent offspring diagnoses in a community sample. *Archives of general psychiatry, 60*(3), 253–258. https://doi.org/10.1001/archpsyc.60.3.253

Hammen, C., Brennan, P.A., Shih, J.H. (2004). Family discord and stress predictors of depression and other disorders in adolescent children of depressed and non-depressed women. *J. Am. Acad. Child Adolescent Psychiatry 43,* 994–1002.

Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., & Angell, K. E. (1998). Development of depression from preadolescence to young adulthood: emerging gender differences in a 10-year longitudinal study. *Journal of abnormal psychology, 107*(1), 128–140. https://doi.org/10.1037//0021-843x.107.1.128

Hankin, B. L., Young, J. F., Abela, J. R., Smolen, A., Jenness, J. L., Gulley, L. D., ... & Oppenheimer, C. W. (2015). Depression from childhood into late adolescence: Influence of gender, development, genetic susceptibility, and peer stress. *Journal of abnormal psychology, 124*(4), 803.

Kessler, R.C., Andrews, G., Mroczek, D., Ustun, T.B., & Wittchen, H.U. (1998). The World Health Organization Composite International Diagnostic Interview Short-Form (CIDI-SF). *International Journal of Methods in Psychiatric Research, 7,* 171-185.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of general psychiatry, 62*(6), 593–602. https://doi.org/10.1001/archpsyc.62.6.593

Lee, F. S., Heimer, H., Giedd, J. N., Lein, E. S., Šestan, N., Weinberger, D. R., & Casey, B. J. (2014). Adolescent mental health—opportunity and obligation. *Science, 346*(6209), 547-549.

Lee, W. K., & Joo, Y. S. (2020). Adolescent extracurricular activity participation: Associations with parenting stress, mother–adolescent closeness, and social skills. *Children and Youth Services Review*, *116*, 105110.

Lieb, R., Isensee, B., Höfler, M., Pfister, H., & Wittchen, H. U. (2002). Parental major depression and the risk of depression and other mental disorders in offspring: a prospective-longitudinal community study. *Archives of general psychiatry, 59*(4), 365–374. https://doi.org/10.1001/archpsyc.59.4.365

MacKinnon, David. (2011). Integrating Mediators and Moderators in Research Design. *Research on social work practice*, 21. 675-681.

Mak, H. W., Fosco, G. M., & Lanza, S. T. (2021). Dynamic associations of parent–adolescent closeness and friend support with adolescent depressive symptoms across ages 12–19. Journal of Research on Adolescence, 31(2), 299-316.

Mars, B., Collishaw, S., Smith, D., Thapar, A., Potter, R., Sellers, R., Harold, G. T., Craddock, N., Rice, F., & Thapar, A. (2012). Offspring of parents with recurrent depression: which features of parent depression index risk for offspring psychopathology? *Journal of affective disorders, 136*(1-2), 44–53. https://doi.org/10.1016/j.jad.2011.09.002

Marsh, S., Dobson, R., & Maddison, R. (2020). The relationship between household chaos and child, parent, and family outcomes: a systematic scoping review. *BMC Public Health, 20*(1), 1-27.

Matheny, A. P., Wachs, T. D., Ludwig, J. L., & Phillips, K. (1995). Bringing order out of chaos: Psychometric characteristics of the confusion, hubbub, and order scale. *Journal of Applied Developmental Psychology, 16*(3), 429–444. https://doi.org/10.1016/0193-3973(95)90028-4

McAdams, T. A., Rijsdijk, F. V., Neiderhiser, J. M., Narusyte, J., Shaw, D. S., Natsuaki, M. N., Spotts, E. L., Ganiban, J. M., Reiss, D., Leve, L. D., Lichtenstein, P., & Eley, T. C. (2015). The relationship between parental depressive symptoms and offspring psychopathology: evidence from a children-of-twins study and an adoption study. *Psychological medicine, 45*(12), 2583–2594. https://doi.org/10.1017/S0033291715000501

National Survey of Children's Health. (2003). Middle Childhood and Adolescence Section. http://nschdata.org/Content/Guide.aspx#S7

Netsi E, Pearson RM, Murray L, Cooper P, Craske MG, Stein A. 2018. Association of persistent and severe postnatal depression with child outcomes. *JAMA Psychiatry* 75:247–53

Petrill, S. A., Pike, A., Price, T., & Plomin, R. (2004). Chaos in the home and socioeconomic status are associated with cognitive development in early childhood: Environmental mediators identified in a genetic design. *Intelligence, 32*(5), 445-460.

Polderman, T. J., Benyamin, B., De Leeuw, C. A., Sullivan, P. F., Van Bochoven, A., Visscher, P. M., & Posthuma, D. (2015). Meta-analysis of the heritability of human traits based on fifty years of twin studies. *Nature genetics, 47*(7), 702-709.

Radloff, L. S. (1977). The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Applied Psychological Measurement, 1*(3): 385-401.

Radloff, L. S. (1991). The use of the Center for Epidemiologic Studies Depression Scale in adolescents and young adults. *Journal of Youth and Adolescence, 20*(2), 149–166. https://doi.org/10.1007/BF01537606

Reichman, N. E., Teitler, J. O., Garfinkel, I., & McLanahan, S. S. (2001). Fragile Families: Sample and Design. *Children and Youth Services Review, 23*(4-5), 303-326. https://doi.org/10.1016/S0190-7409(01)00141-4

Shelleby, E. C., Votruba-Drzal, E., Shaw, D. S., Dishion, T. J., Wilson, M. N., & Gardner, F. (2014). Income and children's behavioral functioning: a sequential mediation analysis. *Journal of family psychology: JFP: journal of the Division of Family Psychology of the American Psychological Association (Division 43), 28*(6), 936–946. https://doi.org/10.1037/fam0000035

Substance Abuse and Mental Health Services Administration. (2020). Key substance use and mental health indicators in the United States: Results from the 2019 National Survey on Drug Use and Health (HHS Publication No. PEP20-07-01-001). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/sites/default/files/reports/rpt29393/2019NSDUHFFRPDFWHTML/2019NSDUHFFR1PDFW090120.pdf.

Tirumalaraju, V., Suchting, R., Evans, J., Goetzl, L., Refuerzo, J., Neumann, A., Anand, D., Ravikumar, R., Green, C. E., Cowen, P. J., & Selvaraj, S. (2020). Risk of Depression in the Adolescent and Adult Offspring of Mothers With Perinatal Depression: A Systematic Review and Meta-analysis. *JAMA network open, 3*(6), e208783. https://doi.org/10.1001/jamanetworkopen.2020.8783

Weissman, M. M., Wickramaratne, P., Nomura, Y., Warner, V., Pilowsky, D., & Verdeli, H. (2006). Offspring of depressed parents: 20 years later. *The American journal of psychiatry, 163*(6), 1001–1008. https://doi.org/10.1176/ajp.2006.163.6.1001

Wu, A.D., & Zumbo, B.D. (2008). Understanding and Using Mediators and Moderators. *Soc Indic Res 87*, 367. https://doi.org/10.1007/s11205-007-9143-1

Yu, E. A., & Chang, E. C. (2018). Parent–Child Closeness and Parents' Meaning in Life in Personal Meaning in Life: Examining Ethnic Differences. *The Family Journal, 26*(3), 300-305.

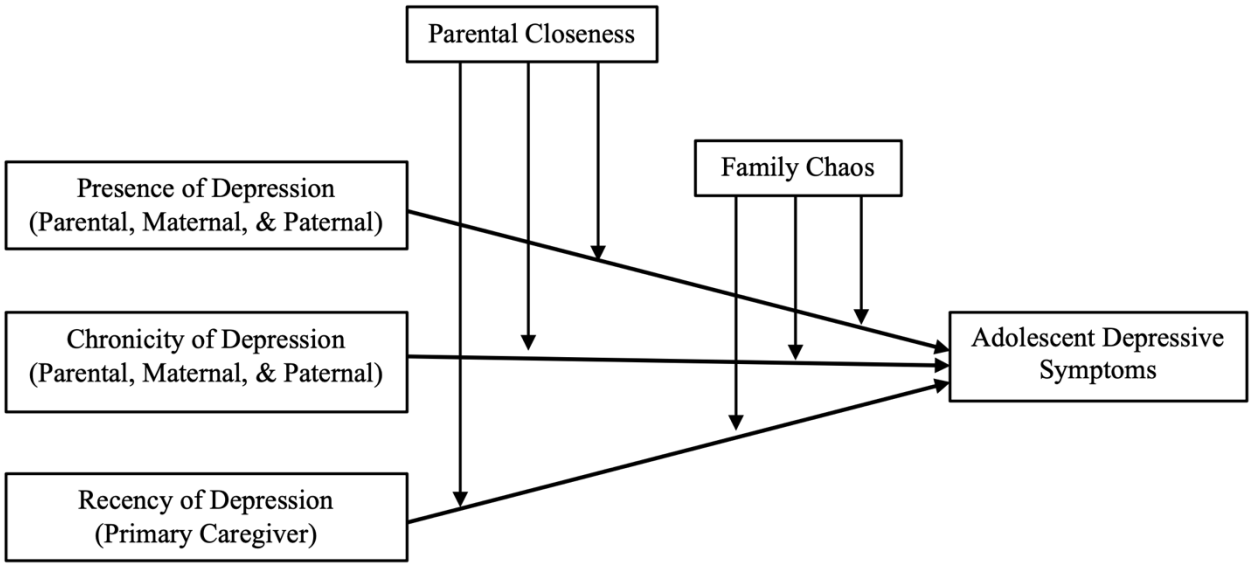

Figure 1. Proposed Conceptual Model.

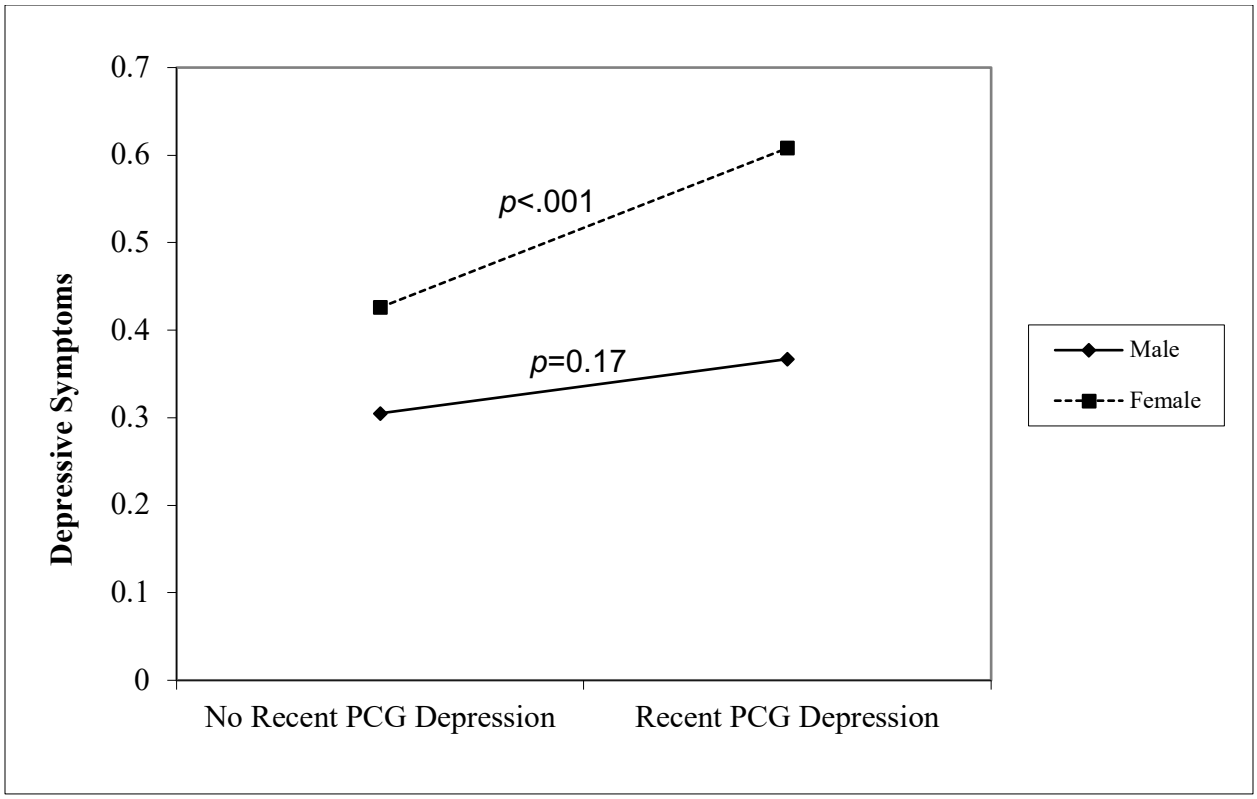

Figure 2. Child sex as a moderator of recent primary caregiver (PCG) depression and adolescent depressive symptoms at wave 6.

Table 1. Participant Demographics.

	Assessment	***M (SD)* or *N (%)***
Maternal Race/Ethnicity *N (%)*	Birth	
White		1030 (21.08%)
Black		2326 (47.61%)
Hispanic		1336 (27.34%)
Other		194 (3.97%)
Maternal Education *N (%)*	Birth	
Less than H.S. Degree		1699 (34.73%)
H.S. Diploma or equivalent		1480 (30.25%)
Some College		1189 (24.30%)
College Degree		524 (10.71%)
Paternal Education *N (%)*	Birth	
Less than H.S. Degree		1616 (34.40%)
H.S. Diploma or equivalent		1581 (33.66%)
Some College		1021 (21.74%)
College Degree		479 (10.20%)
Marital Status *N (%)*	Birth	
Married		1187 (24.24%)
Unmarried		3710 (75.76%)
Family Income *M (SD)*	Birth	$31994.04 ($31567.17)
Child Sex *N (%)*	Birth	
Male		2556 (52.20%)
Female		2341 (47.80%)
Child Age *M (SD)*	Wave 6	15.60 (0.77)
Primary Caregiver *N (%)*	Wave 6	
Biological Mother		3146 (87.88%)
Biological Father		257 (7.18%)
Other		177 (4.94%)

Table 2. Descriptive Statistics for Study Variables.

	N	*M(SD)*	**Min-Max**
Parental Depression – Presence	4740	0.49(0.50)	0-1
Parental Depression – Chronicity	4740	0.93(1.25)	0-7
PCG Depression – Recency	3575	0.17(0.38)	0-1
Maternal Depression – Presence	4706	0.37(0.48)	0-1
Maternal Depression – Chronicity	4706	0.62(0.97)	0-4
Paternal Depression – Presence	4085	0.26(0.44)	0-1
Paternal Depression – Chronicity	4085	0.39(0.74)	0-4
Family Chaos	3625	1.79(0.74)	1-5
Parental Closeness	3270	3.64(0.74)	1-4
Adolescent Depressive Symptoms	3437	0.60(0.60)	0-3

Table 3. Results of Paired Samples T-test for Differences in Presence and Chronicity of Depression

	Maternal		Paternal				
	M	*SD*	*M*	*SD*	*df*	*t*	*p*
Depression - Presence	0.37	0.48	0.26	0.44	4050	10.51	$p<.001$
Depression - Chronicity	0.62	0.97	0.39	0.75	4050	12.61	$p<.001$

Table 4. Correlations Among Study Variables.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1. Parental Depression – Presence	1.00										
2. Parental Depression – Chronicity	.76**	1.00									
3. PCG Depression – Recency	.21**	.26**	1.00								
4. Maternal Depression – Presence	.77**	.69**	.27**	1.00							
5. Maternal Depression – Chronicity	.64**	.83**	.31**	.83**	1.00						
6. Paternal Depression – Presence	.59**	.59**	.04*	.10**	.12**	1.00					
7. Paternal Depression – Chronicity	.51**	.66**	.05**	.10**	.11**	.86**	1.00				
8. Family Chaos	.13**	.17**	.14**	.13**	.17**	.06**	.06**	1.00			
9. Parental Closeness	-.01	-.04*	.04*	0.1	-.03	-.04*	-.04*	-.06**	1.00		
10. Adolescent Depressive Symptoms	.10**	.10**	.07**	.09**	.10**	.05**	.04*	.06**	-.12**	1.00	
11. Child Sex	.01	.01	-.03	.01	-.01	.02	.02	-.01	.04*	.12**	1.00

Note: Child sex: 0 = male, 1 = female.

*p<.05, **p<.01.

Table 5. Summary of Hierarchical Regression Analysis for Presence of Parental Depression and Chaos Predicting Adolescent Depressive Symptoms.

	Model 1				Model 2				Model 3				Model 4			
Variable	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*
Family Income	**-.02**	**.01**	**-.04**	**.04***	-.02	.01	-.04	.06	-.02	.01	-.04	.07	-.02	.01	-.04	.07
Child Age	.00	.02	.00	.85	.00	.02	.00	.81	.00	.02	.01	.79	.00	.02	.01	.79
Child Sex	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****
Marital Status	-.05	.03	-.04	.08	-.05	.03	-.03	.11	-.05	.03	-.03	.11	-.05	.03	-.03	.12
Race/Ethnicity																
Black	-.02	.03	-.02	.53	-.01	.03	-.01	.65	.00	.03	.00	.93	.00	.03	.00	.95
Hispanic	.00	.03	.00	.97	.01	.03	.00	.71	.02	.03	.02	.52	.02	.03	.02	.52
Other	.00	.06	.00	.90	.00	.06	.00	.99	.00	.06	.00	.99	.00	.06	.00	.99
Maternal Education																
Less than H.S. Degree	**.10**	**.04**	**.08**	**.02***	.08	.04	.06	.06	.08	.04	.06	.08	.08	.04	.06	.08
H.S. Diploma or equivalent	**.09**	**.04**	**.07**	**.04***	.07	.04	.06	.09	.07	.04	.05	.11	.07	.04	.05	.11
Some College	.02	.04	.02	.58	.01	.04	.01	.81	.01	.04	.00	.91	.00	.04	.00	.91
Parental Depression – Presence					**.09**	**.02**	**.08**	**<.001****	**.08**	**.02**	**.07**	**<.001****	**.09**	**.02**	**.07**	**<.001****
Family Chaos									**.05**	**.01**	**.06**	**<.001****	.03	.02	.04	.20
Presence X Chaos													.03	.03	.03	.36
R^2		.02				.03				.03				.03		
F for change in R^2		7.72				8.81				8.91				8.29		
N		3225				3225				3225				3225		

Note: Chaos was mean-centered. Child sex: 0=male, 1=female. White was the reference category for race/ethnicity. A Bachelor's degree was the reference category for maternal education.

*p<.05, **p<.001.

Table 6. Summary of Hierarchical Regression Analysis for Presence of Parental Depression and Closeness Predicting Adolescent Depressive Symptoms.

	Model 1				Model 2				Model 3				Model 4			
Variable	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*
Family Income	-.02	.01	-.03	.09	-.01	.01	-.03	.11	-.01	.01	-.03	.15	-.01	.01	-.03	.15
Child Age	.01	.02	.01	.46	.01	.02	.02	.41	.01	.02	.02	.43	.01	.02	.01	.43
Child Sex	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****	**.14**	**.02**	**.12**	**<.001****	**.14**	**.02**	**.12**	**<.001****
Marital Status	-.05	.03	-.04	.08	-.05	.03	-.03	.13	-.04	.03	-.03	.14	-.04	.03	-.03	.14
Race/Ethnicity																
Black	-.01	.03	-.01	.67	-.01	.03	-.01	.76	.00	.03	.00	.90	.00	.03	.00	.89
Hispanic	.02	.03	.01	.65	.03	.03	.02	.47	.03	.03	.02	.40	.03	.03	.02	.40
Other	.01	.06	.00	.89	.01	.06	.00	.84	.01	.06	.00	.83	.01	.06	.00	.83
Maternal Education																
Less than H.S. Degree	**.10**	**.05**	**.08**	**.03***	.09	.05	.07	.07	.08	.05	.06	.10	.08	.05	.06	.10
H.S. Diploma or equivalent	.08	.05	.07	.06	.07	.05	.06	.12	.06	.05	.05	.18	.06	.05	.05	.19
Some College	.01	.05	.01	.81	.00	.04	.00	.98	-.01	.04	-.01	.83	-.01	.04	.00	.82
Parental Depression – Presence					**.09**	**.02**	**.08**	**<.001****	**.09**	**.02**	**.07**	**<.001****	**.09**	**.02**	**.07**	**<.001****
Parental Closeness									**-.10**	**.02**	**-.12**	**<.001****	**-.10**	**.02**	**.13**	**<.001****
Presence X Closeness													.01	.03	.01	.67
R^2		.02				.03				.04				.04		
F for change in R^2		7.65				8.51				11.40				10.53		
N		2974				2974				2974				2974		

Note: Closeness was mean-centered. Child sex: 0=male, 1=female. White was the reference category for race/ethnicity. A Bachelor's degree was the reference category for maternal education.

*p<.05, **p<.001.

Table 7. Summary of Hierarchical Regression Analysis for Chronicity of Parental Depression and Chaos Predicting Adolescent Depressive Symptoms.

Variable	Model 1				Model 2				Model 3				Model 4			
	B	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*
Family Income	**-.02**	**.01**	**-.04**	**.04***	-.02	.01	-.04	.07	-.01	.01	-.03	.09	-.01	.01	-.03	.08
Child Age	.00	.02	.00	.85	.00	.02	.00	.81	.00	.02	.01	.79	.00	.02	.01	.79
Child Sex	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****
Marital Status	-.05	.03	-.04	.08	-.05	.03	-.03	.12	-.05	.03	-.03	.11	-.05	.03	-.03	.12
Race/Ethnicity																
Black	-.02	.03	-.02	.53	-.01	.03	-.01	.78	.00	.03	.00	.97	.00	.03	.00	.95
Hispanic	.00	.03	.00	.97	.02	.03	.01	.55	.03	.03	.02	.41	.03	.03	.02	.40
Other	-.01	.06	.00	.90	.00	.06	.00	.98	.00	.06	.00	.96	.00	.06	.00	.96
Maternal Education																
Less than H.S. Degree	**.10**	**.04**	**.08**	**.02***	.08	.04	.06	.07	.08	.04	.06	.08	.08	.04	.06	.08
H.S. Diploma or equivalent	**.09**	**.04**	**.07**	**.04***	.07	.04	.06	.09	.07	.04	.05	.10	.07	.04	.05	.10
Some College	.02	.04	.02	.58	.01	.04	.01	.85	.00	.04	.00	.93	.00	.04	.00	.94
Parental Depression – Chronicity					**.04**	**.01**	**.09**	**<.001****	**.04**	**.01**	**.08**	**<.001****	**.04**	**.01**	**.08**	**<.001****
Family Chaos									**.04**	**.01**	**.05**	**<.001****	.03	.02	.04	.09
Chronicity X Chaos													.01	.01	.02	.44
R^2		.02				.03				.03				.03		
F for change in R^2		7.72				9.39				9.32				8.65		
N		3225				3225				3225				3225		

Note: Chaos was mean-centered. Child sex: 0=male, 1=female. White was the reference category for race/ethnicity. A Bachelor's degree was the reference category for maternal education.

*p<.05, **p<.001.

Table 8. Summary of Hierarchical Regression Analysis for Chronicity of Parental Depression and Closeness Predicting Adolescent Depressive Symptoms.

	Model 1				Model 2				Model 3				Model 4			
Variable	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*
Family Income	-.02	.01	-.03	.09	-.01	.01	-.03	.14	-.01	.01	-.03	.18	-.01	.01	-.03	.19
Child Age	.01	.07	.01	.46	.01	.02	.02	.41	.01	.02	.02	.42	.01	.02	.02	.42
Child Sex	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****	**.14**	**.02**	**.12**	**<.001****	**.14**	**.02**	**.12**	**<.001****
Marital Status	-.05	.03	-.04	.08	-.05	.03	-.03	.12	-.05	.03	-.03	.13	-.05	.03	-.03	.13
Race/Ethnicity																
Black	-.01	.03	-.01	.67	.00	.03	.00	.88	.00	.03	.00	.98	.00	.03	.00	.98
Hispanic	.02	.03	.01	.65	.03	.03	.02	.34	.04	.03	.03	.30	.04	.03	.03	.29
Other	.01	.06	.00	.89	.02	.06	.01	.78	.02	.06	.01	.78	.02	.06	.01	.78
Maternal Education																
Less than H.S. Degree	**.10**	**.05**	**.08**	**.03***	.09	.05	.07	.07	.08	.05	.06	.10	.08	.05	.06	.10
H.S. Diploma or equivalent	.08	.05	.07	.06	.07	.05	.06	.11	.06	.04	.05	.17	.06	.04	.05	.17
Some College	.01	.04	.01	.81	.00	.04	.00	.94	-.01	.04	-.01	.80	-.01	.04	-.01	.80
Parental Depression – Chronicity					**.04**	**.01**	**.09**	**<.001****	**.04**	**.01**	**.08**	**<.001****	**.04**	**.01**	**.08**	**<.001****
Parental Closeness									**-.09**	**.02**	**-.12**	**<.001****	**-.09**	**.02**	**-.11**	**<.001****
Chronicity X Closeness													.00	.01	.00	.89
R^2		.02				.03				.04				.04		
F for change in R^2		7.65				9.05				11.77				10.86		
N		2974				2974				2974				2974		

Note: Closeness was mean-centered. Child sex: 0=male, 1=female. White was the reference category for race/ethnicity. A Bachelor's degree was the reference category for maternal education.

*p<.05, **p<.001.

Table 9. Summary of Hierarchical Regression Analysis for Recency of PCG Depression and Chaos Predicting Adolescent Depressive Symptoms.

	Model 1				Model 2				Model 3				Model 4			
Variable	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*
Family Income	**-.02**	**.01**	**-.04**	**.05***	**-.02**	**.01**	**-.04**	**.05***	-.02	.01	-.04	.06	-.02	.01	-.04	.06
Child Age	.01	.02	.01	.75	.01	.02	.01	.73	.01	.02	.01	.72	.01	.02	.01	.72
Child Sex	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****
Marital Status	-.05	.03	-.03	.11	-.04	.03	-.03	.17	-.04	.03	-.03	.16	-.04	.03	-.03	.16
Race/Ethnicity																
Black	-.02	.03	-.01	.61	-.01	.03	-.01	.72	.00	.03	.00	.99	.00	.03	.00	.99
Hispanic	.00	.03	.00	.92	.01	.03	.01	.70	.02	.03	.02	.51	.02	.03	.02	.52
Other	-.01	.06	.00	.91	.00	.06	.00	.99	.00	.06	.00	.97	.00	.06	.00	.96
Maternal Education																
Less than H.S. Degree	**.10**	**.04**	**.08**	**.02***	**.09**	**.04**	**.07**	**.03***	**.09**	**.04**	**.07**	**.05***	**.09**	**.04**	**.07**	**.04***
H.S. Diploma or equivalent	**.09**	**.04**	**.07**	**.04***	.08	.04	.06	.06	.08	.04	.06	.08	.08	.04	.06	.07
Some College	.02	.04	.02	.58	.02	.04	.02	.63	.01	.04	.01	.73	.02	.04	.01	.71
PCG Depression – Recency					**.11**	**.03**	**.07**	**<.001****	**.09**	**.03**	**.06**	**<.001****	**.10**	**.03**	**.07**	**<.001****
Family Chaos									**.04**	**.01**	**.06**	**<.001****	**.05**	**.02**	**.07**	**<.001****
Recency X Chaos													-.05	.04	-.03	.17
R^2		.02				.02				.03				.03		
F for change in R^2		7.45				8.13				8.27				7.77		
N		3213				3213				3213				3213		

Note: Chaos was mean-centered. Child sex: 0=male, 1=female. White was the reference category for race/ethnicity. A Bachelor's degree was the reference category for maternal education.

*p<.05, **p<.001.

Table 10. Summary of Hierarchical Regression Analysis for Recency of PCG Depression and Closeness Predicting Adolescent Depressive Symptoms.

	Model 1				Model 2				Model 3				Model 4			
Variable	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*
Family Income	-.01	.01	-.03	.09	-.02	.01	-.03	.09	-.01	.01	-.03	.13	-.01	.01	-.03	.13
Child Age	.01	.02	.02	.37	.02	.02	.02	.36	.02	.02	.02	.35	.02	.02	.02	.35
Child Sex	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.11**	**<.001****	**.14**	**.02**	**.12**	**<.001****	**.14**	**.02**	**.12**	**<.001****
Marital Status	-.05	.03	-.04	.11	-.04	.03	-.03	.16	-.04	.03	-.03	.19	-.04	.03	-.03	.19
Race/Ethnicity																
Black	-.01	.03	-.01	.68	-.01	.03	-.01	.81	.00	.03	.00	.96	.00	.03	.00	.96
Hispanic	.02	.03	.01	.65	.03	.03	.02	.46	.03	.03	.02	.38	.03	.03	.02	.38
Other	.01	.06	.00	.90	.02	.06	.01	.79	.02	.06	.01	.78	.02	.06	.01	.78
Maternal Education																
Less than H.S. Degree	**.10**	**.05**	**.08**	**.03***	**.10**	**.05**	**.08**	**.04***	.09	.05	.07	.07	.09	.05	.07	.07
H.S. Diploma or equivalent	.09	.05	.07	.06	.08	.05	.06	.08	.07	.05	.05	.15	.07	.05	.05	.15
Some College	.01	.04	.01	.79	.01	.04	.01	.85	.00	.04	.00	.99	.00	.04	.00	.99
PCG Depression – Recency					**.11**	**.03**	**.07**	**<.001****	**.12**	**.03**	**.08**	**<.001****	**.12**	**.03**	**.08**	**<.001****
Parental Closeness									**-.10**	**.02**	**-.12**	**<.001****	**-.10**	**.02**	**-.12**	**<.001****
Recency X Closeness													-.01	.04	.00	.84
R^2		.02				.03				.04				.04		
F for change in R^2		7.45				8.22				11.43				10.55		
N		2962				2962				2962				2962		

Note: Closeness was mean-centered. Child sex: 0=male, 1=female. White was the reference category for race/ethnicity. A Bachelor's degree was the reference category for maternal education.

*p<.05, **p<.001.

Table 11. Summary of Hierarchical Regression Analysis for Presence, Chronicity and Recency of Parental Depression Predicting Adolescent Depressive Symptoms.

	Model 1				Model 2			
Variable	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*
Family Income	-.01	.01	-.03	.11	-.01	.01	-.03	.17
Child Age	.00	.01	.00	.89	.00	.01	.00	.92
Child Sex	**.12**	**.02**	**.10**	**<.001****	**.13**	**.02**	**.10**	**<.001****
Marital Status	-.03	.03	-.02	.38	-.02	.03	-.01	.57
Race/Ethnicity								
Black	-.02	.03	-.02	.44	-.01	.03	-.01	.71
Hispanic	.00	.03	.00	.94	.03	.03	.02	.43
Other	-.01	.06	.00	.89	.01	.06	.00	.93
Maternal Education								
Less than H.S. Degree	.04	.05	.03	.37	.02	.05	.02	.61
H.S. Diploma or equivalent	.03	.05	.03	.47	.02	.05	.02	.67
Some College	-.01	.04	-.01	.87	-.02	.04	-.02	.63
Paternal Education								
Less than H.S. Degree	**.12**	**.05**	**.09**	**.01***	**.11**	**.05**	**.09**	**.03***
H.S. Diploma or equivalent	**.10**	**.05**	**.08**	**.03***	**.09**	**.05**	**.08**	**.04***
Some College	.06	.05	.04	.18	.06	.05	.04	.22
Parental Depression – Presence					.04	.03	.03	.24
Parental Depression – Chronicity					**.03**	**.01**	**.06**	**.03***
PCG Depression – Recency					**.08**	**.03**	**.05**	**.01***
R^2		.02				.03		
F for change in R^2		5.84				7.09		
N		3290				3290		

Note: Child sex: 0=male, 1=female. White was the reference category for race/ethnicity. A Bachelor's degree was the reference category for maternal education.
*p<.05, **p<.001.

Table 12. Summary of Hierarchical Regression Analysis for Presence of Maternal and Paternal Depression Predicting Adolescent Depressive Symptoms.

Variable	Model 1				Model 2			
	B	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*
Family Income	-.01	.01	-.03	.20	-.01	.01	-.02	.26
Child Age	.00	.01	-.00	.85	.00	.01	.00	.99
Child Sex	**.13**	**.02**	**.11**	**<.001****	**.13**	**.02**	**.10**	**<.001****
Marital Status	-.04	.03	-.03	.19	-.03	.03	-.02	.27
Race/Ethnicity								
Black	-.04	.03	-.03	.24	-.03	.03	-.02	.33
Hispanic	-.01	.03	.00	.88	.01	.03	.01	.82
Other	-.01	.06	.00	.85	-.01	.06	.00	.94
Maternal Education								
Less than H.S. Degree	.07	.05	.06	.15	.06	.05	.04	.27
H.S. Diploma or equivalent	.04	.05	.03	.37	.03	.05	.03	.49
Some College	.00	.05	.00	.94	-.01	.05	-.01	.82
Paternal Education								
Less than H.S. Degree	.11	.05	.09	.03	**.10**	**.05**	**.08**	**.04***
H.S. Diploma or equivalent	.10	.05	.08	.04	**.10**	**.05**	**.08**	**.05***
Some College	.05	.05	.03	.31	.04	.05	.03	.35
Maternal Depression – Presence					**.10**	**.023**	**.08**	**<.001****
Paternal Depression – Presence					.04	.03	.03	.14
R^2		.02				.03		
F for change in R^2		6.16				6.87		
N		2989				2989		

Note: Child sex: 0=male, 1=female. White was the reference category for race/ethnicity. A Bachelor's degree was the reference category for maternal education.

*p<.05, **p<.001.

Table 13. Summary of Hierarchical Regression Analysis for Chronicity of Maternal and Paternal Depression Predicting Adolescent Depressive Symptoms.

	Model 1				Model 2			
Variable	*B*	*(SE)*	*β*	*p*	*B*	*(SE)*	*β*	*p*
Family Income	-.01	.01	-.02	.33	-.01	.01	-.02	.42
Child Age	.01	.02	.02	.46	.01	.02	.01	.47
Child Sex	**.14**	**.02**	**.11**	**<.001****	**.14**	**.02**	**.11**	**<.001****
Marital Status	-.05	.03	-.04	.12	-.05	.03	-.03	.16
Race/Ethnicity								
Black	-.03	.03	-.02	.38	-.02	.03	-.02	.52
Hispanic	.01	.04	.01	.82	.02	.04	.02	.51
Other	.02	.07	.01	.78	.03	.07	.01	.66
Maternal Education								
Less than H.S. Degree	.06	.05	.05	.27	.05	.05	.04	.39
H.S. Diploma or equivalent	.03	.05	.02	.55	.02	.05	.02	.64
Some College	-.03	.05	-.02	.60	-.04	.05	-.03	.43
Paternal Education								
Less than H.S. Degree	**.13**	**.05**	**.10**	**.02***	.12	.05	.10	.02
H.S. Diploma or equivalent	**.11**	**.05**	**.09**	**.03***	.11	.05	.08	.04
Some College	.05	.05	.03	.38	.04	.05	.03	.41
Maternal Depression – Chronicity					**.05**	**.01**	**.09**	**<.001****
Paternal Depression – Chronicity					.01	.02	.01	.60
R^2		.03				.04		
F for change in R^2		6.66				7.27		
N		2839				2839		

Note: Child sex: 0=male, 1=female. White was the reference category for race/ethnicity. A Bachelor's degree was the reference category for maternal education.

*p<.05, **p<.001.