

Effects of Father Involvement on Mothers' Stress and Depression: A Moderated
Mediation Model

by Claudia X. Reyes

B.S. in Psychology, May 2004, George Mason University
M.Phil. in Clinical Psychology, December 2011, The George Washington University

A Dissertation submitted to

The Faculty of
The Columbian College of Arts and Sciences
of The George Washington University
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy

January 31, 2014

Dissertation directed by

Christina B. Gee
Associate Professor of Psychology

The Columbian College of Arts and Sciences of The George Washington University certifies that Claudia X. Reyes has passed the Final Examination for the degree of Doctor of Philosophy as of December 17, 2013. This is the final and approved form of the dissertation.

Effects of Father Involvement on Mothers' Stress and Depression: A Moderated
Mediation Model

Claudia X. Reyes

Dissertation Research Committee:

Christina B. Gee, Associate Professor of Psychology, Dissertation Director

George W. Howe, Professor of Psychology, Committee Member

Maria Cecilia Zea, Professor of Psychology, Committee Member

© Copyright 2014 by Claudia X. Reyes
All rights reserved

Acknowledgements

The journey to the completion of my dissertation and Ph.D. has been filled with opportunities for growth, some more challenging than others, and I cannot neglect to thank those who have and continue to impact me on a personal, professional or academic level. Their support not only enhanced my experience as a doctoral student by promoting my curiosity and desire to learn, but by making these past seven and a half years of graduate school quite memorable. I would like to thank my family, those who are here and those who I greatly miss because they have parted, for their life-long sacrifices, their continuous faith in me, and their unconditional love. These have been the propellers that guided me and led me where I am today. You make me proud to be part of this family, and indebted for the fortune to have you. I would like to thank my husband for his loyalty through the good, the bad and the ugly of these past seven years, and for serving as my constant protector and defender; thank you for sticking to my side and not only being supportive, but encouraging of my academic goals. I would also like to thank my fellow classmates for their genuine friendship, and for the many, many laughs that allowed me to keep sane. To my clinical supervisors, thank you for enriching me with your perspectives and for helping me expand my clinical acumen, which has reinforced this path I embarked on. Lastly, but not least, I am grateful to my current committee members for their mentoring and direction. To my committee chair, Dr. Christina B. Gee, I am thankful for taking me under your wing during a period of transitions, and for guiding my research and writing with your patient and caring demeanor. To Dr. George W. Howe, thank you for allowing me to feel that your door is always open, for being understanding,

and for being generous with your time and statistical/methodological expertise. To Dr. Maria Cecilia Zea, thank you for your passion in multiculturalism, and for the contributions on my research that this has produced. Thank you to my readers, Dr. Cynthia A. Rohrbeck and Dr. Elisabeth K. Rice, who graciously took part on the finalization of this dissertation.

At the risk of being redundant, to all, many thanks!

Abstract of Dissertation

Effects of Father Involvement on Mothers' Stress and Depression: A Moderated Mediation Model

Rates of adolescent pregnancy continued to affect an estimate of over four million mothers in 2009 (Hamilton, Martin, & Ventura, 2010), putting them at risk for negative outcomes like depression (Milan et al., 2004; Mollborn & Morningstar, 2009). Father involvement has been suggested to have an impact on mothers' level of depressive symptoms and parenting stress (Dienhart & Daly, 1997; Gee & Rhodes, 2003; Jackson, 1999; Kalil et al., 2005), but overall, findings have been mixed (Arditti & Bickley, 1996; Fagan & Lee, 2010; Kalil, Ziol-Guest, and Coley, 2005) and research has not consistently measured mother's satisfaction in the measurement of father involvement. In turn, there is a need for longitudinal research on lower-income adolescents that provide a measurement of mother's satisfaction with fathers and that test the potential mediating effect of parenting stress on depression. Therefore, the current study explored the effects of mother satisfaction on the relationships between father involvement, parenting stress and maternal depression in a sample of 78 first-time, low-income adolescent and young African American and Latina mothers who were part of a larger longitudinal study. Data for the current study were obtained at six-months postpartum and twelve-months postpartum, and run against a moderated mediation model using Structural Equation Modeling in MPlus 7.0. Results did not indicate that there was a good fit between the model and the data but individual paths were found significant, including the associations from parenting stress at twelve-months to depressive symptoms at twelve-months, and

from parenting stress at six-months and parenting stress six months later. Study results are further presented and discussed, along with clinical implications and future directions.

Table of Contents

Acknowledgements.....	iv
Abstract of Dissertation	vi
List of Figures.....	x
List of Tables	xi
Chapter 1: Introduction and Background.....	1
Chapter 2: Literature Review.....	5
Stress in Early Parenthood.....	5
Coping with Stress and Depression	8
Social Support as Coping.....	10
Father Involvement	11
Limitations of Father Involvement Research.....	14
Summary	16
Chapter 3: The Current Study.....	17
Chapter 4: Methods.....	18
Participants.....	18
Procedure	19
Measures	20
Demographic information.....	20
Maternal depression.....	20

Parenting stress.	21
Father involvement.	23
Satisfaction with father’s involvement.	24
Chapter 5: Data Analysis	24
Chapter 6: Results	27
Descriptive Statistics.....	27
Model Fit.....	28
Model alterations.	29
Bivariate Correlations of Observed Variables	30
Individual Analysis of the Mediation Model	31
Chapter 7: Discussion	32
Limitations	35
Future Directions	41
Summary	42
References	55
Appendices.....	78
Appendix A. <i>Questions Regarding Father Involvement</i>	78

List of Figures

Figure 1. Model 1 of Moderated Mediation.....	51
Figure 2. Model 2 of Moderated Mediation.....	52
Figure 3. Model 3 of Moderated Mediation.....	53
Figure 4. Results of Individual Paths of Model 2 without the MLR Estimator.....	54

List of Tables

Table 1. Mean Statistics for Model Variables	44
Table 2. Fit Statistics for Three Moderated Mediation Models.....	45
Table 3. Bivariate Correlations of Measured Variables for Model 2	47
Table 4. Bivariate Correlations from SPSS Version 21.....	48
Table 5. Confirmatory Factor Analysis for the Parenting Stress Construct of Model 2...	49
Table 6. Structural Equation Modeling of Model 2.....	50

Chapter 1: Introduction and Background

Rates of adolescent pregnancy have varied over the last few decades. For example, a decrease in the rate of pregnancy in adolescent and young females was reported from 1991 to 2005 (Center for Disease Control and Prevention [CDC], 2000; McKay, 2006), but the two consecutive years noted an increase (Hamilton, Martin, & Ventura, 2010; Martin et al., 2009). More recent statistics suggest that the current pattern is downward, as data suggest that the rate of adolescent pregnancy in both 2008 and 2009 decreased from its previous year (Hamilton, Martin, & Ventura, 2010), as did the rate of adolescent pregnancy in 2012 (Hamilton, Martin, & Ventura, 2013). While this decrease is positive, still, just under four million births occurred among adolescents in 2012 (Hamilton, Martin, & Ventura, 2013), resulting in short- and long-term disadvantages for these adolescent parents and their children. In particular, pregnancy prior to the age of 21 has been found to put mothers at higher risk for psychological distress when compared to either non-teenage mothers or childless women of the same age (Boden et al., 2008; Brown, Adams & Kellman, 1981; Cohler & Musick, 1996).

Psychological distress among adolescent mothers is frequently manifested as depression (e.g. Milan et al., 2004; Mollborn & Morningstar, 2009). Maternal depression has been found to have a significant impact on child attachment (Cicchetti, Rogosch, & Toth, 1998), thus the mother-child bond may be compromised. In addition, maternal depression further heightens the risks for socioemotional and behavioral problems, including emotion dysregulation and poor cognitive development (Cicchetti et al., 1998; Marchand & Hock, 1998; Murray, Hipwell, Hooper, Stein, & Cooper, 1996; Stein et al., 1991; Teti, Gelfand, Messinger, & Isabella, 1995). In general, children of young parents are at higher risk for physical and social disadvantages, even when compared to other children their same age (Carothers, Borkowski, & Whitman, 2006;

Hayes, 1987; Levine, Emery, & Pollack, 2007; Maynard, 1997; Nortman, 1974; Wakschlag & Hans, 2000; Whitman, Borkowski, Schellenbach, & Nath, 1987).

While early pregnancy can place both mothers and children at risk for various negative outcomes, availability and use of social support resources have been found to ameliorate this difficult transition for mothers (Crnic & Greenberg, 1990), and thus the risk of children's negative outcomes (Cicchetti, Rogosch, & Toth, 1998). In particular, support provided by a spouse, partner, or father of the child, for example, has been related to parental competence (Eckenrode & Gore, 1981; Fagan & Lee, 2010; Weiss, 1969), general well-being (Wandersman & Wandersman, 1980), and less psychological distress (Feldman, 2007; Gee & Rhodes, 1999; Jackson, 1999; Kalil et al., 2005). More specifically, father involvement (a type of social support that involves a father's parenting activities with the mother and his child) has also been found to have an impact on mothers' level of depressive symptoms and parenting stress (Dienhart & Daly, 1997; Gee & Rhodes, 2003; Jackson, 1999; Kalil et al., 2005).

Father involvement is defined by the fulfillment of the child's needs (versus those of the mother) and is conceptually independent from the father-mother relationship. This specialized form of social support encompasses the father's access, availability, engagement (e.g., play), and responsibility with his child (e.g., economic and instrumental assistance; Lamb, Pleck, Charnov, & Levine, 1987) and plays an important role in reducing the stress of early parenthood, even when parents do not coreside. Father involvement is thought to minimize levels of stress and psychological distress through the sharing of parenting responsibilities. A reduction in parental stress can in turn reduce the risk of maternal depression, particularly because different forms of stress have been found to contribute to the development of depression (Hammen & Rudolph, 2003).

The availability and use of father involvement, however, may be limited for these young mothers due to a lack of stable romantic relationships and marriage among these young parents. Studies have found that approximately one-third (37%) of African American adolescent mothers live alone (Henly, 1997), and one-third (34%) of African American and Latina mothers do not live with the baby's father (Brunelli, Wasserman, Rauh, Alvarado, & Caraballo, 1995). Not coresiding with the baby's father has been found to limit the amount of engagement and material support the father has with his child, over time (Castillo, Welch, & Server, 2011; Gee, McNERney, Reiter, & Leaman, 2007; Gee & Rhodes, 2003). Existing relationships are often short-lived and have a high probability of dissolution overtime. Between 21% and 26% of adolescent parents were still romantically involved by their child's third birthday (Gee & Rhodes, 2003; Leadbeater & Way, 2001), and a mere 12% were still romantically involved at six years postpartum (Leadbeater & Way, 2001). Marriage rates of adolescent parents are even lower, with research finding that fewer than 2% are married at three years postpartum (Gee & Rhodes, 2003). Marriage rates vary by ethnicity; African American adolescent mothers are less likely to enter into marriage than Caucasians (Mayfield-Brown, 1989), placing African Americans at an increased risk for lower social support from the baby's father. Indeed, as many as 49% of adolescent mothers did not consider the baby's father a source of support during pregnancy (Gee & Rhodes, 2003).

Findings regarding its impact of father involvement on well-being have been mixed. In particular, the research on father involvement becomes clouded when looking at parenting stress in conjunction with outcomes of depression. For example, one study found father involvement to be predictive of parenting stress but not of depression (Kalil, Ziol-Guest, & Coley, 2005), and another found the opposite, where father involvement predicted depression but not stress (Fagan

& Lee, 2010). Additionally, findings of father involvement are largely impacted by the operationalization and measurement of the construct, which had primarily been focused on financial support and focused more recently on father's engagement in parenting activities. In turn, it can be said that a measurement gap exists in the father involvement literature. In particular, research has rarely examined mother's satisfaction with the father and his parental involvement. Satisfaction with involvement may help explain how parenting stress and depression are affected when financial support from the baby's father is low, for example. In turn, measuring satisfaction with fathers' role can complement the more traditional forms of father involvement measurement, particularly in cases where aspects of the relationship with the father provide the mother with sufficient emotional and co-parental help to satisfy her expectations of support. Alternatively, father involvement may be present, but not meet the mother's expectations, resulting in dissatisfaction. Similarly, mothers may experience dissatisfaction with father support when involvement is undesired (by either the adolescent mother or the maternal grandmother), and creates conflict and stress for the adolescent mother. Therefore, including satisfaction with the father and his involvement as a parent (compared to only assessing the amount of involvement) can improve the field of father involvement research and improve our knowledge on how it affects parental stress and depression in adolescent and young mothers. The current study measured mother's satisfaction with paternal involvement, and tested a moderated mediation model to determine if mother's satisfaction had an effect on the relationships between father involvement, parenting stress and maternal depression.

Chapter 2: Literature Review

Stress in Early Parenthood

Adolescent mothers have been found to be particularly vulnerable for various forms of stress and distress. One reason for their increased vulnerability is that the unexpected or unwanted nature of the pregnancy for most adolescent mothers can contribute to high levels of stress due to their lack of preparedness for the demands of parenthood (Bavolek, Kline, McLaughlin, & Publicover, 1979; Reis & Herz, 1987; Whitman et al., 1987; Bucholz & Korn-Bursztyn, 1993). That is, adolescents' developmental needs and parenting needs can create conflict and dissonance in early parenthood (Erf, 1981; Catrone & Sadler, 1984; Wakschlag & Hans, 2000); in addition to balancing the multiple changes of adolescence (biological, social, cognitive and psychological), they must also develop the confidence and belief in their ability to effectively parent. Indeed, life changes such as adjusting to the mothering role and child rearing have been perceived as stressful by adolescent and young mothers (Thompson, 1986).

Theories of psychosocial development (e.g., Erikson, 1968) can also provide an explanation for why adolescent mothers may experience higher levels of stress. Beyond the stress stemming from their multiple developing roles, adolescent mothers experience additional stressors relative to adult mothers and childless adolescents, which may be partially explained by certain aspects of their demographic background. Further, it appears that some of these characteristics generate or exacerbate other risk factors for this population. Younger mothers are at an increased risk for poverty (Moore et al., 1993; McLoyd, 1990), are more likely to be welfare dependent than older mothers (Grindstaff, 1988; Nanchahal et al., 2005), and are more poor in comparison to adult mothers even a year after giving birth (Deal & Holt, 1998). In addition, for ethnic minority mothers, racism is a salient challenge that has been related to

negative outcomes (McLoyd, 1990). Moreover, adolescent and young mothers often do not complete their high school education (Deal & Holt, 1998) and, on average, complete about two years less of education compared to adult mothers (Hofferth et al., 2001). The lack of economic resources for adolescent parents has been identified as a significant and ongoing stressful life adversity (Schinke, Barth, Gilchrist, & Maxwell, 1986), and may put adolescent mothers at heightened risk for psychological distress (Ketterlinus, Lamb, & Nitz, 1991). For example, higher rates of depression have been associated with poverty (Deal & Holt, 1998), unmarried marital status (Brown, & Harris, 1978), and younger age at pregnancy (McGee, Williams, & Kashan, 1983).

Likewise, adolescent pregnancy and parenting also poses risks for increased levels of parenting stress (Birkeland et al., 2005; Schinke et al., 1986; Seccombe, 2000; Thompson, 1986). Parenting stress is defined as stress that stems from parental demands and the parent-child dynamic (Huth-Bocks & Hughes, 2008). Belsky's (1984) definition of parenting stress incorporates the effects of contextual factors such as partner support, social support, and workforce involvement, which were proposed to directly and/or indirectly impact the parenting experience. For adolescent mothers, these contextual factors can determine if adolescent mothers thrive or not in their roles. Examples of contextual factors include the links between parenting stress and struggles with economic resources and poverty (Seccombe, 2000), and an observed decrease in social support in early parenthood (Herrman, Van Cleve & Levisen, 1998). Indeed, research has shown that adolescent mothers experience higher levels of parental stress when compared to adult mothers (Passino et al., 1993).

Lastly, adolescent and young mothers experience higher levels of general psychological and emotional distress including symptoms of depression, anxiety, and hostility when compared

to both older mothers and childless peers (Milan et al., 2004; Mollborn & Morningstar, 2009). Specifically, adolescent mothers demonstrate higher rates of depression when compared to women who first became mothers in their 20s or 30s (Moffitt & the E-Risk Study Team, 2002) and when compared to adult first-time mothers (Deal & Holt, 1998). Recent studies suggest that depression rate among adolescent mothers may be as high as 53% to 61% (Clare & Yeh, 2012; Logsdon, Birkimer, Simpson, & Looney, 2005). This reported rate of depression is alarming given that it is significantly higher than the 29% rate reported in 2005 among 15 to 19 year old mothers (Birkeland, Thompson, & Phares, 2005), and that it is more than three times higher than the 17% rate in the general population (Kessler et al., 1994). Expectedly, adolescent mothers report up to twice the rate of depressive symptoms during their third trimester when compared to older mothers (Azar, Paquette, Zoccolillo, Baltzer, & Tremblay, 2007) or to a matched sample of non-mother adolescents (Troutman & Cutrona, 1990).

In addition to being vulnerable to higher rates of depression and distress, adolescent mothers are at a further disadvantage as they remain more depressed than adult mothers more than one year after birth (Deal & Holt, 1998), and at times, through to early and middle adulthood (Mollborn & Morningstar, 2009). Research on adults who were former adolescent mothers found that these women had depression rates twice as high in comparison to a community counterpart matched in age and ethnic background (Horwitz, Bruce, Hoff, Harley & Jekel, 1996). With regards to symptomatology, as many as 59% of adolescent mothers have continued to report symptoms of depression two years post-birth, and it has been found that those identified as single, younger, and less educated reported the most symptoms (Colletta, 1983). Of concern is the level of severity given that moderate to severe symptoms were endorsed by more

than 50% of adolescent mothers over a four year period (Schmidt, Wiemann, Rickert, & Smith, 2006).

In sum, adolescent and young mothers are more likely than their counterparts to experience negative psychological outcomes. Their background characteristics, living conditions, limited access to resources such as social support, and underdeveloped coping capabilities contribute to experiences of parenting stress and depression. The interrelation and bivariate relations among these factors makes their situation particularly complex and difficult to tease apart and predict their causal order, which can translate to challenges at the intervention level.

Coping with Stress and Depression

The theoretical framework of stress and coping proposed by Lazarus and Folkman (1984) has been used to understand the different ecological factors that can affect adolescent parenting. In this framework, stress is the result of bidirectional transactions occurring between an individual and his/her environment. These transactions are affected by the individual's appraisal of the stressor (i.e., primary appraisal) and the resources for coping available to the individual (i.e., secondary appraisal). Using this model, an event is stressful if the resources or coping needed for the event exceed what is available to the individual (Lazarus & Folkman, 1984). As outlined in the previous section, the primary appraisal often times exceeds that of the secondary appraisal in adolescent and young mothers placing them at high risk for stress and its sequelae, inclusive of depression. These mothers navigate conditions of high stress with limited amounts of financial and instrumental resources (e.g. McLoyd, 1990), less developed capabilities to cope (e.g. Schinke et al., 1986) and a declining support system as they transition into parenthood (e.g. Herrman, Van Cleve & Levisen, 1998). Research has noted that adolescent mothers have less of an ability to deal with high levels of stress, placing them susceptible for poor coping when

unwanted advice, negative comments, unreasonable demands, conflicts with partners, social isolation, and childcare demands are presented (Schinke et al., 1986).

More directly, this framework has been employed by researchers to partially explain how and why adolescent mothers reach and sustain such high levels of depression in comparison to their peers. These results highlight that depressive symptomatology is predicted by both stressors (e.g., negative life stressors, daily stressors, rejection), and resources (e.g., social support; McKenry, Browne, Kotch, & Symons, 1990). More specifically, studies have noted that stress in the form of parenting stress or coping with child care is predictive of later (Soliday, McCluskey-Fawcett, & O'Brien, 1999) and concurrent (Tarkka, Paunonen, & Laippala, 1999) depression, and of depression severity (Sato, Sugawara, Toda, Shima, & Kitamura, 1994) in adolescent parents. The validity of this framework is reinforced by findings suggesting that even in adult mothers, lack of social support combined with high levels of parenting stress is associated with depressive symptoms (Horwitz, Briggs-Gowan, Storfer-Isser, & Carter, 2007), and that different treatment modalities that are effective in treating depression have similar results on parenting stress (Misri, Reebye, Milis, & Shah, 2006).

Given that stress has been associated with the development of depression (Hammen & Rudolph, 2003), and adolescents have been found to experience significant stress related to their unique parenting roles (Birkeland, Thompson & Phares, 2005) and background circumstances, a focus on experiences of parenting stress in adolescent mothers may be useful in explaining their increased risk for depression. However, other research suggests that depression may cause parenting stress. For example Gelfand, Teti, and Fox (1992) reported that depressed mothers experience higher levels of parenting stress when compared to non-depressed mothers. Conflicting findings like these (e.g. Gelfand, Teti, & Fox, 1992; Hammen & Rudolph, 2003)

highlight the need for greater clarity on the directionality of the relationship between parenting stress and depression.

Social Support as Coping

Development of social support networks (relationships that can serve as a resource to deal with stressors), and social support use (utilizing those resources found within the supportive relationships) are important coping mechanisms for adolescent and young mothers who are at risk for experiencing poor psychological outcomes (Wandersman & Wandersman, 1980). This support may help balance out the environmental stressors that affect perceptions of parenting (Muslow, Caldera, Pursley, Reifman, & Huston, 2002). Further, prior research consistently demonstrates that social support in its many forms is associated with psychological well-being (e.g. Belsky, 1984; Henly, 1997; Miller & Ingham, 1976; Sieger, & Renk, 2007). In particular emotional support has been linked to less stress (Crnic & Greenberg, 1990), and a reduction of feelings of depression and anxiety among adolescent mothers (Barrera, 1981; Brown, Harris, Woods, Buman & Cox, 2012; Hudson, Elek, & Campbell-Grossman, 2000).

Specifically, support from a significant other or male partner has been related to lower levels of stress and depression in adolescent mothers (Brown, Harris, Woods, Buman & Cox, 2012; Ketterlinus, Lamb, & Nitz, 1991; Thompson & Peebles-Wilkins, 1992). In a longitudinal study of adolescent mothers and non-mothers, Milan, Ickovics, Kershaw, Lewis, and Meade (2004) found that limited partner support (as measured through perceived economic and emotional support, and relationship conflict) was characteristic of distress during pregnancy. Furthermore, this relationship between support and symptoms of distress (i.e., anxiety, depression, and hostility) was significantly larger for pregnant and/or parenting adolescents; this association was not found in adolescents without children. Similarly, other research has reported

that support from the baby's father is associated with lower levels of depressive symptoms for adolescent mothers (Edwards et al., 2012; Gee & Rhodes, 2003; Smith & Howard, 2008).

With respect to their findings that male partner support is more significant for pregnant and/or parenting adolescents, Milan and colleagues (2004) alluded to a developmental transition whereby parental influence begins to decrease while romantic partner influence begins to increase (Allen & Land, 1999); once again, this transition was more salient for adolescent mothers than adolescent non-mothers. This shift in focus of relationships in adolescent mothers is consistent with research that suggests that adolescent females who have poor relationships with their parents increase their reliance for support on boyfriends (Grant et al., 2002), and that the support from partners is higher than support received from mothers as they transition into parenthood (Gee & Rhodes, 1999). Therefore, involvement from the baby's father is an important factor to explore when examining the psychological well-being of adolescent mothers. Lastly, it has been noted that perceived support is more consistently related to outcomes when compared to actual support received (Cohen & Willis, 1985; Sarason, Sarason, & Pierce, 1990), hence highlighting the relevance of mother reports, perceptions, and satisfaction around social support from fathers and father involvement.

Father Involvement

Father involvement is a specific type of social support encompassing the access and availability, engagement, and responsibility a father has with his child (Lamb, et al., 1987). Even though father involvement is specific to the care and parenting of the child, it can still provide many benefits to young mothers' adjustment, for example, by decreasing their parental stress, which may also result in a decrease of their symptoms of depression. One study of adolescent parents found that male partner support measured as support of the father and assistance with

childcare was negatively linked to psychological distress, and positively linked to psychological well-being, life satisfaction, and self-esteem (Gee & Rhodes, 1999). Another study found that involvement in childcare activities by fathers were an important buffer against maternal depression, maternal anxiety, and maternal stress, especially during the initial transitions to parenthood (Feldman, 2007). Similar findings hold across other samples, as it has been found that elevated depressive symptoms for adult partnered women were associated with infrequent father involvement (caring for the child) and single parenting (Horwitz et al., 2007).

In addition, unemployed adult mothers' satisfaction with father involvement across different domains (including love and care provided to the child, time spent with child, and amount of money and help provided for raising child) was negatively correlated with maternal depressive symptoms (Jackson, 1999). Results differed for adult employed mothers, whose depressive symptoms were not significantly affected by father involvement (Jackson, 1999), suggesting that employment status and/or personal income can impact mothers' father involvement needs. Interpreting these results using Lazarus and Folkman's (1984) model, employed mothers' secondary appraisal may surpass that of unemployed mothers, making them less dependent on resources like father involvement because employment provides them with the coping needed to buffer against parenting stress.

Despite research that supports the theory that father involvement has a beneficial effect on maternal health of adolescent and young mothers, findings within the literature are not entirely consistent with regard to father involvement's effect on parenting stress. Kalil, Ziol-Guest, and Coley (2005) tested a mediation model where parenting stress was a mediator between father involvement and depression. In their study, they found that while father involvement (i.e., caretaking, financial support, and time spent with the child) was not directly

associated with adolescent mothers' depression (and hence not supporting the first condition of mediation), it was significantly and negatively associated with parenting stress. In other words, while their results did not indicate that father involvement affects depression through parenting stress, the results did suggest that higher levels of father involvement may decrease mothers' parenting stress. Similarly, Fagan and Lee (2010) also tested parenting stress as a mediator between satisfaction with father involvement and depression, and found that mothers' satisfaction with father involvement was negatively correlated with maternal depressive symptoms among adolescent mothers. In contrast to Kalil et al. (2005), Fagan and Lee (2010) found negative correlations between mother's satisfaction with the father's involvement and maternal depression, but no significant association between mother's satisfaction and parenting stress. Thus, neither set of results supported their proposed mediation models. It should be noted, however, that while mediation was not supported by either Kalil and colleagues (2005) or Fagan and Lee (2010), these findings are nonetheless relevant as they provide additional support to other research suggesting that father involvement may affect adolescent mothers' mental health. Lastly, Arditti and Bickley (1996), who studied divorced adult mothers, did not find significant associations between father involvement and mothers' parental stress. One possible explanation for these conflicting results lies in demographic differences across the samples, which likely affected experiences of stress, and the measurement of involvement. Arditti and Bickley's (1996) sample was essentially comprised of older, educated, Caucasian mothers whereas the others (Kalil et al., 2005; Fagan & Lee, 2010) were comprised of mainly of low-income adolescent mothers. In addition, Fagan and Lee (2010) included satisfaction in the measurement of father involvement whereas the others did not.

Given these conflicting findings, it is possible that these processes and outcomes are affected by the mother's satisfaction regarding her experiences with the father. Mothers' perceptions of the adequacy of fathers' contributions to the child may dictate how they control fathers' access to their children (Fagan & Barnett, 2003). Satisfaction with father involvement, however, should not be confused with relationship satisfaction. While perhaps related, these two are separate constructs; father involvement satisfaction pertains directly to the father's role as caretaker, whereas relationship satisfaction refers to the father's role as a partner or friend. An individual can be a less competent father than as a partner or friend. Despite the potential importance of examining mothers' satisfaction with fathers' involvement, research on this construct is scarce. Instead, most studies examining the variable of father involvement tend to only measure quantity of father involvement (e.g., Feldman, 2007; Horwitz et al. 2007). These studies appear to assume that higher quantities of involvement produce positive outcomes despite research that has documented the negative outcomes that can be associated with father involvement (Gee & Rhodes, 1999; Shapiro & Mangelosdorf, 1994).

Limitations of Father Involvement Research. It should be noted that the literature presented here regarding father involvement should be considered in light of its limitations. Some studies of father involvement have limited generalizability. For example, although Fagan and Lee (2010) found that maternal satisfaction with fathers' involvement negatively predicted depression in a sample of low-income adolescent parents, the partners of these mothers were already participating in a randomized intervention study. In addition to limitations in sample characteristics, other studies have been limited by the analysis of cross-sectional data, and thus, are unable to demonstrate the directionality of the associations (Feldman, 2007). As a result, it is unclear whether father involvement causes maternal depression or whether mother's depression

affects father involvement. For example, a mother's depression may cause her to isolate herself from the relationship with the father, and in turn, create barriers to father involvement. Just as likely, however, is that supportive activities of father involvement and parenting relieve the mother of much experienced stress, leading to less depression.

Given the mixed findings in the existing literature, longitudinal studies are needed to provide a clearer picture of how father involvement affects adolescent mothers' psychological adjustment. Further, some of the results of father involvement research tend to only highlight the negative impact that father "uninvolvement" has on maternal well-being, or the positive impact that father involvement has on maternal well-being (Feldman, 2007; Horwitz et al., 2007; Jackson, 1999). In fact, some studies have found that father involvement may actually be detrimental to the adolescent mother in terms of diminished parenting skills (Shapiro & Mangelosdorf, 1994). In addition, conflict with the father of the baby, has also been associated with depressive symptoms (Gee & Rhodes, 1999).

As indicated above, another limitation entails the absence of mother's satisfaction in the research of father involvement (Arditti & Bickley, 1996; Feldman, 2007; Kalil, Ziol-Guest, & Coley, 2005). Although research suggests that the quantity of father involvement is important and beneficial to mothers, this may not always be the case. For example, mothers who have poor relationships or high conflict with the fathers may desire less engagement from the father and thus, may be unsatisfied with fathers who are involved. In these cases, father involvement can result in greater parenting stress, ultimately leading to higher risk for depression. Therefore, adding satisfaction to the predominant measurement method of father involvement (e.g. amount of involvement) can provide a more complete picture of its effects. Finally, the existing research literature has not fully addressed the degree of association between satisfaction and amount of

father involvement. Although these two are distinct variables, some association is expected between them. Fagan and Lee's (2010) study has been the most recent study to include maternal satisfaction in the study of father involvement and found correlations at 0.43 ($p < .0001$) prenatally, and 0.48 ($p < .0001$) postnatally, in a sample of mainly African American and Latina adolescent mothers. Given the limited number of studies looking at the strength of their correlation, replication will help determine if mother's satisfaction is redundant with father involvement, or serves as an enhancement to the measurement of this construct.

Summary

Taken together, adolescent parents are at increased risk for experiencing various negative psychological outcomes, including parental stress and depressive symptomatology. While father involvement can be an important source of social support that can help alleviate the many challenges posed by the transition to parenthood for adolescent mothers (Fagan & Lee, 2010; Gee & Rhodes, 1999; Horwitz et al., 2007; Kalil, Ziol-Guest, & Coley, 2005), its effects are somewhat inconsistent across studies (Arditti & Bickley, 1996; Fagan & Lee, 2010; Kalil, Ziol-Guest, and Coley, 2005). In all, the existing literature on father involvement suggests the need for longitudinal research on lower-income adolescents that provide a measurement of mother's satisfaction with fathers. Research further suggests the need to test the potential mediating effect of parenting stress on depression, as results regarding this effect have been inconsistent. Additionally, father involvement research has been constrained by measures that leave out mother satisfaction as a factor of the construct. For this reason, the overarching aim of this study is to focus on these adolescents' experiences of depression through a stress and coping model with the goal of better understanding how father involvement (conceptualized to include mothers' satisfaction) affects adolescent mothers.

Chapter 3: The Current Study

Given the mixed results about the effects of father involvement on maternal well-being (Arditti & Bickley, 1996; Fagan & Lee, 2010; Kalil, Ziol-Guest, and Coley, 2005), and the theoretical importance of satisfaction in the measurement of factors such as social support or father involvement, the current study explored the effects of mother satisfaction on the relationships between father involvement, parenting stress and maternal depression during the postpartum period in a sample of low-income adolescent and young African American and Latina mothers. To further help clarify some of the conflicting results in previous studies, the current study examined the specific role of parenting stress. Given the existing literature, the following hypotheses were made:

1. Mothers' satisfaction with fathers will moderate the association between father involvement and mothers' parenting stress (see Figure 1), suggesting that this relationship will vary at different levels of maternal satisfaction. Specifically, higher levels of father involvement will have a stronger association with higher levels of parenting stress under conditions of lower maternal satisfaction. On the contrary, higher levels of father involvement will be less strongly associated with higher levels of parenting stress under conditions of higher maternal satisfaction.
2. Mothers' parenting stress will function as a mediator that positively predicts maternal depression and is predicted by the interaction between father involvement and mother satisfaction (see Figure 1). Thus, the interaction between

father involvement and maternal satisfaction predicts mothers' parental stress, which then leads to maternal depression.

Chapter 4: Methods

Participants

Participants were 78 first-time adolescent mothers with an average age of 18.76 ($SD = 1.35$, Minimum = 15.58, Maximum = 23.08) years at six-months postpartum. Children had a mean age of six months and three weeks ($M = 0.56$ years; $SD = 0.11$) at the six-month follow-up interview and the children's fathers had a mean age of 20.67 ($SD = 3.79$) years. A small percentage of mothers were pregnant with a second child at either six-month interview (2%) or twelve-month interview (4%). With regards to ethnicity, the majority of mothers (67.1%; $n=49$) identified as "Black/African American" and slightly over a quarter (27.4%; $n=20$) identified as "Latina". Of those mothers identifying as Latina, the vast majority reported a Central American background. Additionally, most mothers (96%) had never been married at the time of the six-month interview, but a small percentage were married to the baby's father (4%). At the six-month interview, mothers reported on average that they lived with four other people in their household ($M = 4.21$, $SD = 1.76$), primarily including the baby's father (48%), the adolescent mothers' mother (31%), the adolescent mothers' father (12%), and siblings (36%). None of the mothers had a new partner at the six-month interview, but by the twelve-month interview, approximately one-third reporting having a new romantic partner.

With regards to socioeconomic status, 50% of the mothers were receiving welfare benefits at the six-month interview, with an average of \$350 per month. In terms of education, 36% of mothers were in school or working toward an academic degree at the time of the six-

month interview and were, on average, in the 11th grade. In contrast, 64% of mothers were not in school or working toward an academic degree at the time of the six-month interview; of these mothers not in school, 54% were unemployed, 42% were working at a job on a regular basis and 4% were working occasional odd or seasonal jobs.

Procedure

Participants were recruited during pregnancy at public high schools, community service agencies promoting programs geared to adolescent parents, and hospitals in a mid-Atlantic metropolitan area. While the baby's father needed to be known and willing to participate in the larger study, there was no exclusion based on the relationship status between the two parents. Once identified through recruitment efforts, eligible adolescent mothers were contacted by research assistants who explained the procedures of the study, and that participation was confidential and voluntary. Informed consent was obtained via pre-paid postal mail; this included parental consent and minor assent for those adolescent mothers under the age of 18. Participants were asked to complete four interviews conducted at the following time points: during the third trimester of pregnancy ("Baseline"), six-months postpartum ("Six-month follow-up), twelve-months postpartum ("12-month follow-up), and two years postpartum ("2-year follow-up"). Participants completed interviews at a convenient location (usually the participant's home) and were compensated with \$30 for completion of each of the interviews. Interviews were conducted by trained graduate or undergraduate research assistants who read questions to the participants and noted their responses. These interviews collected information regarding mental health, social support, and demographic characteristics including economic and employment status. All measures and interviews were translated to Spanish (and back translated to English for accuracy), and these, along with a Spanish-speaking research assistant, were available for use

with participants who preferred to be interviewed in Spanish. Data were taken from a larger longitudinal study (1 K01 MH072504; Principal Investigator Christina Gee), the purpose of which was to examine issues relevant to the transition to parenthood among African American and/or Hispanic/Latino(a) adolescent mothers and their babies' fathers. While mothers and fathers were interviewed for the larger longitudinal study, only mothers' data from two time points (six-month follow-up and twelve-month follow-up) were used in this current study. Although it has been said that mothers typically underreport father involvement (Ahrons, 1983), mother reports are frequently used over father reports due to the availability of this data and to the similarity of mother and father reports (Hernandez & Coley, 2007). In addition, mothers' perceptions and appraisals are quite important as those same appraisals affect and relate to their reports of their satisfaction with father involvement and own psychological well-being (i.e. parental stress and depression).

Measures

Demographic information. The demographic information that was collected for the larger study included participants' age, baby's date of birth, race and ethnicity, marital status, educational attainment, income, welfare assistance, and whether the pregnancy was a multiple birth. Information about the participants' relationship history and current relationship involvement to the other parent of the baby was collected. At the twelve-month follow-up, participants were also asked whether they had been pregnant again since the first interview, and if so, whether the father of this baby was the same as the father of the first baby.

Maternal depression. Maternal depression was measured by the endorsement of symptoms on the Beck Depression Inventory – Second Edition (BDI-II; Beck, Steer, & Brown, 1996) at the twelve-month follow-up. The BDI-II is a reliable and commonly used questionnaire

that assesses the presence and severity of 21 symptoms during the past two weeks. These represent depressive symptoms listed in the DSM-IV (American Psychiatric Association [APA], 1994) and are rated on a four-point scale that ranges from 0 to 3, with higher numbers representing greater severity. Some of the symptoms assessed on this questionnaire include sadness, anhedonia, self-dislike, crying, changes in sleep and weight, fatigue, and loss of concentration and interest in sex. For clinical use, items are summed to obtain a total depression score ranging from 0 to 63, with scores between 0 and 13 considered minimal, 14 and 19 considered mild, 20 and 28 considered moderate, and 29 and above considered severe. For the purposes of statistical modeling for this study, items were averaged to obtain a depression score, which was entered into the model. Further, the BDI-II has psychometric properties that have demonstrated high internal consistency, good test-retest reliability, and good construct and concurrent validity with other common measures of depression (Beck, Steer, & Brown, 1996), and it has been validated and deemed appropriate for low-income, African Americans (Grothe et al., 2005), Latinos/as (Lugo Carro, Louro Bernal, & Bayarre Vea, 1998), and high school adolescents (Osman, Barrios, Gutierrez, Williams, & Bailey, 2008). The current study found a Cronbach's alpha of 0.91 for this measure at the twelve-month follow-up, indicating excellent internal consistency. Table 1 contains the descriptive statistics for this measure.

Parenting stress. Parenting stress was measured postnatally at the six-month follow-up with the Parenting Stress Index – Short Form (PSI-SF; Abidin, 1995), which contains a subset of 36 items from 101-item Parenting Stress Index (PSI; Abidin, 1983). Like its full length counterpart, the PSI-SF was written at a fifth grade reading level and provides response choices through a five-point likert scale (“1” = “strongly disagree”; “5” = “strongly agree”) that indicates participants' level of agreement to each of the parenting stress statements. Development and

validity studies have found a high correlation between this short form and the full-length form ($r = 0.94$), which is also comparable to the two-week test-retest reliability of the full length PSI ($r = 0.95$; Abidin, 1995). In sum, the PSI-SF was designed to provide a quick alternative to the full version while maintaining many of its psychometric benefits, which have also been found for its Spanish version, tested on a sample of Hispanics (Cronbach's alpha for total stress score = 0.94; Solis & Abidin, 1991). The PSI-SF, as well as its parent version (PSI), has been validated and considered appropriate to use across ethnic minority samples, including low-income African Americans and Latinos/as (Florsheim et al., 2003; Foucault & Schneider, 2009; Hutcheson & Black, 1996; Solis & Abidin 1991).

The PSI-SF also provides scores for the three 12-item subscales, Parental Distress, Difficult Child, and Parent-Child Dysfunctional Interaction. The Parental Distress subscale (PD) measures distress directly associated with the parental role as it is influenced by personal factors such as an impaired sense of parental competence, stressors created by restrictions placed by the parenting role, conflict with the other parent of the child, and decreases in social support (e.g. "I find myself giving up more of my life to meet my child's needs than I ever expected", "I feel trapped by my responsibilities as a parent"). The Difficult Child subscale (DC) pertains to basic characteristics that can be common and present in less manageable children, such as in children with challenging types of temperament and/or in children with learned patterns of defiant, non-compliant and demanding behaviors (e.g. "My child gets upset easily over the smallest thing", "My child makes more demands on me than most children"). The Parent-Child Dysfunctional Interaction subscale (P-CDI) represents parental perceptions regarding how the child meets preconceived expectations of being a parent, and/or how reinforcing or rewarding the parenting experience is (e.g. "My child smiles at me much less than I expected", "My child doesn't seem to

learn as quickly as most children”). The Total Stress score indicates the overall level of distress a parent is experiencing in relation to the three aspects of parenting mentioned above. For this study, items were recoded then averaged to its respective subscales so that higher numbers indicate greater distress in each domain. The overall Parenting Stress for this study was treated a latent variable in the analysis, which was defined by the three subscale scores described above. The current study found a Cronbach’s alpha of 0.93 for this measure at the twelve-month follow-up, indicating excellent internal consistency. Table 1 contains the descriptive statistics for this measure.

Father involvement. Father involvement was measured at the six-month follow-up through the mother’s report of the frequency of nine fathering activities that capture his provision of the child’s material needs and accessibility as a father (see Appendix A). The questions for this study were derived and adapted from the Fragile Families and Child Well-Being Study (Reichman, Teitler, Garfinkel, & McLanahan, 1998; <http://www.fragilefamilies.princeton.edu>), and comprise a multidimensional measure that captures different aspects of father involvement, including the accessibility and responsibility domains proposed by Lamb’s three-domain typology (Lamb, et al., 1987), and the cognitive and behavioral domains proposed by Palkovitz’s model (1997). For example, items inquire about how parents will divide parenting roles (Lamb’s accessibility domain; Palkovitz’s cognitive domain), and about how often the father buys clothes, diapers, baby food/formula, toys or presents (Lamb’s responsibility domain; Palkovitz’s behavioral domain). Mothers responded on a four-point likert-scale (1 = “never,” 4 = “often”) indicating the frequency with which the father engaged in the listed activities over the last month. Responses to the items were standardized and then averaged to obtain the total Father Involvement score for this study. These questions as well as parallel modifications have been

used extensively to measure father involvement in samples of mothers, including those of ethnic minority backgrounds (e.g., Choi, J.-K., Palmer, & Pyun, 2012; <http://crew.princeton.edu/publications/publications.asp>). Although there is no prior research establishing their psychometric properties, the items demonstrated acceptable reliability in the current study (Cronbach's alpha = 0.87 at the six-month follow-up). Table 1 contains the descriptive statistics for this measure.

Satisfaction with father's involvement. Mother's satisfaction with the quantity of father involvement was measured through a single item at the six-month follow-up. Mothers rated on a four-point likert scale ("1" = "not at all", "2" = "somewhat", "3" = "quite a bit", and "4" = "a lot") how much the father of the child is characterized by qualities the mother finds important in being a good father. More specifically, mothers were first asked, in an open-ended response format, the characteristics that they felt were most important to being a good father; no limitations were placed on the number of qualities they listed. A follow-up question, then, inquired how much these previously stated qualities described the baby's father, on the scale of one to four described above. For the purposes of this study, this item was used as a proxy of mother's satisfaction with father involvement. The single score obtained was centered around the grand mean of the sample prior to its use in the analyses. For this variable, a mean of 3.19 ($SD = 0.97$) was found within this sample at the six-month follow-up. Table 1 contains the descriptive statistics for this measure.

Chapter 5: Data Analysis

Data analysis results for the current study, including multiple imputation, descriptive statistics, and modeling analyses were obtained by using MPlus Statistical Analysis with Latent Variables Version 7.0 (Muthén & Muthén, 1998-2012), a statistical package commonly

recommended because of its power in performing for Structural Equation Modeling analyses. IBM SPSS Statistics Version 21 (IBM Corp., 2012) was used to compute sample descriptive statistics (means, standard deviations and frequencies) of variables that were discrete and not part of the main model, such as race, ethnicity, and employment status.

Since missing values were present in the longitudinal data due to interviewer error or participant attrition, multiple imputation of the variables of interest was performed in MPlus. Multiple imputation in MPlus uses Bayesian inference using Markov chain Monte Carlo (MCMC) algorithms, and in short, produces a specified number of data sets that are later aggregated and used in the overarching analysis of the study's hypotheses. The current study performed a total of ten imputations. Multiple imputation is chosen over common approaches (such as data editing/deletion) and over single imputation approaches (such as mean and regression substitutions), as suggested by Dow and Eff (2009). Unlike the traditional or single imputation approaches, multiple imputation takes the error variance into account when calculating the imputation value, and hence, provides parameter estimates. Without these parameter estimates, arriving at smaller standard errors, low *p*-values, and higher than accepted Type I errors are all probable (Dow & Eff, 2009).

To test the mediation hypothesis of indirect effects between the interaction term and maternal depression, Structural Equation Modeling (SEM) was chosen as the statistical analysis technique. An extension of the General Linear Model, Structural Equation Modeling (SEM) provides information, based on different statistical tests, about the fit of the proposed mediation model with the sample data, all while taking into account the probability of measurement error in the psychological constructs being tested. Therefore, SEM has two parts: one that provides information about the validity of the observed variables in the prediction of a psychological

construct (referred to as a latent variable or factor) through Confirmatory Factor Analysis, and a structural component looking at relationships among these latent variables (much like a path analysis with latent constructs). The structural component of SEM produces a correlation matrix that is implied by the specified model, and is compared for goodness of fit to the original (non-forced or non-implied) correlation matrix (Grimm & Yarnold, 2000). Therefore, SEM can produce a matrix of residuals based on the difference between the implied and original correlation matrices.

While the Chi-Square test is the platform and root for goodness-of-fit testing, it is not often the sole test used to determine fit in SEM because of its vulnerability to sample size, model complexity, and normality of the variables (Grimm & Yarnold, 2000). Mplus provides results for the Chi-Square goodness-of-fit, as well as supplementary tests used for this study, such as the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the Root Mean Squared Error of Approximation (RMSEA), and the Standardized Root Mean Squared Residual (SRMR), which is a Comparative Fit Index (CFI; Muthén & Muthén, 1998-2012). Goodness of fit for the present study was indicated by CFI values of 0.90 or greater (Barrett, 2007). By contrast, a good fit was indicated by smaller values in the AIC, BIC, and RMSEA. In particular, RMSEA values below the 0.08 boundary were used to indicate a good fitting model.

To determine the role of interaction between terms as specified in the hypothesis (the role of mediation), the product between the interacting terms was created and implemented within the structural model. Therefore, the algorithmic product between the standardized and averaged Father Involvement total score and the centered Satisfaction variable was specified as one of the predictors of the mediating variable and the outcome variable. In turn, the moderated mediation model was tested as a whole for goodness of fit using SEM. This model included paths from all

six-month variables (father involvement, satisfaction, the interaction term, parenting stress and depression) to parenting stress at twelve-months and to depression at twelve-months, and from parenting stress at twelve-months to depression at twelve-months (Figure 1), which if not specified, would be forced to zero. Lastly, bivariate correlations among all independent variables at six-months were also included in the model. Specifically, associations among father involvement, mother's satisfaction, the interaction variable, parenting stress and depression were specified.

Chapter 6: Results

Descriptive Statistics

Pre-imputation sample statistics obtained through the use of SPSS Version 21 indicated that the mean for father involvement at the six-month follow-up was 2.48 ($SD = 0.82$, Minimum = 1.00, Maximum = 4.00), suggesting that fathers were between “rarely” and “sometimes” involved with their six-month olds. Specifically, fathers were mostly involved in discussing the division of parenting roles ($M = 3.26$, $SD = 0.90$) and in buying basics for the baby, such as clothes, diapers, food, toys or presents ($M = 3.36$, $SD = 0.92$). Additionally, fathers were least involved in providing for transportation (e.g., help making car payments or lending a car, $M = 1.67$, $SD = 1.14$) and housing needs (help with rent or mortgage payments, $M = 1.76$, $SD = 1.26$). However, on average, mothers were “quite a bit” satisfied with the parenting role of fathers at the six-month interview ($M = 3.19$, $SD = 0.97$, Minimum = 1.00, Maximum = 4.00). Similar patterns of involvement and similar levels of satisfaction were observed at the twelve-month follow-up.

With regard to overall level of parenting stress, on average, mothers did not report aspects of parenting their six-month-olds as stressful ($M = 1.86$, $SD = 0.49$, Minimum = 1.03, Maximum = 2.92). The highest reported subscale on the PSI-SF was Parental Distress ($M = 2.27$,

$SD = 0.74$), whereas the lowest reported subscale was that of Parent-Child Dysfunctional Interaction ($M = 1.44$, $SD = 0.45$). Similar patterns parenting stress were observed at the twelve-month follow-up.

Lastly, mothers reported minimal symptoms of depression at both the six-month ($M = 9.10$, $SD = 8.12$) and twelve-month follow-up interviews ($M = 8.66$, $SD = 7.95$). Specifically at the six-month interview, mothers mostly struggled with symptoms of depression related to sleep ($M = 0.99$, $SD = 0.86$), appetite changes ($M = 0.77$, $SD = 0.94$), fatigue ($M = 0.74$, $SD = 0.75$), and decreased energy ($M = 0.67$, $SD = 0.65$). These patterns were also found at the twelve-month interview. Table 1 provides mean statistics for all variables of interest.

Model Fit

The results from analyses conducted using MPlus indicated that the overall model, inclusive of the measurement and structural components, was not a good fit with the sample data. In goodness of fit tests like the Chi-Square, small and non-significant numbers are desired where goodness of fit is also desired. Supplemental tests like the Root Mean Square Error of Approximation (RMSEA), the Akaike Information Criterion (AIC), and the Bayesian Information Criterion (BIC) require a value less than 0.08 if goodness of fit is desired. For Comparative Fit Index (CFI) tests like the Standardized Root Mean Square Residual (SRMR), values of 0.90 or greater are desired. All model fit statistics provided by MPlus did not meet the thresholds previously determined to suggest goodness of fit. Table 2 contains the goodness of fit values, including the Chi-Square Test, which yielded a value of 74.677 and a p-value of 0.000, suggesting that the model was not a fit to the data. Additional test results yielded an RMSEA value of 0.146, an AIC value of 1130.258, and a BIC value of 1245.737, all surpassing the

suggested value of 0.08. Test results also noted that the SRMR value was of 0.073, concurring to a poorly fitting model as a value of 0.90 or greater is desired in this test.

Model alterations. In attempts to find a better fit, additional paths were specified within the structural component of the model and in turn, a second model was tested. As seen on Figure 2, bivariate relationships between the parenting stress indicators at six-months and the respective parenting stress indicators at twelve-months were included. Model fit results for this second model improved in that a statistically significant drop in the Chi-Square value was found from the previous model (p -value = 0.00); however, the model continued to be unacceptable in trying to explain the relationships in the sample data. Table 2 contains the goodness of fit values for this new model (Model 2), which included a Chi-Square value of 47.562 and a p -value of 0.004, an RMSEA value of 0.108, an AIC value of 1088.458, a BIC value of 1211.007, and an SRMR value of 0.070. To address any possible issues with non-normality and its effects on model fit, this second model was reanalyzed with maximum likelihood estimation with robust standard errors (MLR). In using such estimator, model fit results actually got worse as the Chi-Square value increased almost two-fold (p -value = 0.00). Table 2 contains all statistical values for this analysis. Lastly, to address any possible concerns around the interaction term having an impact on the model fit, a third model was tested where the interaction term was removed (Figure 3). As seen on Figure 3, the paths to and from father involvement and satisfaction remained specified. Results for this last model were found to be similar to those of the second model (ran without the MLR estimator), suggesting that the interaction term is not responsible for the lack of fit. Additional values for this last model are reported in Table 2.

In sum, no support was provided for the two main hypotheses by either of the tested models. Specifically, the current sample data did not support hypothesis 1, which proposed that

mothers' satisfaction with fathers moderated the association between father involvement and mothers' parenting stress. It also did not support hypothesis 2, which proposed that mothers' parenting stress functions as a mediator between the interaction variable (the product of father involvement and satisfaction at six-months) and maternal depression. Despite the lack of support for the model as a whole, Model 2 will be discussed from here on out in terms of individual results and implications.

Bivariate Correlations of Observed Variables

Table 3 presents the results obtained through the use of MPlus, which indicated that various moderate bivariate correlations exist between the observed variables of interest for the mediation model, providing support for some associations between variables in the model. For example, twelve-month depressive symptoms had moderate correlations with each of the three subscales of the PSI-SF at twelve-months, including Parenting Distress ($r = 0.67$), Parent-Child Dysfunctional Interaction ($r = 0.48$), and Difficult Child ($r = 0.55$).

Low correlations, however, were observed among variables expected to be related in the hypothesized model (see Table 3). For example, the interaction term (the product of father involvement and satisfaction at six-months) had very low correlations with each of the three subscales of the PSI-SF at twelve-months (Parenting Distress, $r = -0.02$; Parent-Child Dysfunctional Interaction, $r = -0.03$; Difficult Child, $r = -0.05$), and with depression at twelve-months ($r = -0.08$). The same was true of its originating variables (father involvement and maternal satisfaction). Specifically, the three PSI-SF subscales at twelve-months correlated weakly with father involvement at six-months (correlations ranging between 0.02 and 0.12), and with mother's satisfaction at six-months (correlations ranging between -0.14 and -0.01); likewise, twelve-month depressive symptoms had very low correlations with father involvement

at six-months ($r = -0.02$) and maternal satisfaction at six-months ($r = -0.11$; see Table 3). Table 4 reports the bivariate correlations of observed variables obtained through SPSS Version 21, prior to imputation.

Individual Analysis of the Mediation Model

Although the model as a whole was not supported by the data, some individual associations were found to be significant and supported individual paths in the model (Figure 4). Starting with the factor model, the standardization results obtained from MPlus suggested that all observed variables in the model loaded well on their corresponding factors, providing no concerns around the measurement ability of the parenting stress questionnaire used for this study. Table 5 has a complete list of factor loading values.

Standardization results of the structural model, on the other hand, were more mixed as only some paths of the model were found to be significant (Figure 4 and Table 6). Specifically, twelve-month depression was strongly and positively predicted by twelve-month parenting stress ($b = 0.74$), and parenting stress at six-months strongly predicted parenting stress six months later ($b = 0.67$; Figure 4 and Table 6). Additionally, bivariate associations were found among some of the independent variables at the six-month time line. In particular, mother's satisfaction had a moderate negative bivariate association with parenting stress ($r = -0.35$) and depression ($r = -0.33$).

Lastly, the paths in the model that were expected to be significant, but were not, included the main paths from the interaction variable (the product of father involvement and satisfaction at six-months) to parenting stress and depression at twelve-months, and paths from father involvement and satisfaction at six-months to parenting stress and depression at twelve-months.

A bivariate association was also expected between father involvement and mother's satisfaction, however, such was found to be non-significant.

Chapter 7: Discussion

In the current study, father involvement and mother's satisfaction were examined in a sample of adolescent and young minority mothers of low socioeconomic status in order to determine its effects on mothers' parenting stress and depression. A moderated mediation model was tested using Structural Equation Modeling with MPlus Statistical Analysis with Latent Variables Version 7.0 (Muthén & Muthén, 1998-2012), which provided some significant results. In particular, all observed variables in the model loaded highly on their corresponding factors, and significant path were found between parenting stress at twelve-months and maternal depression at twelve-months, and between parenting stress at six-months and parenting stress at twelve-months. Additionally, negative, moderate bivariate correlations were found between concurrent mother's satisfaction and parenting stress, and concurrent mother's satisfaction and depression.

However, contrary to hypothesis 1, SEM analyses did not support mother's satisfaction as a moderator of the association between father involvement and mothers' parenting stress. In addition, contrary to hypothesis 2, parenting stress did not function as a mediator between father involvement and maternal depression. Although the data did not support satisfaction as a moderator within the specified model, results indicated that mother's satisfaction had an impact on parenting stress and depression during the same time period. This negative low bivariate correlation highlights the role of satisfaction, particularly as father involvement did not carry any kind of relationship to the parenting stress and depression variables at either time points. However, the causal direction of this association remains unclear; it could be that when mothers

are more satisfied they are also less stress and depressed, or that when mothers are more stressed and depressed, they are also less satisfied. This suggests that measuring mothers' satisfaction is an important construct to consider in this research. This finding is in line with previous research that state that mother's satisfaction was more significant than amounts of father involvement in predicting psychological well-being among adolescent mothers (Fagan & Lee, 2010). Therefore, given the role of satisfaction in this study, expanding our conceptualization of father involvement to include maternal satisfaction may be important for future research.

Although results for this study obtained by SEM did not support mediation, individual paths within the mediation model were found to be significant. In particular, parenting stress at twelve-months was associated with depressive symptoms at twelve-months, highlighting the impacts that experiences of parenting stress may have on adolescent mothers' psychological well-being. This finding is consistent with Lazarus and Folkman's (1984) framework of stress and distress, and with previous research linking stress to depression (McKenry, Browne, Kotch, & Symons, 1990; Tarkka, Paunonen, & Laippala, 1999; Soliday, McCluskey-Fawcett, & O'Brien, 1999). This finding provides potential for clinically translatable results as the findings may indicate an early point of intervention for depression for adolescent mothers. Clinicians may be effective in reducing or even preventing the development of maternal depression among adolescent mothers if they can assess, monitor, and intervene to reduce mothers' levels of parenting stress. Specific areas of attention for such efforts can include those measured by the PSI-SF, such as personality factors that could interfere with an effective parenting role (Parental Distress), child temperament that could cause above average parenting challenges for the mother (Difficult Child), and expectations of the parent-child interaction that could be affected by either or both personality and child characteristics. Particular focus could be directed at the mothers'

parental distress given that this subscale was highest in this sample. Whether reducing high levels of parental stress, or sustaining their low levels of parental stress (as found in this sample) is a potential avenue for preventive intervention. Likewise, sustaining the resiliency factors that keep these mothers healthy may be also effective, particularly since this sample of mothers reported to have low levels of parenting stress. Factors such as internal (e.g. healthy self-esteem) and external (e.g. help seeking behaviors) coping strategies that help reduce their distress are examples. Further, intervention programs that focus on contextual factors affecting these areas of parenting stress may also be beneficial given that these, along with personal and child characteristics, have been found to influence trajectories of parenting stress (Chang & Fine, 2007). It should be noted, however, that the significant path from parenting stress to depression was found in data that was concurrent in time (at twelve-months); therefore, implementing interventions around this result should take this caveat into account. Pending future research, it could also be useful to intervene around depressive symptoms in order to help reduce future experiences of parenting stress.

Despite relatively low levels of parenting stress in this sample, previous experiences of parenting stress positively predicted this experience six months later. These results are consistent with previous literature that denote the rather stable paths of parenting stress in adolescent mother populations (Crnic, Gaze, & Hoffman, 2005; Deater-Deckard, Pickerton, & Scarr, 1996). Given that early experiences of distress can predict future ones, this highlights the importance of intervention and prevention efforts within this population. Without intervention, these data suggest that it is likely that parenting stress would persist and continue to potentially hinder the psychological adjustment of these mothers, and indirectly, their children.

Lastly, within the mediation model, father involvement, satisfaction and the interaction alone did not make a significant impact in reducing experiences of parenting stress and depression six months later. Thus, simply having father involvement and being satisfied with fathers does not lead to a reduction in mothers' psychological distress. It could be likely that mothers are receiving support from other individuals including coresiding family; in such cases, paternal support could become less significant in the well-being and adjustment of adolescent mothers because their financial and emotional needs are already being met by close family members. Likewise, it could be that since this sample's primary appraisal (parenting stress levels) is already low ($M = 1.86$), increasing their secondary appraisal (resources like father involvement) does not result in significant changes to their well-being.

Limitations

Several limitations may have contributed to the study results. The data used for this study come from two time points, which are six months apart. The length of the interval may be of importance given that the paths of the structural model found to be significant were between variables measured during the same time point (e.g. parenting stress at twelve-months predicted depression at twelve-months). Since different factors affect stress levels in this population, a six-month period is wide enough for significant confounding stressors to arise, which would produce changes in parenting stress levels that are not caused by the effects of father involvement. For example, mothers may experience changes or conflicts in their relationship with others who provided assistance with their parental role, and this, in turn impacted their parenting stress. Therefore, the predictive value of father involvement and satisfaction on parenting stress and depression is likely compromised by the six-month interval, as it has been found that the effects of stress are rather short-lived (Kendler, Karkowski, & Prescott, 1998). Accordingly, it would be

assumed that the effects of parenting stress on depression would be short-lived if parenting stress is also short-lived, which may explain the significant path found between parenting stress and depression at the same time point.

Second, the current study did not include other forms and sources of social support. Specifically, the father involvement measure has a relative emphasis on the father's ability to provide tangible support, which may be impacted by the overall income and socioeconomic status of the father and the father's family. Given the demographics of this population, it is possible then that this measure restricted the report of father involvement. It is likely that mothers reported being more or less satisfied with fathers despite their average levels of involvement because they factor in fathers' difficulty with access to material resources (e.g., money, transportation, housing). Likewise, the current study did not include other sources of support, such as that provided by the grandmother of the child, in the structural model. Results of this study failed to support the predictive path from father involvement to parenting stress or depression, as well as the predictive path from the interaction term (the product of father involvement and satisfaction at six-months) to parenting stress or depression, in turn questioning whether other forms of father involvement or other sources of support (or other contextual factors) were also or solely driving the psychological distress of these mothers. Including a more multidimensional measure of father involvement and other sources of support such as maternal support from the baby's grandmother in the study of father involvement may be of importance. The inclusion of grandmother's support in future research could be particularly relevant for mothers residing with their own mothers (slightly less than one-third of mothers in the current study), and given that maternal grandmother support has been found to play an important effect in diminishing adjustment difficulties in these mothers (Leadbeater & Bishop, 1994; McLoyd,

1990). Contextual factors such as access to social assistance programs may be of importance as well.

Third, missing data may have impacted the power of the statistical analyses, despite having performed a priori power tests and multiple imputation. While studies on the rates of retention and attrition of adolescent mothers in research participation is quite limited and scarce, some recent studies have reported that retention rates for ethnically diverse adolescent mothers can range between 54% and 59%, over a six-month period (Pinto-Foltz, Logsdon, & Derrick, 2011; Seed, Juarez, & Alnatour, 2009). The current study had an attrition rate between 15% and 17% over a six-month period (15% between baseline and the six-month interview, and 17% between the six-month and twelve-month interview), which is more conservative than previous studies. Factors that contributed to this study's conservative attrition rate included tracking strategies employed by research assistants, which were aided by our relationships with staff who was in more frequent contact with participants (e.g. teachers, service providers, etc.) and by collecting information for backup contacts (contact information for participants' family and friends). Additionally, research assistants made calls and sent out requests to update contact information in between interviews, and sent out birthday cards at the child's first birthday.

While attrition was low for this study, it is possible that the continuing participants in the present study may differ from those participants that did not continue participation in ways that could impact the variables measured in the study. Participant mothers may represent African American and Latina adolescent mothers who were less stressed and busy, more open and willing to share their experiences. Reasons for attrition were primarily due to inability to contact them due to disconnected and wrong phone numbers, and undeliverable postal mail due to a withheld address change. Thus, participants who were of lower socioeconomic status may have

moved more frequently or have phone service disconnected, thus making them more difficult to retain in a longitudinal study. These reasons for attrition are consistent with other research that has reported similar issues regarding adolescent mothers' mobility (Letourneau, Stewart, & Barnfather, 2004).

In turn, future research with this population may want to consider implementing strategies that will help maintain participation, in addition to those implemented in the current study. Examples include data collection at schools and medical offices where participants are already present, establishing collaborating relationships with school staff and other service providers to help maintain contact with student participants and to help participants "buy-into" the study, and maintaining contact with participants via holiday cards and reminders of upcoming interviews in between interviews. This latter strategy would not only increase the tracking of participants' contact information, but increase rapport and create a feeling of connectedness and belongingness to the study.

Fourth, results of this study are limited adolescent mothers of low socioeconomic status living in an urban environment of the mid-Atlantic U.S; this limitation excludes the experiences of adolescent mothers who reside in rural environments where access to education, jobs, child care and health care, and even social contact, are more limited. Also, results of this study are limited to African American and Latina mothers. In particular, results are mostly applicable to adolescent mothers who self-identify as African American as it comprised the majority of the sample. Although Latina participants comprised 27% of the sample for this study, the sample size was too small ($n=20$) to analyze them separately from the African American mothers, and the majority of Latinas were of Central American descent. Future research should aim to examine cultural differences in father involvement given some previous research that has found

differences between African Americans and Mexican Americans with regard to coresidence with the baby's father, social support from the fathers of the baby, and establishment of a long-term relationship commitment such as engagement or marriage (Wiemann, Agurcia, Rickert, Berenson & Volk, 2006). Additionally, future research should aim to explore how adolescent parenting affects a more diverse sample of Latina mothers, and examine the cultural differences within these Latina mothers (e.g. differences in experiences between Central American- and South American-descent mothers). Likewise, the study can only be generalized to primiparous mothers and therefore cannot explain how father involvement affects mothers with more than one child or mothers whose children have different fathers. For mothers with more than one child, parenting stress levels may be higher; father involvement for these mothers may mean something different (may be more necessary or important) than for mothers with only one child.

Further, mothers reported low levels of depressive symptoms ($M = 9.10$, $SD = 8.12$), which may indicate limitations in the use of the BDI-II to measure depressive symptoms in this sample. Therefore, alternative measures of depression can be considered, particularly when participants are new parents and transitioning through adolescence. Sleep disturbances, appetite changes, fatigue, and decreased energy were the most troublesome symptoms, which could be affected by new parenthood or by normative physiological changes that occur during this period of development. The BDI-II's focus on somatic symptoms may have had significant impact on depression scores for this population, and it is possible that these physical changes were unrelated to depression. Additionally, the measurement of mothers' satisfaction with fathers' involvement was limited to a single item that inquired about how much fathers resembled characteristics that they believed were important for being a good father. Relying on a single item can pose risks to the reliability and content validity of the measure; future research could

incorporate the assessment of satisfaction with the level of involvement fathers have with each of the different activities that capture the different domains of father involvement. In other words, two assessments would be made about each of the fathering activities, one about the quantity of engagement, and one about the mothers' satisfaction with this quantity (e.g. "How often did the baby's father buy clothes, diapers, baby food/formula, toys or presents for the baby?", "How satisfied are you with the baby's father's frequency of buying clothes, diapers, baby food/formula, toys or presents for the baby?"). Thus, satisfaction with the father may be a multifaceted construct that is more reliability captured by a measure that accesses satisfaction across different parenting domains.

Another limitation is that mother reports for all variables were used for the present study. While mother reports are frequently used for its availability and for its similarity to father reports (Hernandez & Coley, 2007), it has been suggested that mothers underreport father involvement (Ahrons, 1983), which may pose a limitation for these findings, particularly in the report of activities that the mother is unaware of. For example, mothers may be uninformed regarding food, clothes, toys, and other baby items that the father buys but does not directly tender to the mother, and instead may keep at his place of residence or that of other family (e.g., paternal grandparents) that cares for the child, and about activities that the father engages in when the mother is not present. The mother may also be unaware of attempts the father makes to become more available to his child, such as changing work schedules or refusing activities that may interfere with his accessibility to his child. Future research should consider ways to integrate mother and father reports as fathers may provide more accurate reports about his engagement with his child. Likewise, the use of the PSI-SF relies on mother reports regarding children's temperament; specifically, on characteristics that allude to a more challenging temperament. The

measure may pose concerns around the accuracy of a single reporter. Richardson and Day (2000) highlight the importance of multiple reporters when measuring child behaviors, particularly because there appears to be significant disagreement between reporters (Achenbach, Howell, Quay, & Conners, 1991; Christensen, Margolin, & Sullaway, 1992; Kaufman, Cook, Arny, Jones, & Pittinsky, 1994), particularly if emotional dysfunction is already present on behalf of a given reporter (Najman, et al., 2001).

Lastly, moderate correlations were observed between the parenting distress subscale of the PSI-SF and the depression measure when administered at the same time point. Therefore, the results of this study may have been compromised and confounded by this association, possibly causing disturbances in the fit of the proposed model. While a standardized measure, results of this study point to possible concerns with the PSI-SF when used in conjunction with a depression measure like the BDI-II. Specific research on the psychometric characteristics of the PSI-SF in depression research may be further warranted, particularly around items within the parenting distress subscale that are vague and less specific to the roles of parenting. For example, items like “I am not interested in people as I used be” and “I don’t enjoy things as I used to” may capture symptoms of depression (i.e. anhedonia) already measured by the depression instrument.

Future Directions

Continued research on adolescent mothers in the area of father involvement and well-being can aid the modification and development of interventions for maternal depression in adolescent mothers who are at risk for negative mental health outcomes. Creating and modifying programs that address the moderate levels of parenting stress would be relevant, particularly because the current study found that parenting stress is significantly associated with depression (cross-sectionally), and with future experiences of parenting stress. Likewise, detecting and

intervening with depressive symptoms in adolescent mothers is important, as trajectories for these females were seen as relatively stable over time. Schools and health practitioners who come into frequent contact with this population could pay special attention to these issues.

Therefore, to aid in this intervention development, future research on adolescent mothers should consider the following recommendations, given the noted limitations and results of this study. First, it is recommended that longitudinal research on psychological distress consider the time interval between assessments; a six-month interval may affect the power to detect the effects of social support on psychological well-being, therefore, frequent assessments (e.g., monthly) may be appropriate. More frequent assessments would allow for mediation testing using data from three different time points that are closely spaced. Second, future research on the maternal outcomes of father involvement should consider including an “income-sensitive” measure of father involvement and other sources of support in the model. In particular, researchers could measure other aspects of father involvement (such as emotional engagement), and look at how the child’s maternal grandmother may be fulfilling those same activities that are expected of the father. Lastly, future research could include other informants for data collection. Specifically, future research could include father reports on more objective measures like quantity of involvement, or reports of other types of father involvement like father’s cognitive or emotional engagement with his child. Additionally, future research could consider collecting data from multiple reporters when assessing child behaviors and outcomes, particularly if there is concern of psychological distress on part of the reporter.

Summary

In sum, results obtained through SEM for the collected sample did not support either of the main hypotheses. Despite the limitations of the current study and not having support for the

model as a whole, individual paths within the model were found to be significant. First, all observed variables in the model loaded highly on their corresponding factors and significant paths were found from parenting stress at twelve-months to maternal depression at twelve-months, and from parenting stress at six-months to parenting stress at twelve-months. Lastly, negative, low bivariate correlations were found between mothers' satisfaction with fathers and maternal well-being, as measured by parenting stress and depressive symptoms. These findings provided some preliminary knowledge as to how parenting stress is related to depression, and about the inclusion of satisfaction in the measurement of father involvement. Further, these findings support the continued need of research on adolescent mothers and father involvement, and about the need for research and development of prevention and intervention programs for these mothers given those previous experiences of stress are likely to be sustained during later months.

Table 1. *Mean Statistics for Model Variables*

Variables	Six-Months			Twelve-Months		
	<i>M</i>	<i>SD</i>	n	<i>M</i>	<i>SD</i>	n
	Father Involvement					
Total (Average)	2.48	0.82	68	2.15	0.9	68
	Mother's Satisfaction with Involvement					
Mother Satisfaction Item	3.19	0.97	70	2.98	1.12	66
	Parenting Stress Index - Short Form					
Parenting Distress (PD)	2.28	0.74	71	2.14	0.75	68
Parent-Child Dysfunctional Interaction (P-CDI)	1.44	0.45	71	1.38	0.47	68
Difficult Child (DC)	1.84	0.59	70	1.93	0.59	68
Total (Average)	1.86	0.49	70	1.81	0.5	68
	Beck Depression Inventory - Second Edition					
Total (Sum)	9.1	8.12	73	8.66	7.95	68
Total (Average)	0.43	0.39	73	0.41	0.38	68

Note. Results were obtained from SPSS Version 21.

Table 2. *Fit Statistics for Three Moderated Mediation Models*

	Model 1	Model 2	Model 2 (*)	Model 3
Chi-Square				
Value	74.677	** 47.562	** 83.523	** 43.986
Degrees of Freedom	28	25	25	21
P-Value	0.000	0.004	0.000	0.002
Root Mean Square Error of Approximation (RMSEA)				
Estimate	0.146	0.108	0.172	
90% C. I.	0.107 – 0.187	0.059 – 0.154	---	0.107 – 0.190
Probability RMSEA <= .05	0.000	0.029	---	0.000
Other Fit Tests				
Standardized Root Mean Square Residual (SRMR)				
	0.073	0.070	0.085	
Akaike (AIC)	1130.258	1088.458	1088.458	1154.506
Bayesian (BIC)	1245.737	1211.007	1211.007	1258.201
Sample-Size Adjusted Bayesian (BIC)	1091.253	1047.065	1047.065	1119.481

Note. Figures 1-3 contain illustrations of the models tested. The use of MLR analysis is denoted by (*) and in turn, results are mean values over 10 computations. Significant (p-value < 0.05) changes in Chi-Square values from the previous model are denoted with **. Models were tested using SEM in Mplus 7.0.

^a No statistically significant difference was found between Model 2 and Model 3.

Table 3. *Bivariate Correlations of Measured Variables for Model 2*

	1	2	3	4	5	6	7	8	9	10	11
1. Father Involvement (6m)	---										
2. Satisfaction (6m)	-0.06	---									
3. Interaction Term	0.80	0.47	---								
4. Parental Distress (6m)	0.03	-0.39	-0.20	---							
5. Parent-Child Dysfunction (6m)	-0.13	-0.01	-0.15	0.53	---						
6. Difficult Child (6m)	-0.10	-0.15	-0.22	0.52	0.55	---					
7. BDI-II (6m)	0.15	-0.34	-0.05	0.71	0.28	0.51	---				
8. Parental Distress (12m)	0.12	-0.14	-0.02	0.54	0.37	0.24	0.42	---			
9. Parent-Child Dysfunction (12m)	0.11	-0.01	0.03	0.32	0.70	0.54	0.24	0.45	---		
10. Difficult Child (12m)	0.02	-0.06	-0.05	0.46	0.46	0.54	0.47	0.54	0.60	---	
11. BDI-II (12m)	-0.02	-0.11	-0.08	0.54	0.49	0.39	0.52	0.70	0.48	0.55	---

Note. Figure 2 contains an illustration of the model. Results were obtained from Mplus 7.0, using imputed data.

Table 4. *Bivariate Correlations from SPSS Version 21*

	1	2	3	4	5	6	7	8	9	10	11
1. Father Involvement (6m)	---										
2. Satisfaction (6m)	0.54**	---									
3. Interaction Term	-0.19	-0.55**	---								
4. Parental Distress (6m)	-0.27*	-0.36**	-0.02	---							
5. Parent-Child Dysfunction (6m)	-0.02	-0.01	-0.07	0.54**	---						
6. Difficult Child (6m)	-0.26*	-0.16	-0.03	0.52**	0.56**	---					
7. BDI-II (6m)	-0.28*	-0.29*	-0.14	0.68**	0.30*	0.51**	---				
8. Parental Distress (12m)	-0.03	-0.13	-0.08	0.54**	0.40**	0.22	0.39**	---			
9. Parent-Child Dysfunction (12m)	-0.02	-0.02	0.15	0.29*	0.75**	0.57**	0.23	0.45**	---		
10. Difficult Child (12m)	-0.18	-0.03	-0.06	0.44**	0.48**	0.55**	0.45**	0.52**	0.59**	---	
11. BDI-II (12m)	-0.07	-0.11	-0.06	0.54**	0.49**	0.35**	0.52**	0.66**	0.47**	0.53**	---

Note. Figure 2 contains an illustration of the model. Results were obtained from SPSS Version 21, prior to imputation. Double asterisks (**) denotes a correlation that is significant at the 0.01 level (2-tailed). A single asterisk (*) denotes a correlation that is significant at the 0.05 level (2-tailed).

Table 5. *Confirmatory Factor Analysis for the Parenting Stress Construct of Model 2*

	Estimate	S.E.	p-value
	Six-Months		
Parental Distress Subscale of PSI-SF	0.918	0.071	0.000
Parent-Child Dysfunctional Interaction Subscale of PSI-SF	0.575	0.126	0.000
Difficult Child Subscale of PSI-SF	0.598	0.115	0.000
	Twelve-Months		
Parental Distress Subscale of PSI-SF	0.797	0.067	0.000
Parent-Child Dysfunctional Interaction Subscale of PSI-SF	0.561	0.124	0.000
Difficult Child Subscale of PSI-SF	0.704	0.091	0.000

Note. Figure 2 contains an illustration of the model. p-values are two-tailed.

Table 6. *Structural Equation Modeling of Model 2*

	Estimate	S.E.	p-value
Parenting Stress (12M)			
Father Involvement (6M)	0.537	0.433	0.215
Mother's Satisfaction (6M)	0.346	0.220	0.116
Interaction Term (6M)	-0.453	0.385	0.239
Parenting Stress (6M)	0.666	0.241	0.006
Depression (6M)	0.137	0.223	0.540
	Estimate	S.E.	P-Value
Depression (12M)			
Parenting Stress (12M)	0.738	0.180	0.000
Father Involvement (6M)	-0.501	0.301	0.096
Mother's Satisfaction (6M)	-0.209	0.185	0.260
Interaction Term (6M)	0.473	0.313	0.131
Parenting Stress (6M)	0.110	0.254	0.664
Depression (6M)	0.054	0.171	0.751

Note. Figure 2 contains an illustration of the model. p-values are two-tailed.

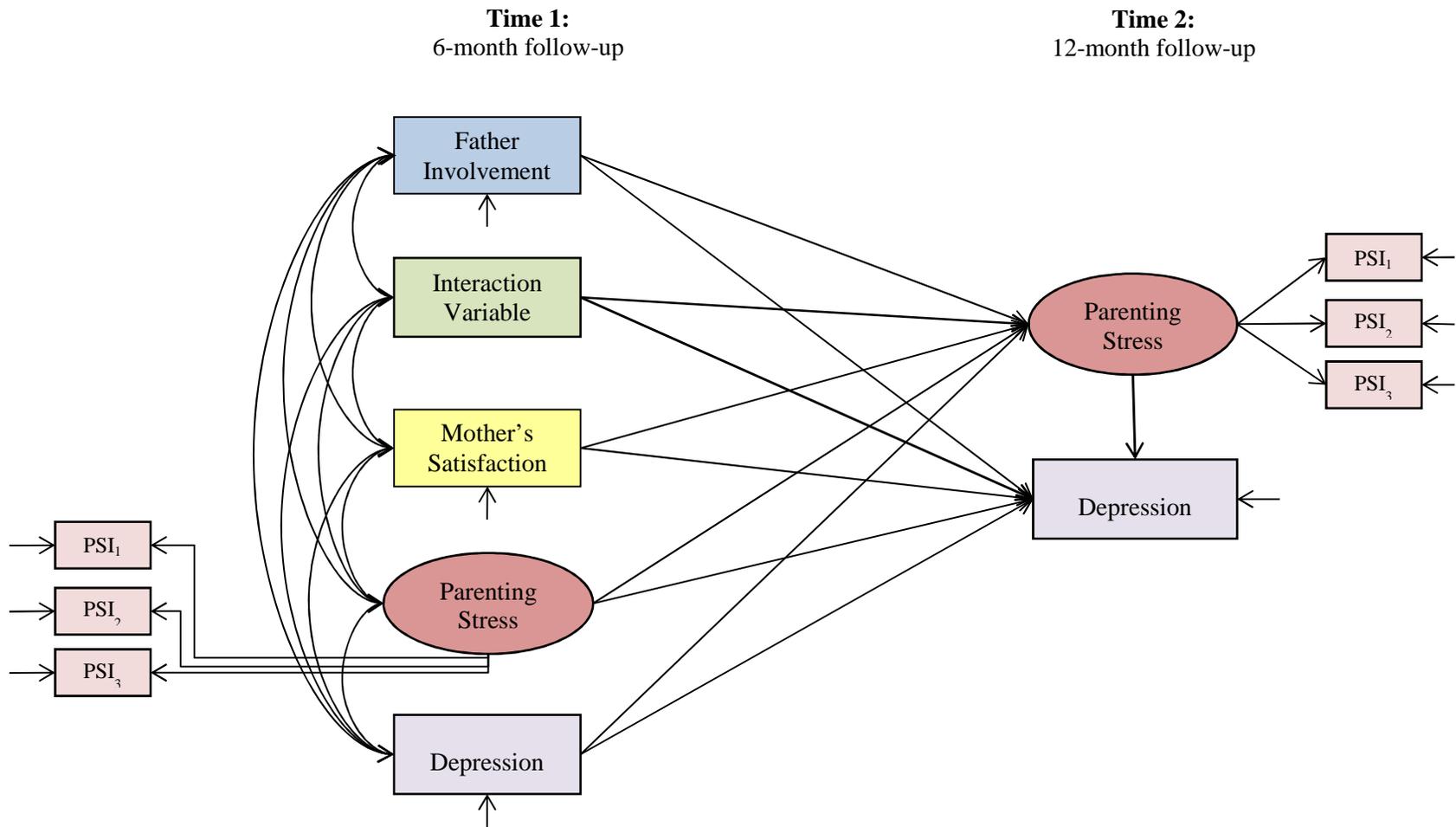


Figure 1. Model 1 of Moderated Mediation.

In this model the Interaction Variable is the product of the standardized father involvement measure and the centered mother's satisfaction with the father's role as a father.

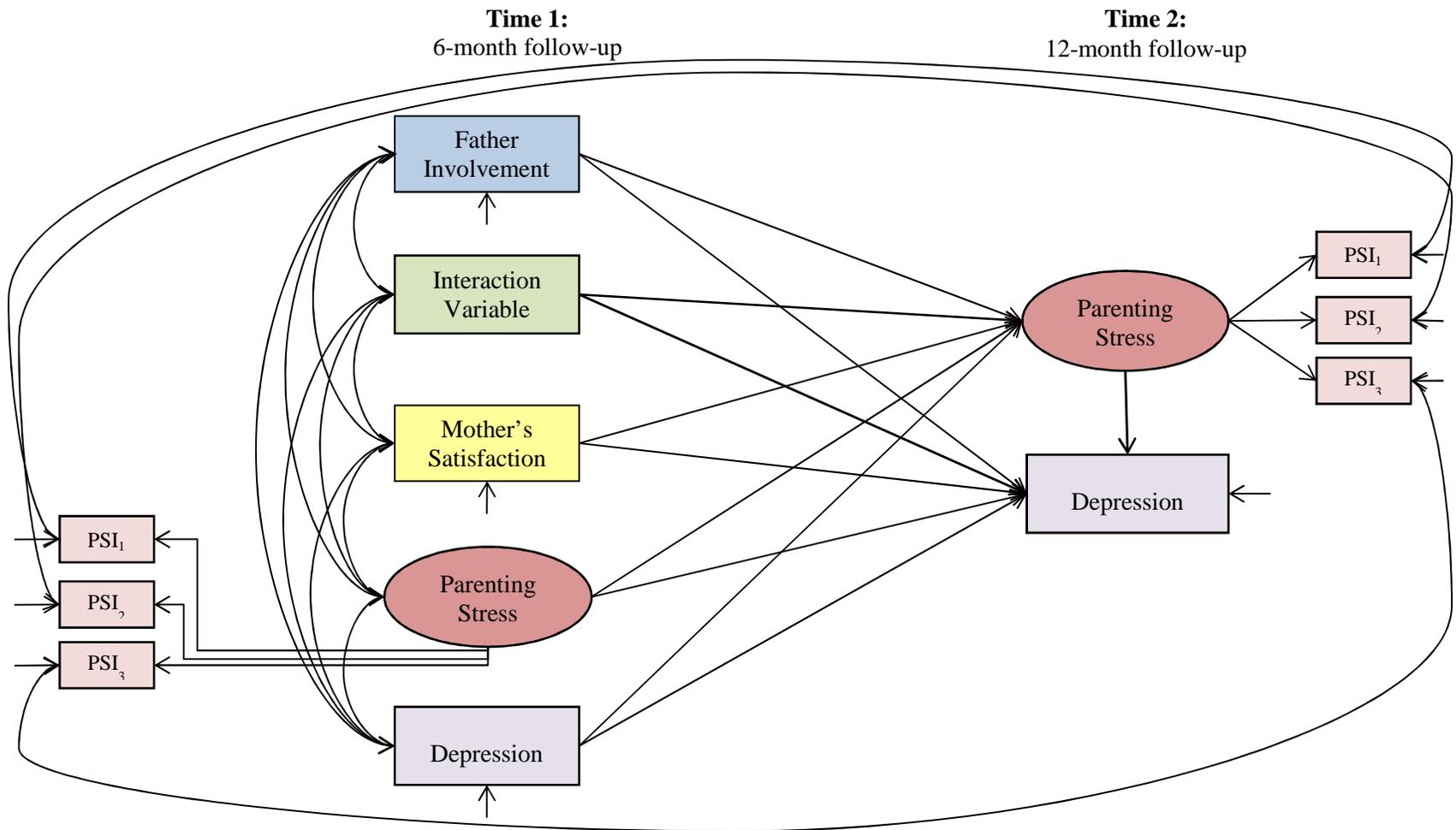


Figure 2. Model 2 of Moderated Mediation.
 Model 2 was run with and without an MLR estimator.

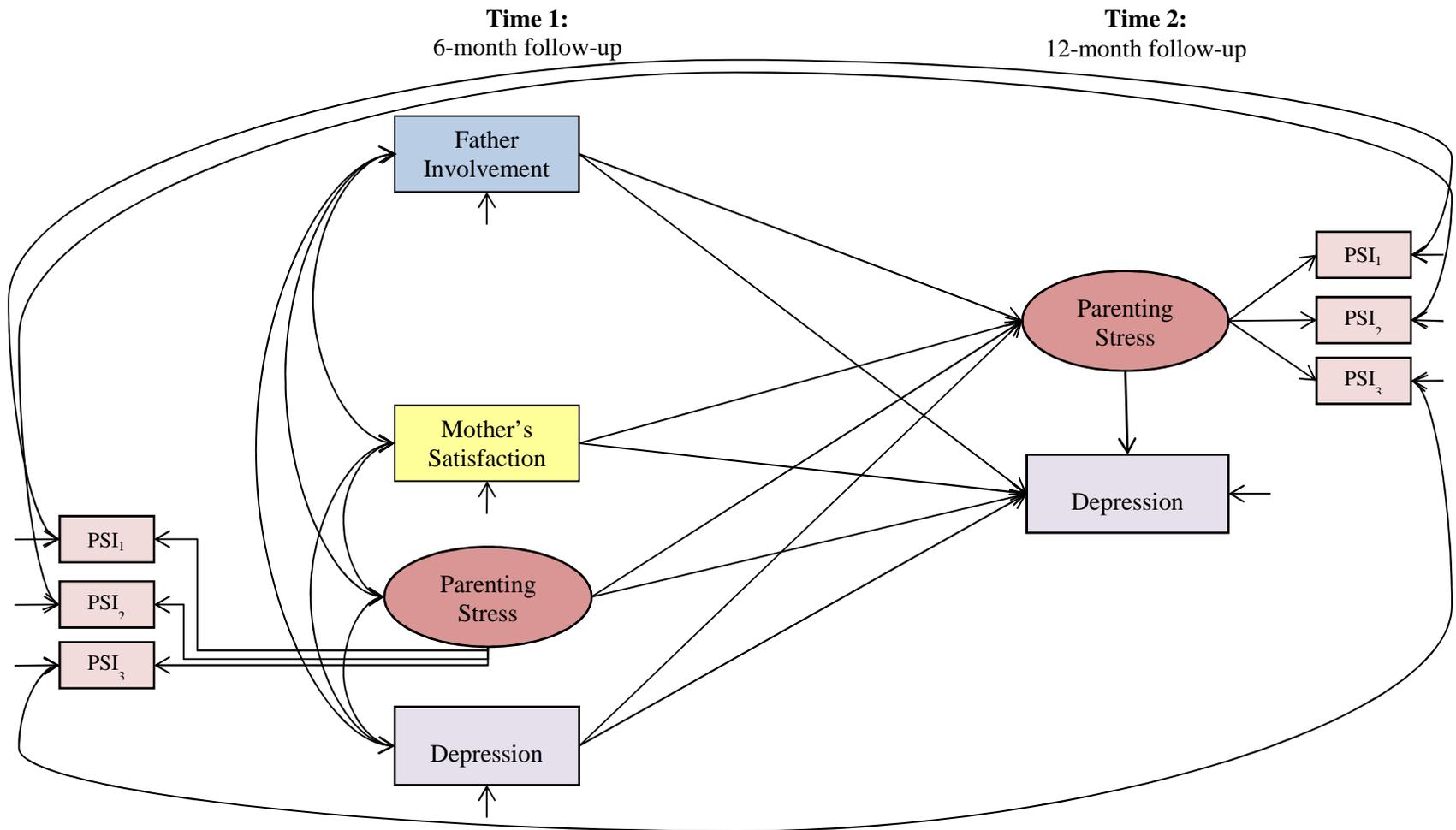


Figure 3. Model 3 of Moderated Mediation.

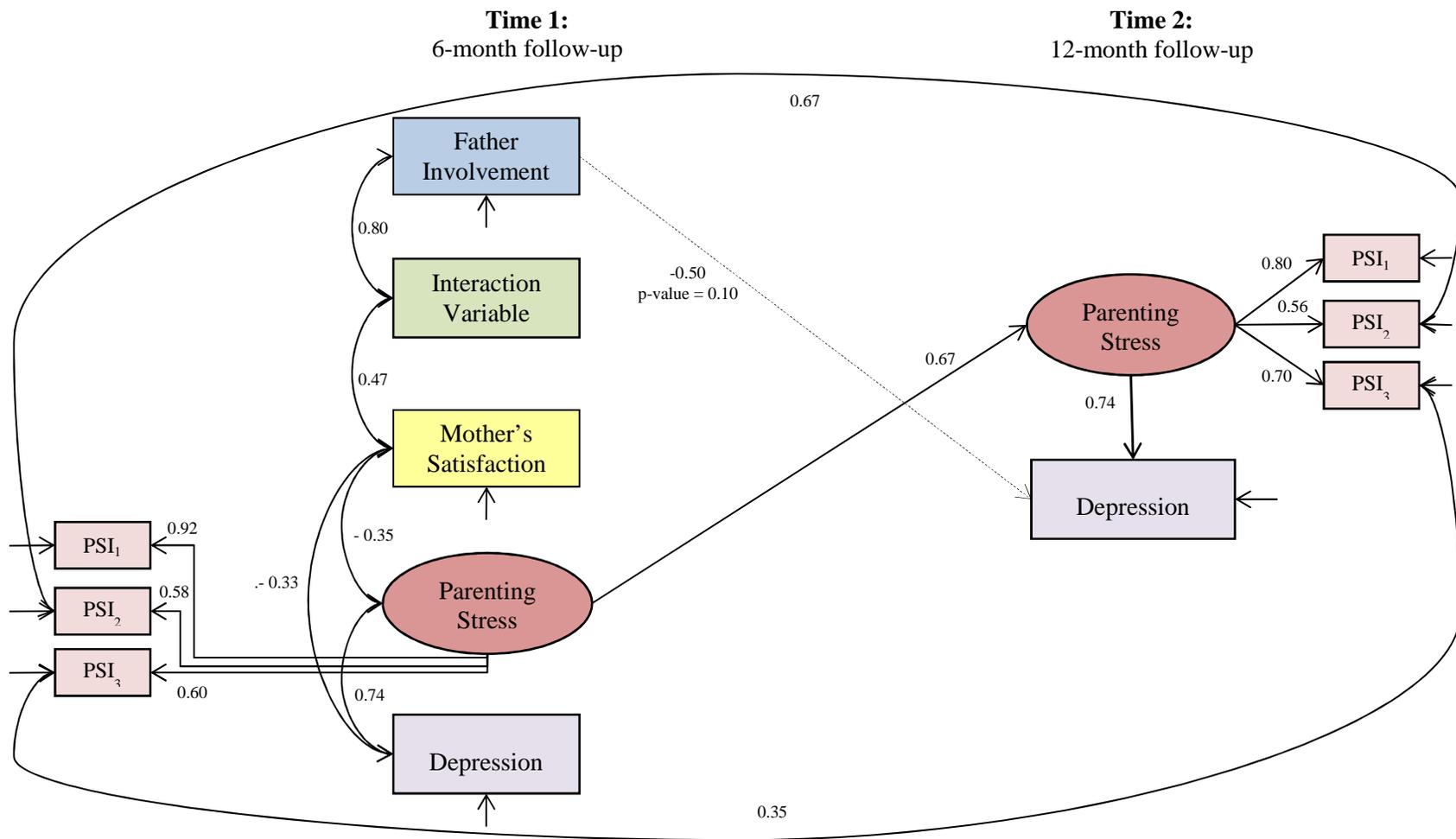


Figure 4. Results of Individual Paths of Model 2 without the MLR Estimator. Paths found to be significant (p-value < 0.05) are represented in this figure. Paths reaching significance are illustrated with a broken line.

References

- Abidin, R. R. (1983). *Parenting Stress Index*. Charlottesville, VA: Pediatric Psychology Press.
- Abidin, R. R. (1992). The determinants of parenting behavior. *Journal of Clinical Child Psychology, 21*(4), 407-412. doi:10.1207/s15374424jccp2104_12.
- Abidin, R. R. (1995). *Parenting Stress Index (PSI) manual* (3rd ed.). Charlottesville, VA: Pediatric Psychology Press.
- Achenbach, T. M., Howell, C. T., Quay, H. C., & Conners, C. (1991). National survey of problems and competencies among four- to sixteen-year-olds: Parents' reports for normative and clinical samples. *Monographs of the Society for Research in Child Development, 56*(3), v-120.
- Ahrons, C. R. (1981). The continuing coparental relationship between divorced spouses. *American Journal of Orthopsychiatry, 51*, 415-428. doi:
- American Psychiatric Association [APA]. (1994). *Diagnostic Statistical Manual – Fourth Edition (DSM-IV)*. Washington, DC: American Psychological Association.
- Arditti, J. A., & Bickley, P. (1996). Fathers' involvement and mothers' parenting stress postdivorce. *Journal of Divorce and Remarriage, 26*(1-2), 1-23. doi:10.1300/J087v26n01_01.
- Azar, R., Paquette, D., Zoccolillo, M., Baltzer, F., & Tremblay, R. E. (2007). The association of major depression, conduct disorder, and maternal overcontrol with a failure to show a cortisol buffered response in 4-month-old infants of teenage mothers. *Biological Psychiatry, 62*(6), 573-579. doi:10.1016/j.biopsych.2006.11.009.
- Bacon, L. (1974). Early motherhood, accelerated role transition, and social pathologies. *Social Forces, 52*(3), 333-341. doi:10.2307/2576888.

- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173-1182. doi:10.1037/0022-3514.51.6.1173.
- Barrera, M., Jr. (1981). Social support in the adjustment of pregnant adolescents: Assessment issues. In B. H. Gottheb (Ed.), *Social networks and social support* (pp. 69-96). Beverly Hills, CA: Sage.
- Barrett, P. (2007). Structural equation modeling: Adjudging model fit. *Personality and Individual Differences*, *42*, 815-824. doi:10.1016/j.paid.2006.09.018.
- Bavolek, S. J., Kline, D. F., McLaughlin, J. A., & Publicover, P. R. (1979). Primary prevention of child abuse and neglect: Identification of high risk adolescents. *Child Abuse and Neglect*, *3*, 1071–1080.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). Manual for Beck Depression Inventory – Second Edition [BDI-II]. San Antonio, TX: The Psychological Corporation.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*(1), 83-96. doi:10.2307/1129836.
- Berry, J. W. (2003). Conceptual approaches to acculturation. In K. M. Chun, P. B. Organista, & G. Marin (Eds.), *Acculturation: Advances in theory, measurement, and applied research* (pp. 17-37). Washington, DC: American Psychological Association. doi:10.1037/10472-004.
- Birkeland, R., Thompson, J., & Phares, V. (2005). Adolescent motherhood and postpartum depression. *Journal of Clinical Child and Adolescent Psychology*, *34*(2), 292-300. doi:10.1207/s15374424jccp3402_8.

- Boden, J. M., Fergusson, D. M., & Horwood, L. J. (2008). Early motherhood and subsequent life outcomes. *The Journal of Child Psychology and Psychiatry*, *49*(2), 151-160.
- Brown, H., Adams, R. G., & Kellman, S. G. (1981). A longitudinal study of teenage motherhood and symptoms of distress: The Woodlawn Community Epidemiology Project. *Research in Community and Mental Health*, *2*, 183-213.
- Brown, G. W., & Harris, T. O. (1978). *Social origins of depression: A study of psychiatric disorder in women*. London, England: Tavistock.
- Brown, J. D., Harris, S. K., Woods, E. R., Buman, M. P., & Cox, J. E. (2012). Longitudinal study of depressive symptoms and social support in adolescent mothers. *Maternal and Child Health Journal*, *16*(4), 894-901. doi:10.1007/s10995-011-0814-9.
- Brunelli, S. A., Wasserman, G. A., Rauh, V. A., Alvarado, L. E., & Caraballo, C. (1995). Mothers' reports of paternal support: Associations with maternal child-rearing attitudes. *Merrill-Palmer Quarterly*, *41*(2), 152-171.
- Buchholz, E. S., & Korn-Bursztyn, C. (1993). Children of adolescent mothers: Are they at risk for abuse?. *Adolescence*, *28*(110), 361.
- Bunting, L., & McAuley, C. (2004). Research review: Teenage pregnancy and motherhood: The contribution of support. *Child & Family Social Work*, *9*(2), 207-215. doi:10.1111/j.1365-2206.2004.00328.x.
- Lugo Carro, I., Louro Bernal, I., & Bayarre Veá, H. (1998). La depresión in Cuba: Validación del Inventario de Depresión de Beck y de la Escala de Actitudes Disfuncionales en población Cubana. *Avances en Psicología Clínica Latinoamericana*, *16*, 111-120.
Retrieved from EBSCOhost.

- Carothers, S. S., Borkowski, J. G., & Whitman, T. L. (2006). Children of adolescent mothers: exposure to negative life events and the role of social supports on their socioemotional adjustment. *Journal of Youth and Adolescence*, 35(5), 827-837. doi:10.1007/s10964-006-9096-8.
- Castillo, J., Welch, G., & Server, C. (2011). Fathering: The relationship between fathers' residence, fathers' sociodemographic characteristics, and father involvement. *Maternal and Child Health Journal*, 15(8), 1342-1349. doi:10.1007/s10995-010-0684-6.
- Catrone, C., & Sadler, L. S. (1984). A developmental model for teenage parent education. *Journal of School Health*, 54(2), 63-67. doi:10.1111/j.1746-1561.1984.tb08767.x.
- Center for Disease Control and Prevention [CDC]. (2000). Youth risk behavior surveillance – United States, 1999. *Morbidity and Mortality Weekly Report Surveillance Summaries*, 49 (SS05), 1-96. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss4905a1.htm>
- Center for Research on Child Wellbeing [CRCW]. Fragile Families publications collection. Retrieved June 20, 2013, from <http://crcw.princeton.edu/publications/publications.asp>
- Chang, Y., & Fine, M. A. (2007). Modeling parenting stress trajectories among low-income young mothers across the child's second and third years: Factors accounting for stability and change. *Journal of Family Psychology*, 21(4), 584-594. doi: 10.1037/0893-3200.21.4.584.
- Choi, J.-K., Palmer, R. J. and Pyun, H.-S. (2012). Three measures of non-resident fathers' involvement, maternal parenting and child development in low-income single-mother families. *Child & Family Social Work*. doi: 10.1111/cfs.12000.

- Christensen, A., Margolin, G., & Sullaway, M. (1992). Interparental agreement on child behavior problems. *Psychological Assessment, 4*(4), 419-425. doi:10.1037/1040-3590.4.4.419.
- Cicchetti, D., Rogosch, F. A., & Toth, S. L. (1998). Maternal depressive disorder and contextual risk: Contributions to the development of attachment insecurity and behavior problems in toddlerhood. *Development and Psychopathology, 10*(2), 283-300.
doi:10.1017/S0954579498001618.
- Clare, C.A., & Yeh, J. (2012). Postpartum depression in special populations: A review. *Obstetrical and Gynecological Survey, 67*, 313-323.
doi:10.1097/OGX.0b013e318259cb52.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357. doi:10.1037/0033-2909.98.2.310.
- Cohler, B. J., & Musick, J. S. (1996). Adolescent parenthood and the transition to adulthood. In J. A. Graber, J. Brooks-Gunn, & A. C. Petersen (Eds.), *Transition through adolescence: Interpersonal domains and context* (pp. 201-232). Mahwah, NJ: Lawrence Erlbaum Associates.
- Coll, C. T. G., Hoffman, J., & Oh, W. (1987). The social ecology and early parenting of Caucasian adolescent mothers. *Child Development, 58*(4), 955-963.
doi:10.2307/1130536.
- Colletta, N. D. (1983). At risk for depression: A study of young mothers. *The Journal of Genetic Psychology: Research and Theory on Human Development, 142*(2), 301-310.
- Colletta, N., Hadler, S., & Gregg, C. (1981). How adolescents cope with the problems of early motherhood. *Adolescence, 16*(63), 499-512.

- Coley, R., & Chase-Lansdale, P. (1998). Adolescent pregnancy and parenthood: Recent evidence and future directions. *American Psychologist*, *53*(2), 152-166. doi:10.1037/0003-066X.53.2.152.
- Coley, R. L., & Hernandez, D. C. (2006). Predictors of paternal involvement for resident and nonresident low-income fathers. *Developmental Psychology*, *42*(6), 1041-1056. doi:10.1037/0012-1649.42.6.1041.
- Cowan, C. P., & Cowan, P. (2000). *When partners become parents: The big life change for couples*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Crnic, K. A., Gaze, C., & Hoffman, C. (2005). Cumulative parenting stress across the preschool period: Relations to Maternal parenting and child behavior at age 5. *Infant and Child Development*, *14*(2), 117-132. doi:10.1002/icd.384.
- Crnic, K. A., & Greenberg, M. T. (1990). Minor parenting stress with young children. *Child Development*, *61*(5), 1628-1637. doi:10.2307/1130770.
- Crockenberg, S. B. (1981). Infant irritability, mother responsiveness, and social support influences on the security of infant–mother attachment. *Child Development*, *52*(3), 857-865. doi:10.2307/1129087.
- Cutrona, C. (1984). Social support and stress in the transition to parenthood. *Journal of Abnormal Psychology*, *93*, 378-390. doi:10.1037/0021-843X.93.4.378.
- Cutrona, C. E., Hessling, R. M., Bacon, P. L., & Russell, D. W. (1998). Predictors and correlates of continuing involvement with the baby's father among adolescent mothers. *Journal of Family Psychology*, *12*(3), 369-387. doi:10.1037/0893-3200.12.3.369.

- Dawson, N. (1997). The provision of education and opportunities for future employment for pregnant schoolgirls and schoolgirl mothers in the UK. *Children and Society*, 11(4), 252-263. doi:10.1111/j.1099-0860.1997.tb00034.x.
- Danziger, S. K., & Radin, N. (1990). Absent does not equal uninvolved: Predictors of fathering in teen mother families. *Journal of Marriage and the Family*, 52(3), 636-642. doi:10.2307/352930.
- Deal, L. W., & Holt, V. L. (1998). Young maternal age and depressive symptoms: Results from the 1988 National Maternal and Infant Health Survey. *American Journal of Public Health*, 88(2), 266-270. doi:10.2105/AJPH.88.2.266.
- Deater-Deckard, K., Pickerton, R., & Scarr, S. (1996). Childcare quality and children's behavioral adjustment: A four-year longitudinal study. *Journal of Child Psychology and Psychiatry*, 37(8), 937-948. doi:10.1111/j.1469-7610.1996.tb01491.x.
- Dienhart, A., & Daly, K. (1997). Men and women cocreating father involvement in a nongenerative culture. In A. J. Hawkins & J. Youth Adolescence (2010) 39:1109–1121 & D. C. Dollahite (Eds.), *Generative fathering: Beyond deficit perspectives* (pp. 147–164). Thousand Oaks, CA: Sage Publications.
- Dow, M. M., & Eff, E. A. (2009). Multiple imputation of missing data in cross-cultural samples. *Behavior Science Research*, 43(3), 206-229. doi:10.1177/1069397109333362.
- Eaton, W. W. (1978). Life events, social supports, and psychiatric symptoms: A re-analysis of the New Haven data. *Journal of Health and Social Behavior*, 19(2), 230-234. doi:10.2307/2136537.

- Eckenrode, J., & Gore, S. (1981). Stressful events and social supports: The significance of context. In B. H. Gottlieb (Ed.), *Social networks and social support*. Beverly Hills, CA: Sage.
- Edwards, R. C., Thullen, M. J., Isarowong, N., Shiu, C.-S., Henson, L., & Hans, S. L. (2012). Supportive relationships and the trajectory of depressive symptoms among young, African American mothers. *Journal of Family Psychology, 26*(4), 585-594. doi:10.1037/a0029053.
- Erf, L. A. (1981). A moratorium for growth: Group work with adolescent mothers. *Clinical Social Work Journal, 9*(1), 44-56. doi:10.1007/BF00757093.
- Erikson, E. H. (1968). *Identity: Youth and crisis*. Oxford, England: Norton.
- Fagan, J., & Barnett, M. (2003). The relationship between maternal gatekeeping, paternal competence, mothers' attitudes about the father role, and father involvement. *Journal of Family Issues, 24*(8), 1020-1043. doi:10.1177/0192513X03256397.
- Fagan, J., & Lee, Y. (2010). Perceptions and satisfaction with father involvement and adolescent mothers' postpartum depressive symptoms. *Journal of Youth and Adolescence, 39*(9), 1109-1121. doi:10.1007/s10964-009-9444-6.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*(4), 1149-1160. doi:10.3758/BRM.41.4.1149.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175-191. doi:10.3758/BF03193146.

- Feldman, R. (2007). Maternal versus child risk and the development of parent-child and family relationships in five high-risk populations. *Development and Psychopathology, 19*(2), 293-312. doi:10.1159/000102392.
- Florsheim, P., et al., (2003). The transition to parenthood among young African American and Latino couples: Relational predictors of risk for parental dysfunction. *Journal of Family Psychology, 17*(1), 65-79. doi:10.1037/0893-3200.17.1.65.
- Forste, R., Bartkowski, J. P., & Jackson, R. A. (2009). “Just be there for them’’: Perspectives of fathering among single, low-income men. *Fathering: A Journal of Theory, Research, and Practice about Men as Fathers, 7*(1), 49–69. doi:10.3149/fth.0701.49.
- Foucault, D. C., & Schneider, B. H. (2009). Parenting values and parenting stress among impoverished village and middle-class small city mothers in the Dominican Republic. *International Journal of Behavioral Development, 33*(5), 440-450. doi:10.1177/0165025409340094.
- Gavin, A. R., Lindhorst, T., & Lohr, M. J. (2011). The prevalence and correlates of depressive symptoms among adolescent mothers: Results from a 17-year longitudinal study. *Women and Health, 51*(6), 525-545. doi:10.1080/03630242.2011.606355.
- Gee, C. B., McNeerney, C. M., Reiter, M. L., & Leaman, S. C. (2007). Adolescent and young adult mothers' relationship quality during the transition to parenthood: Associations with father involvement in fragile families. *Journal of Youth and Adolescence, 36*(2), 213-224. doi:10.1007/s10964-006-9130-x.
- Gee, C. B., & Rhodes, J. E. (1999). Postpartum transitions in adolescent mothers' romantic and maternal relationships. *Merrill-Palmer Quarterly: Journal of Developmental Psychology, 45*(3), 512-532.

- Gee, C. B., & Rhodes, J. E. (2003). Adolescent mothers' relationship with their children's biological fathers: Social support, social strain and relationship continuity. *Journal of Family Psychology, 17*(3), 370-383. doi:10.1037/0893-3200.17.3.370.
- Grant, K., Grace, P., Trujillo, J., Halpert, J., Kessler-Cordeiro, A., Razzino, B., & Davis, T. (2002). Predicting desire for a child among low-income urban adolescent girls: Interpersonal processes in the context of poverty. *The Journal of Primary Prevention, 22*(4), 341-359. doi:10.1023/A:1015223522236.
- Grimm, L. G., & Yarnold, P. R. (2000). *Reading and understanding more multivariate statistics*. Washington, DC: American Psychological Association.
- Grindstaff, C. F. (1988). Adolescent marriage and childbearing: The long-term economic outcome, Canada in the 1980s. *Adolescence, 23*(89), 45-58.
- Grothe, K. B., Dutton, G. R., Jones, G. N., Bodenlos, J., Ancona, M., & Brantley, P. J. (2005). Validation of the Beck Depression Inventory – II in a low-income African American sample of medical outpatients. *Psychological Assessment, 17*(1), 110-114. doi:10.1037/1040-3590.17.1.110.
- Hamilton, B. E., Martin, J. A., & Ventura, S. J. (2010). Births: Preliminary data for 2009. *National Vital Statistics Report, 59*(3), 1-19.
- Hammen, C., & Rudolph, K. D. (2003). Childhood mood disorders. In E. J. Mash, & R. A. Barkley (Eds.), *Child psychopathology (2nd ed.)* (pp. 233-278). New York, NY: Guilford.
- Hayes, C. D. (Ed.). (1987). *Risking the future: Adolescent sexuality, pregnancy, and childbearing*. Washington, DC: National Academy of Sciences.

- Henly, J. (1997). The complexity of support: The impact of family structure and provisional support on African American and White adolescent mothers' well-being. *American Journal of Community Psychology, 25*(5), 629–655. doi: 10.1023/A:1024634917076.
- Hernandez, D. C., & Coley, R. L. (2007). Measuring father involvement within low-income families: Who is a reliable and valid reporter?. *Parenting: Science and Practice, 7*(1), 69-97. doi:10.1207/s15327922par0701_4.
- Herrman, M. M., Van Cleve, L., & Levisen, L. (1998). Parenting competence, social support, and self-esteem in teen mothers case managed by public health nurses. *Public Health Nursing, 15*(6), 432-439. doi:10.1111/j.1525-1446.1998.tb00370.x.
- Hofferth, S. L., Reid, L., & Mott, F. L. (2001). The effects of early childbearing on schooling over time. *Family Planning Perspectives, 33*(6), 259-267.
- Holmbeck, G. N. (1997). Toward terminology, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the Child-Clinical and Pediatric Psychology literatures. *Journal of Consulting and Clinical Psychology, 65*(4), 599-610. doi:10.1037//0022-006X.65.4.599.
- Horwitz, S. M., Briggs-Gowan, M. J., Storfer-Isser, A., & Carter, A. S. (2007). Prevalence, correlates, and persistence of maternal depression. *Journal of Women's Health, 16*(5), 678-691. doi:10.1089/jwh.2006.0185.
- Horwitz, S. M., Bruce, M. L., Hoff, R. A., Harley, I., & Jekel, J. F. (1996). Depression in former school-age mothers and community comparison subjects. *Journal of Affective Disorders, 40*(1-2), 95-103. doi:10.1016/0165-0327(96)00047-X.

- Hudson, D. B., Elek, S. M., & Campbell-Grossman, C. (2000). Depression, self-esteem, loneliness, and social support among adolescent mothers participating in the New Parents Project. *Adolescence*, 35(139), 445-453.
- Hutcheson, J. J., & Black, M. M. (1996). Psychometric properties of the Parenting Stress Index in a sample of low-income African-American mothers of infants and toddlers. *Early Education and Development*, 7(4), 381-400. doi:10.1207/s15566935eed0704_5.
- Huth-Bocks, A. C., & Hughes, H. M. (2008). Parenting stress, parenting behavior, and children's adjustment in families experiencing intimate partner violence. *Journal of Family Violence*, 23(4), 243-251. doi:10.1007/s10896-007-9148-1.
- IBM Corporation. (2012). IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corporation.
- Jackson, A. P. (1999). The effects of nonresident father involvement on single Black mothers and their young children. *Social Work*, 44(2), 156-166.
- Johnson, W. R. (2001). Paternal involvement among unwed fathers. *Children And Youth Services Review*, 23(6-7), 513-536. doi:10.1016/S0190-7409(01)00146-3.
- Kalil, A., Ziol-Guest, K. M., & Coley, R. L. (2005). Perceptions of father involvement patterns in teenage-mother families: Predictors and links to mothers' psychological adjustment. *Family Relations*, 54(2), 197-211. doi:10.1111/j.0197-6664.2005.00016.x.
- Kaufman, J., Cook, A., Arny, L., Jones, B., & Pittinsky, T. (1994). Problems defining resiliency: Illustrations from the study of maltreated children. *Development and Psychopathology*, 6, 215-229.

- Kellam, S. G., Adams, R. G., Brown, C. H., & Ensminger, M. E. (1982). The long-term evolution of the family structure of teenage and older mothers. *Journal of Marriage and the Family*, 44(3), 539-554. doi:10.2307/351578.
- Kendler, K. S., Karkowski, L. M., & Prescott, C. A. (1998). Stressful life events and major depression: Risk period, long-term contextual threat and diagnostic specificity. *Journal of Nervous and Mental Disease*, 186(11), 661-669. doi:10.1097/00005053-199811000-00001.
- Kessler, R. C., Andrews, G., Mroczek, D., Ustun, T. B., & Wittchen, H. U. (1998). The World Health Organization Composite International Diagnostic Interview Short-Form (CIDI-SF). *International Journal of Methods in Psychiatric Research*, 7(4), 171-185.
- Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S. ... & Kendler, K.S. (1994). Lifetime and 12-month prevalence rates of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry*, 51(1), 8-19.
- Ketterlinus, R. D., Lamb, M. E., & Nitz, K. (1991). Developmental and ecological sources of stress among adolescent parents. *Family Relations*, 40(4), 435-441. doi:10.2307/584901.
- Lamb, M. E., Pleck, J. H., Charnov, E. L., & Levine, J. A. (1987). A biosocial perspective on paternal behavior and involvement. In J. B. Lancaster, J. Altman, A. S. Rossi, & L. R. Sherrod (Eds.), *Parenting across the lifespan: Biosocial dimensions* (pp.111-142). Hawthorne, NY: Aldine.
- Lamb, M. E., Hopps, K., & Elster, A. B. (1987). Strange Situation behavior of infants with adolescent mothers. *Infant Behavior and Development*, 10(1), 39-48. doi:10.1016/0163-6383(87)90005-1.

- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer.
- Leadbeater, B. J., & Bishop, S. J. (1994). Predictors of behavior problems in preschool children of inner-city Afro-American and Puerto Rican adolescent mothers. *Child Development*, 65(2), 638-648. doi:10.2307/1131406.
- Leadbeater, B. J., & Way, N. (2001). *Growing up fast: Transitions to early adulthood of inner-city adolescent mothers*. Mahwah, NJ: Erlbaum.
- Lerman, R., & Sorensen, E. (2000). Father involvement with their nonmarital children: Patterns, determinants, and effects on their earnings. *Marriage and Family Review*, 29(2-3), 137-158. doi:10.1300/J002v29n02_09.
- Letourneau, N. L., Stewart, M. J., & Barnfather, A. K. (2004). Adolescent Mothers: Support Needs, Resources, and Support-Education Interventions. *Journal of Adolescent Health*, 35(6), 509-525. doi:10.1016/j.jadohealth.2004.01.007.
- Levine, J., Emery, C., & Pollack, H. (2007). The well-being of children born to teen mothers. *Journal of Marriage and Family*, 69(1), 105-122. doi:10.1111/j.1741-3737.2006.00348.x.
- Logsdon, M.C., Birkimer, J.C., Simpson, T., & Looney, S. (2005). Postpartum depression and social support in adolescents. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 34, 46-54. doi:10.1177/0884217504272802.
- Lounds, J. J., Borkowski, J. G., Whitman, T. L., Maxwell, S. E., & Weed, K. (2005). Adolescent parenting and attachment during infancy and early childhood. *Parenting: Science and Practice*, 5(1), 91-117. doi:10.1207/s15327922par0501_4.
- Lowenthal, M. F., & Haven, C. (1968). Interaction and adaptation: Intimacy as a critical variable. *American Sociological Review*, 33(1), 20-30. doi:10.2307/2092237.

- MacKinnon, D. P. (2000). Contrasts in multiple mediator models. In J. Rose, L. Chassin, C. C. Presson, & S. J. Sherman (Eds.), *Multivariate applications in substance use research: new methods for new questions*. Mahwah, NJ: Erlbaum.
- MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation Review*, 7(2), 144–158. doi:10.1177/0193841X9301700202.
- Marchand, J. F., & Hock, E. (1998). The relation of problem behaviors in preschool children to depressive symptoms in mothers and fathers. *The Journal of Genetic Psychology: Research and Theory on Human Development*, 159(3), 353-366.
doi:10.1080/00221329809596157.
- Martin, J. A., Hamilton, B. E., Sutton, P. D., Ventura, S. J., Menacker, F., Kirmeyer, S., & Mathews, T. J. (2009). Births: Final data for 2006. *National Vital Statistics Report*, 57(7), 1-102.
- Mayfield-Brown, L. (1989). Family status of low-income adolescent mothers. *Journal of Adolescent Research*, 4(2), 202-213. doi:10.1177/074355488942008.
- Maynard, R. A. (Ed.). (1997). *Kids having kids: Economic costs and social consequences of teen pregnancy*. Washington, DC: Urban Institute Press.
- Maynard, R. A. (Ed.). (1996). *Kids having kids: A Robin Hood Foundation special report on the costs of adolescent childbearing*. New York, NY: Robin Hood Foundation.
- McGee, R., Williams, S. M., Kashani, J. H., & Silva, P. A. (1983). Prevalence of self-reported depressive symptoms and associated social factors in mothers in Dunedin. *British Journal of Psychiatry*, 143, 473-479. doi:10.1192/bjp.143.5.473.
- McKay, A. (2006). Trends in teen pregnancy in Canada with comparisons to U.S.A., and England/Wales. *Canadian Journal of Human Sexuality*, 15(3-4), 157-161.

- McKenry, P. C., Browne, D. H., Kotch, J. B., & Symons, M. J. (1990). Mediators of depression among low-income, adolescent mothers of infants: A longitudinal perspective. *Journal of Youth and Adolescence*, *19*(4), 327-347. doi:10.1007/BF01537076.
- McLoyd, V. C. (1990). The impact of economic hardship on Black families and children: Psychological distress, parenting, and socioemotional development. *Child Development*, *61*(2), 311-346. doi:10.2307/1131096.
- Milan, S., Ickovics, J. R., Kershaw, T., Lewis, J., Meade, C., & Ethier, K. (2004). Prevalence, Course, and Predictors of Emotional Distress in Pregnant and Parenting Adolescents. *Journal of Consulting and Clinical Psychology*, *72*(2), 328-340. doi:10.1037/0022-006X.72.2.328.
- Miller, P. M., & Ingham, J. G. (1976). Friends, confidants and symptoms. *Social Psychiatry*, *11*(2), 51-58. doi:10.1007/BF00578738.
- Misri, S., Reebye, P., Milis, L., & Shah, S. (2006). The impact of treatment intervention on parenting stress in postpartum depressed mothers: A prospective study. *American Journal of Orthopsychiatry*, *76*(1), 115-119. doi:10.1037/0002-9432.76.1.115.
- Moffitt, T., & the E-Risk Study Team. (2002). Teen-aged mothers in contemporary Britain. *Journal of Child Psychology and Psychiatry*, *43*(6), 727-742. doi:10.1111/1469-7610.00082.
- Mollborn, S., & Morningstar, E. (2009). Investigating the relationship between teenage childbearing and psychological distress using longitudinal evidence. *Journal of Health and Social Behavior*, *50*(3), 310-326. doi:10.1177/002214650905000305.

- Moore, K. A., Myers, D. E., Morrison, D. R., Nord, C. W., Brown, B., & Edmonston, B. (1993). Age at first childbirth and later poverty. *Journal of Research on Adolescence (Lawrence Erlbaum)*, 3(4), 393-422. doi:10.1111/1532-7795.ep11301350.
- Murray, L., Hipwell, A., Hooper, R., Stein, A., & Cooper, P. (1996). The cognitive development of 5-year-old children of postnatally depressed mothers. *Journal of Child Psychology and Psychiatry*, 37(8), 927-935. doi:10.1111/j.1469-7610.1996.tb01490.x.
- Muslow, M., Caldera, Y., Pursley, M., Reifman, A., & Huston, A. (2002). Multilevel factors influencing maternal stress during the first 3 years. *The Journal on Marriage and Family Therapy*, 64(4), 944-956. doi:10.1111/j.1741-3737.2002.00944.x.
- Muthén, L.K. and Muthén, B.O. (1998-2012). Mplus User's Guide. Seventh Edition. Los Angeles, CA: Muthén & Muthén
- Najman, J. M., Williams, G. M., Nikles, J. J., Spence, S. S., Bor, W. W., O'Callaghan, M. M., & Shuttlewood, G. J. (2001). Bias influencing maternal reports of child behaviour and emotional state. *Social Psychiatry and Psychiatric Epidemiology*, 36(4), 186-194. doi:10.1007/s001270170062.
- Nanchahal, K., Wellings, K., Barrett, G., Copas, A. J., Mercer, C. H., Macmanus, S. ... & Johnson, A. M. (2005). Changes in the circumstances of young mothers in Britain: 1990 to 2000. *Journal of Epidemiology and Community Health*, 59(10), 828-833. doi:10.1136/jech.2004.026021.
- Nortman, D. (1974). Parental age as a factor in pregnancy outcome and child development. *Reports on Population/Family Planning*, 16, .

- Osman, A., Barrios, F. X., Gutierrez, P. M., Williams, J. E., & Bailey, J. (2008). Psychometric properties of the Beck Depression Inventory-II in nonclinical adolescent samples. *Journal of Clinical Psychology, 64*(1), 83-102. doi:10.1002/jclp.20433.
- Ostberg, M., & Hagekull, B. (2000). A structural modeling approach to the understanding of parenting stress. *Journal of Clinical Child Psychology, 29*, 615-625.
- Palkovitz, R. (1997). Reconstructing "Involvement:" Expanding conceptualizations of men's caring in contemporary families. In A.J. Hawkins & D.C. Dollahite (Eds.), *Generative fathering: Beyond deficit perspectives* (pp. 200-216). Thousand Oaks, CA: Sage.
Retrieved from <http://www.sagepub.com>
- Panzarine, S. (1986). Stressors, coping, and social supports of adolescent mothers. *Journal of Adolescent Health Care, 7*(3), 153-161. doi:10.1016/S0197-0070(86)80031-6.
- Passino, A. W., Whitman, T. L., Borkowski, J. G., Schellenbach, C. J., Maxwell, S. E., Keogh, D. A., & Rellinger, E. (1993). Personal adjustment during pregnancy and adolescent parenting. *Adolescence, 28*(109), 97-122.
- Pinto-Foltz, M. D., Logsdon, M. C., & Derrick, A. (2011). Engaging adolescent mothers in a longitudinal mental health intervention study: Challenges and lessons learned. *Issues in Mental Health Nursing, 32*(4), 214-219. doi:10.3109/01612840.2010.544841.
- Ragozin, A. S., Basham, R. B., Crnic, K. A., Greenberg, M. T., & Robinson, N. M. (1982). Effects of maternal age on parenting role. *Developmental Psychology, 18*(4), 627-634. doi:10.1037/0012-1649.18.4.627.
- Ramos-Marcuse, F., Oberlander, S. E., Papas, M. A., McNary, S. W., Hurley, K. M., & Black, M. M. (2010). Stability of maternal depressive symptoms among urban, low-income,

- African American adolescent mothers. *Journal of Affective Disorders*, 22(1-2), 68-75.
doi:10.1016/j.jad.2009.06.018
- Reichman, N. E., Teitler, J. O., Garfinkel, I., & McLanahan S. S. (1998). Fragile Families: Sample and design. *Children and Youth Services Review*, 23(4-5), 303-326.
doi:10.1016/S0190-7409(01)00141-4.
- Reis, J. S., & Herz, E. J. (1987). Correlates of adolescent parenting. *Adolescence*, 22(87), 599-609.
- Rhein, L. M., Ginsburg, K. R., Schwartz, D. F., Pinto-Martin, J. A., Zhao, H., Morgan, A. P., & Slap, G. B. (1997). Teen father participation in child rearing: Family perspectives. *Journal of Adolescent Health*, 21(4), 244-252. doi:10.1016/S1054-139X(97)00115-8.
- Richardson, G. A., & Day, N. L. (2000). Epidemiologic considerations. In M. Hersen & R. T. Ammerman (Eds.), *Advanced Abnormal Child Psychology (2nd Ed.)*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.
- Roy, K. M., Buckmiller, N., & McDowell, A. (2008). Together but not “together”: Trajectories of relationship suspension for low-income unmarried parents. *Family Relations*, 57(2), 198–210. doi:10.1111/j.1741-3729.2008.00494.x.
- Sarason, I. G., Sarason, B. R., & Pierce, G. R. (1990). Social support: The search for theory. *Journal of Social and Clinical Psychology*, 9(1), 133-147. doi:10.1521/jscp.1990.9.1.133.
- Sato, T., Sugawara, M., Toda, M., Shima, S., & Kitamura, T. (1994). Rearing-related stress and depressive severity. *Japanese Journal of Psychology*, 64(6), 409-416.
doi:10.4992/jjpsy.64.409.
- Schinke, S. P., Barth, R. P., Gilchrist, L. D., & Maxwell, J. S. (1986). Adolescent mothers, stress, and prevention. *Journal of Human Stress*, 12(4), 162-167.

- Schmidt, R., Wiemann, C., Rickert, V., & Smith, E. (2006). Moderate to severe depressive symptoms among adolescent mothers followed four years postpartum. *Journal of Adolescent Health, 38*(6), 712-718. doi:10.1016/j.jadohealth.2005.05.023.
- Seccombe, K. (2000). Families in poverty in the 1990s: Trends, causes, consequences, and lessons learned. *Journal of Marriage and the Family, 62*(4), 1094-1113. doi:10.1111/j.1741-3737.2000.01094.x.
- Seed, M., Juarez, M., & Alnatour, R. (2009). Improving recruitment and retention rates in preventive longitudinal research with adolescent mothers. *Journal of Child and Adolescent Psychiatric Nursing, 22*(3), 150-153. doi:10.1111/j.1744-6171.2009.00193.x.
- Sieger, K., & Renk, K. (2007). Pregnant and parenting adolescents: A study of ethnic identity, emotional and behavioral functioning, child characteristics, and social support. *Journal of Youth and Adolescence, 36*(4), 567-581. doi:10.1007/s10964-007-9182-6.
- Soliday, E., McCluskey-Fawcett, K., & O'Brien, M. (1999). Postpartum affect and depressive symptoms in mothers and fathers. *American Journal of Orthopsychiatry, 69*(1), 30-38. doi:10.1037/h0080379.
- Solis, M. L., & Abidin, R. R. (1991). The Spanish Version Parenting Stress Index: A psychometric study. *Journal of Clinical Child Psychology, 20*(4), 372-378. doi:10.1207/s15374424jccp2004_5.
- Smith, L. E., Howard, K. S., & Centers for the Prevention of Child Neglect [CPCN]. (2008). Continuity of paternal social support and depressive symptoms among new mothers. *Journal of Family Psychology, 22*(5), 763-773. doi:10.1037/a0013581.

- Stein, A., Gath, D. H., Bucher, J., & Bond, A. (1991). The relationship between post-natal depression and mother-child interaction. *British Journal of Psychiatry*, *158*, 46-52. doi:10.1192/bjp.158.1.46.
- Tarkka, M.-T., Paunonen, M., & Laippala, P. (1999). Social support provided by public health nurses and the coping of first-time mothers with child care. *Public Health Nursing*, *16*(2), 114-119. doi:10.1046/j.1525-1446.1999.00114.x
- Teti, D. M., Gelfand, D. M., Messinger, D. S., & Isabella, R. (1995). Maternal depression and the quality of early attachment: An examination of infants, preschoolers, and their mothers. *Developmental Psychology*, *31*(3), 364-376. doi:10.1037/0012-1649.31.3.364.
- Thompson, M. S. (1986). The influence of supportive relations on the psychological well-being of teenage mothers. *Social Forces*, *64*(4), 1006-1024. doi:10.2307/2578791.
- Thompson, M. S., & Peebles-Wilkins, W. (1992). The impact of formal, informal, and societal support networks on the psychological well-being of Black adolescent mothers. *Social Work*, *37*(4), 322-328.
- Troutman, B. R., & Cutrona, C. E. (1990). Nonpsychotic postpartum depression among adolescent mothers. *Journal of Abnormal Psychology*, *99*(1), 69-78. doi:10.1037/0021-843X.99.1.69.
- Turner, R. J., Grindstaff, C. F., & Phillips, N. (1990). Social support and outcome in teenage pregnancy. *Journal of Health and Social Behavior*, *31*(1), 43-57. doi:10.2307/2137044.
- Unger, D. G., & Wandersman, L. P. (1988). The relation of family and partner support to the adjustment of adolescent mothers. *Child Development*, *59*(4), 1056-1060. doi:10.2307/1130271.

- United States Department of Health and Human Services [USDHHS]. (1995). *Report to congress on out-of-wedlock childbearing*. (DHHS Publication No. PHS 95-1257-1.) Retrieved from <http://www.cdc.gov/nchs/data/misc/wedlock.pdf>
- Vaughn, B. E., Egeland, B. R., Sroufe, L. A., & Waters, E. (1979). Individual differences in infant–mother attachment at twelve and eighteen months: Stability and change in families under stress. *Child Development*, 50(4), 971-975. doi:10.2307/1129321.
- Wakschlag, L. S., & Hans, S. L. (2000). Early parenthood in context: Implications for development and intervention. In C. H. Zeanah Jr., (Ed.), *Handbook of infant mental health (2nd ed.)* (pp. 129-144). New York, NY: Guilford.
- Wandersman, L. P., Wandersman, A., & Kahn, S. (1980). Social support in the transition to parenthood. *Journal of Community Psychology*, 8(4), 332-342. doi:10.1002/1520-6629
- Waller, M. R., & Swisher, R. R. (2006). Fathers’ risk behaviors in fragile families: Implications for ‘Healthy’ relationships and father involvement. *Social Problems*, 53(3), 392-420. doi: 10.1525/sp.2006.53.3.392.
- Wiemann, C. M., Agurcia, C. A., Rickert, V. I., Berenson, A. B., & Volk, R. J. (2006). Absent fathers as providers: Race/ethnic differences in support for adolescent mothers. *Child and Adolescent Social Work Journal*, 23(5-6), 617-634. doi:10.1007/s10560-006-0078-1
- Weiss, R. S. (1969). The fund of sociability: Relationships with other people are essential and their loss can be traumatic. *Society*, 6, 36-43.
- Whitman, T. L., Borkowski, J. G., Schellenbach, C. J., & Nath, P. S. (1987). Predicting and understanding developmental delay of children of adolescent mothers: A multidimensional approach. *American Journal of Mental Deficiency*, 92(1), 40-56.

Williams, D. R., Neighbors, H. W., & Jackson, J. S. (2003). Racial/Ethnic discrimination and health: Findings from community studies. *American Journal of Public Health, 93*(2), 200-208. doi:10.2105/AJPH.93.2.200.

Yeung, W. J., Sandberg, S. F., Davis-Kean, P. E., & Hofferth, S. L. (2001). Children's time with fathers in intact families. *Journal of Marriage and Family, 63*(1.), 136–154. doi: 10.1111/j.1741-3737.2001.00136.x.

Appendices

Appendix A. *Questions Regarding Father Involvement*

In the past month, how often has your baby's father:

1. Discussed how you will divide parenting roles and responsibilities?
1 2 3 4
Never Rarely Sometimes Often
2. Bought clothes, diapers, baby food/formula, toys or presents for the baby?
1 2 3 4
Never Rarely Sometimes Often
3. Paid for doctor bills or medicines related to the baby?
1 2 3 4
Never Rarely Sometimes Often
4. Gave you extra money to help out, not including child support?
1 2 3 4
Never Rarely Sometimes Often
5. Helped you with repairs around the house or to the car?
1 2 3 4
Never Rarely Sometimes Often
6. Bought food for you – either groceries or meals out?
1 2 3 4
Never Rarely Sometimes Often
7. Made car payments, paid for repairs, or purchased or loaned you a car?
1 2 3 4
Never Rarely Sometimes Often
8. Helped you with rent or mortgage payments?
1 2 3 4
Never Rarely Sometimes Often
9. Helped you to pay for utilities (e.g. gas, electricity, phone, or other household bills)?
1 2 3 4
Never Rarely Sometimes Often