A longitudinal evaluation of depressive symptoms: The effects of economic pressure, couple conflict, harsh parenting, and emotional support

by

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DEDICATION

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This dissertation encompasses two studies that examine the continuity of depressive symptoms across generations and the stability of depressive symptoms within generations across time among a sample of rural American families experiencing the agricultural economic downturn in the 1980s. In the first study, the Family Stress Model (FSM) was utilized to examine the effects of economic pressure on G1 maternal depressive symptoms, G1 mother hostility toward G1 father, G1 mother harsh parenting during G2 adolescence, and G2 depressive symptoms in adulthood. Findings were in support of the FSM in that economic pressure predicted G1 maternal depressive symptoms, which was associated with G1 mother hostility G1 father, that in turn predicted G1 mother harsh parenting during G2 adolescence, and G1 mother harsh parenting was associated with G2 depressive symptoms in adulthood. In the second study, the stability of and reciprocal association between depressive symptoms and couple conflict was assessed across time among a sample of married or cohabiting romantic partners. In addition, the moderating role of emotional support was examined. Contrary to expectations, the reciprocal association between depressive symptoms and couple conflict within and across time points was not supported. Moreover, the interaction between depressive symptoms and emotional support, and the interaction between couple conflict was not significant. However, the results did support stability of depressive symptoms and couple conflict across time, as well as an association between emotional support and couple conflict. These findings provide insight to the specific mechanisms of couple conflict, harsh parenting, and emotional support through which depressive symptoms are sustained.
CHAPTER 1: GENERAL INTRODUCTION

In 2015, an estimated 16.1 million Americans had at least one major episode of depression in the last year (National Institute of Mental Health, 2017). In addition, the annual economic burden of depression is approximately $210.5 billion in direct and indirect costs (Greenberg, Fournier, Sisitsky, Pike & Kessler, 2015). These statistics indicate a critical public health issue involving all ages and genders. Moreover, depression has been shown to be transmitted across generations (Goodman, 2007; O’Connell, Boat, & Warner, 2009) and be stable across time (Tram & Cole, 2006; Gullone, King, & Ollendick, 2001). Thus, the focus of my dissertation will center on two processes that occur within individuals and families: the continuity of depressive symptoms across generations and the stability of depressive symptoms across time from emerging adulthood to adulthood.

There are mechanisms proposed to explain the continuity of depression across two generations. One way to model this continuity is through the Family Stress Model (FSM), which posits a series of mediated relationships explain the association between economic pressure and youth outcomes. The FSM (Conger & Conger, 2002) was originally developed to help explain how financial adversity impacts families going through the downturn in the agricultural economy in the late 1980s. The FSM proposes that economic pressure leads to parental depressive symptoms that can create conflict between parents. Conflict between parents can then spillover into the parent-child relationship and lead to harsh parenting. Finally, harsh parenting can lead to negative emotional outcomes of the child (Conger et al., 1990). Empirical evidence supporting the FSM was first demonstrated with the first two generations from the present dissertation. Since then, findings have been replicated in a number of studies drawing from different populations using a wide array of measures reflecting harsh behavioral interactions and
problematic child development (see Conger, et al., 2010). For example, Ponnet (2014) examined a sample of families with varying income levels and found that in all families, parental depression, interparental conflict, and positive parenting mediated the relationship between parent financial stress and adolescent problem behavior. Another study found among a sample of Turkish mothers in the Netherlands that the association between socioeconomic status and parenting was mediated by maternal stress (Emmen, 2013). Last, Neppl, Senia, and Donnellan (2016) tested the FSM utilizing a sample of families from the same prospective data as presented in this dissertation, and found that economic pressure was associated with parental depressive symptoms, which led to couple conflict. Couple conflict was associated with harsh parenting, which in turn was associated with externalizing behavior in toddlerhood.

In addition to being transmitted across generations, there may also be continuity of pathways of the FSM over time. For example, both depression (Fergusson & Woodward, 2002) and couple conflict (Lavner, Karney, & Bradbury, 2014) have been shown to be stable across time. Lamers and colleagues (2012) found depressive symptoms to be stable over a two-year period among a sample of adults. In addition, Birditt and colleagues (2010) found conflict behaviors among a sample of married couples to be stable over a 16-year time period. There may also be a reciprocal association between depression and couple conflict across time. For example, it has been found that lower quality romantic relationships may lead to higher levels of depression (Chango, McElhaney, Allen, Schad, & Marston, 2012), and higher levels of depression may lead to more hostile interactions with a romantic partner (Gotlib & Whiffen, 1989; Kahn, Coyne, & Margolin, 1985). A potential explanation for such stability of depression and couple conflict may be the stress generation perspective, which states that people who are depressed experience more interpersonal stressors due in part to their own behaviors (Hammen,
That is, depressed children (Rudolph et al., 2000) as well as adults (Hammen, 2003) are more likely to behave in ways that lead to interpersonal stress, which in turn, can perpetuate ongoing depressive symptoms or induce new episodes of such symptoms. Indeed, several studies have found that prior maltreatment, as well as current stressors precipitate the first onset of depression (Kendler, Thornton, & Gardner, 2000; Monroe & Harkness, 2005).

Furthermore, research suggests that positive behaviors (e.g., seeking emotional support from a friend, sibling, or parent) may help buffer the effects of hostile interactions (Johnson et al., 2005). Indeed, parental and sibling support has shown to be vital to well-being and adjustment in emerging adulthood (Mounts, Valentiner, Anderson, & Boswell, 2006). Taken together, the goal of this dissertation was to examine the effects of generation one (G1) mothers’ economic pressure (e.g., trouble making ends meet), depressive symptoms (e.g., feeling hopeless, loss of energy), mother hostility toward father (e.g., harsh or hostile interactions), and mother harsh parenting (e.g., angry, coercive interactions) during the second generation’s (G2) adolescence, on G2 depressive symptoms in adulthood. In addition, the stability and reciprocal effects of G2 depressive symptoms and G2 couple conflict from emerging adulthood to adulthood were assessed, as moderated by emotional support (e.g., warmth and caring from a friend or family member).

This dissertation addresses several gaps in the literature. First, data come from a prospective longitudinal study spanning nearly twenty years, which overcomes a limitation in previous studies that have been largely cross-sectional and retrospective (Thornberry, 2009). Second, the current dissertation also used multiple informants, including observational ratings of romantic relationships, self-report data, and reports from family members (e.g., father report of mother, child report of mother). This approach helps to reduce method variance biases produced
by the reliance on a single informant. Finally, observational measures were rated by different but equivalently trained observers at each time point. This approach helps to reduce biases based on ratings by a single informant which could inflate estimates of stability across time.

Dissertation Organization

This dissertation will follow the alternative dissertation format and will encompass two comprehensive manuscripts. In Chapter Two, the first study “Economic Pressure and Depressive symptoms: Testing the Family Stress Model from Adolescence to Adulthood” will be prepared for submission to the Journal of Family Psychology. Specifically, in accordance with the FSM, this paper examined economic pressure, maternal depressive symptoms, mother hostility toward her romantic partner, mother harsh parenting, and youth depressive symptoms in adulthood using a sample of families with adolescents moving from early adolescence to adulthood. Longitudinal data were used in order to evaluate relative change in depressive symptoms across time by controlling for earlier levels of depressive symptoms in early adolescence. The data was analyzed at four developmental time points. The first when G2 adolescents were 13 years old (early adolescence, 1989). The second time point when G2 adolescents were 14 to 15 years old (mid-adolescence, 1990 to 1991). The third time point when G2 adolescents were 16 and 18 years old (late adolescence, 1993 and 1995). The fourth time point when G2 were 27 to 31 years old (early adulthood, 2003 to 2007). The findings from this study can enhance understanding of the effects of economic pressure on the intergenerational transmission of G1 depressive symptoms during G2 adolescence into G2 adulthood.

In Chapter 3, the second study, “The Association and Stability between Depressive Symptoms and Couple Conflict Over Time: The Moderating Role of Emotional Support” will be prepared for submission to the Journal of Marriage and Family. The purpose of this study was to
expand our understanding of the stability and reciprocal effects of depressive symptoms and couple conflict from emerging adulthood (age 21) to adulthood (age 31). Moreover, we examined whether or not these paths are moderated by emotional support from a parent, sibling, or friend during young adulthood (ages 25-27). The findings from this research have the potential to enhance our understanding of emotional support on the stability and reciprocal effects of depressive symptoms and couple conflict between romantic partners, and further examine potential ways to positively disrupt this stability over time.
References


http://dx.doi.org/10.1146/annurev.clinpsy.3.022806.091401.

http://dx.doi.org/10.1037/0021-843x.98.1.23.


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CHAPTER 2: ECONOMIC PRESSURE AND DEPRESSIVE SYMPTOMS: TESTING THE FAMILY STRESS MODEL FROM ADOLESCENCE TO ADULTHOOD

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A paper to be submitted to: Journal of Family Psychology

Introduction

The negative effects of depression impact millions of Americans every year (National Institute of Mental Health, 2015). Depression has been associated with poor physical health (Osborn, 2001), substance use (Grant et al., 2015), lost wages (Kessler et al., 2008), and disrupted family relationships (Conger et al., 1992). Children of parents who are depressed are at much higher risk of a range of poor psychosocial outcomes such as school performance, difficulty in interpersonal relationships, delinquency, and substance abuse (Beardslee et al., 1996; Connell & Goodman, 2002; Dean et al., 2010; Oyserman, Mowbray, Meares, & Firminger, 2000). Moreover, approximately half of children living with a depressed parent will develop depression in adulthood (Goodman et al., 2011; Williamson, Birmaher, Axelson, Ryan, & Dahl, 2004). Research suggests that economic adversity may be associated with risk for behavioral and mental disorders (Conger, Conger, & Martin, 2010; Sareen, Afifi, McMillan, & Asmundson, 2011). Indeed, women with lower income have been twice as likely to report depression compared to those with higher income (Cutrona, Wallace, & Wesner, 2006; Lennon, Blome, & English, 2001). According to the Family Stress Model (FSM), economic pressure may lead to parental emotional distress which in turn can lead to conflict within family relationships (Conger & Conger, 2002). Specifically, the model posits that economic pressure precipitates emotional distress, which can create couple conflict that spills over into the parent-adolescent relationship, putting the next generation at risk for negative behavioral or developmental outcomes.
Despite this evidence, much of the existing research has focused on the effects of parental depression and family conflict on depression as an outcome in adolescence, leaving relatively few studies examining the effects of these associations on depression into adulthood (Jones et al., 2000; Slicker & Thornberry, 2003). Research also indicates when compared to paternal depression, maternal depression has been the stronger predictor of depression in their sons and daughters (Pilowsky et al., 2014). Furthermore, females have been found to be twice as likely as males to exhibit depression, and report higher levels of depression in both adolescence and adulthood than males (Morris, McGrath, Goldman, & Rottenberg, 2014). Therefore, in accordance with the pathways of the FSM, the purpose of the present study was to examine economic pressure, maternal emotional distress via depressive symptoms, mother conflict toward her romantic partner, mother harsh parenting, and youth depressive symptoms in adulthood using a sample of families with adolescents moving from early adolescence to adulthood. Longitudinal data was used in order to evaluate relative change in depressive symptoms across time by controlling for earlier levels of depressive symptoms in early adolescence.

**Literature Review**

**The Family Stress Model**

The Family Stress Model (FSM) posits that parental distress, couple conflict, and harsh parenting mediate the association between economic pressure and youth outcomes. Specifically, economic pressure leads to parental emotional distress such as depressive symptoms that can create conflict between parents. Conflict between parents can then spillover into the parent-adolescent relationship and lead to harsh parenting. Finally, harsh parenting can lead to negative emotional outcomes of the child (Conger et al., 1990). Economic pressure encompasses the emotional responses tied to not being able to make ends meet, having to make significant
cutbacks, and not having enough money to meet material needs (Conger et al., 2000; Conger et al., 1999).

The FSM was originally developed to help explain the impact of economic adversity in families living in the rural Midwest during the agricultural economic downturn in the 1980s (Conger & Conger, 2002; Conger et al. 2000; Conger et al., 2010; Conger, Ge, Elder, Lorenz, & Simons, 1994; Conger, Rueter, & Elder, 1999). Thus, empirical support for the FSM was initially found with data when the youth in the present study were in adolescence. The current study extends this previous work by examining these adolescents from the original project into adulthood. Since the initial findings, support for the FSM has been replicated in several independent studies (see also Behnke et al., 2008; Gershoff et al., 2007; Mistry, Lowe, Benner, & Chien, 2008; Mistry, Vandewater, Huston, & McLoyd, 2002; Parke et al., 2004; Scaramella, Sohr-Preston, Callahan, & Mirabile, 2008; Yeung, Linver, & Brooks-Gunn, 2002; Yoder & Hoyt, 2005). For example, Ponnet (2014) found that among families across income levels, the association between financial stress and adolescent externalizing behavior was mediated by parental depression and couple conflict. In another study by White and colleagues (2015), economic pressure was associated with higher levels of harsh parenting among a sample of Latina mothers. Moreover, the FSM has been modeled in several other studies of diverse families including outside of the United States (e.g., Aytaç & Rankin, 2009; Borge, Rutter, Côté, & Tremblay, 2004; Morrison Gutman, McLoyd, & Tokoyawa, 2005; Prior, Sanson, Smart, & Oberklaid, 1999; Robila & Krishnakumar, 2005; Solantaus, Leinonen, & Punamäki, 2004; Wickrama, Noh, & Bryant, 2005; Zevalkink & Riksen-Walraven, 2001).

Although there has been a number of replications from the FSM, most studies have used cross-sectional data which is limited in terms of evaluating the hypothesized temporal ordering
of causal influences. Thus, it is important to conduct tests of the FSM using longitudinal data (Conger et al., 2010; Donnellan, Martin, Conger, & Conger, 2013; Neppl, Senia, & Donnellan, 2015). For example, when the adolescents in the present study were parents of young children, Neppl and colleagues (2015) examined economic pressure of parents with a child during toddlerhood, and parental emotional distress, couple conflict, and harsh parenting during early childhood. Child externalizing behavior was assessed during both toddlerhood and middle childhood. Results were consistent with predictions from the FSM where economic pressure was associated with parental emotional distress and couple conflict. This conflict was associated with harsh parenting and child problem behavior, even after controlling for externalizing behavior in toddlerhood. The present study extends this research by addressing predictions of the FSM across four developmental time points from adolescence into adulthood. That is, pathways of the FSM were measured in adolescence to help understand how economic pressure is associated with depressive symptoms in adulthood.

**Maternal Hostility, Harsh Parenting, and Depression**

Maternal depression has been associated with a particularly high risk of psychological problems in children (Connell & Goodman, 2002). Specifically, maternal depression has been linked with earlier age at onset and increased severity of child symptoms (Lieb, Isensee, Hofler, Pfister, & Wittchen, 2002). Indeed, a child of a depressed parent is three to five times more likely to develop major depressive symptoms by early adulthood (Beardslee, Versage, & Gladstone, 1998; Williamson, Birmaher, Axelson, Ryan, & Dahl, 2004). This may be due to child exposure to the mother’s negative affect, as well as exposure to stressful environments (Goodman & Gottlieb, 1999). For example, studies have found that depression is transmitted from parent to child through witnessing parental couple conflict (Buehler et al., 1997; Cummings
& Davies, 2002; Cummings, Keller, & Davies, 2005; Fincham, 1998) and experiencing harsh parenting (McLeod, Weisz, & Wood, 2007; Barber, Stolz, Olsen, Collins, & Burchinal, 2005). A study by Jenkins, Simpson, Dunn, Rasbash, and Connor (2005) found parental conflict to directly predict youth depression even after controlling for harsh parenting. A recent study analyzing marital conflict, parenting practices, and youth adjustment also found a direct path from marital conflict to youth depression (Coln, Jordan, & Mercer, 2013). Furthermore, Cummings, Cheung, Koss, and Davies (2014) conducted a longitudinal study and found parental depression predicted adolescent emotional disruption which was mediated by marital conflict. Still, others find that, in line with the FSM, the effect of marital discord spills over into parent-adolescent interactions which impacts the emotional health of the next generation (e.g., Conger & Conger, 2002; Erel & Burman, 1995).

Indeed, parental depression can have negative effects on parenting quality which can lead to the use of ineffective parenting strategies (Bayer, Sanson, & Hemphill, 2006). For example, mothers may be overwhelmed with feelings of depression and are disengaged from their children, or they are less affectionate. Specifically, depression has been linked to a decrease in verbal interactions (positive or negative), an increase in negative physical interactions (Querido, Eyberg, & Boggs, 2001), and a decreased awareness of the emotional impact these interactions have on their children (Coyne et al., 2007). Taken together, these findings highlight the importance of examining the potential pathways of couple conflict and harsh parenting practices as experienced in the family of origin on the association between maternal depression and youth depression in adulthood.
The Present Investigation

The present study evaluated pathways from the FSM to understand how economic pressure as experienced in adolescence is related to depressive symptoms in adulthood. Specifically, generation 1 (G1) maternal economic pressure was assessed when generation 2 (G2) adolescents were 13 years old. Maternal depressive symptoms were assessed when their G2 adolescent was 14 to 15 years old. G1 mother conflict toward her romantic partner and G1 maternal harsh parenting to G2 were examined when G2s were 16 and 18 years old. Finally, G2 depressive symptoms in adulthood was assessed at ages 27, 29, and 31 years old. The potential effects of G2 early depressive symptoms on G2 depressive symptoms in adulthood was accounted for by controlling for G2 depressive symptoms in adolescence when they were 13 years old (see Figure 1). The current study contributes to the body of literature by examining the effects of economic pressure on depressive symptoms over time; from early adolescence through adulthood. As illustrated in Figure 1, the FSM proposes that parents experiencing economic pressure will show higher levels of depressive symptoms, which will lead to couple conflict and harsh parenting. In line with the FSM, the association between couple conflict and youth outcomes is thought to be mediated via disrupted parenting processes. However, due to the literature on the association between couple conflict and youth depressive symptoms, we included the path from mother conflict toward her partner to youth depressive symptoms in adulthood. In addition, because we controlled for youth depressive symptoms during the early adolescent years, the model predicts relative change in youth adjustment over time.

In the current investigation we also controlled for the age of G1 mothers as older maternal age has been associated with higher levels of depression in female offspring in early adulthood (Tearne et al., 2015). Moreover, we also examined G1 per capita income as the
association between low socioeconomic status and depression has been well documented (Lorant et al., 2003). We also tested for moderation by G2 gender as women are more likely to experience depression than men, and are also more likely than men to report negative symptoms related to depression due to sociocultural influences related to gender (National Institute of Mental Health, 2016).

**Method**

**Participants**

Data come from the Iowa Youth and Families Project (IYFP), where information from the G1 family of origin ($N = 451$) were collected annually from 1989 through 1992. Participants included the G2 adolescent, his or her G1 parents, and a sibling within 4 years of age of the adolescent. When interviewed in 1989, G2 adolescents were in seventh grade ($M$ age = 12.7 years; 236 females, 215 males). They were recruited from both public and private schools in eight rural Iowa counties. Due to the rural Midwestern nature of the sample there were few minority families (approximately 1% of the population); therefore, all of the participants were Caucasian. Seventy–eight percent of the eligible families agreed to participate. The families were primarily lower middle– or middle–class. In 1989, G1 parents averaged 13 years of schooling and had a median family income of $33,700. Families ranged in size from 4 to 13 members, with an average size of 4.94 members. Fathers’ average age was 40 years, while mothers’ average age was 38. In 1994, the families from the IYFP continued in another project, the Family Transitions Project (FTP). The same G2 adolescents were followed during their transition into adulthood. Beginning in 1995, the G2 adolescents (one year after completion of high school), now young adults, participated in the study with a romantic partner.
The present study examined 451 G2s (60% female) who participated with their G1 mothers from 1989 to 2009. The data were analyzed at four developmental time points. The first when G2 adolescents were 13 years old (early adolescence, 1989). The second time point when G2 adolescents were 14 to 15 years old (mid-adolescence, 1990 to 1991). The third time point when G2 adolescents were 16 and 18 years old (late adolescence, 1993 and 1995). The fourth time point when G2 were 27 to 31 years old (early adulthood, 2003 to 2007).

**Procedures**

When G2 were adolescents, all of the families of origin were visited twice in their homes each year by a trained interviewer. Each visit lasted approximately two hours, with the second visit occurring within two weeks of the first visit. During the first visit, each family member (G1 parent and G2 adolescent) completed questionnaires pertaining to subjects such as parenting, individual characteristics, and quality of family interactions. When G2s were adults, they were visited biennially in their home by trained interviewers. During that visit, G2s completed a series of questionnaires which included individual characteristics.

**Measures**

The means, standard deviations, and minimum and maximum scores for all study variables are provided in Table 1.

**G1 economic pressure (Time 1).** Economic pressure was assessed using G1 mother self-report on questions regarding making ends meet, financial cutbacks, and material needs. Making ends meet consisted of two questions, the first being on a five-point scale (1) *a great deal of difficulty* to (5) *no difficulty at all* and asked during the past 12 months “how much difficulty have you had paying your bills?” The second question was on a four-point scale (1) *more than enough money left over* and (4) *not enough to make ends meet*. Mothers were asked to think
again over the last 12 months “generally at the end of each month how much money did you end up with?” The items were then reversed coded and both items were standardized and averaged to create an overall measure for making ends meet. Financial cutbacks included 28 yes or no questions to determine drastic measures or cutbacks for the family. Questions included items such as “whether or not the parent dropped plans for going to college,” “postponed medical or dental care,” or “taking bankruptcy.” Additional items regarding thriftiness were also asked including items such as “whether or not the parent had taken on extra jobs to help meet expenses,” “change to food shopping or eating habits to save money,” and “purchase secondhand goods rather than new.” The material needs measure was determined by asking parents to indicate their level of agreement regarding six items that were on a five-point scale (1) strongly agree and (5) strongly disagree. Items included statements such as “I have enough money to afford the kind of place to live in that I should have,” “I have enough money to afford the kind of clothing I should have,” and “I have enough money to afford the kind of food I should have.” The scores for each of the three indicators were standardized and then averaged to create an overall composite score of economic pressure (α = .82).

G2 depressive symptoms in early adolescence (Time 1). G2 self-report of depressive symptoms was assessed using the depressive symptoms domains from the Symptom Checklist-90-R (SCL-90-R; Derogatis, 1994) when the adolescent was 13 years old. For the 12-item depressive symptoms subscale (α = .87), questions regarding symptoms such as crying easily or feelings of worthlessness were assessed. Responding participants rated items using a 5-point Likert scale ranging from (1) Not at All to (5) Extremely. Ratings were averaged across items to create an overall composite score.
**G1 maternal depressive symptoms (Time 2).** G1 depressive symptoms were assessed via self-report using the depressive symptoms subdomain of the Symptom Checklist-90-R (SCL-90-R; Derogatis, 1994) when G2s were 14 and 15 years old. For the 12-item depressive symptoms subscale ($\alpha = .92$), questions regarding symptoms such as crying easily or feelings of worthlessness were assessed. Responding participants rated items using a 5-point Likert scale ranging from (1) *Not at All* to (5) *Extremely*. Ratings were averaged across ages to create an overall composite score for G1 mothers.

**G1 mother hostility toward father (Time 3).** G1 father report of G1 mother hostility toward him was measured using the 12-item hostility scale of the Behavioral Affective Rating Scale (BARS: Conger, 1989a). The introduction for the scale read “During the past month when you and your wife spent time talking or doing things together, how often did he/she…” Items included statements such as “Insult or swear at you,” “Criticize you or your ideas,” and “Shout or yell at you because she was mad at you.” Responding participants rated items using a 7-point Likert scale ranging from (1) *Never* to (7) *Always*. All items will be averaged across time points to create an overall composite score of hostility. The scale showed acceptable reliability ($\alpha = .91$).

**G1 mother harsh parenting (Time 3).** G2s were 16 and 18 years old when their G1 mother’s hostility towards them was measured via G2 report using the same 12-item hostility scale of the Behavioral Affective Rating Scale (BARS: Conger, 1989b). The introduction for the scale read “During the past month when you and your mother have spent time talking or doing things together, how often did she…” Items included statements such as “Get angry at you,” “Hit, push, grab or shove you,” and “Call you bad names.” Responding participants rated items using a 7-point Likert scale ranging from (1) *Never* to (7) *Always*. All items were averaged
across time points to create an overall composite score of G1 mother harsh parenting. The scale showed acceptable reliability ($\alpha = .91$).

**G2 depressive symptoms in adulthood (Time 4).** G2 self-report of depressive symptoms was assessed using the depressive symptoms domains from the Symptom Checklist-90-R (SCL-90-R; Derogatis, 1994). For the 12-item depressive symptoms subscale ($\alpha = .94$), questions regarding symptoms such as crying easily or feelings of worthlessness were assessed. Responding participants rated items using a 5-point Likert scale ranging from (1) *Not at All* to (5) *Extremely*. Scores were averaged across ages to create an overall composite score for G2 adults.

**Control Variables.** The control variables included G1 mother self-report of her age and household per capita income at Time 1.

**Analytic Strategy**

Attrition analyses were conducted to ascertain if participants included at Time 1 and Time 4 differed from those who only participated at Time 1. We tested whether there was a systematic difference between the two groups in terms of demographic variables (G1 mother’s age, per capital income, G2 gender) and predictor variables (G1 economic pressure, G1 maternal depressive symptoms, G1 maternal hostility to father, G1 maternal harsh parenting, G2 depressive symptoms in adolescence). There was a significant difference in G1 maternal age between the two groups ($t= 3.70, p=.001$), where G2s of older G1 mothers were more likely to be missing at Time 4. There was also a significant difference in G2 gender between the two groups ($t= 1.98, p=.05$), where G2 females were more likely to be missing at Time 4.

Basic descriptive analyses and correlations among the study variables were conducted. Next, due to the variables in the model being observed, path analysis was employed using Mplus
Version 7 software (Muthen & Muthen, 2012). Full Information Maximum Likelihood (FIML) estimation was utilized to handle missing data and establish the best model fit for the data (Allison, 2003). Using this method for model estimation will produce the most accurate fit results because FIML limits bias by using estimations based on all of the available data (Newsom, 2015) instead of deleting cases that contain missing data (Duncan, Duncan, & Strycker, 2013). Three indices were assessed to evaluate the fit of the model to the data, including the standard chi-square index, the root mean square error of approximation (RMSEA; Brown & Cudeck, 1993) and the comparative fit index (CFI; Hu & Bentler, 1999). RMSEA values below .05 indicate close fit to the data, and values between .05 and .08 represent reasonable fit (Hu & Bentler, 1999). Regarding the CFI, fit index values above .90 and ideally above .95, are considered to be acceptable. In addition to examining the direct relations within the model, we also examined the significance of the indirect pathways of the FSM model. All indirect analyses were conducted in Mplus Version 7 with 95% confidence intervals constructed and bias-corrected bootstrapping (1,000 samples) which provide a more accurate estimation of the indirect effects (MacKinnon, Lockwood, & Williams, 2004).

The model was tested in two different ways. First, the model was estimated without the inclusion of the control variables in the analysis. Next, the model was estimated with the inclusion of the controls. Both sets of the model generated the same pattern of results, therefore, we present the results without the inclusion of the control variables in the final model. Testing for moderation by G2 gender was also conducted. The model was estimated with the paths unconstrained and then with the paths constrained to equality across both male and female groups. The chi-square difference test was not significant, indicating the models were not significantly different from each other. Therefore, moderation by gender was not supported.
Results

Correlations among Constructs

Table 2 shows the zero-order correlations among study variables. Consistent with theoretical predictions, economic pressure was significantly correlated with G1 maternal depressive symptoms \((r = .34, p < .001)\). G1 maternal depressive symptoms was significantly correlated with G1 couple conflict \((r = .35, p < .001)\) and G2 depressive symptoms in adulthood \((r = .13, p < .01)\). G1 couple conflict was significantly correlated with G1 harsh parenting \((r = .20, p < .001)\), and G1 harsh parenting was significantly correlated with G2 depressive symptoms in adulthood \((r = .15, p < .01)\). G1 couple conflict was not significantly related to G2 depressive symptoms in adulthood. Depressive symptoms in G2 early adolescence was related to G2 depressive symptoms in adulthood \((r = .28, < .001)\). The associations among study variables were consistent with expectations and therefore moving forward in testing the model was justified.

Path Analyses

The model demonstrated acceptable fit, \(\chi^2 (7) = 16.73, p < .05\), RMSEA = .06, CFI = .95. Standardized coefficients from the final model which reached statistical significance are presented in Figure 2. Consistent with the predicted model pathways, economic pressure was significantly positively associated with G1 maternal depressive symptoms \((\beta = 0.31, SE = 0.04)\). G1 maternal depressive symptoms, in turn, was significantly associated with G1 couple conflict \((\beta = 0.35, SE = 0.07)\). G1 couple conflict was significantly associated with G1 harsh parenting \((\beta = 0.20, SE = .06)\) and G1 harsh parenting was significantly associated with G2 depressive symptoms in adulthood \((\beta = 0.12, SE = 0.05)\). G2 early depressive symptoms was significantly associated with G2 depressive symptoms in adulthood \((\beta = 0.25, SE = 0.06)\).
Indirect Effects. In addition to assessing the direct associations in the model, the mediating pathways through which economic pressure is associated with youth depressive symptoms in adulthood were also examined (see Table 3). G1 economic pressure was indirectly associated with G1 couple conflict through G1 mother depressive symptoms ($\beta = .11 \ SE = .03$). Moreover, G1 economic pressure was indirectly associated with G1 mother harsh parenting through G1 mother depressive symptoms and G1 couple conflict ($\beta = .02 \ SE = .01$). G1 economic pressure was also indirectly associated with G2 adult depressive symptoms through G1 mother depressive symptoms, G1 couple conflict, and G1 mother harsh parenting ($\beta = .002 \ SE = .01$). The direct path from G1 mother depressive symptoms to G1 mother harsh parenting was not significant, rather was mediated through G1 couple conflict ($\beta = .07 \ SE = .02$). Moreover, the direct path from G1 mother depressive symptoms to G2 adult depressive symptoms was not significant, but was significantly mediated through G1 couple conflict and G1 mother harsh parenting ($\beta = .002 \ SE = .01$). Last, G1 couple conflict was associated with G2 adult depressive symptoms through G1 mother harsh parenting ($\beta = .02 \ SE = .01$).

Discussion

The present investigation examined pathways of the FSM to help understand the associations between economic pressure, maternal depressive symptoms, and family conflict as experienced in adolescence on youth depressive symptoms in adulthood. These family processes were examined while controlling for earlier levels of depressive symptoms in adolescence. This study adds to the existing literature surrounding the FSM by using longitudinal data to study the original adolescents at four developmental time points. Results showed support for the model in that economic pressure in early adolescence was related to maternal depressive symptoms during middle adolescence. Maternal depressive symptoms were associated with mother conflict toward
the father as reported by the father, as well as maternal harsh parenting toward the adolescent as reported by youth in late adolescence. Maternal harsh parenting was then related to self-report of depressive symptoms of youth in adulthood. This was true even after earlier adolescent depressive symptoms was taken into account. These results illustrate that economic pressure as experienced by mothers when youth are in early adolescence precipitates maternal depressive symptoms which has implications for family functioning and puts the adolescent at risk for depressive symptoms in adulthood.

The current results replicate and extend previous studies examining economic adversity, family processes, and youth developmental outcomes. For example, Conger and colleagues (1994) showed the pathways of the FSM operated similarly when youth from the present study were in adolescence. Specifically, they examined youth over three years during seventh, eighth, and ninth grades. Results were consistent with theoretical predictions in that economic pressure was associated with parental couple conflict, which was related to harsh parenting of the adolescent child. Harsh parenting, in turn, was associated with youth internalizing and externalizing symptoms. Similarly, Lee, Wickrama, and Simons (2012) examined the effects of chronic economic hardship and family processes on the progression of mental and physical health symptoms in adolescence. Using the same prospective longitudinal data as the present study, results indicated that the effects of economic hardship were mediated through parental couple conflict and supportive parenting, which in turn was associated with adolescent mental and physical health. The present study extends this original work by examining these processes across time from adolescence into adulthood. Future research should continue to extend the model into later adulthood as this may hold an important key to understanding the impact of economic stressors on development throughout adolescence and adulthood.
The current results also extend work conducted by other researchers. For example, Parke et al. (2004) tested and replicated the FSM where economic pressure was associated with parental distress, couple conflict, and harsh parenting. In turn, these family processes were associated with problems of adjustment in childhood. Gershoff et al. (2007) found that effects of economic adversity on child behavioral outcomes was mediated by parental distress and harsh parenting. Moreover, Ponnet (2014) found that parental depression, interparental conflict, and positive parenting mediated the relation between financial stress and adolescent problem behavior. Solantaus et al. (2004) examined children’s mental health before Finland’s economic recession to assess whether change in a family’s economic situation led to problematic child behavior. They found that after controlling for pre-recession child mental health, economic hardship led to changes in children’s internalizing and externalizing behavior. Finally, Newland, Crnic, Cox, and Mills-Koonce (2013) showed that economic pressure was associated with maternal depression, which in turn was significantly related to decreases in sensitive and supportive parenting practices. The present study extends this previous work by drawing from a prospective, longitudinal sample into adulthood.

Limitations and Future Directions

It should be acknowledged that there are alternative explanations for some of the findings. It could be that shared genetic factors passed directly from parent to child help explain some of the observed associations. For example, Caspi et al. (2003) found a gene-environment interaction between 5-HTTLPR (a serotonin transporter polymorphism), negative life events, and depression using data spanning from childhood to early adulthood. Thus, future research should evaluate genetic factors within the pathways of the FSM. There are also limitations of the present study worth noting. For example, the participants are primarily Caucasian, living in the rural
Midwest, which limits the generalizability of the findings. However, as outlined in this report, earlier research has shown similar findings using more diverse samples. Moreover, although the study includes data obtained from three reporters (G1 mother, G1 father, G2 during adolescence and adulthood) at four time points, the study does not include any observational data which could further corroborate self-report measures. However, Alschuler and colleagues (2008) indicated that the association between depression and other adversities is not explained by the potential self-report bias of people with depressive symptoms over-reporting negative or under-reporting positive aspects of their experiences. Despite these limitations, the present study utilized a prospective longitudinal study spanning over 20 years. In addition, as prior studies have replicated the FSM using nationally representative data (Gershoff et al., 2007) or multiple reporters (Parke et al., 2004; Yeung et al., 2002), they were still limited by relying on cross-sectional or self-report measures. The present study overcomes these limitations by utilizing prospective, longitudinal data across four time points from multiple reporters.

There are several other promising directions for future work. For example, future research should utilize clinical measures of depression, which could further delineate the influence of specific levels of depression, such as major depressive disorder. Moreover, future research should involve resiliency factors that could potentially disrupt the processes outlined by the FSM. For example, Jeon and Neppl (2016) examined the intergenerational continuity of economic hardship, parental positivity, and positive parenting utilizing the FSM and a resilience framework. Using the same longitudinal data as the current study, results indicated that G1 economic hardship was negatively associated with G1 parental positivity and G1 positive parenting to the G2 adolescent. Moreover, G2 economic hardship was also negatively associated with G2 positivity and G2 positive parenting to G3 in adulthood. This, in turn, was associated
with G3 child positive behavior towards G2. Overall, findings indicated that even during times of economic adversity, positivity and positive parenting was transmitted across generations to influence the behavior of the G3 child.

**Implications for Policy and Practice**

Based on the results that depressive symptoms are related to couple and parent-adolescent relationships which impact depressive symptoms of the next generation into adulthood, it is important that policies are in place that ensure the use of evidence-based practices (EPBs) which refer to the body of research about the efficacy of clinical treatments of mental health problems such as depression or depressive symptoms. There is growing concern that a gap exists between the research regarding effective treatments and mental health providers applying this knowledge in their work (Drabick & Goldfried, 2000; Kazdin, 2008). Strategies have been put in place to address this practice-research gap including surveying mental health practitioners (Teachman et al., 2012), developing Practice Research Networks to enhance collaboration between researchers and mental health practitioners (Castonguay et al., 2010), and using mental health clinics as a natural laboratory (Westen, Novotny, & Thompson-Brenner, 2004) to assess the effectiveness of EBPs. To address the cascading effects of economic adversity as outlined in the FSM, one promising and emerging approach could be financial therapy, which is a collaborative approach between financial and mental health professionals that integrates the emotional, cognitive, relational, and behavioral aspects of financial health (Grable, McGill, & Britt, 2010). Indeed, a recent study by Archuleta, Grable, and Burr (2015) who conducted a pilot study of solution-focused financial therapy found that participants had an increase in psychological well-being scores, improved financial behaviors, and a decrease in financial distress when comparing pre
and post-intervention scores. Further research is warranted to evaluate the efficacy of financial therapy and develop an evidence base.

**Conclusion**

In conclusion, results from the current investigation show that felt economic pressure is associated with maternal depressive symptoms, which is related to couple conflict. Mother conflict toward her spouse is associated with maternal harsh parenting that was directly related to depressive symptoms in early adulthood in the next generation. These results highlight the long-term effects of economic pressure, depressive symptoms, and family conflict that have lasting effects on youth into adulthood. Understanding such pathways will help inform policy makers and mental health professionals working with mothers and their families particularly when faced with economic pressure.
References


Morris, B. H., McGrath, A. C., Goldman, M. S., & Rottenberg, J. (2014). Parental depression confers greater prospective depression risk to females than males in emerging


Table 1.

*Descriptive Statistics of Study Variables (N = 451)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
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<th>Min</th>
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<td>6.78</td>
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<td>1</td>
<td>4.78</td>
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<tr>
<td>G2 Adult Depressive Symptoms&lt;sup&gt;d&lt;/sup&gt;</td>
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<td>.44</td>
<td>1</td>
<td>3.96</td>
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<td>G2 Early Depressive Symptoms&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>G1 Mother Age&lt;sup&gt;a&lt;/sup&gt;</td>
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*Note.* <sup>a</sup>Time 1; <sup>b</sup>Time 2; <sup>c</sup>Time 3; <sup>d</sup>Time 4.
Table 2.

*Correlations of Study Variables*

<table>
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<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
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<td>1. G1 Economic Pressure Pressure&lt;sup&gt;a&lt;/sup&gt;</td>
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<td></td>
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</tr>
<tr>
<td>2. G1 Mother Depressive Symptoms&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.34**</td>
<td>-</td>
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</tr>
<tr>
<td>3. G1 Mother Hostility toward Father&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.23**</td>
<td>.35**</td>
<td>-</td>
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<td></td>
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<td>4. G1 Mother Harsh Parenting&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>.09</td>
<td>.20**</td>
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<td>.15**</td>
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<td>6. G2 Early Depressive Symptoms&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>.20**</td>
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<td>.13**</td>
<td>.28**</td>
<td>-</td>
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<td>7. G2 Gender</td>
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<td>-.01</td>
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<td>.11*</td>
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<td>8. G1 Mother Age&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>.02</td>
<td>-.11</td>
<td>&lt;.001</td>
<td>-.03</td>
<td>.03</td>
<td>-</td>
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<td>9. G1 Per Capita Income&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.43**</td>
<td>-.12*</td>
<td>-.02</td>
<td>.01</td>
<td>-.01</td>
<td>.03</td>
<td>-.02</td>
<td>.26**</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. <sup>a</sup>Time 1; <sup>b</sup>Time 2; <sup>c</sup>Time 3; <sup>d</sup>Time 4. * p < .05, ** p < .01, *** p < .001.
### Table 3.

**Mediating Pathways**

<table>
<thead>
<tr>
<th>Significant Indirect Paths from Figure 1</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1 Depressive Symptoms → G1 Hostility toward Father → G1 Harsh Parenting → G2 Adult Depressive Symptoms</td>
<td>.002(.01)†</td>
</tr>
<tr>
<td>G1 Economic Pressure → G1 Depressive Symptoms → G1 Hostility toward Father → G1 Harsh Parenting → G2 Adult Depressive Symptoms</td>
<td>.003(.002)†</td>
</tr>
<tr>
<td>G1 Hostility toward Father → G1 Harsh Parenting → G2 Adult Depressive Symptoms</td>
<td>.02(.01)*</td>
</tr>
<tr>
<td>G1 Economic Pressure → G1 Depressive Symptoms → G1 Hostility toward Father → G1 Harsh Parenting</td>
<td>.02(.01)**</td>
</tr>
<tr>
<td>G1 Depressive Symptoms → G1 Hostility toward Father → G1 Harsh Parenting</td>
<td>.07(.02)**</td>
</tr>
<tr>
<td>G1 Economic Pressure → G1 Depressive Symptoms → G1 Hostility toward Father</td>
<td>.11(.03)***</td>
</tr>
</tbody>
</table>

*Note.* † p < .10, * p < .05, ** p < .01, *** p < .001. Standard errors in parentheses.
Figure 1. Conceptual Model

- **G1 Economic Pressure**
- **G1 Mother Harsh Parenting**
- **G1 Mother Depressive Symptoms**
- **G2 Early Depressive Symptoms**
- **G2 Adult Depressive Symptoms**
- **G1 Mother Hostility toward Father**

**Time 1:** G2 Early Adolescence  
**Time 2:** G2 Mid-Adolescence  
**Time 3:** G2 Late Adolescence  
**Time 4:** G2 Adulthood
Figure 2. Significant Standardized Coefficients of Model

Note. Nonsignificant paths not shown. * p < .05, ** p < .01, *** p < .001.
## APPENDIX A

### TABLE OF MEASURES

<table>
<thead>
<tr>
<th>Concept</th>
<th>Variable</th>
<th>Measurement/Instrument</th>
<th>Item(s)</th>
<th>Collection time(s)</th>
<th>Reporter/Data source</th>
<th>Validity</th>
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<tbody>
<tr>
<td>Economic Adversity</td>
<td>Economic Pressure</td>
<td>Self-report of making ends meet, financial cutbacks, and material needs</td>
<td>Two items (first on five-point scale, second on four-point scale); 28 yes/no items; six items on five-point scale</td>
<td>Time 1</td>
<td>Self-report of G1 mother</td>
<td>$\alpha = .82$</td>
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</tr>
<tr>
<td>Depression</td>
<td>Depressive</td>
<td>Depressive symptoms subdomain of the Symptom Checklist-90-R (SCL-90-R; Derogatis, 1994)</td>
<td>Symptoms of depression; 12 items on five-point scale</td>
<td>Time 1, 2, and 4</td>
<td>Self-report of G2 adolescent; Self-report of G1 mother; Self-report of G2 in adulthood</td>
<td>$\alpha = .87$; $\alpha = .92$; $\alpha = .94$</td>
</tr>
<tr>
<td>Interparental relationship</td>
<td>Couple Conflict</td>
<td>Hostility scale of the Behavioral Affective Rating Scale (BARS: Conger, 1989a)</td>
<td>Hostile behaviors toward spouse; 12 items on seven-point scale</td>
<td>Time 3</td>
<td>G1 father report of G1 mother</td>
<td>$\alpha = .91$</td>
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<tr>
<td>Parent-adolescent relationship</td>
<td>Harsh Parenting</td>
<td>Hostility scale of the Behavioral Affective Rating Scale (BARS: Conger, 1989b)</td>
<td>Hostile behaviors toward child; 12 items on seven-point scale</td>
<td>Time 4</td>
<td>G2 adolescent report of G1 mother</td>
<td>$\alpha = .91$</td>
</tr>
</tbody>
</table>
CHAPTER 3: THE ASSOCIATION BETWEEN DEPRESSIVE SYMPTOMS AND COUPLE CONFLICT OVER TIME: THE MODERATING ROLE OF EMOTIONAL SUPPORT

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Iowa State University

A paper to be submitted to: Journal of Marriage and Family

Introduction

The negative effects of depression are well documented. For example, depression has been associated with higher rates of substance use (Grant et al., 2015), poor physical health (Osborn, 2001), and a host of negative psychosocial outcomes such as low self-concept (Shahar & Davidson, 2003), disrupted family relationships (Conger, Conger, Elder Jr., Lorenz, & Simons, 1992) and emotional support (Grav, Hellzen, Romild, & Stordal, 2012). Furthermore, research has consistently found that depression is linked with poor quality relationships (Allen, Porter, McFarland, McElhaney, & Marsh, 2007; Branje, Hale, Frijns, & Meeus, 2010; Jenkins, Goodness, & Buhrmester, 2002; La Greca & Harrison, 2005; Molcho, Gabhainn, Kelly, Friel, & Kelleher, 2007; Sheeber, Davis, Leve, Hops, & Tildesley, 2007; Stice, Ragan, & Randall, 2004). Specifically, individuals with higher levels of depression may treat their romantic partner more harshly. Indeed, couples who report conflict within their romantic relationship report higher levels of depression (Bradbury, Fincham, & Beach, 2000), lower levels of relationship security (Davies, Sturge-Apple, Woitach, & Cummings, 2009), and higher levels of harsh or hostile interactions (Karney & Bradbury, 1995).

There is evidence that the association between depression and poor relationship quality may be cyclical in nature (Atkins, Bortnik, Hahlweg, & Klann, 2011; Lemmens, Buysse, Heene, Eisler, & Demyttenaere, 2007). That is, the association between depression and couple conflict may be reciprocal where depression predicts couple conflict and vice versa. Furthermore, there is
evidence to suggest that depression and the quality of couple interaction may be stable across time. For example, studies indicate that levels of depression become more stable as individuals progress from adolescence into adulthood (Hofstra & Verhulst, 2000; Richards & Huppert, 2011). Similarly, levels of couple conflict have been found to remain stable across time (Lavner, Karney, & Bradbury, 2014). Despite this evidence, few studies have prospectively examined the association between depression and couple conflict in emerging adulthood with depression and couple conflict in adulthood. One exception was a study by Choi and Marks (2008) that examined the association between depression, marital conflict, and functional impairment (e.g., a mental or physical condition that limited ability to perform activities of daily living) across three time points among a nationally representative sample of participants at least 19 years old. Results indicated marital discord directly led to increases in depression and functional impairment, and indirectly led to an increase in depression through functional impairment, but this association was only evident from Time 2 to Time 3. Moreover, a reciprocal association from depression to marital conflict was evident, but only from Time 1 to Time 2. It was concluded that the reciprocal effects of depression on couple conflict, or couple conflict on depression, may be more immediate. Therefore, the purpose of the current study was to prospectively examine the stability of, and reciprocal association at two developmental time points, between depressive symptoms and couple conflict in emerging adulthood with depressive symptoms and couple conflict in later emerging adulthood.

It is also possible that the association between depressive symptoms and couple conflict may be buffered by the emotional support received by someone outside the romantic relationship. For example, one study found that emotional support from family members buffered the effects of stress on symptoms of depression (Levens, Elrahal, & Sagui, 2016).
Another study found that support from a friend or family member moderated the effects of stressful life events on symptoms of depression (Divney et al., 2012). In addition, emotional support helped to buffer the effects of a romantic partner’s harsh physical and psychological treatment on levels of depression (Beeble, Bybee, Sullivan, & Adams, 2009) and peer support was shown to buffer the effects of marital conflict (Mueller, 2006). Thus, the present study extends this research by examining the stability and reciprocal association between depressive symptoms and couple conflict, and the moderating role of emotional support on these associations over time.

**Literature Review**

**Depressive Symptoms and Couple Conflict**

The formation and maintenance of romantic relationships in adulthood is a major developmental transition and has been linked to many positive outcomes such as mental health (Barithwaite, Delevi, & Fincham, 2010), physical health (Bennett, 2006), life satisfaction (Guarnieri, Smorti, & Tani, 2015), and reduced mortality (Dupre, Beck, & Meadows, 2009). Furthermore, poor relationship quality is linked with negative physical and mental health outcomes (Kiecolt-Glaser & Newton, 2001). Specifically, low quality romantic relationships have been shown to lead to more depression in adulthood (Chango et al. 2012; Seiffge-Krenke, 2011). For example, Chango et al. (2012) examined depression and relational stressors among a sample of late adolescents and found that multiple relational stressors predicted later depression from 16 to 18 years old. Another study by Teo, Choi, and Valenstein (2013) examined social relationships and depression among a nationally representative sample who completed surveys at baseline and at 10-year follow-up. Results indicated that poor spouse/partner relationship quality increased risk of depression. Moreover, couples that include a partner who is depressed have
been shown to be more hostile, negative, and conflictual in their interactions with each other (Gotlib & Whiffen, 1989; Kahn, Coyne, & Margolin, 1985).

**Stress Generation Perspective**

A potential explanation for the association between depression and couple conflict may be the stress generation perspective. From this perspective, people who are depressed experience more stressful life events due in part to their own behaviors and personal characteristics when engaged in interpersonal interactions (Hammen, 1991). Therefore, the individual is seen as an active as opposed to a passive participant in their environment. Stress generation patterns have been observed among late adolescents with depression (Daley et al., 1997), samples of college students with elevated levels of depression (Hankin, Kassel, & Abela, 2005; Joiner, Wingate, Genco, & Genco, 2005), and adults who are depressed (Cui & Valliant, 1997; Hammen & Brennan, 2002). These studies found that not only did individuals with elevated depression report more stressful life events, but that the events were of a dependent nature. That is, the stressors were mainly due to interpersonal conflicts rather than completely independent events. Therefore, within the context of romantic relationships, the interaction between one’s depression and how one treats their romantic partner may continually generate stressful situations and depression.

Prior research has shown that depression predicts chronic conflict in romantic couples (Davila, Burge, & Hammen, 1997). For example, depression in adolescence has been related to poorer romantic relationship quality over a five-year period (Vujeva & Furman, 2011). Moreover, Krackow and Rudolph (2008) found that participants with both clinical and subclinical symptoms of depression had higher levels of interpersonal stress than their asymptomatic counterparts. Indeed, according to Hammen’s stress generation model, stress
increases the risk for depression, but depression also increases the risk for vulnerability to stressful events that may be influenced by the individual (Hammen, 1991). For example, Harkness and Stewart (2009) found that higher symptoms of depression predicted higher frequency and intensity of interpersonal stress. Furthermore, Hammen and colleagues (2009) assessed the association between chronic stress (defined as ongoing conditions lasting for at least six months across multiple domains) (e.g., couple interactions) and episodic stress (defined as events with a clear onset that resolve at a clear time point), and found chronic stress did predict periods of episodic stress, therefore supporting the stress generation model. Based on this model and within the context of romantic relationships, couple conflict may be influenced by depression thus creating a pattern of conflict among couples.

**Stability of Depression and Couple Conflict**

Research indicates that regardless if studies included samples of adults that were clinically-referred, community-based, or those who received treatment or not, most recover from a depressive episode, but many will experience subsequent episodes of depression (Beshai, Dobson, Bockting, & Quigley, 2011; Burcusa & Lacono, 2007; Hardeveld et al., 2010). The most consistent predictors of depression across the lifespan have been family history, number of prior episodes, and stressful events (Burcusa & Lacono, 2007; Rao et al., 2009; Solomon et al., 2008). Previous studies using cross-sectional data have found that emerging adults ages 25 to 34 showed lower prevalence of depression compared to those ages 18 to 24, however these studies did not assess change over time (de Girolamo et al., 2006; de Graaf, Ten Have, van Gool, & van Dorsselaer, 2012). Indeed, the literature suggests the need for longitudinal research to examine associations and stability of depression into adulthood (Schulenberg & Zarrett, 2006; Tanner et al., 2007). One of most informative studies utilizing a prospective longitudinal approach is the
National Institute of Mental Health (NIMH) Collaborative Depressive symptoms Study of Adults (Elkin et al., 1985), which utilized a sample of clinically referred inpatient and outpatient adults in their mid-30s and assessed them at multiple time points across a period of approximately 20 years. The study revealed a temporal course of depression, that after the first depressive episode, cumulative recovery rates for the subsequent five episodes where 92%, 88%, 90%, 90%, and 90%, respectively (Solomon et al., 1997). Moreover, rates of recurrence after the initial episode for the first, second, and third recurrent episode were 60%, 74%, and 79%, respectively (Solomon et al., 2000). However, recovery and recurrence rates do not capture cumulative morbidity, therefore periods when individuals are free of depression must also be taken into account (Kovacs, Obrosky, & George, 2016).

Regarding stability of couple interaction quality, studies differ based on factors such as developmental age of partners, stage in the couple relationship, and conflict style. For example, from adolescence to emerging adulthood, patterns of normative relationship development indicate increased use of negotiation and decreased use of coercion (Laursen, Hartup, & Koplas, 1996), and disengagement or minimizing (Tuval-Mashiach & Shulman, 2006). However, hostility is often mutually occurring against both partners and has shown to be more stable within rather than across relationships (Timmons-Fritz & Slep, 2009; Shortt et al., 2012). Furthermore, much of the literature has focused on couple conflict within a single romantic relationship over time as opposed to patterns of negative behavior within an individual across relationships. For example, stability of couple conflict could be due in part to assortative mating, where individuals seek romantic partners similar to themselves in terms of prior exposure to conflict in the family of origin or antisocial behavior (Kim & Capaldi, 2004). As hostile behavior towards a romantic partner is associated with greater likelihood of relationship transitions
(Lawrence & Bradbury, 2001; Shortt et al., 2012), knowing one’s history of hostile behavior in prior relationships could provide insight to one’s behavior in current and future relationships.

**The Role of Emotional Support**

When individuals encounter stressful situations, they are at increased risk for depression if they have a low threshold for tolerating stress and therefore are less able to cope (Welle & Graf, 2011). Furthermore, if the stressor involves a romantic partner, it may not be appropriate to seek support from that romantic partner. However, if a supportive person is available outside of the couple, it may compensate for the lack of support from a romantic partner (Coyne & DeLongis, 1986). Studies have indicated a strong association between friend and relative support and well-being (e.g., Holahan & Moos, 1981), yet how an individual solicits and responds to support will impact the type of support they receive (Pearlin & McCall, 1990). Indeed, individuals with high levels of depression have been observed to be less effective in soliciting emotional support (Rook, Pietromonaco, & Lewis, 1994). When one receives support, it is important to distinguish between perceived support and the actual support provided (Barry, Bunde, Brock, & Lawrence, 2009). There has been relatively little research on the role of the person receiving the support (for exceptions see Lawrence et al., 2008; Cutrona, Shaffer, Wesner, & Gardner, 2007). The present study extends this literature by examining the perception of received support by the support-seeker.

Parental and family support has been shown to be vital to adjustment and well-being in emerging adulthood (Lee, Chung, & Park, 2015; Mounts et al., 2006). Moreover, a recent study found support from family was associated with fewer depressive symptoms among emerging adults (Pettit, Roberts, Lewinsohn, Seeley, & Yaroslavsky, 2011). As friends and romantic partners begin to take the place of family members as the primary sources of support during the
transition to adulthood (Meadows et al., 2006; Tanner, 2011), it is important to evaluate the perceived support from both family members and peers. For example, support from family has been shown to be less effective than that from friends in reducing depression during emerging adulthood (Segrin, 2003). Conversely, a study by Milevsky (2005) examining the compensatory effects of support on psychological adjustment in emerging adulthood found that when comparing sibling, parental, and peer support, sibling support was associated with lower levels of depression and higher levels of self-esteem and life satisfaction. Moreover, Milevsky (2005) found that high levels of sibling support compensated for low levels of parental and peer support. These findings underscore the importance of including multiple sources of potential support (Rafaelli et al., 2013; Uchino, 2009).

As depression and couple conflict may have reciprocal effects, it has been argued that strong sources of support protect individuals from the potential negative effects of stressful events (Cobb, 1976). More specifically, Cobb (1976) believed that those who perceived interactions with others as caring and warm were protected because these perceptions facilitated prosocial coping (Lakey & Cohen, 2000; Cohen, Underwood, & Gottlieb, 2000). For example, compensatory effects may be observed when positive qualities in one relationship may compensate for or buffer against the negative qualities of another dyadic relationship (Erel & Burman, 1995). That is, emotional support from a family member or friend may compensate for or buffer against the effects of depression on harsh couple interaction or vice versa.

Prior studies indicate emotional support may impact the stability of depression or couple conflict over time. For example, a study of adolescent girls found that deficits in perceived parental support predicted future increases in depression over a three-year period (Stice et al., 2004); while another study of emerging adults found perceived family support predicted lower
levels of depression at four different time points over the course of nearly ten years (Pettit et al., 2011). In addition, a cross-sectional survey of women who were either currently or had ever been in a hostile romantic relationship, found those who reported higher levels of perceived support were more likely to report lower levels of perceived depressive symptoms (Coker et al., 2002). Finally, a study of older adults found individuals who reported higher levels of hostility also reported less agreeable, intimate, and supportive social interactions in daily life (Vella, Kamarck, & Shiffman, 2008). Taken together, if there are no positive qualities in one relationship to compensate for the negative qualities in another relationship, these negative feelings, perceptions, and behaviors could be perpetuated over time.

**The Present Investigation**

The present study examined the reciprocal association between depressive symptoms and couple conflict, as well as the stability of depressive symptoms and couple conflict with a romantic partner over time. Moreover, we evaluated the moderating effect of perceived emotional support from friends, siblings, and parents on depressive symptoms and couple conflict across time. We used data from a two-decade longitudinal study of a cohort of individuals and their partners followed from emerging adulthood to adulthood. Specifically, we examined depressive symptoms and couple conflict in emerging adulthood (21 and 23 years old), emotional support at ages 25 and 27, and depressive symptoms and couple conflict in adulthood (ages 21 and 31; see Figure 1). Guided by the stress generation perspective (Hammen, 1991), we expected that depressive symptoms and couple conflict would be stable over time. It was also expected that depressive symptoms in emerging adulthood would be associated with couple conflict in adulthood, and couple conflict in emerging adulthood would be related to depressive symptoms in adulthood. Finally, the emotional support from friends, siblings, and parents would
help to buffer the effects of depressive symptoms and couple conflict across time. The current study extends previous research in that many existing studies have been cross-sectional. The present study addresses this limitation by utilizing prospective longitudinal data which allows us to examine behavior over time (Leon et al., 2003; Posternak et al., 2006; Solomon et al., 1997, 2000, 2008). Furthermore, much of the research on couple conflict focuses on the partner who is being treated harshly, whereas the current study assesses mutual or reciprocal conflict within a couple. In addition, as the role of support has been examined in buffering the effects of stress, relatively little research has focused on various types or sources of perceived support. The present study addresses this limitation by including perceived emotional support from parents, friends, and siblings.

Finally, we controlled for gender, relationship status, and per capita income. Previous research shows that these control variables may be related to depression and couple conflict. For example, women are more likely to experience depression than men, and are also more likely than men to report negative symptoms related to depressive symptoms (Afifi, 2007). To capture the experience of marriage or marriage-like relationships, only participants indicating they lived with a spouse or romantic partner were included in the study. Being married or cohabiting was included because prior research indicates more hostility tends to be present in cohabiting compared to marital couples (Conger, Conger, & Martin, 2010). Per capita income was included as it is strongly correlated with many aspects of family relationships (Conger & Donnellan, 2007).
**Method**

**Participants**

Data come from the Family Transitions Project (FTP) which included 559 target youth and their families. The FTP is derived from two earlier studies: the Iowa Youth and Families Project (IYFP) and the Iowa Single Parent-Project (ISSP). The IYFP included 451 target adolescents, both of his or her parents, and a sibling within 4 years of age of the adolescent. Data were collected annually from 1989 through 1992. When interviewed in 1989, adolescents were in seventh grade ($M$ age = 12.7 years; 236 females, 215 males). They were recruited from both public and private schools in eight rural Iowa counties. Due to the rural Midwestern nature of the sample there were few minority families (approximately 1% of the population); therefore, all of the participants were Caucasian. Seventy–eight percent of the eligible families agreed to participate. The families were primarily lower–middle or middle–class. In 1989, parents averaged 13 years of schooling and had a median family income of $33,700. Families ranged in size from 4 to 13 members, with an average size of 4.94 members. Fathers’ average age was 40 years, while mothers’ average age was 38.

The ISPP began in 1991 when the target adolescent was in 9th grade. Participants consisted of the target adolescent, his or her single-parent mother, and a sibling within 4 years of age of the target adolescent ($N$=108). Telephone screeners identified families headed by single mothers who had divorced within 2 years prior to the start of the study. All but three eligible families agreed to participate. Measures and procedures for the ISPP were identical with IYFP; however, ISPP fathers did not participate. The ISPP families participated in three waves of data collection (1991, 1992, and 1993).
In 1994, families from the IYFP and ISPP continued in another project, the Family Transitions Project (FTP). At that time, target adolescents from both studies were in 12th grade and participated in the study with their parents as they had during earlier years of adolescence. Beginning in 1995, the target youth (one year after post-high school) participated in data collection with their friend or romantic partner. The present study includes N = 251 targets (60% female) who participated with their romantic partner from 1999 through 2007. A romantic partner could be a cohabitating partner, or a married spouse. The data were analyzed at three developmental time points. The first was when the target was in emerging adulthood (age 21-23), the second in middle adulthood (ages 25-27, and the last period was in adulthood (age 29-31).

**Procedure**

When targets were adults, they participated in the study with their romantic partner. Each adult and his or her partner were visited biennially in their home by trained interviewers. During that visit, adults completed a series of questionnaires, some of which addressed individual characteristics and social relationships. In addition to questionnaires, the target adult and his or her romantic partner participated in a videotaped 25–minute discussion task. Couples took turns reading questions aloud to each other related to topics such as household duties, other family members, and parenting. The reader was instructed to give his or her answers first, then the listener was instructed to give their answer. The couple then discussed the answers given until they were both satisfied before moving on to the next question.

**Measures**

The means, standard deviations, and minimum and maximum scores for the interaction task as well as for all study variables are provided in Table 1.
Depressive symptoms (Time 1 and Time 3). Target self-report of depressive symptoms was assessed using the depressive symptoms domain from the Symptom Checklist-90-R (SCL-90-R; Derogatis, 1994). For the 13-item depressive symptoms subscale ($\alpha = .92$ and $\alpha = .93$ for Time 1 and Time 3 respectively), questions regarding symptoms such as crying easily or feelings of worthlessness were assessed. Responding participants rated items using a 5-point Likert scale ranging from (1) Not at All to (5) Extremely. Scores were averaged across ages at each time point to create an overall composite score.

Couple Conflict (Time 1 and Time 3). Observer ratings were used to assess the target to romantic partner, and romantic partner to target hostility, antisocial behavior, and angry coercion during a discussion task. Hostility measures hostile, angry, critical, disapproving, and rejecting behavior. Antisocial is the demonstration of socially unacceptable behavior, including resistance, defiance, and insensitivity. Angry coercion is the attempt to control or change the behavior of another in a hostile manner including demands, hostile commands, refusals, and threats. Each rating was scored on a 9-point scale, ranging from (1) low (no evidence of the behavior) to (9) high (behavior is highly characteristic) using the IFIRS (Melby et al., 1998; Melby & Conger, 2001). Scores were averaged across waves, and then averaged across the indicators to create a composite score for each target and their romantic partner. Then each target and romantic partner composite score was averaged to create an overall composite score for each couple. The observed scales indicated acceptable reliability at Time 1 and Time 3 ($\alpha = .93$ and $\alpha = .87$), respectively.

Emotional support (Time 2). Target self-report of warmth and support from a friend, sibling, and parent was measured using the 7-item warmth scale of the Behavioral Affective Rating Scale (BARS: Conger, 1989). The introduction for the scale read “During the past month
when you and your [friend, sibling, or parent] have spent time talking or doing things together, how often did he/she…” Items included “Let you know he/she really cares about you” and “let you know that he/she appreciates you, your ideas, or the things you do.” All items were averaged across time points and each source of support were combined to create an overall composite support score. The support scale showed acceptable reliability ($\alpha = .94$).

**Control Variables.** The control variables included per capita income, gender ($0 = male$, $1 = female$), and relationship status ($0 = cohabiting$, $1 = married$ at Time 1. Relationship status was assessed by target self-report and only those who indicated there was a spouse ($n = 168$) or cohabiting partner ($n = 67$) living in the home were included in the analyses.

**Analytic Strategy**

Basic descriptive tests and correlations among the study variables were conducted first. Next, the model was analyzed using Mplus Version 7 software (Muthen & Muthen, 2012). Full Information Maximum Likelihood (FIML) estimation was employed to handle missing data and establish the best model fit for the data (Allison, 2003). Using this method for model estimation will produce the most accurate fit results because FIML limits bias by using estimations based on all of the available data (Newsom, 2015) instead of deleting cases that contain missing data (Duncan, Duncan, & Strycker, 2013). Three indices were assessed to evaluate the fit of the model to the data, including the standard chi-square index, the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993) and the comparative fit index (CFI; Hu & Bentler, 1999). RMSEA values below .05 indicate close fit to the data, and values between .05 and .08 represent reasonable fit (Hu & Bentler, 1999). Regarding the CFI, fit index values above .90 and ideally above .95, are considered to be acceptable.
To begin, the main effects model was estimated without the inclusion of the control variables. Next, the main effects model was estimated with the inclusion of the control variables. Gender was not significantly associated with the outcome variables; therefore, it was not included in the overall model. Third, the overall model was tested with the moderation variable of Time 2 emotional support added to each path. Since results of the main effects model were similar to the overall model, the results of the overall model with the moderation variable are reported below as well as in Figure 2. Fourth, the independent continuous variables and the moderator variable of Time 2 emotional support were mean-centered to reduce multicollinearity (Cohen & Cohen, 2003). The interaction terms Time 1 Depressive symptoms X Time 2 Emotional Support, and Time 1 Couple Conflict X Time 2 Emotional Support were then created and added to the model simultaneously to examine the interaction effects for each path.

Results

Correlations among Variables

Table 2 shows the zero-order correlations among study variables. Consistent with expectations, Time 1 depressive symptoms was significantly correlated with Time 3 depressive symptoms \((r = .59, p < .001)\). Time 1 couple conflict was significantly correlated with Time 3 couple conflict \((r = .34, p < .001)\). Time 1 depressive symptoms was significantly correlated with Time 3 couple conflict \((r = .13, p < .05)\), however, Time 1 couple conflict was not significantly related to Time 3 depressive symptoms. In addition, Time 2 emotional support was significantly negatively correlated with Time 3 couple conflict \((r = -.27, p < .001)\). The within time associations between Time 1 depressive symptoms and Time 1 couple conflict and Time 3 depressive symptoms and Time 3 couple conflict were not significantly correlated.

Overall Model with Emotional Support
The overall model demonstrated acceptable fit, $\chi^2 (df=3) = 7.52, p < .28$, RMSEA = .03, CFI = .99. Standardized coefficients which reached statistical significance are presented in Figure 2. Consistent with expectations, Time 1 depressive symptoms was significantly positively associated with Time 3 depressive symptoms ($\beta = 0.59, SE = 0.04$). Time 1 couple conflict, in turn, was significantly associated with Time 3 couple conflict ($\beta = 0.31, SE = 0.06$). Time 2 emotional support was significantly negatively associated with time 3 couple conflict ($\beta = -0.23, SE = 0.06$). Regarding the reciprocal associations, Time 1 depressive symptoms was not significantly associated with Time 3 couple conflict, and Time 1 couple conflict was not associated with Time 3 depressive symptoms. Moreover, Time 1 depressive symptoms was not significantly associated with Time 1 couple conflict, and Time 3 depressive symptoms was not significantly associated with Time 3 couple conflict.

**Overall Model with Interaction Terms.** The interaction terms, Time 1 Depressive symptoms X Time 2 Emotional Support, and Time 1 Couple Conflict X Time 2 Emotional Support were created and added to the overall model simultaneously to examine the interaction effects for each path. The model demonstrated acceptable fit $\chi^2 (df=10) = 13.93, p < .18$, RMSEA = .04, CFI = .97. Contrary to expectations, none of the interaction terms were significant. See Table 3 for the standardized coefficients of the model with the interaction terms.

**Discussion**

The present investigation examined the stability and reciprocal association between depressive symptoms and couple conflict over time using the stress generation perspective. Moreover, moderation by emotional support was tested to examine the buffering effects on depressive symptoms and couple conflict over time. Therefore, the current study contributes to the existing literature by clarifying the association between depressive symptoms, couple
conflict, and emotional support from emerging adulthood to adulthood. Consistent with expectations, Time 1 depressive symptoms was associated with Time 3 depressive symptoms, and Time 1 couple conflict was associated with Time 3 couple conflict. This is consistent with prior studies indicating that depressive symptoms (Hofstra et al., 2000; Richards & Huppert, 2011), as well as couple conflict (Lavner, Karney, & Bradbury, 2014) are stable across time. Results also showed that higher levels of emotional support were associated with lower levels of couple conflict. That is, emotional support from a peer or family member may compensate for or buffer against the negative interactions with a romantic partner over time.

Contrary to expectations, the results did not support a reciprocal association between depressive symptoms and couple conflict across time. In other words, depressive symptoms did not lead to couple conflict or vice versa across time points. Moreover, depressive symptoms and couple conflict were not related to one another at the same point in time. Therefore, alternative explanations should be considered when applying the stress generation perspective to the association between depressive symptoms and couple conflict. For example, Hammen (1991) originally found that women with a history of major depressive disorder tended to engage in situations that created more interpersonal stressors in their lives. It remains to be seen as to whether these tendencies are unique to more chronic or severe forms of depression, or are common to depression in general (see Hammen, 2005 for a review). Indeed, a study by Uhrlass and Gibb (2007) of college students found higher levels of depression predicted higher rates of reporting negative life events over the course of the study. Moreover, it is unclear whether the observed interactions were related to the self-report of depression at all, or if the depressive symptoms were independent of the couple relationship. That is, the present study only examined stressors within the context of the couple relationship, which limited the range of potential
stressors that could be contributing to one’s self-report of depressive symptoms. In addition, it is unclear if any conflict observed during the couple discussion task is of a dependent nature, in other words, whether a potential stressor was due directly to the actions of the individual.

Regarding the moderating effect of emotional support, the present study also found results contrary to expectations. The interaction between Time 1 depressive symptoms with Time 2 emotional support was not significantly associated with Time 3 depressive symptoms or Time 3 couple conflict. Moreover, the interaction between Time 1 couple conflict with Time 2 emotional support was not significantly associated with Time 3 depressive symptoms or Time 3 couple conflict. It could be that the effects of emotional support are more immediate, therefore the moderating effects could be seen within time points as opposed to across time. In addition, regarding temporal order, it could be that depressive symptoms or couple conflict have a moderating effect on emotional support over time, as opposed to emotional support moderating the effects of depressive symptoms or couple conflict over time.

**Limitations and Directions for Future Research**

The present study is not without limitations. Depressive symptoms were assessed via self-report which can leave out complimentary information obtained by clinician-rated scales (Uher et al., 2015). Moreover, the sample comes from the rural Midwest, and the participants were all Caucasian, which limits our ability to generalize the findings to wider populations. For example, although depression has been largely understudied among rural populations, those living in rural areas are more likely to experience increased risk for depression such as lower education attainment, living in poverty, and poor physical health (Kusmin, 2012). Therefore, it is unclear whether living in a rural area in and of itself puts one at increased risk for depression, or
if it is the lack of access to treatment and services in rural areas that is the culprit (Probst et al., 2006).

The findings of the present study can also be extended in several ways. First, future research should consider hereditary factors in regards to depression. For example, a national Swedish twin study indicated a lifetime heritability rate of depression at 38% (Kendler, Gatz, Gardner, & Pedersen, 2006). Moreover, future studies should take into account attachment style when examining couple conflict and emotional support. Prior research on attachment indicates people with insecure attachments are more likely to perceive situations as more stressful, and appraise others responsiveness more negatively when seeking support (Mikulincer & Shaver, 2009). In addition, people with secure attachments report higher levels of trust, intimacy, prosocial behavior, and relationship satisfaction (Mikulincer & Shaver, 2007).

**Implications for Policy and Practice**

Based on the results of the present study, policies should be in place to ensure the use of evidence-based practices (EBPs), which refer to the use of efficacious treatments for issues such as depressive symptoms and couple conflict. For example, emotionally-focused therapy for couples (EFT-C) is a brief attachment-based couple therapy which utilizes an experiential and interpersonal systems approach to help couples improve emotional attunement, accessibility, responsiveness, and engagement (Burgess Moser & Johnson, 2008; Johnson, 2004). Moreover, EFT-C has shown promising results in treating partners with depressive symptoms. Dessaulles, Johnson, and Denton (2003) conducted a pilot study of EFT-C among a sample of depressed women and their partners. Couples were randomized to either the EFT-C only group or medication only group. Results indicated that the women from both groups had significant improvements in depressive symptoms from pre to posttreatment. However, women in the EFT-
C only group maintained significantly lower levels of depressive symptoms at six-month follow-up compared to the medication only group. In another study of EFT-C, Denton, Wittenborn, and Golden (2012) randomly assigned couples to either EFT-C with medication group or medication only group. Results indicated both groups had significant reduction in depressive symptoms, but only the EFT-C with medication group had significant improvement in their relationship functioning.

In conclusion, the current study provides insight into the stability of depressive symptoms and couple conflict from early emerging adulthood to later emerging adulthood. Inconsistent with expectations, the present study did not find significant associations on the reciprocal effects between depressive symptoms and couple conflict within and across time. Moreover, perceived emotional support was not found to moderate these reciprocal associations, nor did perceived emotional support moderate the stability of depressive symptoms or couple conflict across time. However, results did show that higher levels of emotional support were associated with lower levels of couple conflict. This means that emotional support from a peer or family member may compensate for or buffer against the negative interactions with a romantic partner. Thus, further understanding the potential predictors of depressive symptoms as well as resiliency factors within couples will help inform policy makers and mental health professionals.
References

https://sites.oxy.edu/clint/physio/article/Genderdifferencesinmentalhealth.pdf.


http://dx.doi.org/10.1037/t01210-000.


Rook, K. S., Pietromonaco, P. R., & Lewis, M. A. (1994). When are dysphoric individuals distressing to others and vice versa? Effects of friendship, similarity, and interaction


http://dx.doi.org/10.1080/10926770903539664.


http://dx.doi.org/10.1080/15374416.2011.533414.

### Table 1.

**Descriptive Statistics of Study Variables (N = 235)**

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<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
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<td>Time 1 Depressive Symptoms</td>
<td>1.38</td>
<td>.39</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Time 1 Couple Conflict</td>
<td>3.63</td>
<td>1.37</td>
<td>1.08</td>
<td>8.42</td>
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<tr>
<td>Time 2 Emotional Support</td>
<td>30.59</td>
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<tr>
<td>Time 3 Depressive Symptoms</td>
<td>1.41</td>
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<td>3.35</td>
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<td>Time 3 Couple Conflict</td>
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<td>1.18</td>
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<td>7.33</td>
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<tr>
<td>Per Capita Income</td>
<td>22345</td>
<td>23004</td>
<td>4250</td>
<td>303350</td>
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Table 2.

Correlations of Study Variables

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<thead>
<tr>
<th>Variable</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
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<td>1. Time 1 Depressive Symptoms</td>
<td>-</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>2. Time 1 Couple Conflict</td>
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<tr>
<td>3. Time 2 Emotional Support</td>
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<td>-.13</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4. Time 3 Depressive Symptoms</td>
<td>.59**</td>
<td>.001</td>
<td>.04</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. Time 3 Couple Conflict</td>
<td>.13*</td>
<td>.34**</td>
<td>-.27**</td>
<td>.06</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6. Relationship Status</td>
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<td>.04</td>
<td>.10</td>
<td>-.07</td>
<td>.09</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Gender</td>
<td>.23**</td>
<td>.04</td>
<td>.33**</td>
<td>.19**</td>
<td>-.01</td>
<td>.11</td>
<td>-</td>
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<tr>
<td>8. Per Capita Income</td>
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<td>-.04</td>
<td>.03</td>
<td>-.11</td>
<td>-.06</td>
<td>-.06</td>
<td>.05</td>
<td>-</td>
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</table>

Note. ***p < .001, ** p < .01, *p < .05.
Table 3.

**Standardized Coefficients for Interaction Model**

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<th>Predictor Variables</th>
<th>Outcome Variables</th>
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<td>Time 3 Depression</td>
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<tr>
<td>Time 1 Couple Conflict</td>
<td>.03(.05)</td>
</tr>
<tr>
<td>Time 2 Emotional Support</td>
<td>.09(.06)</td>
</tr>
<tr>
<td>Time 1 Depressive Symptoms X Time 2 Emotional Support</td>
<td>.08(.06)</td>
</tr>
<tr>
<td>Time 1 Couple Conflict X Time 2 Emotional Support</td>
<td>.03(.06)</td>
</tr>
<tr>
<td>Time 1 Relationship Status</td>
<td>-.12(.05)*</td>
</tr>
<tr>
<td>Time 1 Per Capita Income</td>
<td>-.16(0.07)**</td>
</tr>
</tbody>
</table>

*Note.* ***p < .001, ** p < .01, *p < .05. Standard errors in parentheses.
Figure 1. Conceptual Model
Figure 2. Standardized Coefficients of Overall Model

*Note. ***p < .001, ** p < .01, *p < .05.*
## APPENDIX B

### TABLE OF MEASURES

<table>
<thead>
<tr>
<th>Concept</th>
<th>Variable</th>
<th>Measurement/Instrument</th>
<th>Item(s)</th>
<th>Collection time(s)</th>
<th>Reporter/Data source</th>
<th>Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Depressive Symptoms</td>
<td>Depressive symptoms subdomain of the Symptom Checklist-90-R (SCL-90-R; Derogatis, 1994)</td>
<td>12 items on five-point scale</td>
<td>Time 1 and 3</td>
<td>Target self-report in early emerging adulthood and late emerging adulthood</td>
<td>$\alpha = .92$; $\alpha = .93$</td>
</tr>
<tr>
<td>Intercouple relationship</td>
<td>Couple Conflict</td>
<td>IFIRS (Melby et al., 1998; Melby &amp; Conger, 2001)</td>
<td>Three subscales of hostility, angry coercion, and antisocial on nine-point scale</td>
<td>Time 1 and 3</td>
<td>Trained observer rating of target and their romantic partner during videotaped 25-minute discussion task</td>
<td>$\alpha = .93$; $\alpha = .87$</td>
</tr>
<tr>
<td>Informal support system</td>
<td>Emotional support</td>
<td>Warmth scale of the Behavioral Affective Rating Scale (BARS: Conger, 1989b)</td>
<td>Seven items on seven-point scale</td>
<td>Time 2</td>
<td>Target self-report of support from friend, parent, and sibling</td>
<td>$\alpha = .94$</td>
</tr>
</tbody>
</table>
CHAPTER 4: GENERAL DISCUSSION

The goal of this dissertation research was to examine the continuity of depressive symptoms across generations and the stability of depressive symptoms within generations across time. Economic adversity has been shown to be a predictor of depressive symptoms as it has been associated with risk for behavioral and mental disorders, as well as physical health problems (Conger, Conger, & Martin, 2010; Sareen, Afifi, McMillan, & Asmundson, 2011). Depressive symptoms has been shown to be transmitted across generations (Goodman, 2007; O’Connell, Boat, & Warner, 2009) and across time (Tram & Cole, 2006; Gullone, King, & Ollendick, 2001). Utilizing the Family Stress Model (FSM) and stress generation perspective, the findings provided insight to the specific mechanisms of couple conflict, harsh parenting, and emotional support through which depressive symptoms are sustained. This dissertation includes a sample of rural American families experiencing the agricultural economic downturn in the 1980s.

In Chapter Two, the FSM was tested by examining the effects of economic pressure on G1 maternal depressive symptoms, G1 mother couple conflict toward G1 father, G1 mother harsh parenting during G2 adolescence, and G2 depressive symptoms in adulthood. Findings were in support of the FSM in that economic pressure predicted G1 maternal depressive symptoms, which was associated with G1 mother conflict toward G1 father, that in turn predicted G1 mother harsh parenting during G2 adolescence, and G1 mother harsh parenting was associated with G2 depressive symptoms in adulthood.

In Chapter Three, the stability of and reciprocal association between depressive symptoms and couple conflict was assessed across time among a sample of married or cohabiting romantic partners. In addition, the moderating role of emotional support was examined. Contrary
to expectations, the reciprocal association between depressive symptoms and couple conflict within and across time points was not supported. Moreover, the interaction between depressive symptoms and emotional support, and the interaction between couple conflict was not significant. However, the results did support stability of depressive symptoms and couple conflict across time, as well as an association between emotional support and couple conflict.

Taken together, the findings from these studies help to bridge gaps in the current literature. Regarding the study in Chapter Two, we extend previous work by utilizing the FSM to examine the transmission of depressive symptoms across generations from G1 mothers during G2 adolescence to G2 depressive symptoms in adulthood. In addition, this study supports previous research that parent-child interactions are the stronger mechanism compared to witnessing interparental interaction in the continuity of depressive symptoms. Regarding the study in Chapter Three, we tested the reciprocal nature of depressive symptoms and couple conflict as well as the stability of depressive symptoms and couple conflict across time. We found that depressive symptoms and couple conflict did not predict one another, but were stable across time points. This extends previous work utilizing longitudinal data from community samples indicating the stability of depressive symptoms over time (Bardone, Moffitt, Caspi, Dickson, & Silva, 1996; Fergusson & Woodward, 2002; Lewinsohn, Rohde, Klein, & Seeley, 1999; Pine, Cohen, Gurley, Brook, & Ma, 1998), and the stability of couple conflict over time (Lavner, Karney, & Bradbury, 2014). Moreover, we found that emotional support at Time 2 was negatively associated with couple conflict at Time 3, indicating emotional support from a family member or friend may buffer or compensate for the effects of conflict with a romantic partner. These results provide a base from which to further examine stress generation processes among
more diverse samples, as the current sample was from the rural Midwest there were few minority families (approximately 1% of the population); therefore, all participants were Caucasian.

Understanding the mechanisms through which depressive symptoms are transmitted is essential to inform policy and practice. Future research should include self-report and clinician-rated measures of depressive symptoms to allow for the most comprehensive assessment of depressive symptoms (Uher et al., 2012). This will allow researchers to delineate more specifically what types of depressive disorders and severity of symptoms are most prone to continuity and stability. In addition, a review by Rutter, Kim-Cohen, and Maughan (2006) outlines three considerations for future research on stability of depressive symptoms including family history (Weissman et al., 2006), adverse childhood experiences (Rudolph et al., 2000), and negative cognitive attributional biases Abramson et al., 2002). This research will inform practitioners to tailor treatment and services to best serve individuals, couples, and families.

**Barriers and Promising Practices**

Mental health care is the most expensive type of care accounting for nine percent of personal health spending (Roehrig, Miller, Lake, & Bryant, 2009). However, rural communities are faced with a lack of mental health service providers. Indeed, up to 60% live in an area with a mental health provider shortage (U.S. Department of Health and Human Services, Health Resources and Services Administration, 2012). This shortage is concerning due to the fact that rural communities often have higher rates of socioeconomic disparities making them more prone to poor mental health (Kusmin, 2012). Moreover, barriers to accessing mental health services are more pronounced in rural areas including “rural stoicism”, lack of perceived privacy due to living in a small community, stigma, and chronic financial strain (Judd et al., 2006; Burgess et al., 2007; Fragar et al., 2010; Stain et al., 2011).
One promising strategy to address these barriers is the use of telemental health services, which involves the use of teleconferencing with a mental health clinician. Telemental health has been shown to be just as effective, if not more so, as in-person services in several randomized trials (Hilty et al., 2006; Fortney et al., 2013; Flay et al., 2005). More specifically, telemental health has been particularly beneficial in treatment of depressive symptoms (Morland et al., 2009; Pakyurek, Yellowlees, & Hilty, 2010; O’Reilly et al., 2007).

As a gap has been identified between the research regarding effective treatments and the mental health providers applying this knowledge in their work (Drabick & Goldfried, 2000; Kazdin, 2008), it is essential that the rural population is a priority for research and implementation of evidence-based practices (EBPs) due to the high need and lack of treatment availability. Practice Research Networks have been developed to enhance collaboration between researchers and mental health practitioners (Castonguay et al., 2010), which can assess the rural population specifically to identify the most appropriate treatment strategies.

The Role of Informal Supports

The positive effects of maintaining a social network of family, friends, and community members are well documented. For example, a study of rural families with lower incomes found that parents with supportive relationships were more likely to report lower levels of depressive symptoms (Lee, 2009). Moreover, maintaining relationships with others often shapes one’s own behavior and beliefs to conform to the behaviors and beliefs of those around them (Cochran & Niego, 2002; DePanfilis, 1996). Therefore, it could be that maintaining a support network with people who do not stigmatize mental health services could lead to greater likelihood of accessing mental health services if needed. Moreover, during periods of economic adversity in particular, a strong support network gives one greater access to a wider range of role models and resources.
(Sheldon, 2002). For example, ongoing relationships can provide hands-on support with everyday problems such as help with transportation or childcare, which can offset costs of living and enhance overall financial stability (Orthner, Jones-Sanpei, & Williamson, 2004; Runyan et al., 1998). In addition, social isolation is strongly associated with family violence (Gracia & Misitu, 2003), while the presence of a social support network is strongly associated with lower rates of child abuse and neglect (DePanfilis, 1996).

**Conclusion**

As rural areas are underserved, future research should focus specifically on the needs of rural communities to better understand the risks and predictors that may be unique to this population. In addition, future research should include diverse family members and family formations to provide a more nuanced understanding of how the FSM and stress generation performs within various family structures. This research will allow findings to be more generalized to the wider population.
References


APPENDIX C

INSTITUTIONAL REVIEW BOARD APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Date: 3/10/2016
To: Dr. Tricia Neppi
2358 Palmer

From: Office for Responsible Research

Title: Couple Relationships and Health during the Transition to Later Adulthood
IRB ID: 14-457

Approval Date: 3/9/2016
Date for Continuing Review: 3/23/2017
Submission Type: Continuing Review / Modification
Review Type: Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

• Use only the approved study materials in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.

• Retain signed informed consent documents for 3 years after the close of the study, when documented consent is required.

• Obtain IRB approval prior to implementing any changes to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.

• Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences involving risks to subjects or others; and (2) any other unanticipated problems involving risks to subjects or others.

• Stop all research activity if IRB approval lapses, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.

• Complete a new continuing review form at least three to four weeks prior to the date for continuing review as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. Approval from other entities may also be needed. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. IRB approval in no way implies or guarantees that permission from these other entities will be granted.

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 1138 Pearson Hall, to officially close the project.

Please don’t hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.