

Relationships That Protect:
Teenage Parents' Supportive Relationships, Children's Externalizing and Internalizing Behavior
Problems, and the Indirect Role of Harsh Parenting

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A dissertation submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF WASHINGTON

2018

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Program Authorized to Offer Degree:

College of Education

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Abstract

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Prior to the birth of their first child, the majority of teenage mothers and their children's biological fathers have a strong desire to raise a family together and be involved parents (Mollborn & Jacobs, 2015). Supportive couple and coparenting relationships are often overlooked as a strength or asset of teenage-headed families, which may help to mitigate common challenges for their children, including externalizing and internalizing symptoms. Yet, little is known about trajectories of teenage parents' supportive relationships and how they link to the development of their children's externalizing and internalizing behavior problems. To answer these questions, five waves of Fragile Families and Child Well-being Study data were extracted for a subsample of teenage-headed families (N=773). Parallel process latent growth curve models tested whether growth factors of supportive couple and coparenting relationship trajectories linked to starting levels or rates of change in children's externalizing and

internalizing challenges, or whether effects were indirectly channeled through lower levels of maternal harsh parenting. Results suggest that higher starting levels of couple supportiveness at birth predicted lower starting levels of children's externalizing symptoms at age three and slower declines in symptoms across time. Some of these associations were partially transmitted through attenuated levels of maternal harsh parenting behaviors. For coparenting relationships, higher levels of support one year after birth predicted lower starting levels of children's externalizing symptoms at age three and slower rates of change in symptoms across time. For children's internalizing challenges, higher levels of couple supportiveness at birth predicted lower starting levels of internalizing symptoms at age three and slower rates of change in symptoms across time. Taken together, findings suggest that initial levels of teenage parents' supportive relationships may buffer children from developing more severe externalizing or internalizing trajectories, in part, by reducing levels maternal harsh parenting behaviors. Implications of these findings on policies and programs serving teenage-headed families are discussed.

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Acknowledgments

I have deep gratitude for the guidance and support provided by my dissertation committee: Bob Abbott, Soojin Oh-Park, Min Sun, and especially for my advisor, Holly Schindler. Five years ago, Holly planted seeds of integrity, perseverance, and empowerment in me, which have given rise to a much stronger sense of my intellectual-self and capabilities as researcher. Most notably, Holly has brought kindness and sensitivity to her role as my advisor, which has made this journey possible (and enjoyable!). To Bob Abbott, who has invested time and resources to develop my competency in measurement and statistics; my enthusiasm remains strong! I would also like to recognize the emotional sustenance provided by close friends, family, and colleagues. To those who have nourished my soul, Millie, Elsa, and my life partner, Scott Hollis. Finally, this publication was made possible by Grant Number 90PR0007-01-00, Family Strengthening Scholars, from the Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Office of Planning, Research and Evaluation, the Administration for Children and Families, or the U.S. Department of Health and Human Services.

Chapter One: Introduction

Over the past two decades, the proportion of teenage births to unmarried teenage mothers (versus married teenage mothers) has increased over 85%. In 2013, only 11% of teenage mothers were married at the time of their child's birth, and of this group, an estimated 40% will divorce by their child's fifth birthday (Ng & Kaye, 2012; Ventura, Hamilton, & Matthews, 2014).

Though a large majority of fathers withdraw support from mothers and children, those who are involved during prenatal and postpartum experiences have a greater likelihood of continued engagement with their children and stronger relationships with their children's mothers (Fagan, 2014; Pinzon & Jones, 2012). Importantly, about 25% of fathers partnered with teenage mothers maintain consistent relationships throughout their child's early development, childhood, and adolescence, which has important implications for teenage mothers and their children (Furstenberg & Harris, 1993).

Supportive couple and coparenting relationships¹ between teenage mothers and their children's biological fathers have the potential to buffer families from stressful experiences, which may help children and parents adapt to challenging circumstances. For example, supportive relationships have been associated with fewer depressive symptoms and fewer harsh parenting behaviors for teenage mothers (Crockenberg, 1987; Easterbrooks, Kotake, Raskin, & Bumgarner, 2016) and increased engagement with children for fathers (Fagan, 2014). On the other hand, it is not uncommon for teenage mothers to cite partner conflict as a stressor in their lives. Disappointment over unmet financial and coparenting expectations, misunderstood feelings, or poor communication may create strained family environments or challenging

¹ Couple relationship is defined as the satisfaction, conflict, and coalition experienced by two individuals who are involved in a romantic or intimate relationship (Erel & Burnam, 1995); coparenting relationship is defined as the support, coordination, and commitment required of parental figures to facilitate childrearing and parenting (Feinberg, 2003; McHale, 1995).

emotional circumstances for mothers and children (Gee & Rhodes, 2003; Mollborn & Jacobs, 2015). For example, conflictual relationships between adolescent parents have been associated with lower levels of coparenting alliance and engagement for fathers (Fagan, 2014), higher levels of internalizing and externalizing symptoms for children (Black et al, 2002), and increased levels of depressive symptoms for mothers (Gee & Rhodes, 1999).

Yet, for teenage mothers who do have supportive partnerships with their children's fathers, couple and coparenting relationships can be an especially important emotional resource (Fagan & Lee, 2010; Gee & Rhodes, 2013). Teenage mothers are more likely to experience an accumulation of stress and adversity compared to adult mothers including poverty, poor educational opportunities, and maternal history of child maltreatment (Coyne, & D'Onofrio, 2012; Garwood, Gerassi, Jonson-Reid, Plax, & Drake, 2015). What's more, many teenage mothers describe experiences of alienation and stigmatization from peers, teachers, and social institutions, which may place additional psychological burdens on these young woman (Gregson, 2009). High-stress, low-resource environments often place teenage mothers at risk for depression and harsh parenting behaviors, which have been linked to the development of children's emotional and behavior problems (Easterbrooks, et al., 2016; Pasalich, Cyr, Zhenga, McMahon, & Spieker, 2016; Spieker, Larson, Lewis, Keller, & Gilchrist, 1999). However, research suggests that responsive relationships (i.e., caring, empathetic, and supportive relationships) between parents has been associated with lower levels of harsh parenting behaviors, especially for parents with histories of maltreatment (Conger, Thomas, Schofield, Neppl, and Merrick, 2013), which may mitigate children's emotional and behavioral problems (Sanders, 1999; Sanders, Kirby, Tellegen, & Day, 2014). Yet, extant research has yet to consider whether responsive relationships between teenage mothers and their children's fathers may buffer or *protect* children

from developing more severe mental health challenges² and whether such influences are indirectly linked through attenuated levels of harsh parenting behaviors. By focusing on relationship dissolution between teenage parents, extant research has overlooked that many, if not most, of teenage parents consider their relationships to be supportive and fulfilling around the time of their pregnancy, which has the potential to influence children later on in their developmental trajectories. This dissertation aims to deepen the field's understanding of how supportive relationships between mothers who gave birth as teenagers³ and their children's biological fathers⁴ develop over time, whether trajectories of these responsive relationships directly mitigate the development children's emotional and behavioral challenges, or whether such influences are either partially or fully mediated by the attenuated development of maternal harsh parenting trajectories. Specifically, this dissertation asks:

1. Across the first nine years of parenthood, what are the developmental trajectories of supportive couple relationships and supportive coparenting relationships for teenage parents and how do trajectories of these relationships compare?
2. From early to middle childhood, what are the developmental trajectories of children's externalizing behavior problems and internalizing behavior problems? Do individual children differ in their behavioral trajectories?

² In this study, young children's mental health challenges are defined as difficulty managing and regulating emotions, specifically non-clinical levels (i.e., low levels) of externalizing and internalizing symptoms, which are considered common indicators of poor psychological adjustment and mental health.

³To keep wording succinct, 'teenage mothers' will be used to characterize mothers who gave birth between the ages of 15 and 19 years old. However, many of these young women prefer to identify simply as mothers, rather than *teenage* mothers, given common misunderstandings and assumptions made about women who gave birth early in their life course.

⁴ Often men who father children with teenage mothers tend to be slightly older than mothers, averaging in age about 19-21 years old. In this study, fathers ranged in age from 15-47 years, with an average age of 21.5 years old. Couples and coparents in this study include teenage mothers and fathers who have an average age of 21.5 and will be referred to as 'teenage parents.'

3. From early to middle childhood, what is the developmental trajectory of maternal harsh parenting behaviors? Do individual mothers differ in their parenting trajectories?
4. Do growth curve characteristics of supportive couple or coparenting relationship trajectories predict individual differences in children's externalizing or internalizing trajectories, or are these associations indirectly linked by attenuated levels or rates of change in maternal harsh parenting trajectories?

Gaining a clearer understanding how teenage parents' couple and coparenting relationships develop across time and how these relationships link to the development of their children's mental health challenges is important for a handful of reasons. First teenage-headed families navigate a distinct set of developmental experiences, given that *both* mothers and children transition through periods of rapid brain development (i.e., adolescence and early childhood), during which time profound gains in social learning and emotional regulation occur (Dahl, 2004; Phillips & Shonkoff, 2000). Second, by the time children of teenage mothers enter middle childhood, a large majority of relationships between their parents will have dissolved (Ng & Kaye, 2012), which is likely to have shaped children's emotional and behavioral trajectories (Davies & Cummings, 1994). Third, research on parental relationships – both specific to teenage parents and broadly across the family systems literature – has overwhelmingly focused on the influences of parental conflict on children's emotional and behavioral trajectories. By doing so, the literature has overlooked how couple and coparenting *supportiveness*, may in turn, mitigate such trajectories. Lessons gleaned from this dissertation will improve our understanding of whether efforts to strengthen couple and/ or coparenting relationships are valuable investments for mitigating children's mental health challenges and buffering mothers from harsh parenting behaviors. Lastly, findings from this dissertation will help to build a small, yet growing network

of literature that gestures to inherent abilities and strengths of teenage-headed families (Beers & Hollo, 2009).

Chapter Two: Theoretical Framework

Family Systems Theory

Family systems theory posits that relationships between and among family members are interdependent and transactional processes, which influence and are influenced by other members, continuously across time (Hinde & Hinde, 1988; Schermerhorn & Cummings, 2008). Research that aims to understand young children's emotional and behavioral development has often used this framework, given that parenting behaviors and parent-child relationships have been considered paramount to understanding how young children adapt and respond to their social environments (Landry, Smith, Swank, Assel, & Vellet, 2001; Rothbaum & Weisz, 1994; Sanders et al., 2014). In addition, it has become increasingly clear that other subsystems (i.e., relationships) within the family directly and indirectly influence children's emotional and behavioral trajectories. Specifically, in nuclear and two-parent families, research suggests that characteristics of relationships between parents (e.g., couple relationships or coparenting relationships) make direct contributions to children's emotional and behavioral well-being through the transference of mood or affect, which may enhance or disrupt emotional attachments with their caregivers (Chang, Lansford, Schwartz, Farver, 2004; Cowan, Cowan, Ablow, Johnson, & Measelle, 2005; Peterson & Zill, 1986; Shoppe-Sullivan, Schermerhorn, & Cummings, 2007). Relatedly, qualities of these parental relationships have also been shown to indirectly shape children's emotional development by influencing caregivers' capacity to provide responsive and nurturing care to their children (Carlson, Pilkauskas, McLanahan, & Brooks-Gunn, 2011; Margolin, Gordis, & John, 2001).

Taken together, the quality of relationships between parents and those between parents and children work in tandem to influence children's emotional and behavioral development across time. Family systems framework provides a theoretical rationale for exploring questions proposed by this dissertation, which consider the concurrent and interrelated development of psychosocial processes among members in teenage-headed families, including couple and coparenting relationships, maternal harsh parenting behaviors, and children's emotional and behavioral challenges. Key tenants of family systems theory that apply to questions presented in this dissertation include (a) dynamic interdependence and (b) direct and indirect relational processes.

Dynamic Interdependence. The study of children's emotional well-being cannot be isolated from the families in which they are raised, given that "...individual behavior divorced from relationship aspects will be seriously incomplete...because of the influences of relationships and relationship histories on behavior... and the prominent role of social relations in evaluating individual adaptation" (Sroufe 1989, p. 104). To that end, understanding young children's emotional and behavioral development requires information about how they engage and respond to family members who are closest in emotional proximity to them, namely children's relationships with their parents and their parents' relationships with each other. Indeed, family systems theory posits that individual development is a dynamic product of an integrated system of relationships within the family (Cox & Paley, 1997; Minuchin, 1985). As a whole and integrated system, the family unit is greater than the sum of its parts and contains individuals and subsystems that are never fully independent from the context of the larger system (Cox & Paley, 1997; Minuchin, 1988; Sroufe & Fleeson, 1988).

In the same vein, relationships within a family are best conceptualized as interdependent, dynamic processes that are continually processing inputs (i.e., information from social and natural environments) and formulating outputs (e.g., communication, interactions, behaviors) in transactional exchanges across time (Broderick, 1971; Cox & Paley, 1997). Hence, individuals and relationships contained within family systems reciprocally push and pull on each other in an ever-unfolding, emergent pattern of development. In this light, an ‘emergent family system’ emphasizes that individuals establish developmental trajectories that are, in part, derived from relational experiences of their past and present, which will unfold into discernable life-course trajectories (Belsky, 1981; 1984; Minuchin, 1988). To that end, understanding antecedents of interindividual differences in young children’s behavioral trajectories not only requires information about proximal family processes (e.g., parenting behaviors and parental relationships) but necessarily requires information about the growth and change in these processes as well (O’Brien, 2005).

Direct and Indirect Relational Processes. Family systems theory suggests that characteristics and qualities of one relational subsystem may have direct and/ or indirect influences on other subsystems or individuals within the family. Direct effects of a relationship imply that two individuals have engaged in unobstructed exchanges of inputs and outputs (Belsky, 1984). In context of young children’s development, direct effects most commonly occur when caregivers respond to children’s cues (e.g., crying) with parenting behaviors (e.g., scolding) or engage in parent-child interactions (e.g., co-regulation). Indirect effects within a family system occur when exchanges between individuals are necessarily mediated by an intermediary relational pathway (Belsky, 1984). In a three-member family (e.g., mother, father, and child), indirect effects of adult-to-adult relationships are most commonly channeled through

parenting behaviors, which then influence child functioning (Belsky, 1981; Easterbrooks & Goldberg, 1984).

There are several theories that help to explain how characteristics of family relationships may directly and indirectly influence the development of and relationships among other family members. In terms of direct effects, responsive relationships between parents may directly influence their children's development through social modeling, the process of obtaining new behaviors or attitudes by observing the actions or interactions of others. By actively observing their parents engaging in caring, emotionally responsive social exchanges, children have opportunities to create mental representations of parental behaviors and encode them into memory. Once integrated into their mental schema, children can access these memories to guide future behaviors, which become formally integrated into their behavioral repertoire through repeated practice (Bandura, 1971).

In terms of indirect effects, the spillover hypothesis suggests that parenting behaviors and parental interpersonal relationships are positively correlated, such that parents who have poor relationships with their partners are also likely to engage in poor quality or unresponsive parenting behaviors or parent-child interactions; whereas parents who have high-quality relationships with their partners are more likely to engage in supportive and nurturing behaviors and interactions with their children (Easterbrooks & Emde, 1988; Erel & Burman, 1995). The positive correlation between parental relationships and parenting behaviors suggests that emotional contexts of the parental subsystem spillover to parenting behaviors or parent-child interactions through direct transfer of mood, affect, or behavior (Repetti, 1989). In contrast, the compensatory hypothesis posits that parental relationship quality and parent-child relationships are negatively correlated, such that parents who experience disharmony and conflict may

compensate by making more extensive investments in their parent-child relationship (Belsky, 1981). In this light, positive parent-child relationships have the potential to develop in context of marital conflict and may even buffer some of the adverse effects on children. The compensatory hypothesis also suggests that couples with supportive relationships prior to the birth of a child may find that the responsibilities of parenting interfere with their couple relationship and respond negatively to parenting demands (Erel & Burman, 1995; Goldberg & Easterbrooks, 1984).

More contemporary research has aimed to uncover the mechanisms through which direct and indirect effects of parental relationships shape children's emotional and behavioral adjustment. For example, Kaczynski, Lindahl, Malik, and Laurenceau (2006) have suggested that couple conflict, in part, adversely affects child behavioral adjustment through decreases in positive parenting, which may result from parental preoccupation with their own problems or limited emotional resolve, due to relationship stress (Cox, Paley, & Harter, 2001; Cummings & Merrilees, 2010). On the other hand, Davies and Cummings (1994) and Davies and colleagues (2002) have posited that implications of couple conflict on child adjustment are better understood from the perspective of the child. In particular, emotional security theory (EST) suggests that children are inherently (i.e., biologically) primed to seek emotional safety and security through their family relationships. In such a way, EST can be understood as an extension of general attachment theory, given that both identify the centrality of consistent, responsive, and emotionally nurturant relationships in facilitating children's emotional well-being and mental health. (Cummings & Merrilees, 2010). However particular to EST, it is posited that during childhood and adolescence, children aim to maintain confidence that relationships within their family system, and particularly those between parents, will be managed and maintained in ways that support cooperation, harmony, and stability for the family system. When

parents engage in hostile, aggressive conflict, it is hypothesized that children's internal emotional equilibrium is disrupted, and that they are more likely to become distraught. In such instances, children may respond with feelings of anxiety or sadness, placing them at risk for internalizing behavior problems, or may respond with feelings of anger or frustration, placing them at risk for externalizing behavior problems (Cummings & Merrilees, 2010; McCoy, Cummings, & Davies, 2009; Davies et al., 2002).

Taken together, family systems theory provides a theoretical rationale for examining questions proposed by this dissertation, which consider the concurrent and interrelated development of psychosocial processes among members in teenage-headed families. These processes include couple and coparenting relationships, maternal harsh parenting behaviors, and children's emotional and behavioral challenges. Specifically, family systems theory provides a framework for questions proposed in this dissertation, given that the quality of relationships between parents is hypothesized to (a) directly influence the quality of parenting behaviors through spillover effects, (b) directly influence children's behavioral development through social modeling and children's emotional security, and (c) indirectly influence children's behavioral development through the effects it has on parenting behaviors.

Chapter Three: Empirical Research

Couple Relationships

Research on families and young children has long identified marital and couple relationship quality as a binding and central force to all other relational subsystems within nuclear families (Belsky, 1984; Cummings & O'Reilly, 1997; Erel & Burman, 1995). Couple relationships are defined as the intimate and shared experiences between two individuals, which are required to sustain a romantic relationship. Qualities of couple relationships are organized

into more specific domains including conflict, communication, emotional support, relationship satisfaction, intimacy, and shared enjoyment. Often, characteristics of these relationships are thought to fall on a continuum of quality and effectiveness (Cowan & Cowan, 2014; Hsueh et al., 2012). For example, couple behaviors of withdrawal, escalation, and intentional emotional injury would connote ineffective communication skills, whereas positive emotionality, validation, and solution-oriented problem solving would characterize effective communication skills (Fincham & Beach, 2002).

The emergence of research on couple relationship quality was, in part, a derivative of the noticeable effects of divorce on children's behavioral challenges (e.g., Amato & Keith, 1991). Decades of research have suggested that parental relationships characterized by conflict and tension tend to disrupt children's adjustment (Amato, 2001; Cummings & Davies, 2002), and have consistently emerged as a strong predictor of children's behavioral problems (Davies & Cummings, 1994; Cummings & Merrilees, 2010). However, the type of conflict to which children are exposed matters; frequency, duration, intensity, and resolution of conflict are significant in terms of the stress and disruption that they may cause children. For example, unresolved, hostile, and highly-emotional conflict between parents often leaves children at a greater risk for emotional and behavioral challenges than conflict that is contained, resolved, or discussion-based (for a review see Grych & Fincham, 1990). To that end, it is much more common to find strong links between children's behavioral challenges and hostile couple conflict than it is to find links with couple dissatisfaction (e.g., apathy or indifference) (Emery, 1982).

Noticeably, much less attention has been paid to how parental relationships characterized by supportive, nurturant, and empathetic qualities may influence the development of young children's emotional and behavioral regulation. Non-experimental studies have suggested that

responsive relationships between parents have small, yet significant links to children's emotional and behavioral development. Specifically, for married and cohabitating parents, couple supportiveness has been associated with lower levels of children's externalizing and internalizing behavior problems across early and middle childhood (e.g., Goldberg & Carlson, 2014) and for married couples, higher levels of marital satisfaction and more adaptive family structures have been associated with fewer externalizing behavior problems for preschool age children (e.g., Schoppe, Mangelsdorf, & Frosch, 2001).

Importantly, experimental studies have come to similar conclusions as quasi-experimental research, suggesting that there are small, yet significant, causal links between positive qualities of couple relationships and child developmental outcomes. Experimental research on the influences of couple supportiveness on children's emotional and behavioral development was in response to fadeout and null effects of several parent training programs for families with children who struggled with conduct disorders. Specifically, programs discovered that families for whom programs were not working had high levels of unresolved marital conflict and in response, targeted fathers, marital relationships, and coparenting relationships to reconcile such issues (Cowan & Cowan, 2014; Miller & Prinz, 1990). Results from a handful of these studies suggested that, compared to programs that only offered parenting training, those that combined parenting training with enhancements for marital adjustment, problems solving, and adult emotional regulation were associated with better implementation of child management techniques and lower levels of child noncompliance (e.g., Dadds, Schwartz, & Sanders, 1987; Griest, Forehand, Rogers, Breiner, Furey, & Williams, 1982).

Extending this body of work, more contemporary research has identified couple relationship quality as a pathway to prevent or reduce the development of children's emotional

and behavioral challenges. Specifically, experimental studies within the field of couple relationship education (CRE) have identified causal links between couple relationship quality and children's externalizing and internalizing behavior problems. CRE is a psychoeducation and skills-based support program delivered to couples in group settings, which typically focuses on building effective communication skills, emotional support, and conflict management techniques; CRE may also include components on effective coparenting skills. Most recently, in a review of nine experimental CRE studies that targeted parental relationships and included measures on children's outcomes, Cowan and Cowan (2014) identified eight that had significant, positive effects on children's socioemotional development. Specifically, compared to children in control groups, CRE children were rated lower on overall behavioral problems (Wood, Moore, Clarkwest, & Killewald, 2014), externalizing and internalizing problems (Cowan, Cowan, & Heming, 2005; Lundquist et al., 2014), and poor adjustment (Cummings, Faircloth, Mitchell, Cummings, & Schermerhorn, 2008). Relatedly, compared to control groups, children of CRE participants were rated higher on their socioemotional development and self-regulation (Wood et al., 2014). In all of the aforementioned impact evaluations, CRE parents made improvements in their parenting behaviors and/ or couple relationship quality, suggesting that there are small causal associations between supportive parental relationships and children's emotional and behavioral adjustment, with mean effect sizes hovering around .07 to .10.

As with research on relationship quality for married and adult parents, the majority of work on teenage parents' couple relationship quality has tended to focus on patterns of relationship dissolution, providing little information on characteristics or qualities that may explain why certain teenage-headed families stay together or why others break apart (Bunting & McAuley, 2004; Furstenberg, 2003). With that said, there is a small body of work that has

explored how relationship quality between teenage parents has shaped mothers' mental health and parenting behaviors. Generally, research has found that from the time of pregnancy until childbirth, high-quality intimate relationships with partners are a source of support for young mothers (Gee & Rhodes, 1999). For example, research suggests that emotional support provided by spouses or partners has been linked to nurturant, responsive, and affectionate qualities of maternal caregiving behaviors (Colletta, 1981; Crockenberg, 1987; Lee & Colletta, 1983; Unger & Wandersman, 1988), more positive parenting attitudes (Brunelli, Wasserman, Rauh, Alvarado, Caraballo, 1995) and fewer symptoms of depression and anxiety (Easterbrooks et al., 2016; Gee & Rhodes, 2003; Smith & Howard, 2008).

Coparenting Relationships

Coparenting relationships are defined as the support, coordination, and shared effort required of two people to raise a child (Feinberg, 2003; McHale, 1995). Though couple and coparenting relationships are mutually exclusive constructs, they are strongly correlated given that parents' relationship quality prior to the birth of their first child consistently predicts the quality of their coparenting relationship (Belsky, Crnic, & Gable, 1995; Le, McDanie, Leavitt, & Feinberg, 2016; McHale et al., 2004). As with parents' couple relationship, their coparenting relationship has distinct domains including, (a) coparenting support/ agreement – affirming the other parent's competence as a parent and upholding the other's decisions, (b) coparenting division of labor – shared responsibilities associated with parenting (c) coparenting alliance – the degree to which parents' expectations and values with parenting align, and (d) coparenting undermining - criticism, disparagement, or blame about the other parent's parenting practices (Fagan, 2014; McHale, 1995; McHale, Salman-Engin, Coover, 2015).

Coparenting relationships are thought to be reflective of individual parent characteristics (e.g., emotional adjustment) and the quality of parents' couple relationship. Research suggests that coparenting relationships may be a stronger predictor of children's behavioral development than parent's couple relationships, given its close proximity to key regulatory processes associated parenting behaviors and parent-child interactions (Abidin & Brunner, 1995; Margolin et al., 2001). For example, closely coordinated coparenting relationships have been shown to mitigate risk factors associated with harsh parenting by lessening stress through shared child-rearing responsibilities, or by increasing feelings of parental self-efficacy and esteem (Feinberg, 2003). Additionally, increases in coparental support and fathers' coparenting alliance have been shown to reduce anxiety and depression in mothers and decrease ineffective parent-child interactions (Feinberg & Kan, 2008). Coparenting alliance has also been associated with positive impacts on child adjustment and behavioral regulation (Abidin, 1992; Belsky, 1984; Deater-Deckard, 1998; Feinberg, Kan, & Hetherington, 2007), while conflictual coparenting relationships have been associated with poor parenting behaviors and child adjustment. For example, coparenting conflict during infancy has predicted aggressive behaviors in preschoolers as rated by their teachers (McHale & Rasmussen, 1998), and parental competition during the transition to parenthood has been linked to children's poor behavioral adjustment during toddler years (Solmeyer, Feinberg, Coffman, & Jones, 2014; Schoppe et al., 2001).

Links between coparenting relationships and children's mental health challenges have been evidenced by experimental research. To date, Family Foundations (FF) (Feinberg & Kan, 2008), stands out as one of the more successful coparenting interventions (for additional interventions see McHale et al., 2015), which offered eight classes to first-time mothers and fathers prior to and shortly after child birth. FF aimed to build parents' coparenting strategies for

communication, conflict resolution, and problem solving to improve their satisfaction with caregiving responsibilities, facilitation of children's emotional security, and provision of stimulating parent-child interactions (Feinberg & Kan, 2008). At a one year follow-up, FF children had increased self-regulatory behaviors compared to those in the control group (Feinberg, Kan, & Goslin, 2009); in a 3.5 year follow-up, children had increased social competence and decreased externalizing and internalizing behavior problems for boys, but not girls (Feinberg, Jones, Kan, Goslin, 2010). At 1-year and 3.5-year follow-ups, FF had impacts on parenting behaviors including increased levels of responsive parenting and parental self-efficacy; at the 3.5-year follow-up, FF was also associated with lower levels of parental stress and harsh parenting behaviors (Feinberg et al., 2010).

Compared to adult parents, much less research has explored how coparenting relationships in teenage-headed families influence parents and children. Within this small body of work, findings suggest that fathers and mothers respond sensitively to the quality of their coparenting relationships. Generally, the quality of coparenting relationships shape the ways that fathers engage with their children (Fagan, 2013; Fagan & Lee, 2010; Lewin et al., 2015). For example, in teenage-headed families with high levels of coparenting alliance, fathers have shown high levels of nurturant parenting behaviors with their children and were involved with more caregiving activities (e.g., feeding, diaper changing). In the same vein, fathers tend to be more involved with their children when they are in supportive romantic relationships with their children's mothers; for fathers who are not in romantic relationships with mothers, they have greater access to and involvement with their children if mothers value their parenting contributions (Herzog, Umaña-Taylor, Madden-Derdich & Leonard, 2007). For both parents, characteristics of their relationship prior to the birth of their child has strong associations with

the quality of their coparenting relationship during the first few years of parenthood. For example, fathers' levels of involvement during pregnancy has been shown to predict mothers' and fathers' perceptions of their coparenting alliance during infancy (Fagan, 2013). Research has also suggested that teenage fathers with high levels of coparenting skills (e.g., effective communication around caregiving responsibilities) may provide more emotional support to mothers during pregnancy and have been rated higher by mothers on their coparenting alliance (Fagan, 2008). Notably, research has also suggested that coparenting relationships may matter more for teenage fathers than for adult fathers. Specifically, Fagan and Lee (2010) found that coparenting support had stronger associations with father engagement for adolescent fathers than adult fathers, which did not depend on their romantic status with mothers.

Much less research has explored how coparenting relationships matter for teenage mothers and their children. For mothers, findings suggest that the quality of coparenting relationships link to mothers' feelings of solidarity with her partner and perceptions of fathers' commitment to the family. For example, Fagan (2013) found that higher levels of coparenting conflict during prenatal periods were associated with lower levels of parenting alliance during infancy for mothers, but not fathers, and that higher levels of coparenting conflict were also associated with lower levels of father engagement as rated by mothers. For children of teenage parents, influences of coparenting relationships on their emotional and behavioral outcomes is essentially absent from the research literature. However, Lewin and colleagues (2015) recently wrapped up pilot testing of a coparenting intervention adapted for teenage-headed families, which was based off of Family Foundations (FF). Given that FF evaluations have explored intervention impacts on children's emotional and behavioral development, findings from FF for

teenage-headed families may provide important insights about these relationships for children of teenage parents.

Mental Health Challenges: Externalizing and Internalizing Behavior Problems

Sound mental health in early childhood is evidenced by children's ability to develop and sustain close interpersonal relationships with caregivers and peers by experiencing, regulating, and expressing emotions (Zeanah, Gleason, & Zeanah, 2008). For the youngest of children, their capacity to develop strong mental health and resilient emotional well-being is built by consistent, responsive, and nurturant relationships with primary caregivers (Cassidy, 1994; Morris, Silk, Steinberg, Myers, & Robinson, 2007). Learning how to experience, regulate, and manage emotions early in life provides the necessary building blocks for more complex developmental milestones including cognitive flexibility and problem solving, learning and achievement, and perspective taking and empathy (Murray, Rosanbalm, Christopoulos, & Hamoudi, 2014; Yoshikawa, Aber, & Beardslee, 2012). On the other hand, children who manage and regulate their emotions in ways that significantly disrupt their social relationships, educational accomplishments, or physical development may be having difficulty developing socioemotional competencies or coping mechanisms. Indeed, common indicators of mental health challenges⁵ in early childhood are typically manifested through heightened emotional and behavioral responses to experiences that overwhelm or threaten the security of children, which are commonly categorized into externalizing symptoms or internalizing symptoms. If untreated, externalizing and internalizing symptoms may develop into clinical diagnoses of mental illness including anxiety disorders, attention-deficit/ hyperactivity disorder, conduct disorder, depression,

⁵ In this study, non-clinical levels (i.e., low levels) of externalizing and internalizing symptoms are considered common indicators of poor psychological adjustment and mental health; whereas clinical diagnoses of externalizing and internalizing *disorders* (e.g., oppositional defiant disorder) are considered mental illness in early childhood.

oppositional defiant disorder, or posttraumatic stress disorder (National Scientific Council on the Developing Child, 2008/ 2012).

Externalizing symptoms include tantruming, noncompliance, aggression towards peers, over-reactivity, hyper activity, and impulsivity (Campbell, Shaw, & Gilliom 2000). A common characteristic of externalizing behaviors is that they are directed outwardly towards others (e.g., people, animals, environments). When symptoms are extreme, they are characterized by destructive, dangerous, distracting, or threatening behavior patterns, which significantly interfere with children's learning, development, and social relationships, in addition to putting strain and stress on family members (Doubet & Ostrosky, 2015; National Scientific Council on the Developing Child, 2008/ 2012; Schindler et al, 2015). Internalizing symptoms include extreme shyness, withdrawal, fearfulness, inhibition, sadness, and loneliness (Achenbach, McConaughy, & Howell, 1987; Eisenberg et al., 2001). With these behaviors, negative emotions, including self-blame, low-esteem, and feelings of worthlessness, are directed at oneself rather than outwardly at others (Roeser, Eccles, & Strobel, 1998).

Behavioral challenges in young children are commonly diagnosed as clinical behavioral disorders when they show a constellation of co-occurring symptoms that are frequent and severe, cut across developmental domains (e.g., social, cognitive), are evident across multiple social contexts (e.g., home and child care), and are expressed with different people (e.g., parents and peers) (Campbell et al., 2000). For children who show clinical levels externalizing or internalizing symptoms, emotional and behavioral responses may be reflecting, in part, early exposure to chronic and prolonged experiences of adversity without adequate support from adult caregivers. Indeed, when young children experience severe hardship such as chronic poverty, domestic violence, parental substance abuse, or parental mental illness, their stress response

systems may go on high alert, showing heightened neuroendocrine activation (i.e., increased levels of cortisol and adrenaline). When neuroendocrine systems are consistently activated in early childhood, stress response pathways may be set at a low-activation threshold to ensure a quick response to threat. However, low-to-moderate levels of stress may appear overwhelming to a neurological system that has set a “low bar” for stress, especially in the context of an adverse environment (Garner, 2013).

If left untreated, behavioral and mental health disorders may have short-term consequences on children’s development and long-term consequences on their life course trajectories (Fischer, Anthony, Lalich, & Blue, 2014; King, Iacono, & McGue, 2004; Schindler & Black, 2015). In the short-term, children and adolescents with persistent externalizing disorders are at higher risk for school expulsion or drop out, lower academic performance, and dysfunctional peer- and adult-relationships (Breitenstein et al, 2007; Duncan & Magnuson, 2011; Huaqing & Kaiser, 2003); whereas long-term risk factors may include life-course trajectories of antisocial and criminal behaviors (Schindler & Black, 2015). In the short-term, children and adolescents with persistent internalizing disorders may be at greater risk for lower levels of academic achievement and attainment, difficulties with interpersonal relationships, early onset substance use, and the development of eating disorders (Cassin & von Ranson, 2005; Chansky & Kendall, 1997; Compton, Burns, Egger, & Robertson, 2002). Long-term risk factors may include nicotine dependence, alcohol abuse, illicit drug use, and suicide attempts (Woodward & Fergusson, 2001; Nepon, Belik, Bolton, & Sareen, 2010).

A handful of studies have investigated the development of externalizing and internalizing behavior problems for children of teenage parents. Most studies have been descriptive in nature and have found that, on average, children of teenage parents have a greater likelihood of

developing and being clinically diagnosed with emotional and behavioral problems than children of adult parents (Coley & Chase-Lansdale, 1998; Coyne & D'Onofrio, 2010). However, the association between teenage parenthood and children's mental health challenges has often been explained by social conditions, rather than maternal age at pregnancy. To that end, contextual factors that often place young women at risk for teenage pregnancy have also been commonly associated with children's emotional and behavioral challenges, including poverty, family turmoil, maternal depression, and intergenerational cycles of child maltreatment (Pittman & Coley, 2011). For example, Turley (2003) tested the causal association between the age of teenage mothers and behavioral problems of their children by implementing sibling and cousin fixed effects models, which adjusted for unobserved, time-invariant confounders (Imai & Kim, 2015). Results suggested that for teenage mothers, their age at birth was not causally linked with children's behavior problems; rather, differences in family background explained why children born to teenage mothers were at higher risk than children born to older mothers. On the other hand, using sibling comparisons, D'Onofrio et al. (2009) identified a causal link between mothers' age at childbearing and behavior problems of children born to young parents, which identified unique contributions of both maternal age and social disadvantage on children's behavioral challenges.

Coming from a different angle, research has taken a close look at how teenage mothers' psychological well-being and mental health link to children's emotional and behavioral development. Rates of depression during and after pregnancy are nearly two times higher for adolescent mothers than adult mothers; specifically, rates of depression range from 16% to 44% for teenage mothers, while episodes of major depression among nonpregnant adolescents and adult women ranges from 5% to 20% (Hodgkinson, Beers, Southammakosane, Lewin, 2014;

Kessler, 2003). Serious consequences of depression for mothers and children include reduced levels of sensitive caregiving for mothers (Field, 2010) and higher levels of externalizing and internalizing behavior problems and clinical mental health diagnoses for children (Goodman et al., 2011). In response to such findings, research on teenage mothers and their children has explored how social support may link to maternal levels of depression and children's developmental outcomes. For example, Huang, Costeines, Kaufman, and Ayala (2014) examined how parenting stress, social support, and depression influenced developmental outcomes of children born to African-American and Latina teenage mothers. Results suggested that higher levels of parenting stress and lower levels of social support were associated with higher levels of depression for young mothers; and that, higher levels of maternal depression were associated with more developmental delays in infants at the one-year follow-up. Additionally, levels of maternal depression mediated links between parenting stress and later child outcomes (Huang et al., 2014).

Maternal Parenting Behaviors

Though there are many contexts and conditions that may contribute to young children's emotional and behavioral challenges, parenting behaviors and parent-child interactions often explain, in part, the development of such trajectories. Broadly, parenting behaviors can be classified as effective (i.e., those supporting children's healthy development) and ineffective, (i.e., those that inhibit or detract from children's healthy development) (Hinshaw et al., 2000; Oxford, Cavell, & Hughes, 2003). For young children, parental responsiveness has commonly been identified as an important contributor to their mental, emotional, and behavioral health. For example, parental responsiveness has been associated with cooperation and social engagement for toddlers (Landry, Smith, & Swank, 2006), increased compliance and self-regulation for

preschool aged children (Donovan, Leavitt, & Walsh, 2000; Kochanska & Murray, 2000), and empathy and prosocial responding in childhood (Davidov & Grusec, 2006). On the other hand, ineffective parenting practices, which may include harsh, inconsistent, excessively controlling, emotionally cold, or disapproving behaviors, have been consistently associated with behavioral challenges in children.

Given a broad range of ineffective parenting practices, it's not surprising that different parenting behaviors have been linked to different types of behavioral challenges in children. For example, parental rejection and control has been hypothesized to undermine children's emotional regulation by increasing feelings of anxiety and emotional insecurity, which has been linked to the development of anxiety disorders (McLeod, Wood, & Weisz, 2007). One explanation for this association is that, as children develop from early to late childhood, they are developmentally primed to act more independently. When parents are highly controlling in contexts when it is developmentally appropriate for children to be independent, children may experience decreased self-efficacy, which could then lead to increased anxiety (McLeod et al., 2007; Wood, 2006).

Parenting behaviors that are persistently harsh in nature, including verbal or psychological aggression, physical punishment, yelling, or name calling, may place children at risk for clinical externalizing disorders including oppositional defiant disorder, attention deficit disorder, or conduct disorders (Bradley, Corwyn, Burchinal, McAdoo, & García Coll, 2001; Fisher, Gunnar, Dozier, Bruce, & Pears, 2006; Webster-Stratton & Hammond, 1997). Much less research has explored whether there are consistent associations between harsh parenting behaviors and children's internalizing behavior problems. However, research does suggest that when parents use harsh parenting behaviors in conjunction with highly-involved, controlling parent-child interactions, children are at higher risk for internalizing problems and disorders. For

example, when parents provide both harsh-inconsistent and nurturant-involved care, children have shown greater risk for developing depression in later childhood and adolescence (Kim et al., 2003). Additionally, harsh and punitive parenting behaviors in early childhood have been linked to higher levels of parents' psychological control (e.g., guilt, love withdraw) when young girls were adolescents, which subsequently was tied to adolescents' levels of anxiety and depression (Pettit, Laird, Dodge, Bates, & Criss, 2001). To that end, it is unclear whether harsh parenting alone would significantly contribute to the development of children's internalizing behavior problems.

While all parents experience varying levels of stress across proximal and distal contexts, teenage-headed families are more likely than adult-headed families to experience an accumulation of stress and adversity in absence of supportive factors, which may place mothers at risk for ineffective or harsh parenting behaviors (Bartlett, Raskin, Kotake, Nearing, & Easterbrooks, 2014). Notably, teenage pregnancy is often confounded with family- and neighborhood-level poverty, poor educational and employment opportunities, and maternal history of child maltreatment (Coley & Chase-Lansdale, 1998; Madigan, Wade, Tarabulsky, Jenkins, & Shouldice, 2014). These sources of adversity may also place mothers at risk for substance abuse and depression (Barlow et al., 2013; Black et al., 2002), which could compound their likelihood for harsh parenting behaviors or child maltreatment.

A second hypothesis suggests that teenage mothers may engage in harsh parenting behaviors, given their maturing regulatory and emotional skill sets. Specifically, incomplete development of adolescents' prefrontal cortex limits their ability to set and follow through with goals, engage in complex reasoning, and task-shift, which may explain why it is difficult for teenage parents to provide consistent and responsive care for their children (Blakemore &

Choudhury, 2006; Selemo, 2013; Slade, Cohen, Sadler, & Miller, 2009; Sadler, Novick, & Meadows-Oliver, 2016). In addition to maturing executive function skill sets, research also suggests that inadequate social support from kith and kin may make it more difficult for teenage mothers to manage parenting stress, which may make it more challenging to mitigate the use of harsh parenting behaviors (Abidin, 1992; Belsky, 1984; Thompson, 2015).

On the other hand, heterogeneity of outcomes for teenage parents and their children suggests that some families have better adapted to the often competing psychosocial and developmental requirements of parenthood and adolescence than others. For example, Easterbrooks, Chaudhuri, Bartlett, and Copeman (2011) found that there is a subset of teenage mothers who, in light of accumulated contextual risk, refrain from harsh parenting behaviors and whose children may have stronger emotional resiliency. Indeed, research suggests that parental risk of child maltreatment is often mitigated through supportive and responsive relationships with family members, who reduce contextual stress and strengthen a network of kin to support child rearing efforts (Bunting & McAuley, 2004; Center on the Developing Child, 2017). To that end, responsive relationships between parents have been shown to arrest cycles of maltreatment from one generation to the next (Conger, Thomas, Schofield, Neppl, and Merrick, 2013).

Limitations of Current Literature

Theory and research suggest that teenage parents' interpersonal relationships should be studied over time given the dynamic nature of family processes and rapid restructuring of adolescents' social brain⁶ (Collins, Welsh, & Furman, 2009; Kilford, Garrett, & Blakemore,

⁶ A wide network of brain areas, referred to as the 'social brain', is involved in social perception and cognition (Adolphs, 2009; Frith, 2007). Regions within the social brain network include the posterior superior temporal sulcus, temporoparietal junction, dorsomedial prefrontal cortex, anterior temporal cortex, and the inferior frontal gyrus (Frith & Frith, 2007; Kilford et al., 2016; Van Overwalle, 2009).

2016; Minuchin, 1985). Indeed, profound functional shifts occur in perception and cognition during adolescence, which have direct implications for teenage parents' couple and coparenting relationships. For example, refinement and integration of cognitive processes including joint-attention, face processing, and mental state attribution evolve and solidify over their children's earliest development. These skill sets support teenage parents' capacities to predict mental states, understand intentions and actions of others, and to modify their behaviors accordingly (Frith & Frith, 2007; Kilford et al., 2016). Additionally, these skill sets are required to support healthy adult interpersonal relationships (Crone, 2013; Kilford et al., 2016) and caregiving behaviors (Adam, Gunnar, & Tanaka, 2004; Gonzalez, Jenkins, Steiner, & Fleming, 2012). Surprisingly, research has overlooked the opportunity to longitudinally examine the development of these family processes across the transition to parenthood and children's early development, when teenage parents' relationship skills solidify and their children's emotional regulation begins to take shape (Kochanska, Murray, & Harlan, 2000). In addition, existing longitudinal studies of teenage family systems have been limited by using small sample sizes (e.g., Kalil, Ziol-Guest, & Coley, 2005), examining two timepoints to capture development (e.g., Fagan, 2013), and focusing solely on children's infancy and toddlerhood (e.g., Florsheim et al., 2013).

Most importantly, perspectives of teenage-headed families have often been omitted when thinking about the ways that social programs or public schools may interact with or support parents. For example, though teenage parents perceive that their coparenting relationships strongly influence their "current and future socioeconomic, emotional, and practical circumstances and their success at 'being there' for their child," (Mollborn & Jacobs, 2015, p. 373), extended families, institutions, and social programs often push parents apart. In the same vein, quantitative studies have traditionally overlooked the significance of teenage parents'

interpersonal relationships, perhaps because most teenage mothers do not live with their children's fathers and do not tend to stay in long-term intimate relationships with them (Lewin et al., 2015). Given that many teenage parents believe that they need a "working" relationship with their partner to support the well-being of their child, more research should focus on understanding how supportive qualities of parents' interpersonal relationships develop over time and shape the emotional and behavioral well-being of their children.

Present Study

This study helps to lay a foundation of work that considers developmental experiences of teenage mothers and their children from a strengths-based, family systems perspective. Given that research has tended to consider experiences of teenage mothers "in isolation from the families and social networks in which they are embedded" (Jones, Zalot, Foster, Sterrett, & Chester, 2007; Mollborn & Jacobs, 2015, p. 375) and has a history of stigmatizing teenage mothers (Everson & Ostrach, 2017; SmithBattle, 2013), new perspectives are needed to underscore inherent abilities of these families. This dissertation supports a new direction in research by posing questions that consider how supportive qualities of teenage parents' couple and coparenting relationships may buffer children from developing more severe emotional and behavioral challenges. To date, this is the first study to (a) explore developmental trajectories of teenage parents' supportive couple and coparenting relationships across the first nine years of parenthood, (b) concurrently model parent, parent-child, and child developmental processes for teenage-headed families, and (c) consider the direct transfer of affect or emotion that may occur among these relationships during critical periods of brain development. Specifically, this dissertation asks:

1. Across the first nine years of parenthood, what are the developmental trajectories of supportive couple relationships and supportive coparenting relationships for teenage parents and how do trajectories of these relationships compare?
2. From early to middle childhood, what are the developmental trajectories of children's externalizing behavior problems and internalizing behavior problems? Do individual children differ in their behavioral trajectories?
3. From early to middle childhood, what is the developmental trajectory of maternal harsh parenting behaviors? Do individual mothers differ in their parenting trajectories?
4. Do growth curve characteristics of supportive couple or coparenting relationship trajectories predict individual differences in children's externalizing or internalizing trajectories, or are these associations indirectly linked by attenuated levels or rates of change in maternal harsh parenting trajectories?

Chapter Four: Methodology

Data

Data for this study were drawn from the Fragile Families and Child Well-being Study (FFCW), a longitudinal nationally-representative dataset of 4,789 children who were born from 1998 to 2000 in large, urban cities. Almost three-quarters of children were born to unmarried parents, defined as 'fragile families,' whose risk of relationship dissolution and living in poverty is much greater than married parents. The oversampling of children born to unmarried parents was an intentional element of the study's design and supports its overarching goals, which include to better understand (a) the conditions and capabilities of unmarried parents, especially fathers, (b) the nature and development of unmarried parents' relationships, (c) development of

children born into fragile families, and (d) the effects of political and social contexts on children and families (Fragile Families and Child Well-being Study, 2016).

Mothers of newborn babies were recruited in hospital maternity wards from twenty U.S. cities with populations of 200,000 or more; sixteen of the twenty cities were selected through a stratified random sample of all U.S. cities with more than 200,000 residents, and grouped by political and socioeconomic contexts. Sampling occurred in three stages: First, researchers sampled cities, then hospitals within cities, and finally births within hospitals (Reichman, Teitler, Garfinkel, & McLanahan, 2001). After signing consent forms, eligible mothers' medical data were extracted from hospital records, and they were asked to identify their children's biological fathers. "Core" interviews⁷ were administered separately to mothers and fathers at baseline/ birth (B), year one (Y1), three (Y3), five (Y5), nine (Y9), and fifteen (Y15) follow-ups; however, fathers were dropped from fifteen-year follow-up interviews. In addition to core interviews, four other methods of data collection were implemented to obtain information about parents and children. In-home assessments (e.g., interviews and observations) were conducted with primary caregivers (typically mothers) and children at Y3, Y5, Y9, and Y15 follow-ups. Child care providers were surveyed to assess center quality and focal children's behavioral and mental health at Y3; focal children's elementary school teachers were surveyed to assess similar school- and child-based characteristics at Y5 and Y9. Finally, DNA sampling was administered at Y9 and Y15, (Fragile Families and Child Well-being Study, 2016).

Participant completion rates were available for maternal and paternal core interview data and in-home assessments, from B to Y9. Completion rates were relatively high for mothers and

⁷Though a large majority of baseline interviews took place in-person, telephone interviews became the standard mode of data collection as follow-up times increased (Bendheim-Thoman Center for Research on Child Well-being, 2008).

moderate for fathers. At baseline, a total of 4,789 mothers completed core interviews (100 percent); subsequent completion rates for maternal core interviews were 86 percent (Y1), 86 percent (Y3), 85 percent (Y5), and 76 percent (Y9). At baseline a total of 3,742 fathers completed core interviews (78 percent); subsequent response rates for paternal core interviews were 69 percent (Y1), 67 percent (Y3), 64 percent (Y5), and 59 percent (Y9). Completion rates of in-home assessments were available for caregivers who completed core interviews, which included 78 percent (Y3), 81 percent (Y5), and 89 percent (Y9) of mothers (Bendheermim-Thoman Center for Research on Child Well-being, 2008; Goldberg & Carlson, 2014).

Sample

To address questions proposed in this dissertation, a subsample of children who were born to mothers nineteen years old or younger were extracted from the FFCW database (N = 849). From this sample, only children who primarily lived with their mothers (N = 821) and had parent-reported data on couple and coparenting relationship quality for two or more data points were maintained (N=773).

Measures

Primary variables of interest are couple supportiveness measured at B, Y1, Y3, Y5, and Y9; coparenting supportiveness measured at Y1, Y3, Y5, and Y9; maternal harsh parenting behaviors measured at Y3, Y5, Y9 and children's externalizing behavior problems and internalizing behavior problems measured at Y3, Y5, and Y9. FFCW did not collect data on parents' coparenting relationship quality at birth, on maternal harsh parenting at Y1, or child behavioral outcomes at Y1.

Exogenous variables.

Couple supportiveness. Supportive couple behaviors were measured at B, Y1, Y3, Y5, and Y9 surveys using mothers' responses to questions about the responsive qualities of romantic relationships with their children's biological fathers. Apart from the baseline survey, which only included three items⁸, mothers responded to the following five questions at each wave using a 1 (often), 2 (sometimes), and 3 (never) scale, (a) "(partner) is fair and willing to compromise," (b) "(partner) shows affection and love," (c) "(partner) encourages/ helps you do things that are important to you," (d) "(partner) really listens when you need someone to talk to, and (e) "(partner) really understands your hurts and your joys." For baseline, Y1, Y3, and Y5 surveys, mothers in active relationships and those whose relationships recently ended (i.e., since the last survey) were asked these questions; however, mothers who ended their relationships before the previous year's survey were not asked questions about their couple relationship with their child's biological father. Instead of coding these mothers' responses as missing, their couple supportiveness was given the lowest possible score (Carlson & VanOrman, 2013). This approach was also used for Y9 surveys, which neither included mothers who ended their relationships since the last survey nor those who ended relationships before the previous survey. Item response categories were reverse coded to create a 1 (never), 2 (sometimes), and 3 (often) scale, and averaged into a single score at each wave. Cronbach's alpha for supportive couple behaviors are .80 at baseline, .71 at Y1, .74 at Y3, and .71 at Y5.

Coparenting supportiveness. Supportive coparenting behaviors were measured at Y1, Y3, Y5, and Y9 surveys using mothers' responses to questions about the responsive qualities of coparenting relationships with their children's biological fathers. Mothers responded to six

⁸The first three listed items were those used in the baseline survey

questions at each wave using a 1 (always), 2 (sometimes), and 3 (rarely) scale, which included the following prompts (a) “when (father) is with (child), he acts like the father you want for your child,” (b) “you can trust (father) to take good care of (child)” (c) “he respects schedules and rules you make for (child)” (d) “he supports you in the ways that *you* want to raise your child” (e) “you and (father) talk about problems that come up raising (child)” (f) “you can count on (father) to watch (child) for a few hours.” For Y9 surveys, mothers were no longer asked questions about their coparenting relationship with their children’s biological fathers. Instead of coding these mothers’ responses as missing, coparenting relationship quality was given the lowest possible score (Carlson & VanOrman, 2013). At the Y3, Y5, and Y9 surveys, an additional response category of 4 (never) was provided, which was combined with category 3 (rarely) to yield a consistent three-point scale across all years. Item response options were reverse coded to create a 1 (never), 2 (sometimes), and 3 (often) scale, and averaged into a single score at each wave. Cronbach’s alpha for supportive coparenting behaviors are .88 at Y1, .90 at Y3, and .89 at Y5, and .90 at Y9.

Endogenous variables.

Children’s externalizing and internalizing behavior problems. Children’s externalizing and internalizing symptoms were measured at Y3, Y5, and Y9 using mothers’ reports on the Child Behavior Checklist (CBCL, Achenbach, et al., 1987). The CBCL is a widely-used measurement tool with strong internal consistency, validity, and reliability (Achenbach & Rescorla, 2001) and covers common diagnoses of mental health disorders in young children including anxiety, disruptive behavior disorder, attention deficit/ hyperactivity disorder, and depression (Egger & Angold, 2006). Children’s externalizing symptoms and internalizing symptoms were measured using a 0 (not true) 1 (somewhat true) and 2 (very/ often true) scale,

which rates focal children's externalizing symptoms (e.g., cannot wait turn, easily frustrated, hits others) and internalizing symptoms (e.g., unresponsive to affection, feelings easily hurt, shows little interest in things). Following standardized measurement procedures for the CBCL, externalizing symptoms were measured using 22 items at Y3, 30 items at Y5, and 35 items at Y9; internalizing symptoms were measured using 25 items at Y3, 22 items at Y5, and 32 items at Y9. Cronbach's alpha for externalizing symptoms are .88 at Y3, .86 at Y5, and .91 for Y9. Cronbach's alpha for internalizing symptoms are .82 at Y3, .75 at Y5, and .88 at Y9.

Intermediary variable.

Maternal harsh parenting behaviors. At timepoints Y3, Y5, and Y9, observational data from the Home Observation for Measurement of the Environment (i.e., HOME, Bradley & Caldwell, 1984) was used to measure mothers' harsh parenting behaviors. Four items⁹ from the HOME avoidance of restriction and punishment subscale were reverse coded to create binary 0 (no) and 1 (yes) response categories, which included (a) parent shouted at child, (b) parent expressed annoyance or hostility toward child, (c) parent slapped or spanked child during the visit, and (d) parent scolded or criticized child during the visit. At each wave, item scores were averaged into a single score. Cronbach's alpha for harsh parenting behaviors are .74 at Y3, .78 at Y5, and .65 at Y9.

Covariates. A set of covariates for characteristics of mothers, fathers, and children that were likely associated with couple and coparenting supportiveness, children's behavioral challenges, and harsh parenting were included in all conditional models and those that tested indirect pathways. Time invariant characteristics, which were measured at baseline, included

⁹ The original harsh parenting items were presented in the negative (e.g., "parent did *not* shout at child during visit) which were reverse coded.

mother's and father's age and race/ ethnicity and child gender and temperament¹⁰. Parents' racial and ethnic backgrounds were included to account for cultural differences, which may influence parenting behaviors or relational processes (Hughes et al., 2006; McLoyd, Cauce, Takeuchi, & Wilson, 2000) and to account for race-related stressors, including discrimination, which have been linked to strains on interpersonal relationships and parent-child relationships (Murry, Brown, Brody, Cutrona, Simons, 2001). Child gender was included as a covariate because male and female children tend to experience and cope with interparental conflict in different ways, with girls tending to self-blame and boys tending to be more sensitive to distress, in general (Cummings, Davies, & Simpson, 1994; Keenan & Shaw, 1997). Child temperament was included in models given that young children with excessive distress, irritability, and a generalized negative mood are often at risk for behavioral challenges and may cause additional stress or strain on parents (Campbell et al., 2000; Gilliom & Shaw, 2004). Time-varying covariates included maternal depression (measured at Y1, Y3, Y5, Y9)¹¹, mother's household income (measured at B, Y1, Y3, Y5, Y9) and fathers' household income (measured at B, Y1, Y3, Y5, Y9). Depression was included as a covariate given its high prevalence among adolescent mothers (Easterbrooks et al., 2016) and associations with less responsive parenting and poor child adjustment (Goodman et al., 2011; Hoffman, Crnic, & Baker, 2009). Income was included because limited economic resources tend to increase parenting stress, harsh parenting behaviors, and children's risk for behavioral challenges (Campbell et al., 2000).

Analytic Approach

Latent growth curve (LGC) modeling was used to answer questions outlined in this dissertation. LGC modeling was selected because it can account for key tenets of family systems

¹⁰ Children's temperament was measured at Y1 surveys.

¹¹ FFCW dataset did not include maternal depression at baseline.

theory, such as behavioral and psychological development as a function of time, the direct and indirect transfer of developmental processes among family members, and simultaneous modeling of concurrent developmental processes (Bollen & Curran, 2006). Importantly, LGC modeling allows for characteristics of one family-based trajectory (e.g., initial levels of couple supportiveness) to explain individual differences in starting levels or rates of change in a second family-based developmental process (e.g., trajectories of children's externalizing behavior problems), (McArdle & Epstein, 1987; Muthén, 1991; Willett & Sayer, 1994). Finally, LGC modeling is the only analytic strategy that can model longitudinal change of observable (i.e., manifest) indicators that are assumed to reflect underlying unobservable constructs (i.e., latent factors), which are commonly evidenced in mental and behavioral health outcomes (e.g., child behavioral development), and developmental trajectories of family-based relationships (e.g., couple and coparenting relationship) (Feinberg, Brown, & Kan, 2012; McLeod & Shanahan, 1996).

LGC modeling uses a set of observed repeated measures to estimate “an unobserved growth trajectory that gave rise to the repeated measures,” (Bollen & Curran, 2006, p. 34). In other words, a primary assumption of LGC modeling is that development or growth is characterized by an underlying latent trajectory, which varies across time and individuals, and can be measured by two latent factors that describe the growth trajectory (i.e., latent intercepts and latent slopes) (Goldberg & Carlson, 2014). This modeling technique allows each case (i) to have a unique intercept and slope to describe the path of a variable over time (t) (Bollen & Curran, 2006). The latent intercept (α_i), or initial starting value of the growth trajectory, is the mean value of an outcome at the beginning of the growth curve (time zero). This parameter is estimated through repeated measures and expressed through means and variance, which exert a

constant influence on the growth curve trajectory over time. In a structural equation model (SEM) framework, values of the latent intercept are fixed at values of 1.0 across all time points, assuming that the starting point of a trajectory equally influences all repeated measures across all time points. The latent slope, (β_i), represents the mean rate of growth of an outcome for a one-unit increase in time. This parameter is estimated through repeated measures and expressed through means and variance, which is considered a function of the underlying latent trajectory and intercept. For a growth trajectory with five waves of data that are measured at one-year intervals, the value of time trend variable (λ_t) is constant and λ_t is fixed with linear values (i.e., $\lambda_t = 0, 1, 2, 3, 4$). For developmental trajectories that take on a non-linear shape, modeling strategies may include incorporating a quadratic growth factor, a cubic growth factor, or freely estimating factor loadings (i.e., values of λ_t).

Given that all key outcome variables (e.g., children's externalizing and internalizing behavior problems), predictor variables (e.g., supportive couple relationships and supportive coparenting relationships), and the intermediary variable (e.g., maternal harsh parenting) in this study are best conceptualized by latent growth trajectories, parallel process LGC analyses with regression among intercepts and slopes were used to conduct analyses. *Parallel process LGC modeling* is defined as the modeling of two or more growth trajectories, which are measured at the same time points and linked together by regressing or correlating latent intercepts and/or latent slopes between or among trajectories (Kaplan, 2009). Such an approach is often taken when covariates themselves are best conceptualized as developmental processes, which take on distinct growth trajectories (e.g., Adler-Baeder et al., 2018; McCarty et al., 2013).

Unconditional latent growth curve models (RQ1 RQ2 RQ3). Unconditional latent curve models describe the trajectory of repeated measures by summarizing patterns of change

through latent intercepts and latent slopes, which do not include explanatory variables (Bollen & Curran, 2006). A set of unconditional LGC models were run for (a) couple supportiveness, (b) coparenting supportiveness, (c) children’s externalizing behavior problems, (d) children’s internalizing behavior problems, and (e) maternal harsh parenting behaviors. Unconditional models were run to establish functional forms (e.g., linear, quadratic, non-linear) and growth factors (i.e., latent intercepts and latent slopes) for all growth trajectories. As a first step to modeling unconditional LGCs, all were fit with a linear time trend, which was subsequently adjusted if model fits were poor. For LGCs that took on non-linear shapes, coding strategies for freely estimated models included either (a) setting the first parameter to zero (i.e., $\lambda_1 = 0$), the second parameter to one (i.e., $\lambda_2 = 1$), and freely estimating the remaining three parameters (e.g., $\lambda_3 = *$, $\lambda_4 = *$, $\lambda_5 = *$) or (b) setting the first parameter to zero (i.e., $\lambda_1 = 0$), the last parameter to one (e.g., $\lambda_5 = 1$), and freely estimating the middle three parameters (e.g., $\lambda_2 = *$, $\lambda_3 = *$, $\lambda_4 = *$). Importantly, in freely estimated models, values of the slope factor (β_1) no longer take on the mean rate of change in y for a 1-unit increase in time. Rather, slopes of freely estimated models represent the total proportion of change between time points set to one and zero (i.e., $\lambda_t = 0$ and $\lambda_t = 1$). For all freely estimated models, the average rate of change in y between each survey period was calculated by hand using basic descriptive statistics from freely estimated unconditional growth models. For endogenous variables (e.g., children’s behavioral trajectories and maternal harsh parenting behaviors), unconditional models also established whether individual differences existed in intercepts and slopes, which is required for the inclusion of explanatory variables.

The level-1 trajectory equation for an unconditional LGC model is

$$y_{it} = \alpha_i + \lambda_t \beta_1 + \varepsilon_{it} \tag{4.1}$$

where y_{it} is the value of the dependent variable y for the i^{th} case at time t , α_i and β_i are random intercepts and random slopes (respectively) for case i , and ε_{it} is the disturbance associated with y_{it} . Each case (i) has a unique intercept and slope to describe the trajectory of a variable over time (t), which is captured by indexing latent intercepts (α_i) and latent slopes (β_i) by each case, which differ across all cases in the sample n . λ_t is a trend variable with a common coding of $\lambda_1 = 0$ and $\lambda_2 = 1$, and remaining values of λ_t being incorporated as linear or nonlinear (e.g., quadratic, cubic, or freely estimated) growth factors. The level 2 equation for an unconditional model is

Level 2

$$\alpha_i = \mu_\alpha + \zeta_{\alpha i} \quad (4.2)$$

$$\beta_i = \mu_\beta + \zeta_{\beta i} \quad (4.3)$$

where α_i is a latent construct of the mean intercept for all cases in the sample, with its own unique intercept (μ_α) and error term ($\zeta_{\alpha i}$), which represents individual differences in the intercept. β_i is a latent construct of the mean slopes for all cases in the sample, with its own unique intercept (μ_β) and error term ($\zeta_{\beta i}$), which represents individual differences in the slope. Figure 1 shows a picture of an unconditional LGC model with five repeated measures (Bollen & Curran, 2006).

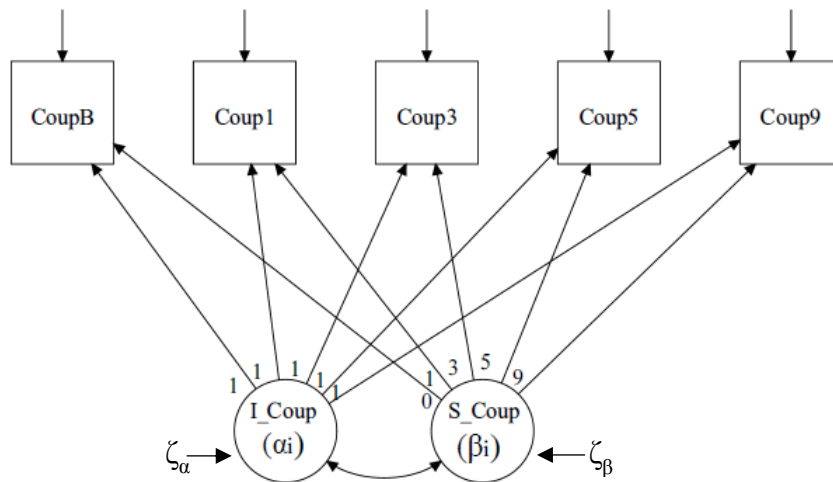


Figure 1. An unconditional LGC model for couple supportiveness with latent intercept and slopes (i.e., I_Coup [α_i] and S_Coup [β_i] respectively) with error terms ζ_α and ζ_β (respectively), and five repeated measures. Time trend (i.e., λ_t) has linear coding (i.e., 0, 1, 3, 5, 9).

Mediation models: Testing direct and indirect pathways with parallel process LGC models (RQ4). This study tested whether growth factors (i.e., intercepts and slopes) of maternal harsh parenting behaviors were indirect pathways through which (a) growth factors of supportive couple relationship trajectories linked to growth factors of children’s externalizing trajectories, (b) growth factors of supportive couple relationship trajectories linked to growth factors of children’s internalizing trajectories, (c) growth factors of supportive coparenting relationship trajectories linked to growth factors of children’s externalizing trajectories, and (d) growth factors of supportive coparenting relationship trajectories linked to growth factors of children’s internalizing trajectories. Hence, four separate models tested whether trajectories of supportive parental relationships directly influenced children’s behavioral trajectories, or whether such influences were indirectly channeled through trajectories of harsh parenting behaviors (RQ4).

Testing for intermediary variables (i.e., mediation) helps researchers to identify pathways through which an independent variable, X , (e.g., couple and coparenting supportiveness) may link to dependent variable, Y , (e.g., children's emotional and behavioral development). As such, an intermediary or mediating variable, M , (e.g., maternal harsh parenting behaviors) is an intervening variable in a pathway from X to Y , that may fully or partially transmit influences of independent variable, X , onto dependent variable, Y (Hayes, 2009; von Soest & Hagtvet, 2011). Theoretical foundations and analytic guidelines for mediation remain a topic of discourse in quantitative methodologies, with diverse and divergent positions on the topic (Hayes & Scharkow, 2013; Mathieu & Taylor, 2006). To assess direct and indirect effects for this study, Baron and Kenny's approach (1986) and Sobel Tests (Sobel, 1982, 1986) with bias-corrected bootstrapped confidence intervals (CIs) were used as preliminary and final steps (respectively) to answer questions proposed by this dissertation.

Preliminary mediation analyses: Testing direct pathways. A sequential set of "direct effects" regression models were run to examine the magnitude and strength of associations between individual pairs of variables. These direct effects models were used to inform the development of more complex models, which tested direct and indirect pathways among multiple variables. Figure 2 and Figure 3 display this basic mediation framework, which includes identifying significant direct effects from X to Y (path $c \neq 0$), identifying significant direct effects from X to M (path $a \neq 0$), identifying significant direct effects from M to Y (path $b \neq 0$), and finally, testing the effect of X on Y in the presence of M (path c') (Baron & Kenny, 1986). c' is the direct effect of X on Y , while the product of a and b is the indirect effect of X on Y through M , where $c = c' + ab$ (Hayes, 2009).

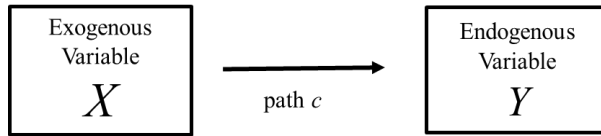


Figure 2. Step one for testing mediation (Baron & Kenny, 1986).

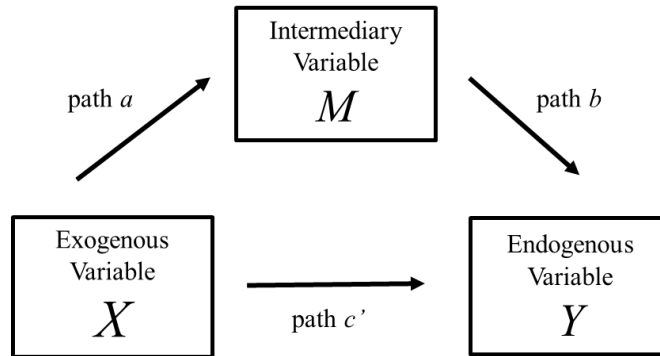


Figure 3. Steps two through four for testing mediation (Baron & Kenny, 1986).

For all four hypothesized indirect effects models, the first three steps of basic mediation analyses were conducted using parallel process LGC models with time invariant covariates (TIC) and time-varying covariates (TVC), which resulted in a total of eight direct effects models. For example, to test whether couple supportiveness was directly associated with children's externalizing behavior problems, parallel process LGC models with regression among intercepts and slopes for dependent variable y (e.g., children's externalizing behavior problems) and predictor variable w (e.g., couple supportiveness), with a time-varying covariate q_{it} , (e.g., maternal depression) and time invariant covariate x_i , (e.g., child gender) was conducted. This set of parallel process LGC models results in the following level 1 equations

Level 1: Endogenous variable y

$$y_{it} = \alpha_{iy} + \beta_{iy}\lambda_t + \gamma_t q_{it} + \varepsilon_{yit} \quad (4.4)$$

Level 1: Exogenous variable w

$$w_{it} = \alpha_{iw} + \beta_{iw}\lambda_t + \varepsilon_{wit} \quad (4.5)$$

which displays the direct influence of time-specific variable q (e.g., maternal depression) with covariate coefficient γ_t on the trajectory of outcome y (e.g., children's externalizing behavior problems) (4.4), in the presence of growth process for w (e.g., couple supportiveness) (4.5). In equation 4.4, the repeated measures of y (e.g., children's externalizing behavior problems) are regressed on repeated measures of time-varying covariate q (e.g., maternal depression). The level 2 equations show random intercepts and slopes of y (e.g., children's externalizing behavior problems) regressed on time-invariant covariate x_i (e.g., child gender) with covariates coefficient γ_{ay} and γ_{by} , respectively. In addition, mean structures of y are regressed on latent intercepts (α_{iw}) and slopes (β_{iw}) of w (e.g., couple supportiveness), with coefficients δ_{aw} and δ_{bw} , respectively.

Level 2: Endogenous variable y

$$\alpha_{iy} = \mu_{ay} + \gamma_{ay} x_i + \delta_{aw1} \alpha_{iw1} + \delta_{bw1} \beta_{iw1} + \zeta_{ayi} \quad (4.6)$$

$$\beta_{iy} = \mu_{by} + \gamma_{by} x_i + \delta_{aw2} \alpha_{iw2} + \delta_{bw2} \beta_{iw2} + \zeta_{byi} \quad (4.7)$$

Equations predicting random intercepts (4.6) and random slopes (4.7) of y are in the presence of equations for latent intercepts (4.8) and latent slopes (4.9) for growth processes of the predictor variable w

Level 2: Exogenous variable w

$$\alpha_{iw} = \mu_{aw} + \zeta_{awi} \quad (4.8)$$

$$\beta_{iw} = \mu_{bw} + \zeta_{bwi} \quad (4.9)$$

Figure 4 shows a pictorial representation of two parallel process growth curves, with regression among intercepts and slopes, in addition to time invariant and time-vary covariates (Bollen & Curran, 2006).

Final analyses: Mediation models with Sobel Tests and bias-corrected bootstrapped CIs. Testing for direct associations between individual pairs of variables provided initial evidence for plausible pathways of indirect effects. Final mediation models tested for the effect of X on Y in the presence of M ; these models also used the Sobel Test with bias-corrected bootstrapped standard errors and asymmetric confidence intervals (CIs) to empirically test for direct and indirect effects among variables. The Sobel Test (Sobel, 1982, 1986) uses the ratio of ab to the estimate of the standard error of ab to test the null hypothesis against the probability that the alternative hypothesis, (i.e., indirect effect) is observed in the sample distribution (Hayes, 2009). However, standard errors of the traditional significance test (i.e., Student's t -test) may not be accurate, given its assumptions of normality in context of the sampling distribution of ab , which is typically asymmetric with nonzero skewness and kurtosis (Bollen & Stine, 1990; Hayes, 2009; Stone & Sobel, 1990). A solution for testing mediation in the presence of asymmetric sampling distributions is to use bootstrapped standard errors with bias-corrected, asymmetric CIs.

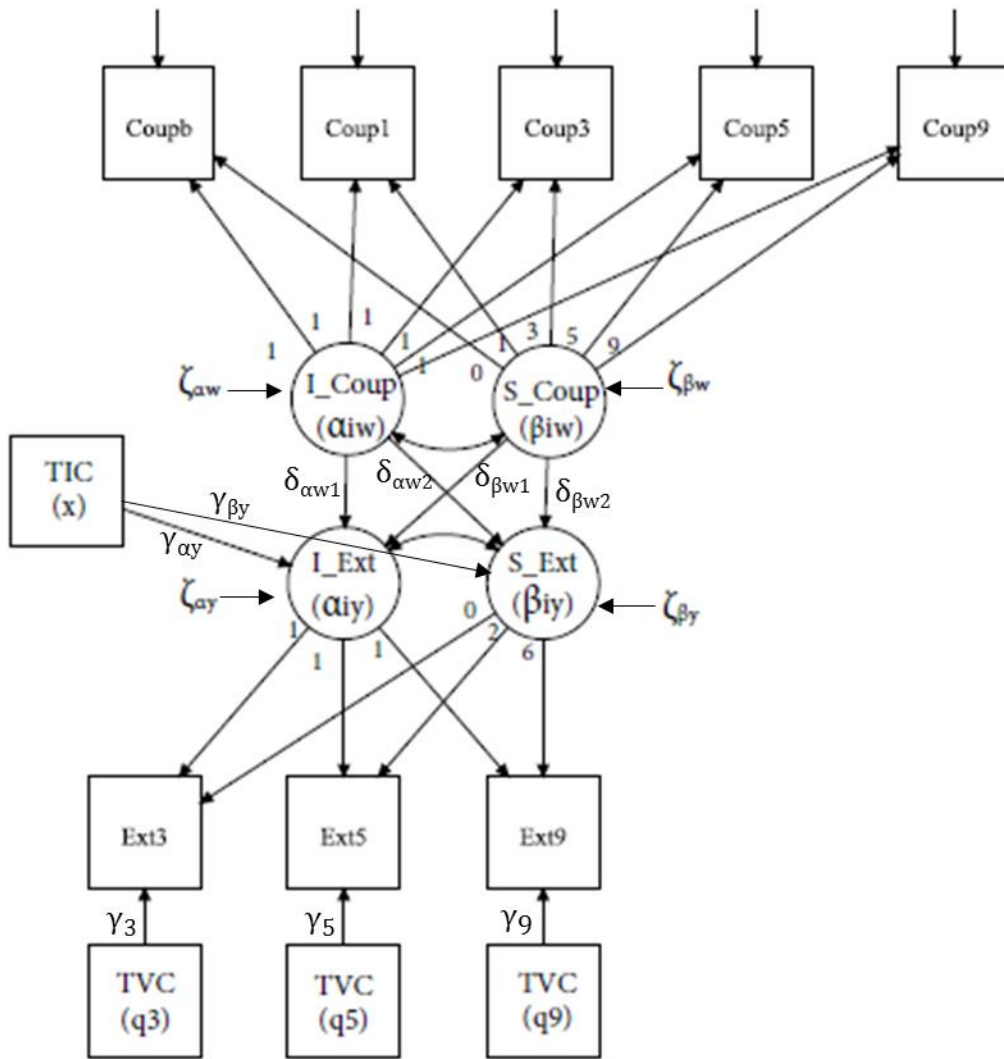


Figure 4. Two parallel process growth curves. Intercepts and slopes of supportive couple relationship (i.e., I_Coup [α_{iw}] and S_Coup [β_{iw}], respectively) with error terms $\zeta_{\alpha w}$ and $\zeta_{\beta w}$ predicting intercepts and slopes children's externalizing symptoms (i.e., I_Ext [α_{iy}] and S_Ext [β_{iy}], respectively), with error terms $\zeta_{\alpha y}$ and $\zeta_{\beta y}$, time invariant covariate (TIC [x]), and time-vary covariate (TVC [q3], TVC [q5], TVC[q9]).

In context testing indirect effects, bootstrapping is the processes of creating an empirical sampling distribution of the indirect effect by resampling cases found in the sample n by a predetermined number of draws (typically 1,000 to 5,000) and replacing them back in sample n for the next draw (Hayes, 2009; MacKinnon, Lockwood, & Williams, 2004). A bias-corrected bootstrap method corrects for bias in the central tendency of the estimate by adjusting upper and lower confidence intervals in context of “the z score of the value obtained from the proportion of bootstrap samples below the original estimate in the total number of bootstrap samples taken,” (Mackinnon et al., 2004, p.115).

To test for indirect effects with dependent variable y (e.g., children’s externalizing behavior problems), predictor variable w , (e.g., couple supportiveness), an intermediary pathway m , (e.g., maternal harsh parenting), a time-varying covariate q_{it} , (e.g., maternal depression) and time invariant covariate x_i , (e.g., maternal race/ ethnicity) the level 1 trajectory equations include

Level 1: Endogenous variable y

$$y_{it} = \alpha_{iy} + \beta_{iy}\lambda_t + \gamma_t q_{ity} + \varepsilon_{yit} \quad (4.10)$$

Level 1: Exogenous variable w

$$w_{it} = \alpha_{iw} + \beta_{iw}\lambda_t + \varepsilon_{wit} \quad (4.11)$$

Level 1: Intermediary variable m

$$m_{it} = \alpha_{im} + \beta_{im}\lambda_t + \gamma_t q_{itm} + \varepsilon_{mit} \quad (4.12)$$

Trajectory equations for y and w remain the same (4.10 – 4.11) and a third level 1 trajectory equation (4.12) is added for the intermediary variable m . m_{it} is function of TVC q with covariate coefficient γ , an individually varying intercept (α_{im}), an individually varying slope multiplied by time ($\beta_{im}\lambda_t$), and a time-specific error term, ε_{mit} .

The level 2 equations significantly build off those from conditional models

Level 2: Endogenous variable y

$$\alpha_{iy} = \mu_{ay} + \gamma_{ay} x_{ia} + \delta_{aw2} \alpha_{iw2} + \eta_{am2} \alpha_{im2} + \zeta_{ayi} \quad (4.13)$$

$$\beta_{iy} = \mu_{\beta y} + \gamma_{\beta y} x_{i\beta} + \delta_{aw3} \alpha_{iw3} + \eta_{am1} \alpha_{im1} + \zeta_{\beta yi} \quad (4.14)$$

In equation 4.13, α_{iy} is predicted by the sum of its own unique intercept (μ_{ay}), time invariant covariate (x_{ia}) with coefficient γ_{ay} , mean intercepts of w (α_{iw2}) with covariate coefficient δ_{aw2} , the random intercepts of intermediary variable m (α_{im2}) with covariate coefficient η_{am2} , and a unique error term (ζ_{ayi}), which represents individual differences in the intercept. A near similar equation (4.14) is presented for β_{iy} , which is predicted by the sum of its own unique intercept ($\mu_{\beta y}$), time invariant covariate ($x_{i\beta}$) with coefficient $\gamma_{\beta y}$, mean intercepts of w (α_{iw3}) with covariate coefficient δ_{aw3} , the random intercept of intermediary variable m (α_{im1}) with covariate coefficient η_{am1} , and a unique error term ($\zeta_{\beta yi}$), which represents individual differences in the slope.

The equations predicting latent intercepts (4.15) and slopes (4.16) for predictor w remain the same, which are written

Level 2: Exogenous variable w

$$\alpha_{iw} = \mu_{aw} + \zeta_{awi} \quad (4.15)$$

$$\beta_{iw} = \mu_{\beta w} + \zeta_{\beta wi} \quad (4.16)$$

Equations 4.17 and 4.18 predict latent intercepts of m (α_{im}) and latent slopes of m (β_{im})

Level 2: Intermediary variable m

$$\alpha_{im} = \mu_{am} + \gamma_{am} x_{im} + \delta_{aw1} \alpha_{iw1} + \delta_{\beta w} \beta_{iw} + \zeta_{ami} \quad (4.17)$$

$$\beta_{im} = \mu_{\beta m} + \gamma_{\beta m} x_{im} + \zeta_{\beta mi} \quad (4.18)$$

where μ_{am} and $\mu_{\beta m}$ are the mean intercepts and slopes (respectively) when all other covariates are zero; x_{im} is a time invariant covariate with coefficients γ_{am} and $\gamma_{\beta m}$, and ζ_{am} and $\zeta_{\beta mi}$ are

disturbance terms associated, which captures individual differences in intercepts (α_{im}) and (β_{im}) slopes. Mediational processes are indexed by regressing α_{im} and β_{im} on random intercepts of predictor w (α_{iw1}) with covariate coefficient $\delta_{\alpha w1}$, and random slopes of predictor w (β_{iw}) with covariate coefficient $\delta_{\beta w}$. Figure 5 shows a pictorial representation of three parallel process growth curves with mediation, in addition to one time invariant and one time-varying covariate (Bollen & Curran, 2006).

Data analyses. SPSS 19 (IBM Corp., 2010) was used for data preparation. All direct effects and mediation analyses were run using Mplus V.8 (Muthén & Muthén, 2018) with full information maximum likelihood (FIML), which handles missing data by computing a case-wise likelihood function using all observable (i.e., non-missing) variables for each case (Enders & Bandalos, 2001). Modification indices were used to increase model fits (where theoretically appropriate), which included correlating repeated measures within the same latent construct across sample waves. For example, couple supportiveness at Y1 was commonly correlated with couple supportive at Y3, given that both measures used precisely the same set of items and would theoretically contain very similar measurement error. For mediation analyses, bootstrapped standard errors were based off a sample of 1,000 draws with resampling replacement and bias-corrected CIs, allowing indirect effects to have a non-normal sampling distribution and non-symmetric confidence intervals. (Kenny, 2018; Muthén & Muthén, 2014).

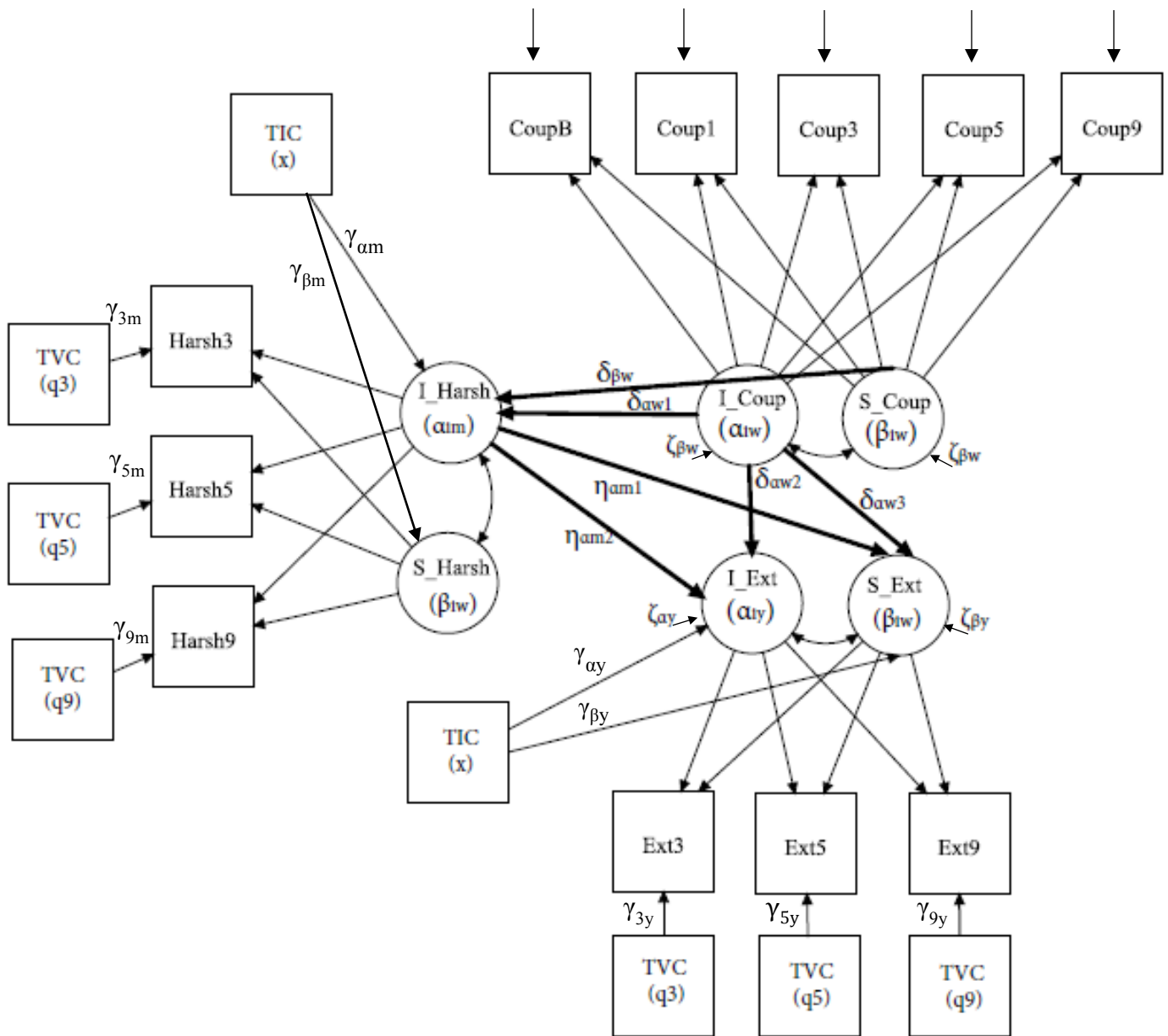


Figure 5. Three parallel process growth curves with indirect effects. Intercept (I_Coup) and slope (S_Coup) of couple supportiveness directly predict intercept of harsh parenting (I_Harsh) and intercept (I_Ext) and slope (S_Ext) of externalizing behaviors. Harsh parenting intercept (I_Harsh) is an indirect pathway between I_Coup and I_Ext and S_Ext. Model includes time invariant covariates (TICs) and time-varying covariates (TVCs).

Chapter Five: Results

Descriptive Statistics

Descriptive statistics for time-varying and time invariant covariates are presented in Table 1. On average, mothers were younger ($M = 18.2$, $SD = 1.00$) than their children's biological fathers ($M = 21.5$, $SD = 3.70$) and had lower reported household incomes across all time points. For racial and ethnic backgrounds, the largest percentage of teenage mothers identified as non-Hispanic black (53.8%), followed by those who identified as Hispanic/ Latina (27.4%), White/ Caucasian (15.9%), and mothers who identified with other racial/ ethnic backgrounds (2.8%). Fathers reported similar backgrounds with 54.9% identifying as non-Hispanic black, 28.5% identifying as Hispanic/ Latino, 11.9% identifying as White/ Caucasian, and 4.1% identifying with a different racial/ ethnic background. These trends are substantively different from those reported at the national level in 2015, which had highest rates of teenage pregnancy among Hispanic/ Latina women (34.9%) followed by non-Hispanic Black/ African-American women (31.8%) (Martin et al., 2017). For mother's mental health, rates of depression peaked at Y3 (20.3%), however dropped down at Y5 (15.9%) and remained at similar levels at Y9 (18.4%). Table 2 presents means and standard deviations for repeated measures associated with parallel process LGC models. Table 3 displays correlations among key latent constructs (i.e., intercepts and slopes) of growth trajectories for all exogenous, endogenous, and intermediary variables. Table 4 displays correlations among time invariant covariates, time-varying covariates, and repeated measures for all parallel process LGC models.

Table 1. Sample Descriptives for Covariates

<i>Time Invariant Covariates</i>	N	Mean or %	SD	Range
Maternal age (years) ¹	773	18.21	1.00	15-19
Mothers' race/ ethnicity				
Black/ African-American	416	53.8	–	–
Hispanic/ Latina	212	27.4	–	–
White/ Caucasian	123	15.9	–	–
Other	22	2.8		
Fathers' age (years)	613	21.46	3.70	15-47
Fathers' race/ ethnicity				
Black/ African-American	424	54.9	–	–
Hispanic/ Latino	220	28.5	–	–
White/ Caucasian	92	11.9	–	–
Other	32	4.1	–	–
Child sex				
Male	420	54.3	–	–
Female	353	45.7	–	–
Child difficult temperament	736	2.95	1.16	1-5
<i>Time-varying Covariates</i>	N	Mean or %	SD	Range
Maternal depression - CIDI (Y1)				
Yes	108	14.7	–	0-1
No	628	85.3	–	0-1
Maternal depression - CIDI (Y3)				
Yes	147	20.3	–	0-1
No	576	79.7	–	0-1
Maternal Depression - CIDI (Y5)				
Yes	113	15.9	–	0-1
No	599	84.1	–	0-1
Maternal Depression - CIDI (Y9)				
Yes	110	18.4	–	0-1
No	487	81.6	–	0-1
Mothers' household income (B)	773	\$24,545	\$23,894	\$0 - \$127,000
Mothers' household income (Y1)	736	\$22,313	\$23,228	\$0 - \$180,000
Mothers' household income (Y3)	724	\$22,665	\$23,530	\$0 - \$241,800
Mothers' household income (Y5)	712	\$24,529	\$22,351	\$0 - \$160,000
Mothers' household income (Y9)	595	\$31,391	\$27,650	\$0 - \$250,000
Fathers' household income (B)	613	\$28,850	\$31,033	\$0 - \$311,600
Fathers' household income (Y1)	545	\$26,927	\$26,766	\$0 - \$250,000
Fathers' household income (Y3)	521	\$32,747	\$34,234	\$0 - \$450,000
Fathers' household income (Y5)	490	\$34,016	\$31,432	\$0 - \$250,410
Fathers' household income (Y9)	393	\$37,382	\$28,398	\$0 - \$169,000

¹Final models did not include maternal age as a covariate; CIDI = composite international diagnostic interview

Table 2. Sample Descriptives for Repeated Measures of Parallel Process LGC Models

<i>Repeated measures</i>	N	Mean or %	SD	Range
Couple supportiveness				
CS (B)	751	2.55	0.48	1-3
CS (Y1)	730	2.15	0.78	1-3
CS (Y3)	709	2.20	0.65	1-3
CS (Y5)	706	1.81	0.82	1-3
CS (Y9)	581	1.40	0.72	1-3
Coparenting supportiveness				
CPS (Y1)	637	2.41	0.71	1-3
CPS (Y3)	708	2.28	0.71	1-3
CPS (Y5)	703	2.16	0.76	1-3
CPS (Y9)	595	2.00	0.80	1-3
Maternal harsh parenting behaviors				
HPB (Y3)	398	0.11	0.24	0-1
HPB (Y5)	405	0.12	0.24	0-1
HPB (Y9)	589	0.03	0.13	0-1
Child Behavior Checklist - Externalizing				
EBC (Y3)	571	0.68	0.36	0-2
EBC (Y5)	538	0.45	0.27	0-2
EBC (Y9)	583	0.20	0.20	0-2
Child Behavior Checklist - Internalizing				
IBC (Y3)	571	0.43	0.25	0-2
IBC (Y5)	538	0.27	0.20	0-2
IBC (Y9)	583	0.16	0.18	0-2

CS = couple supportiveness; CPS = coparenting supportiveness; HPB = harsh parenting behaviors; EBC = externalizing behavioral challenges; IBC = internalizing behavioral challenges.

Table 3. Correlations Among Latent Variables¹

	1.	2.	3.	4.	5.	6.	7.	8.
1. ICoup	–							
2. SCoup	-.267**	–						
3. ICOPAR	.746***	.111	–					
4. SCOPAR	.188	.703~	.001	–				
5. IEXT	.277***	.012	-.244***	.019	–			
6. SEXT	.365***	-.128	.27**	-.094	-.82***	–		
7. IINT	-.300***	.16	-.173*	.076	.73***	-.608***	–	
8. SINT	.291**	-.16	.144	-.146	-.47***	.578***	-.752***	–
9. IHARSH	-.225**	-.012	-.144~	-.041	.428***	-.204	.256*	-.216

ICoup = intercept of couple supportiveness; SCoup = slope of couple supportiveness; ICOPAR = intercept of coparenting supportiveness; SCOPAR = slope of coparenting supportiveness; IEXT = intercept of externalizing behavioral challenges; SEXT = slope of externalizing behavioral challenges; IINT = intercept of internalizing behavioral challenges; SINT = slope of internalizing behavioral

¹SHARSH (i.e., slope of harsh parenting behaviors) was not included because variance structures were constrained to zero.

~ p < .10; *p < .05; **p < .01; ***p < .001

Table 4.

Correlations among covariates, and repeated measures for exogenous, endogenous, and mediator variables.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. MAGE	–												
2. MRACE	-.026	–											
3. FAGE	.218**	-.043	–										
4. FRACE	-.041	.577**	-.065	–									
5. CGEN	-.013	-.005	-.000	-.005	–								
6. CTEMP	-.056	.029	.033	.000	.044	–							
7. CS B	.082*	-.016	.055	-.006	.049	-.062~	–						
8. CS Y1	.126**	.023	.038	.070~	-.029	-.055	.433***	–					
9. CS Y3	.108**	.028	.051	.032	.046	-.103**	.374***	.541**	–				
10. CS Y5	.114**	.048	-.016	.022	-.014	-.033	.317***	.492***	.521***	–			
11. CS Y9	.102*	.038	.026	.060	.024	-.074~	.189***	.311***	.344***	.490***	–		
12. CPS Y1	.074~	.008	.034	.050	-.019	-.097*	.385***	.705***	.532***	.386***	.187***	–	
13. CPS Y3	.092*	.040	.058	.028	.027	-.097*	.396***	.554***	.677***	.537***	.347***	.618***	–
14. CPS Y5	.123**	.059	-.004	-.001	-.064~	-.024	.322***	.413***	.513***	.693***	.392***	.446***	.616***
15. CPS Y9	.074~	.047	-.017	-.025	-.062	-.053	.240***	.357***	.355***	.512***	.547***	.306***	.482***
16. HPB Y3	.027	-.064	-.055	-.09~	.017	.113*	-.086~	-.113*	-.131**	-.048	-.034	-.113*	-.140*
17. HPB Y5	-.112*	.061	-.042	-.062	.050	.097~	-.094~	-.129*	-.120*	-.087~	-.114*	-.090	-.061
18. HPB Y9	-.019	.019	.003	.018	.018	.031	-.085*	-.059	-.048	-.040	-.065	-.039	.014
19. EBC Y3	-.002	.001	.020	-.023	.059	.293***	-.163***	-.189***	-.182***	-.070	-.090~	-.165***	-.168***
20. EBC Y5	.001	-.027	-.089*	-.015	.077~	.252***	-.144**	-.147**	-.143**	-.129**	-.090~	-.151**	-.157**
21. EBC Y9	-.003	-.048	.046	-.026	.114*	.162***	-.006	-.059	-.042	-.092*	-.060	.002	-.081~
22. IBC Y3	-.063	.055	.048	.024	.051	.211***	-.180***	-.180***	-.125**	-.051	-.007	-.121**	-.094**
23. IBC Y5	-.009	.122**	-.032	.109*	.030	.145**	-.109**	-.083~	-.062	-.076~	.037	-.099*	-.049
24. IBC Y9	-.063	.040	.005	.047	.004	.087*	-.056	-.034	-.037	-.068	.031	-.003	-.082~
25. DEP Y1	-.046	-.043	.044	-.060	-.004	.129**	-.039	-.081*	-.117**	-.077*	-.044	-.097*	-.079*
26. DEP Y3	.034	-.038	.066	-.025	-.012	.068~	-.120**	-.067~	-.122**	-.089*	-.050	-.075~	-.066~
27. DEP Y5	-.057	-.070	-.028	-.10*	.032	.067~	-.043	-.016	-.073	-.121**	-.08~	.013	-.005
28. DEP Y9	.019	-.044	-.002	-.067	.068	.042	-.081*	-.052	-.088*	-.084*	-.124**	-.060	-.089*
29. FINC B	.032	-.003	.006	.042	.016	-.033	.057	.063	.025	.039	.108*	.077	.091*
30. FINC Y1	.015	-.073	.047	-.10*	.045	-.079~	.065	.061	.025	-.012	.021	.075	.099*
31. FINC Y3	.023	-.012	.028	.023	.024	-.028	.008	.026	-.022	-.019	.061	-.020	.039
32. FINC Y5	.052	-.060	.038	-.012	.016	-.063	.128**	.156**	.045~	.006	.116*	.133**	.119*
33. FINC Y9	.117*	-.036	-.015	.010	.012	-.114*	.057	.053	.113*	.081	.182**	.011	.161**
34. MINC B	.054	.051	-.017	-.045	.011	-.054	.076*	.104**	.036	.054	.099*	.042	.062
35. MINC Y1	.023	-.165***	-.067	-.041	-.050	-.08*	.088*	.130**	.067~	.040	.034	.053	.070~
36. MINC Y3	.055	-.078*	.032	-.046	-.053	-.115**	.097**	.122**	.035	.082*	.049	.041	.062
37. MINC Y5	.143***	-.141**	.061	-.025	-.008	-.130***	.065~	.131**	.092*	.129**	.123**	.084*	.109**
38. MINC Y9	.035	-.075	-.044	-.008	.025	-.110**	.105*	.101*	.017	.035	.106*	.073	.083~

MAGE = mother's age; MRACE = mother's race/ ethnicity; FAGE = father's age; FRACE = father's race/ ethnicity; CGEN = child's gender; CDTEMP = child's difficult temperament; CS = couple supportiveness; CPS = coparenting supportiveness; HPB = harsh parenting behaviors; EBC = externalizing behavioral challenges; IBC = internalizing behavioral challenges; DEP = depression; MINC = mothers' household income; FINC = father's household income.

~p <.10; *p <.05; **p <.01; ***p <.001

Table 4. (continued)

Correlations among covariates, and repeated measures for exogenous, endogenous, and mediator variables.

	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. MAGE												
2. MRACE												
3. FAGE												
4. FRACE												
5. CGEN												
6. CTEMP												
7. CS B												
8. CS Y1												
9. CS Y3												
10. CS Y5												
11. CS Y9												
12. CPS Y1												
13. CPS Y3												
14. CPS Y5	–											
15. CPS Y9	.631***	–										
16. HPB Y3	-.041	-.095	–									
17. HPB Y5	-.099*	-.041	.210***	–								
18. HPB Y9	-.083	-.050	.045	.287***	–							
19. EBC Y3	-.073~	-.101*	.211***	.150**	.128*	–						
20. EBC Y5	-.143**	-.135**	.129**	.257***	.178**	.343***	–					
21. EBC Y9	-.096*	-.088*	.113*	.202***	.185***	.394***	.492***	–				
22. IBC Y3	-.058	.009	.134**	.024	.086~	.676***	.348***	.244***	–			
23. IBC Y5	-.104*	-.059	.036	.042	.046	.350***	.578***	.313***	.396***	–		
24. IBC Y9	-.044	-.035	.120*	.016	.025	.237***	.241***	.689***	.250***	.360***	–	
25. DEP Y1	-.063	-.069	.059	.083	.009	.087*	.049	.074~	.061	.037	.114**	–
26. DEP Y3	-.015	.030	.125*	.052	.003	.153***	.091*	.074~	.073~	.056	.047	.289***
27. DEP Y5	-.093*	-.086*	.145**	.138**	.068	.108**	.160***	.100*	.042	.113**	.082~	.203***
28. DEP Y9	-.039	-.070~	.080	.088	.108*	.074	.066	.139**	.026	.039	.117**	.193***
29. FINC B	.037	.047	-.053	-.056	.028	-.101*	-.048	-.008	-.099*	-.075	.006	.010
30. FINC Y1	.097*	.058	-.019	-.093	-.019	-.065	-.151**	-.119*	-.082~	-.064	-.059	-.065
31. FINC Y3	-.013	.036	-.106~	-.085	.002	-.031	-.075	-.044	-.077	.005	-.069	.026
32. FINC Y5	.103*	.138**	-.100	-.070	-.032	-.108*	-.107*	-.093~	-.084	-.107*	-.107*	-.042
33. FINC Y9	.135**	.124*	-.130	-.174**	-.014	-.097~	-.092	-.171**	-.137*	-.120*	-.151**	-.001
34. MINC B	.097**	.102*	.024	-.099*	.038	-.074~	-.094*	-.055	-.094*	-.099*	-.013	-.019
35. MINC Y1	.026	.036	-.064	-.133**	-.029	-.095*	-.110*	-.112*	-.150***	-.075~	-.034	-.005
36. MINC Y3	.061	.062	-.130**	-.072	-.015	-.100*	-.150**	-.094*	-.175***	-.142**	-.028	-.006
37. MINC Y5	.105**	.072~	-.116*	-.136**	.023	-.150***	-.185***	-.126**	-.171***	-.162***	-.092*	-.066
38. MINC Y9	.022	.027	-.173**	-.116*	.034	-.149**	-.103*	-.074	-.176***	-.056	-.058	-.022

MAGE = mother's age; MRACE = mother's race/ ethnicity; FAGE = father's age; FRACE = father's race/ ethnicity; CGEN = child's gender; CTEMP = child's difficult temperament; CS = couple supportiveness; CPS = coparenting supportiveness; HPB = harsh parenting behaviors; EBC = externalizing behavioral challenges; IBC = internalizing behavioral challenges; DEP = depression; MINC = mothers' household income; FINC = father's household income.

~ p < .10; *p < .05; **p < .01; ***p < .001

Table 4. (continued)

Correlations among covariates, and repeated measures for exogenous, endogenous, and mediator variables.

	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. MAGE												
2. MRACE												
3. FAGE												
4. FRACE												
5. CGEN												
6. CTEMP												
7. CS B												
8. CS Y1												
9. CS Y3												
10. CS Y5												
11. CS Y9												
12. CPS Y1												
13. CPS Y3												
14. CPS Y5	–											
15. CPS Y9	.631***	–										
16. HPB Y3	-.041	-.095	–									
17. HPB Y5	-.099*	-.041	.210***	–								
18. HPB Y9	-.083	-.050	.045	.287***	–							
19. EBC Y3	-.073~	-.101*	.211***	.150**	.128*	–						
20. EBC Y5	-.143**	-.135**	.129**	.257***	.178**	.343***	–					
21. EBC Y9	-.096*	-.088*	.113*	.202***	.185***	.394***	.492***	–				
22. IBC Y3	-.058	.009	.134**	.024	.086~	.676***	.348***	.244***	–			
23. IBC Y5	-.104*	-.059	.036	.042	.046	.350***	.578***	.313***	.396***	–		
24. IBC Y9	-.044	-.035	.120*	.016	.025	.237***	.241***	.689***	.250***	.360***	–	
25. DEP Y1	-.063	-.069	.059	.083	.009	.087*	.049	.074~	.061	.037	.114**	–
26. DEP Y3	-.015	.030	.125*	.052	.003	.153***	.091*	.074~	.073~	.056	.047	.289***
27. DEP Y5	-.093*	-.086*	.145**	.138**	.068	.108**	.160***	.100*	.042	.113**	.082~	.203***
28. DEP Y9	-.039	-.070~	.080	.088	.108*	.074	.066	.139**	.026	.039	.117**	.193***
29. FINC B	.037	.047	-.053	-.056	.028	-.101*	-.048	-.008	-.099*	-.075	.006	.010
30. FINC Y1	.097*	.058	-.019	-.093	-.019	-.065	-.151**	-.119*	-.082~	-.064	-.059	-.065
31. FINC Y3	-.013	.036	-.106~	-.085	.002	-.031	-.075	-.044	-.077	.005	-.069	.026
32. FINC Y5	.103*	.138**	-.100	-.070	-.032	-.108*	-.107*	-.093~	-.084	-.107*	-.107*	-.042
33. FINC Y9	.135***	.124*	-.130	-.174**	-.014	-.097~	-.092	-.171**	-.137*	-.120*	-.151**	-.001
34. MINC B	.097**	.102*	.024	-.099*	.038	-.074~	-.094*	-.055	-.094*	-.099*	-.013	-.019
35. MINC Y1	.026	.036	-.064	-.133**	-.029	-.095*	-.110*	-.112*	-.150***	-.075~	-.034	-.005
36. MINC Y3	.061	.062	-.130**	-.072	-.015	-.100*	-.150**	-.094*	-.175***	-.142**	-.028	-.006
37. MINC Y5	.105**	.072~	-.116*	-.136**	.023	-.150***	-.185***	-.126**	-.171***	-.162***	-.092*	-.066
38. MINC Y9	.022	.027	-.173**	-.116*	.034	-.149**	-.103*	-.074	-.176***	-.056	-.058	-.022

MAGE = mother's age; MRACE = mother's race/ ethnicity; FAGE = father's age; FRACE = father's race/ ethnicity; CGEN = child's gender; CTEMP = child's difficult temperament; CS = couple supportiveness; CPS = coparenting supportiveness; HPB = harsh parenting behaviors; EBC = externalizing behavioral challenges; IBC = internalizing behavioral challenges; DEP = depression; MINC = mothers' household income; FINC = father's household income.

~p <.10; *p <.05; **p <.01; ***p <.001

Unconditional Latent Growth Curve Models (RQ1, RQ2, RQ3)

Unconditional GC models were run to identify functional forms, mean growth trajectories, and variance components for exogenous variables (i.e., supportive couple relationships and supportive coparenting relationship) endogenous variables (i.e., children’s externalizing and internalizing behavior challenges), and the intermediary variable (i.e., maternal harsh parenting) (Table 5), all of which had good to excellent fit statistics (Table 5a). Variance components of unconditional models identified whether individuals differed in their initial levels or rates of change in latent constructs, providing evidence for the addition of covariates where necessary.

Table 5a.
Goodness of Fit

Unconditional Latent Growth Curve Models							
	N	Chi-square	<i>p</i> value	(df)	RMSEA	CFI/ TLI	SRMR
Couple supportiveness ¹	765	7.56	>.01	2	0.06	0.99/ 0.98	0.02
Coparent supportiveness ²	759	6.34	>.01	2	0.05	1.00/ 0.99	0.02
Externalizing behavioral symptoms ³	731	0.00	<.001	0	<.001	1.00/ 1.00	<.001
Internalizing behavioral symptoms ³	731	0.00	<.001	0	<.001	1.00/ 1.00	<.001
Harsh parenting behaviors ⁴	666	0.47	>.05	1	<.001	1.00/ 1.00	0.01

¹Non-linear GC with first loading set to 0 and second loading set to 1, with remaining freely estimated

²Linear growth curve

³ Non-linear GC with middle loading freely estimated; with zero (*df*) model fit cannot be assessed

⁴ Non-linear GC with middle loading freely estimated

Table 5.

Unconditional Latent Growth Curve Models (unstandardized)		
	Means	Variance
Couple relationship quality ^b		
Intercept	2.55***	0.12***
Slope	-0.40***	0.03**
Coparent relationship quality		
Intercept	2.40***	0.35***
Slope	-0.05***	0.01***
Externalizing behavioral symptoms ^b		
Intercept	0.67***	0.08***
Slope	-0.48***	0.04***
Internalizing behavioral symptoms ^b		
Intercept	0.43***	0.03***
Slope	-0.27***	0.02*
Harsh parenting behaviors ^b		
Intercept	0.11***	0.01***
Slope	-0.08***	<i>n/a</i> ^a

*<.05, **<.01, ***<.001

^a The variance of the slope factor was constrained to 0, given its small non-significant, negative variance.

^b For LGC models with freely estimated time scores, mean slopes provide the estimate of the total rate of change between the estimated time scores and does not represent the mean rate of change across time.

Couple supportiveness. An initial linear trajectory was fit to couple supportiveness; however fit indices were poor,¹² $\chi^2(4) = 154.45$, $p < .001$, CFI/ TLI = 0.82/ 0.55, RMSEA = 0.22, SRMR = 0.09. After examining the plot of the sample and estimated mean trajectories of couple supportiveness, a freely estimated model was fit to the data to account for a non-linear trajectory. For the freely estimated model, the first slope parameter was set to zero ($\lambda_1 = 0$), the second parameter was set to one ($\lambda_2 = 1$), and the remaining three time scores were freely estimated from the data (i.e., $\lambda_3 = *$, $\lambda_4 = *$, and $\lambda_5 = *$). The freely estimated model had an excellent fit, $\chi^2(2) = 7.56$, $p > .05$, CFI/ TLI = 0.99/ 0.98, RMSEA = 0.06, SRMR = 0.02. There was a significant mean intercept ($M = 2.55$, $SE = 0.02$, $p < .001$) and slope ($M = -0.40$, $SE = 0.03$, $p < .001$), suggesting that on average, at birth couples started with relatively high levels of couple supportiveness (2.55 out of a 1-to-3 scale), which had sharp declines from birth to Y1 follow-ups¹³. Sample estimates for the freely estimated slope parameters were $\lambda_3 = 0.92$, $\lambda_4 = 1.91$, and $\lambda_5 = 2.90$, which are scaled relative to the amount of change as identified in the first two time points, suggesting that teenage parents' couple supportiveness had a non-linear shape with more rapid declines early in their relationship than later in their trajectory (Bollen & Curran, 2006). The variance of mean intercepts ($VAR = 0.12$, $SE = 0.02$, $p < .001$) and mean slopes ($VAR = 0.03$, $SE = 0.01$, $p < .01$) were significant, suggesting that individual couples differed in their couple

¹² Model fit indices include (a) chi-square test of model fit with desired p-values greater than or equal to .05 indicating a good fit; (b) CFI – chi-square comparisons of the target model to the baseline model with desired values greater than or equal to .96, (c) TLI – chi-square comparisons of the target model to the baseline model with desired values greater than or equal to .95, (d) RMSEA – function of chi-square, test of close fit with desired values less than or equal to .05, (e) SRMR – average correlation residuals with desired less than or equal to .07, and (f) WRMR – average weighted residuals with desired values less than or equal to 1.00 (Muthén & Muthén, 2010).

¹³ For an LGC model with freely estimated time scores, the “mean” slope estimate provides the total proportion of change between the estimated time scores and does not represent the mean rate of change in x for a one-unit increase in y . Hence, for this model the “mean” slope is the average rate of change in couple supportiveness between birth and Y1 follow-up.

supportiveness trajectories. A graph of modeled couple supportiveness from birth to Y9 (Figure 6), mean scores at each follow-up (Table 6), and average rates of change (i.e., slopes) between each follow-up wave (Table 6a), help to paint a clearer picture of this growth curve. In sum, when children were born, parents started with high ratings of couple supportiveness, experienced rapid declines in relationship quality until their child was 1 year old, stability in levels of supportiveness from Y1 to Y3, and steady declines thereafter.

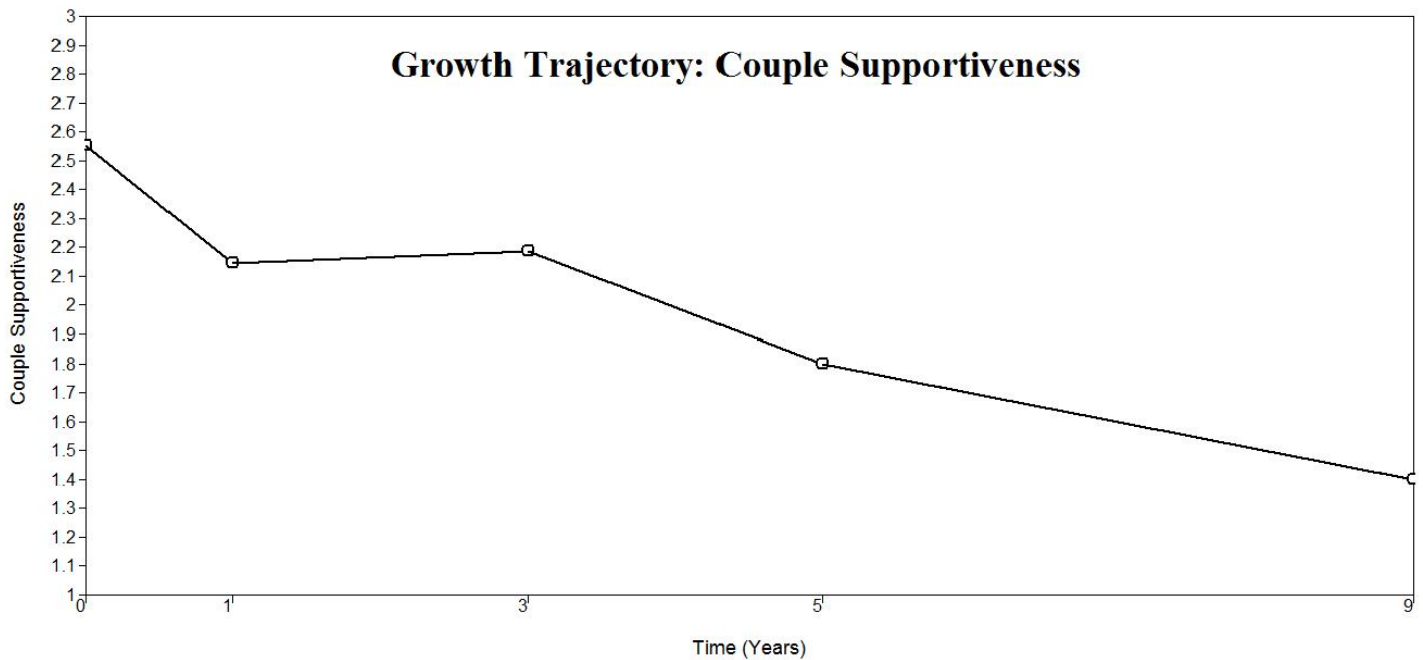


Figure 6. Non-linear growth trajectory for couple supportiveness from birth to Y9.

Table 6a. Mean Slopes for Couple and Coparenting Supportiveness Across Time

Time points	Slopes: Couple Supportiveness (CS)			Slopes: Coparenting Supportiveness (CPS)			Δ Between CS and CPS Slopes	
	<i>M</i>	<i>SE</i>	<i>p</i> value	<i>M</i>	<i>SE</i>	<i>p</i> value	<i>Wald Test</i>	<i>p</i> value
B-Y1	-0.40	0.03	<.001	-	-	-	-	-
Y1-Y3	0.04	0.03	>.05	- 0.16	0.03	<.001	29.49	<.001
Y3-Y5	- 0.39	0.03	<.001	- 0.12	0.03	<.001	49.72	<.001
Y5-Y9	- 0.40	0.03	<.001	- 0.16	0.03	<.001	30.73	<.001

Table 6. Mean Levels of Couple and Coparenting Supportiveness Across Time

Time points	Levels of Couple Supportiveness (CS)			Levels of Coparenting Supportiveness (CPS)			Δ Between CS and CPS Mean Scores	
	<i>M</i>	<i>SE</i>	<i>p</i> value	<i>M</i>	<i>SE</i>	<i>p</i> value	<i>Wald Test</i>	<i>p</i> value
B	2.55	0.02	<.001	-	-	-	-	-
Y1	2.15	0.03	<.001	2.41	0.03	<.001	40.80	<.001
Y3	2.20	0.02	<.001	2.28	0.03	<.001	5.61	<.05
Y5	1.81	0.03	<.001	2.16	0.03	<.001	71.40	<.001
Y9	1.40	0.03	<.001	2.00	0.03	<.001	177.42	<.001

Coparenting supportiveness. A linear trajectory was fit to coparenting supportiveness, which had excellent fit indices, $\chi^2(2) = 6.34, p > .01$, CFI/TLI = 1.00/ 0.99, RMSEA = 0.05, SRMR = 0.02. There was a significant mean intercept ($M = 2.40, SE = 0.03, p < .001$) and mean slope ($M = -0.05, SE = 0.004, p < .001$), which suggests that on average, teenage parents started out relatively high on coparenting supportiveness (2.42 on a 1-to-3 scale) when their child was one year old; and as time passed, coparenting supportiveness steadily decreased, on average by 0.05 every year. Variance components of intercepts ($VAR = 0.35, SE = 0.03, p < .001$) and slopes ($VAR = 0.01, SE = 0.01, p < .001$) were also significant, suggesting that individual couples differed in their coparenting trajectories. Looking at the graph of modeled coparenting supportiveness, (Figure 7) there is a steady and slow linear decline in relationship quality from the time the focal child is one year old across the next eight years of development.

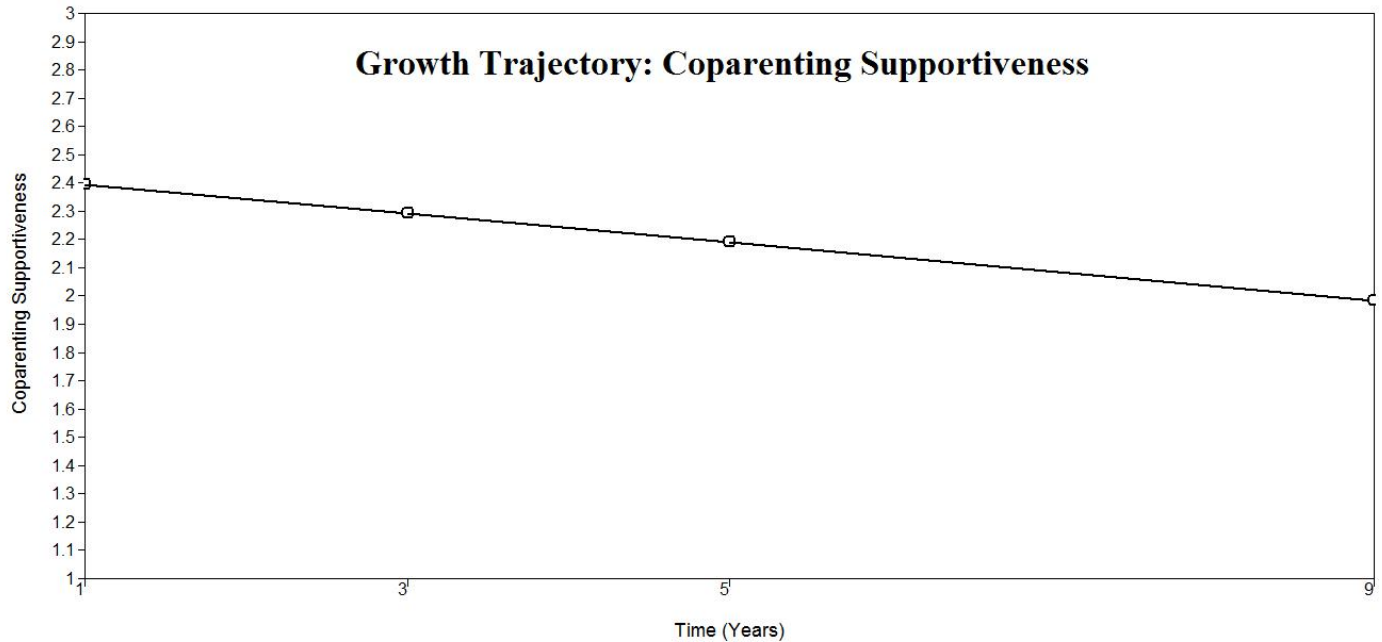


Figure 7. Linear growth curve trajectory for coparenting supportiveness from Y1 to Y9.

Children's externalizing behavior problems. An initial linear trajectory was fit to children's externalizing trajectories; however, fit indices were relatively poor, $\chi^2(1) = 29.059$, $p < .001$, CFI/TLI = 0.90/ 0.71, RMSEA = 0.20, SRMR = 0.06. After examining plots of sample and estimated mean trajectories, a freely estimated model was fit to the data with the first slope parameters set to zero ($\lambda_1 = 0$), the last parameter set to one ($\lambda_3 = 1$), and the middle parameter freely estimated from the data ($\lambda_2 = *$) to account for a non-linear trajectory. With zero degrees of freedom, the fit of freely estimated model could not be assessed. However, by visually comparing the non-linear, freely estimated model to the linear model (Figure 8), a non-linear growth curve appears to have a better fit for the sample means (Table 2). For the freely estimated model, there was a significant mean intercept ($M = 0.67$, $SE = 0.02$, $p < .001$) and mean slope ($M = -0.48$, $SE = 0.01$, $p < .001$), which suggests that on average, when children were three years old they started out with moderate levels of externalizing behavior problems (.67 on a 0-to-2 scale); and as time passed, symptoms decreased across time. The freely estimated slope parameter had a

value of $\lambda_2 = 0.46$, which represents the total proportion of change (i.e., 46%) occurring in children's externalizing symptoms from the Y3 to Y9 (Bollen & Curran, 2006). The variance of mean intercepts ($VAR = 0.03$, $SE = 0.01$, $p < .001$) and mean slopes ($VAR = 0.02$, $SE = 0.01$, $p < .05$) were significant, suggesting that individual children differed in externalizing trajectories and that explanatory variables may help to explain such differences. The graph of modeled children's externalizing trajectories (Figure 8) and average rates of change (i.e., slopes) from follow-up year to follow-up year (Table 7), help to paint a clearer picture of this growth curve. In sum, at three years old, children started out with moderate levels of externalizing behavior problems, experienced faster declines in these symptoms between ages three and five, and slower declines in symptoms between ages five and nine.

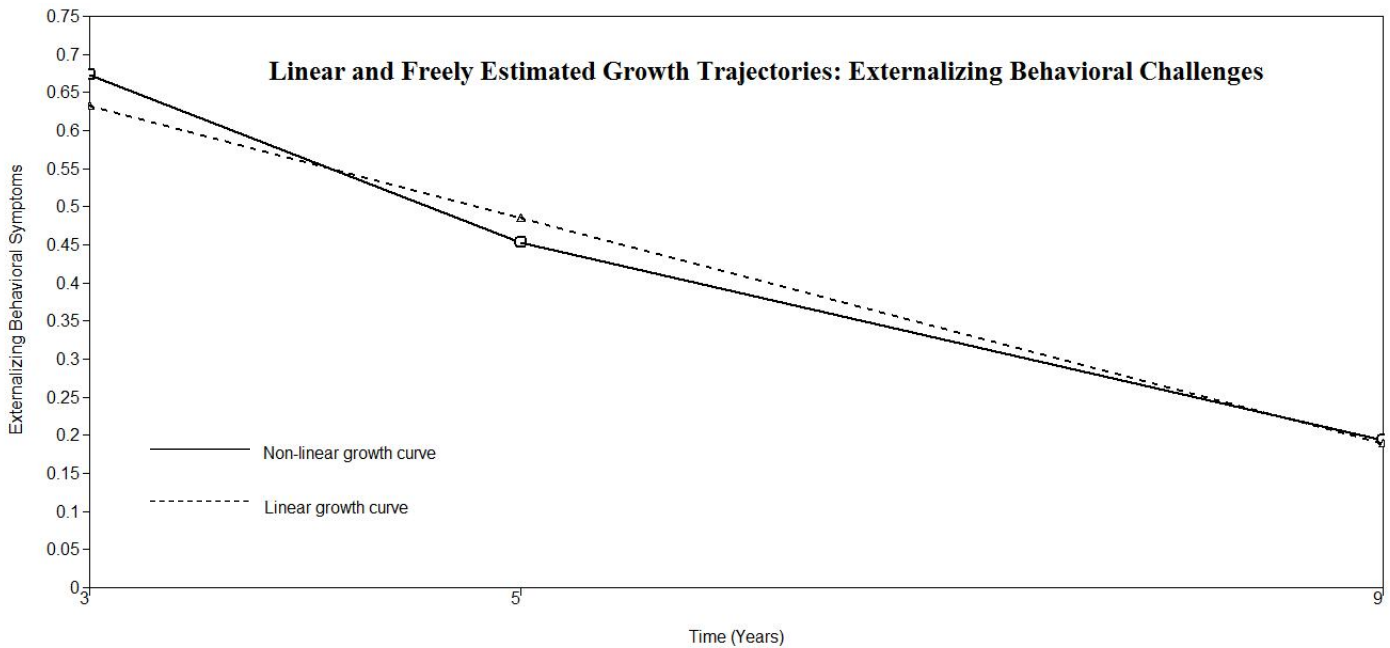


Figure 8. Linear and non-linear growth curve trajectories of children's externalizing symptoms from Y3 to Y9.

Table 7. Mean Slopes: Children's Behavioral Challenges and Maternal Harsh Parenting Behaviors

Time points	Slopes: Children's Externalizing Behavioral Challenges			Slopes: Children's Internalizing Behavioral Challenges			Slopes: Maternal Harsh Parenting Behaviors		
	<i>M</i>	<i>SE</i>	<i>p</i> value	<i>M</i>	<i>SE</i>	<i>p</i> value	<i>M</i>	<i>SE</i>	<i>p</i> value
	Y3-Y5 ¹	- 0.21	0.01	<.001	- 0.15	0.01	<.001	0.01	0.02
Y5-Y9 ²	- 0.26	0.01	<.001	- 0.11	0.01	>.05	- 0.09	0.01	<.001

¹Rates of change across two years

²Rates of change across four years

Children's internalizing behavior problems. An initial linear trajectory was fit to children's internalizing trajectories; however, fit indices were very poor, $\chi^2(1) = 60.57, p < .001$, CFI/ TLI = 0.59/ -0.24, RMSEA = 0.29, SRMR = 0.09. After examining plots of sample and estimated mean trajectories, a freely estimated model was fit to the data with the first slope parameters set to zero ($\lambda_1 = 0$), the last parameter set to one ($\lambda_3 = 1$), and the middle parameter freely estimated from the data ($\lambda_2 = *$) to account for a non-linear trajectory. With zero degrees of freedom, the fit of freely estimated model could not be assessed. However, by visually comparing the non-linear, freely estimated model to the linear model (Figure 9), a non-linear growth curve appears to have a better fit for the sample means (Table 2). For the freely estimated model, there was a significant mean intercept ($M = 0.43, SE = 0.01, p < .001$) and mean slope ($M = -0.27, SE = 0.01, p < .001$). The sample estimate for the freely estimated slope parameters was $\lambda_2 = 0.60$, which represents the total proportion of change (i.e., 60%) occurring in children's internalizing symptoms from Y3 to Y9 (Bollen & Curran, 2006). The variance of mean intercepts ($VAR = 0.03, SE = 0.01, p < .001$) and mean slopes ($VAR = 0.02, SE = 0.01, p < .05$) were significant, suggesting that individual children differed in internalizing trajectories and that explanatory variables may help to explain such differences. The graph of modeled children's internalizing trajectories (Figure 9) and average rates of change (i.e., slopes) from follow-up year to follow-up year (Table 7), help to paint a clearer picture of this growth curve. In sum, at three

years old, children started out with low levels of internalizing challenges, had rapid declines in these symptoms between ages three and five, and experienced leveling off of symptoms between ages five and nine.

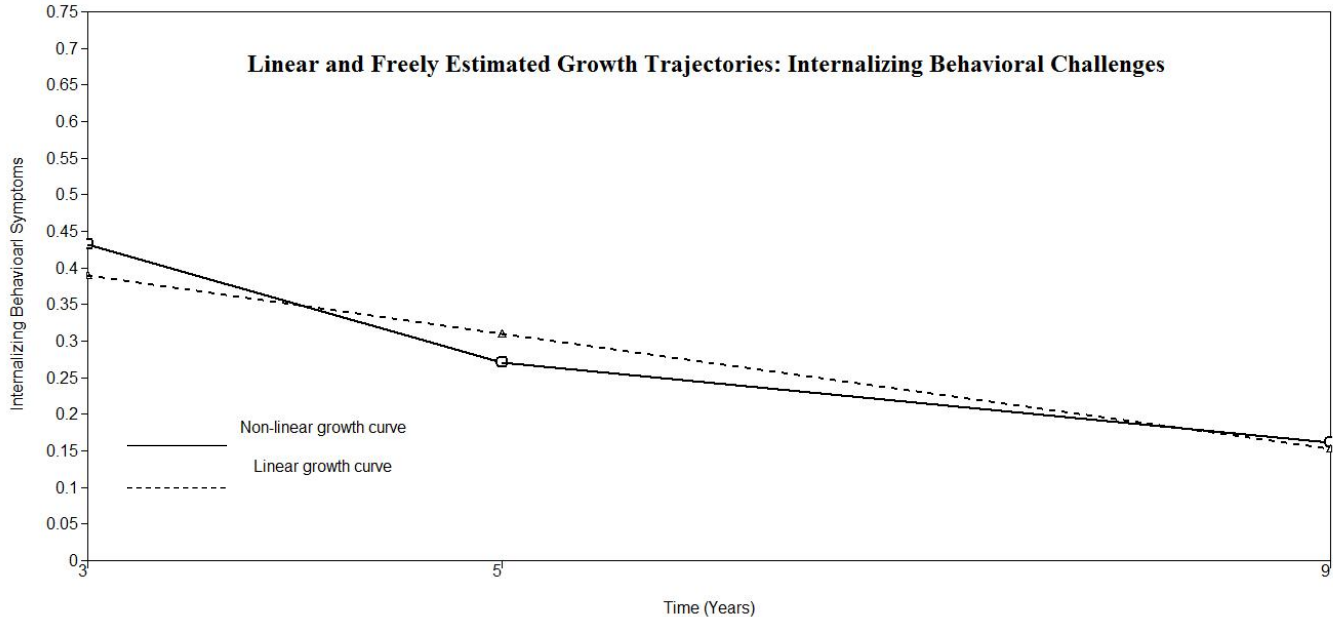


Figure 9. Linear and non-linear growth curve trajectories of children’s internalizing symptoms from Y3 to Y9.

Maternal harsh parenting behaviors. An initial linear trajectory was fit to maternal harsh parenting trajectories; however, fit indices were poor, $\chi^2(2) = 12.65$, $p < .01$, CFI/ TLI = 0.74/ 0.61, RMSEA = 0.09, SRMR = 0.06. After examining plots of sample and estimated mean trajectories, a freely estimated model was fit to the data with the first slope parameters set to zero ($\lambda_1 = 0$), the last parameter set to one ($\lambda_3 = 1$), and the middle parameter freely estimated from the data ($\lambda_2 = *$) to account for a non-linear trajectory. By visually comparing the non-linear, freely estimated model to the linear model (Figure 10), a non-linear growth curve appears to have a better fit for the sample means (Table 2). Indeed, the freely estimated model had excellent fit statistics, $\chi^2(1) = 0.47$, $p > .05$, CFI/ TLI = 1.00/ 1.00, RMSEA < 0.001, SRMR = 0.01. There was a significant mean intercept ($M = 0.11$, $SE = 0.01$, $p < .001$) and mean slope ($M = -0.08$, SE

= 0.01, $p < .001$). The sample estimate for the freely estimated slope parameter was $\lambda_2 = 0.18$, which represents total proportion of change (i.e., 18%) occurring in maternal harsh parenting behaviors from Y3 to Y9. (Bollen & Curran, 2006). The variance of intercepts ($VAR = 0.01$, $SE = 0.002$, $p < .001$) were significant, suggesting that individual mothers differed in their initial levels of harsh parenting trajectories and that explanatory variables may help to explain such differences. The variance of the slope factor could not be estimated, given its small non-significant negative variance, which was constrained to zero (Muthén & Muthén, 2007). The graph of modeled maternal harsh parenting behaviors (Figure 10) and average rates of change (i.e., slopes) from follow-up year to follow-up year (Table 7), help to paint a clearer picture of this growth curve. Taken together, at the three-year follow-up, mothers started with relatively low levels of harsh parenting behaviors (0.11 on a 0-to-1 scale), experienced slight, non-significant increases in harsh parenting behaviors from Y3 to Y5, and had sharp declines in these behaviors from Y5 to Y9.

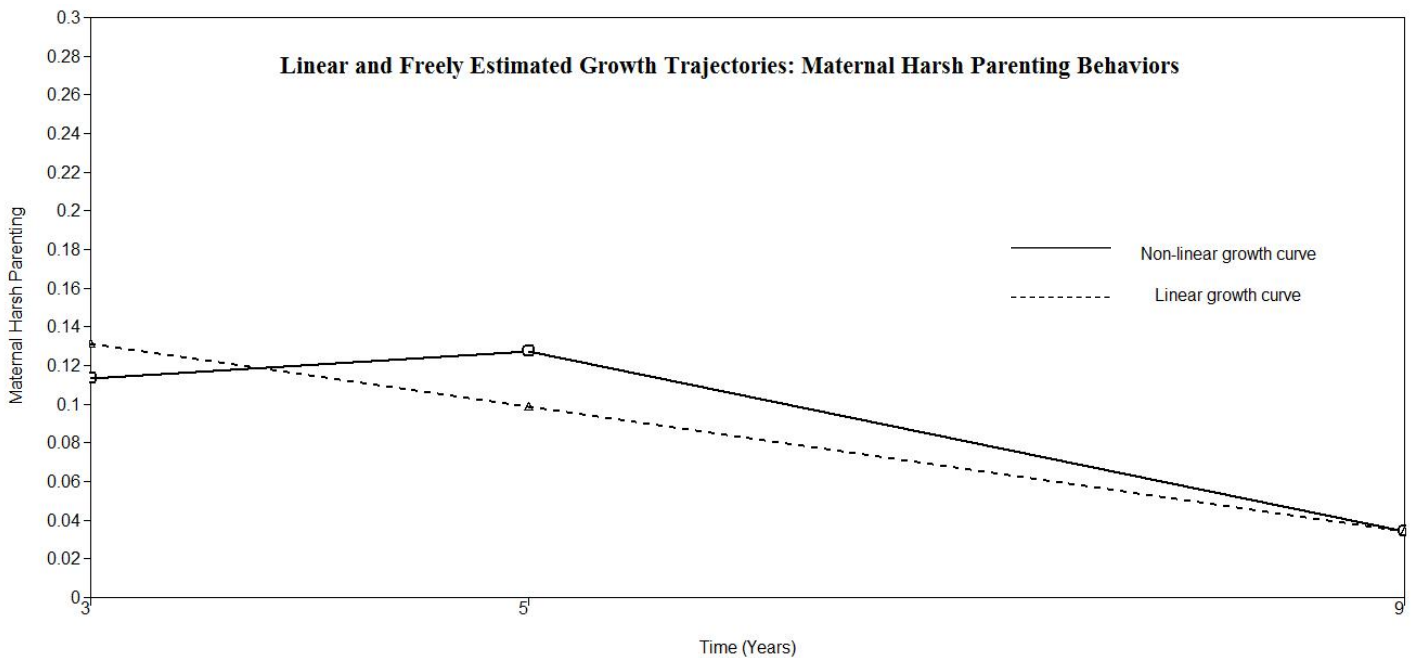


Figure 10. Linear and non-linear growth curve trajectories of maternal harsh parenting behaviors from Y3 to Y9.

Mediation Models: Testing Direct and Indirect Effects with Parallel Process LGCs (RQ4)

Mediation step 1: $X \rightarrow Y$ (path $c \neq 0$). Given results from unconditional models, which suggested that interindividual differences existed in children's behavioral trajectories, the first step testing indirect effects was conducted, which examined whether growth factors of supportive parental relationships predicted initial levels or rates of change in children's behavioral development (i.e., $X \rightarrow Y$ [path $c \neq 0$]). To answer these questions, growth factors (i.e., intercepts and slopes) of endogenous variables were regressed on growth factors of exogenous variables, which resulted in four sets of parallel process LGC models (a) couple supportiveness predicting children's externalizing behavior problems, (b) couple supportiveness predicting children's internalizing behavior problems, (c) coparenting supportiveness predicting children's externalizing behavior problems, and (d) coparenting supportiveness predicting children's internalizing behavior problems. All direct effects models (Table 8) were run with a set of time invariant and time-varying covariates and used standardized coefficients. Model fit indices are found in Table 9. Results of direct effects models without covariates are available upon request

Couple supportiveness predicts fewer children's behavioral challenges. Parallel process LGMs with covariates, which regressed growth factors of children's externalizing trajectories on those of parents' couple supportiveness, had excellent fit statistics, $\chi^2(117) = 140.73, p > .05$, CFI/TLI = 0.98/0.97, RMSEA = 0.02, SRMR = 0.02. Results suggested that higher levels of couple supportiveness at birth predicted lower levels of children's externalizing symptoms when children were 3 years old, ($\beta = -0.22, SE = 0.06, p < .001$) and were associated with slower declines in the total proportion of change in these symptoms from Y3 to Y9 ($\beta = 0.28, SE = 0.10, p < .01$). In contrast, rates of change in couple supportiveness from B to Y1 neither predicted

initial starting levels of children's externalizing symptoms ($\beta = -0.05$, $SE = 0.07$, $p = 0.496$) nor the total proportion of change in these behaviors from Y3 to Y9 ($\beta = -0.01$, $SE = 0.10$, $p = 0.948$). For children's internalizing challenges, parallel process LGMs had excellent fit statistics, $\chi^2(117) = 140.78$, $p > .05$, CFI/ TLI = 0.98/ 0.97, RMSEA = 0.02, SRMR = 0.02. Results suggested that higher levels of couple supportiveness at birth predicted lower levels of children's internalizing symptoms when they were 3 years old, ($\beta = -0.19$, $SE = 0.07$, $p < .01$) and were associated with slower declines in the total proportion of change in these symptoms from Y3 to Y9 ($\beta = 0.22$, $SE = 0.10$, $p < .05$). In contrast, rates of change in couple supportiveness from B to Y1 neither predicted initial starting levels of children's internalizing symptoms ($\beta = 0.08$, $SE = 0.08$, $p = 0.269$) nor the total proportion of change in these behaviors from Y3 to Y9 ($\beta = -0.03$, $SE = 0.10$, $p = 0.776$).

Coparenting supportiveness predicts fewer children's behavioral challenges. Parallel process LGMs, which regressed growth factors of children's externalizing trajectories on those of parents' coparenting supportiveness, had excellent fit statistics, $\chi^2(96) = 105.52$, $p > .05$, CFI/ TLI = 0.99/ 0.99, RMSEA = 0.01, SRMR = 0.02. Results suggested that higher levels of coparenting supportiveness when children were 1-year old predicted lower levels of children's externalizing symptoms when they were 3 years old, ($\beta = -0.19$, $SE = 0.06$, $p < .01$) and were associated with slower declines in the total proportion of change in these symptoms from Y3 to Y9 ($\beta = 0.21$, $SE = 0.09$, $p < .05$). In contrast, rates of change in coparenting supportiveness neither predicted initial starting levels of children's externalizing symptoms ($\beta = -0.07$, $SE = 0.06$, $p = 0.357$) nor the total proportion of change in these behaviors from Y3 to Y9 ($\beta = -0.01$, $SE = 0.09$, $p = 0.900$). For children's internalizing behavior problems, parallel process LGMs had excellent fit statistics, $\chi^2(96) = 98.63$, $p > .05$, CFI/ TLI = 1.00/ 1.00, RMSEA = 0.01, SRMR

= 0.02. Results suggested that associations between initial levels of coparenting supportiveness at Y1 and initial levels of children's internalizing behavior problems at Y3 trended towards significant ($\beta = -0.12$, $SE = 0.07$, $p = 0.08$); however initial levels of coparenting supportiveness did not predict the total proportion of change in these behaviors from Y3 to Y9 ($\beta = 0.11$, $SE = 0.10$, $p = 0.303$). Rates of change in coparenting supportiveness neither predicted initial starting levels ($\beta = 0.06$, $SE = 0.07$, $p = 0.572$) nor the total proportion of change in these behaviors from Y3 to Y9 ($\beta = -0.09$, $SE = 0.10$, $p = 0.361$).

Mediation step 2: X → M (path a ≠ 0). Results from the first step for testing indirect effects suggested that initial levels of couple and coparenting supportiveness predicted initial levels and the total proportion of change in children's externalizing trajectories from Y3 to Y9. Additionally, initial levels of couple supportiveness predicted starting levels of children's internalizing trajectories and the total proportion of change in these behaviors from the Y3 to Y9. There was also suggestive evidence that associations between initial levels of coparenting supportiveness and initial levels of children's internalizing behavior problems trended towards significance. Given these findings, the second step for testing indirect effects was conducted to test associations between exogenous variables (e.g., couple supportiveness and coparenting supportiveness) and the intermediary variable, maternal harsh parenting (i.e., X → M [path a ≠ 0]). Specifically, direct effects models (a) regressed starting levels of maternal harsh parenting trajectories on intercepts and slopes of supportive couple relationship and (b) regressed starting levels of maternal harsh parenting trajectories on intercepts and slopes of supportive coparenting relationships. These direct effects models did not test whether exogenous variables predicted the slope growth factor of maternal harsh parenting, given its small non-significant, negative variance, which was constrained to zero (Muthén & Muthén, 2005).

Couple supportiveness predicts fewer maternal harsh parenting behaviors. Starting levels of maternal harsh parenting were regressed on growth factors of supportive couple relationship trajectories, which had excellent fit statistics, $\chi^2(130) = 151.66, p >.05$, CFI/ TLI = 0.98/ 0.97, RMSEA = 0.02, SRMR = 0.03. Results suggested that higher levels of couple supportiveness at birth predicted lower starting levels of maternal harsh parenting behavior when children were 3 years old ($\beta = -0.17, SE = 0.06, p < 0.01$); however, rates of change in couple supportiveness between B and Y1 did not account for lower levels of maternal harsh parenting behaviors ($\beta = -0.08, SE = 0.07, p = 0.229$).

Coparenting supportiveness predicts fewer maternal harsh parenting behaviors. Starting levels of maternal harsh parenting were regressed on growth factors of supportive coparenting relationship trajectories, which had excellent fit statistics children's, $\chi^2(109) = 123.37, p >.05$, CFI/ TLI = 0.99/ 0.98, RMSEA = 0.01, SRMR = 0.02). Results suggested that neither initial levels ($\beta = -0.09, SE = 0.06, p = 0.119$) nor rates of change ($\beta = -0.08, SE = 0.06, p = 0.120$) in coparenting supportiveness predicted starting levels of maternal harsh parenting behaviors.

Mediation step 3: M → Y (path b ≠ 0). Results from the second step for testing indirect effects suggested that initial levels of couple supportiveness predicted lower starting levels of maternal harsh parenting behaviors. Surprisingly, initial levels of coparenting supportiveness did not predict lower starting levels of maternal harsh parenting behaviors when modeled with covariates. Given these significant findings, parallel process LGC models with regression among intercepts and slopes were run to test associations between exogenous variables and the intermediary variable (i.e., M → Y [path b ≠ 0]). Specifically, direct effects models (a) regressed intercepts and slopes of children's externalizing trajectories on starting levels of maternal harsh

parenting trajectories and (b) regressed intercepts and slopes of children's internalizing trajectories on starting levels of maternal harsh parenting trajectories.

Maternal harsh parenting behaviors link to increases in children's externalizing behavior problems. Growth factors of children's externalizing trajectories were regressed on starting levels of maternal harsh parenting, which had excellent fit statistics, $\chi^2(84) = 85.36, p >.05$, CFI/ TLI = 1.00/ 1.00, RMSEA = 0.01, SRMR = 0.02. Results suggested that higher levels of maternal harsh parenting behaviors were associated with higher levels of children's externalizing behavior problems when children were 3 years old ($\beta = 0.31, SE = 0.07, p <.001$); however, were not associated with the total proportion of change in these behaviors from Y3 to Y9 ($\beta = -0.16, SE = 0.10, p = 0.149$).

Maternal harsh parenting behaviors link to increases in children's internalizing behavior problems. Growth factors of children's internalizing trajectories were regressed on starting levels of maternal harsh parenting behaviors, which had excellent fit statistics, $\chi^2(93) = 102.07, p >.05$, CFI/ TLI = 0.97/ 0.95, RMSEA = 0.01, SRMR = 0.03. Results suggested that higher levels of maternal harsh parenting behaviors were associated with higher levels of children's internalizing symptoms when they were 3 years old, ($\beta = 0.31, SE = 0.10, p <.10$); however, were not associated with the total proportion of change in these behaviors from Y3 to Y9 ($\beta = -0.17, SE = 0.14, p = .213$).

Table 8. Preliminary Mediation Analyses: Direct Effects Models Among Parallel Process Growth Curves

Predictors	Externalizing Intercept		Externalizing Slope		Internalizing Intercept		Internalizing Slope		Harsh Parenting Intercept	
	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>
CS Intercept	-0.22***	0.06	0.28**	0.10	-0.19**	0.07	0.22*	0.10	-0.17**	0.06
CS Slope	-0.05	0.07	-0.01	0.10	0.08	0.08	-0.03	0.10	-0.08	0.07
CPS Intercept	-0.19**	0.06	0.21*	0.09	-0.12~	0.07	0.11	0.10	-0.09	0.06
CPS Slope	-0.07	0.06	0.01	0.09	0.06	0.07	-0.09	0.10	-0.08	0.06
HPB Intercept	0.31***	0.07	-0.16	0.10	0.18~	0.10	-0.17	0.14	-	-
HPB Slope ^a	-	-	-	-	-	-	-	-	-	-

CS = couple supportiveness; CPS = coparenting supportiveness; HPB = harsh parenting behaviors; ^aDue to a small, negative residual variance associated with the slope of HPB, the variance was constrained to zero; ~<.10, *<.05, **<.01, ***<.001.

Table 9. Fit Indicators for Mediation: Direct Effects Models

	Chi-square	(df)	<i>p</i> value	RMSEA	CFI/ TLI	SRMR
Model A ¹	140.73	117	>.05	0.02	0.98 / 0.97	0.02
Model B ²	105.52	96	>.05	0.01	0.99 / 0.99	0.02
Model C ³	140.78	117	>.05	0.02	0.98 / 0.97	0.02
Model D ⁴	98.63	96	>.01	0.01	1.00 / 1.00	0.02
Model G ⁵	151.66	130	>.05	0.02	0.98 / 0.97	0.03
Model H ⁶	123.37	109	>.05	0.01	0.99/ 0.98	0.02
Model I ⁷	85.36	84	>.05	0.01	1.00 / 1.00	0.02
Model J ⁸	102.07	93	>.05	0.01	0.97 / 0.95	0.03

¹Couple supportiveness (CS) growth factors predict growth factors of children's externalizing behavior challenges (EBCs)

²Coparenting supportiveness (CPS) growth factors predict growth factors of children's EBCs

³CS growth factors predict growth factors of children's internalizing behavior challenges (IBCs)

⁴CPS growth factors predict growth factors of children's IBCs

⁵CS growth factors predict growth factors of maternal harsh parenting behaviors (HPB)

⁶CPS growth factors predict growth factors of maternal HPBs

⁷HPB growth factors predict growth factors of children's EBCs

⁸HPB growth factors predict growth factors of children's IBCs

Sobel Test with parallel process LGCs. After completing steps for mediation, a final set of analyses were run, which used the Sobel Test with bias-corrected bootstrapped standard errors

and asymmetric CIs to assess direct and indirect effects of exogenous, endogenous, and intermediary variables for four separate mediation models. These models tested whether starting levels of maternal harsh parenting behaviors mediated relationships between (a) intercepts of couple supportiveness and intercepts and the total proportion of change in children's externalizing behavior problems, (b) intercepts of couple supportiveness and intercepts and the total proportion of change in children's internalizing behavior problems, (c) intercepts of coparenting supportiveness and intercepts and the total proportion of change in children's externalizing behavior problems, and (d) intercepts of coparenting supportiveness and intercepts and the total proportion of change in children's internalizing behavior problems. Standardized and unstandardized path estimates (regression coefficients) of the aforementioned models are reported in Tables 10a – 13c.

Indirect effects of couple supportiveness on children's externalizing behavior problems. Parallel process LGC models tested whether initial levels of maternal harsh parenting behaviors mediated associations between initial levels of couple supportiveness and initial levels and the proportion of change in children's externalizing behavior problems. Results suggest that links between initial levels of couple supportiveness at birth and lower levels of children's externalizing behavior problems at age three were mediated by attenuated levels of maternal harsh parenting behaviors (Table 10b). Direct links between initial levels of couple supportiveness at birth and levels of children's externalizing behavior problems at age three were also apparent (Table 10a), which suggests partial mediation. Higher levels of couple supportiveness at birth also directly predicted slower declines in the total proportion of change in children's externalizing symptoms from age three to age nine (Table 10a); however, these effects were not mediated through lower levels of maternal harsh parenting behaviors (Table 10b).

Slower declines in externalizing symptoms are a result of children starting with fewer symptoms at age three, which provides “less room to decline” across time. Total effects for indirect pathways (Table 10c) suggest that when accounting for both direct and indirect effects of initial levels of couple supportiveness on trajectories of children’s externalizing behavior problems, associations are of a slightly larger magnitude than when considered separately. Taken together, higher levels of couple supportiveness at birth predicted attenuated levels of maternal harsh parenting behaviors when children were three, which in turn, mitigated children’s starting levels of externalizing behavior problems at age three. Additionally, higher levels of couple supportiveness at birth were directly associated with lower starting levels and slower declines in the total proportion of change in these symptoms from early to middle childhood.

Table 10a. Mediation Model: Direct Effects

Direct Effects of Couple Supportiveness on Children's Externalizing Behavioral Challenges				
Direct Paths	B	95% CI	β	95% CI
CS Intercept (B) → EBC Intercept (Y3)	-0.09	(-0.17, -0.01)	-0.16	(-0.28, -0.02)
CS Intercept (B) → EBC Slope	0.11	(0.05, 0.19)	0.28	(0.11, 0.72)

Table 10b. Mediation Model: Indirect Effects

Effects of Couple Supportiveness on Externalizing Behavioral Challenges Through Maternal Harsh Parenting				
Indirect Paths	B	95% CI	β	95% CI
CS Intercept (B) → HPB Intercept (Y3) → EBC Intercept (Y3)	-0.02	(-.10, -0.003)	-0.04	(-0.18, -0.01)
CS Intercept (B) → HPB Intercept (Y3) → EBC Slope	0.01	(-0.004, 0.04)	0.02	(-0.01, 0.11)

Table 10c. Mediation Model: Total Effects of Couple Supportiveness on Children's Externalizing Behavioral Challenges

Total Effects	B	95% CI	β	95% CI
Total Effects: CS Intercept → EBC Intercept	-0.11	(-0.18, -0.05)	-0.20	(-0.30, -0.09)
Total Effects: CS Intercept → EBC Slope	0.12	(0.05, 0.19)	0.29	(0.13, 0.66)

$\chi^2(168) = 196.57, p > .05, CFI/TLI = 0.98/0.97, RMSEA = 0.02, SRMR = 0.03$

CS = couple supportiveness; HPB = harsh parenting behaviors; EBC = externalizing behavioral challenges

Indirect effects of couple supportiveness on children’s internalizing behavior problems.

Parallel process LGC models tested whether initial levels of maternal harsh parenting behaviors mediated associations between initial levels of couple supportiveness and initial levels and the proportion of change in children’s internalizing behavior problems. Results suggest that higher

levels of couple supportiveness at birth directly predicted lower levels of children’s internalizing behavior problems at age three (Table 11a); however, these effects were not mediated by initial levels of maternal harsh parenting behaviors (Table 11b). Similarly, higher levels in couple supportiveness at birth directly predicted slower declines in the total proportion of change in children’s internalizing symptoms from Y3 to Y9 (Table 11a). Slower declines in symptoms are a result of children starting with fewer internalizing symptoms at age three, which provides “less room to decline” across time. Total effects for indirect pathways (Table 11c) suggest that when accounting for both direct and indirect effects of initial levels of couple supportiveness on trajectories of children’s internalizing behavior problems, associations are of a similar magnitude as when considered separately. Taken together, higher levels of couple supportiveness at birth directly predicted lower levels of children’s internalizing behavior problems at age three and were associated with slower declines in the total proportion of change in these symptoms from early to middle childhood.

Table 11a. Mediation Model: Direct Effects

Direct Effects of Couple Supportiveness on Children's Internalizing Behavioral Challenges				
Direct Paths	B	95% CI	β	95% CI
CS Intercept (B) → IBC Intercept (Y3)	-0.08	(-0.13, -0.03)	-0.20	(-0.35, -0.08)
CS Intercept (B) → IBC Slope	0.07	(0.01, 0.12)	0.21	(0.05, 0.61)

Table 11b. Mediation Model: Indirect Effects

Effects of Couple Supportiveness on Children's Internalizing Behavioral Challenges Through Maternal Harsh Parenting				
Indirect Paths	B	95% CI	β	95% CI
CS Intercept (B) → HPB Intercept (Y3) → IBC Intercept (Y3)	-0.01	(-0.02, 0.000)	-0.02	(-0.06, 0.000)
CS Intercept (B) → HPB Intercept (Y3) → IBC Slope	0.01	(-0.005, 0.02)	0.01	(-0.01, 0.09)

Table 11c. Mediation Model: Total Effects of Couple Supportiveness on Children's Internalizing Behavioral Challenges

Total Effects	B	95% CI	β	95% CI
Total Effects: CS Intercept → IBC Intercept	-0.08	(-0.14, -0.04)	-0.22	(-0.37, -0.10)
Total Effects: CS Intercept → IBC Slope	0.07	(0.02, 0.13)	0.22	(0.06, 0.62)

$\chi^2(171) = 189.01, p > .05, CFI/TLI = 0.99/0.98, RMSEA = 0.01, SRMR = 0.03$

CS = couple supportiveness; HPB = harsh parenting behaviors; IBC = internalizing behavioral challenges

Indirect effects of coparenting supportiveness on children's externalizing behavior

problems. Parallel process LGC models tested whether initial levels of maternal harsh parenting behaviors mediated associations between initial levels of coparenting supportiveness and initial levels and the proportion of change in children's externalizing behavior problems. Results suggest that higher levels of coparenting supportiveness one year after birth directly predicted lower levels of children's externalizing behavior problems at age three (Table 12a); however, these effects were not mediated by initial levels of maternal harsh parenting behaviors (Table 12b). Similarly, higher levels in coparenting supportiveness one year after birth directly predicted slower declines in the total proportion of change in children's externalizing symptoms from early to middle childhood (Table 12a). Slower declines in symptoms are a result of children starting with fewer externalizing symptoms at age three, which provides "less room to decline" across time. Total effects for indirect pathways (Table 12c) suggest that when accounting for both direct and indirect effects of initial levels of coparenting supportiveness on trajectories of children's internalizing behavior problems, associations are of a slightly larger magnitude than when considered separately. Taken together, higher levels of coparenting supportiveness one year after birth directly predicted lower levels of children's externalizing behavior problems at age three and were associated with slower declines in the total proportion of change in these symptoms from early to middle childhood.

Table 12a. Mediation Model: Direct Effects

Direct Effects of Coparenting Supportiveness on Children's Externalizing Behavioral Challenges

Direct Paths	B	95% CI	β	95% CI
CPS Intercept (B) → EBC Intercept (Y3)	-0.06	(-0.12, -0.001)	-0.14	(-0.27, -0.002)
CPS Intercept (B) → EBC Slope	0.06	(0.002, 0.12)	0.20	(0.01, 0.54)

Table 12b. Mediation Model: Indirect Effects

Indirect Effects of Coparenting Supportiveness on Externalizing Behavioral Challenges Through Maternal Harsh Parenting

Indirect Paths	B	95% CI	β	95% CI
CPS Intercept (B) → HPB Intercept (Y3) → EBC Intercept	-0.02	(-0.06, 0.01)	-0.04	(-0.14, 0.01)
CPS Intercept (B) → HPB Intercept (Y3) → EBC Slope	0.01	(-0.002, 0.03)	0.02	(-0.009, 0.13)

Table 12c. Mediation Model: Total Effects of Coparenting Supportiveness on Children's Externalizing Behavioral Challenges

Total Effects	B	95% CI	β	95% CI
Total Effects: CPS Intercept → EBC Intercept	-0.08	(-0.13, -0.02)	-0.18	(-0.30, -0.06)
Total Effects: CPS Intercept → EBC Slope	0.07	(0.01, 0.12)	0.22	(0.04, 0.58)

$\chi^2(141) = 180.34, p > .01, CFI/TLI = 0.98/0.96, RMSEA = 0.02, SRMR = 0.03$

CPS = coparenting supportiveness; HPB = harsh parenting behaviors; EBC = externalizing behavioral challenges

Indirect effects of coparenting supportiveness on children's internalizing behavior

problems. Parallel process LGC models tested whether initial levels of maternal harsh parenting behaviors mediated associations between initial levels of coparenting supportiveness and initial levels and the proportion of change in children's internalizing behavior problems. Results suggest that initial levels of coparenting supportiveness neither directly nor indirectly predicted levels of children's internalizing behavior problems at age three (Table 13a and Table 13b). Similarly, initial levels of coparenting supportiveness neither directly nor indirectly predicted the total proportion of change in children's internalizing symptoms from early to middle childhood (Table 13a and 13b).

Table 13a. Mediation Model: Direct Effects

Direct Effects of Coparenting Supportiveness on Children's Internalizing Behavioral Challenges

Direct Paths	B	95% CI	β	95% CI
CPS Intercept (B) → IBC Intercept (Y3)	-0.04	(-0.08, 0.003)	-0.12	(-0.30, 0.01)
CPS Intercept (B) → IBC Slope	0.03	(-0.02, 0.08)	0.12	(-0.09, 0.50)

Table 13b. Mediation Model: Indirect Effects

Indirect Effects of Coparenting Supportiveness on Children's Internalizing Behavior Challenges Through Maternal Harsh

Indirect Paths	B	95% CI	β	95% CI
CPS Intercept (B) → HPB Intercept (Y3) → IBC Intercept (Y3)	-0.003	(-0.01, 0.001)	-0.01	(-0.05, 0.003)
CPS Intercept (B) → HPB Intercept (Y3) → IBC Slope	0.002	(-0.001, 0.01)	0.01	(-0.003, 0.08)

Table 13c. Mediation Model: Total Effects of Coparenting Supportiveness on Children's Internalizing Behavioral Challenges

Total Effects	B	95% CI	β	95% CI
Total Effects: CPS Intercept → IBC Intercept	-0.04	(-0.08, 0.000)	-0.13	(-0.30, 0.002)
Total Effects: CPS Intercept → IBC Slope	0.03	(-0.02, 0.08)	0.13	(-0.07, 0.54)

$\chi^2(141) = 180.34, p > .01, CFI/TLI = 0.98/0.96, RMSEA = 0.02, SRMR = 0.03$

CPS = coparenting supportiveness; HPB = harsh parenting behaviors; IBC = internalizing behavioral challenges

Chapter Six: Discussion

The goals of this dissertation were twofold. First, this study set out to thoughtfully consider family processes in teenage-headed families that are commonly described in research literature, yet uncommonly explored as developmental trajectories that systematically vary across time and individuals. To that end, trajectories of family processes that present inherent strengths (e.g., responsive couple and coparenting relationships) and common challenges (e.g., children's behavioral challenges and maternal harsh parenting) for teenage-headed families were examined to gain a clearer understanding of how these processes unfold for a developmentally distinct group of families across key transitions in their lives. Second, this dissertation set out to consider how interpersonal resources may act to serve as a foundation for mothers' and children's resilience, by testing whether responsive and supportive relationships between teenage parents could lessen the magnitude of children's emotional and behavioral challenges. Inherent to this framework, questions responded to methodological calls by developmental and family scientists to move beyond exploring "main effects" of family relationships on children's

developmental outcomes, by examining intervening roles of potential “third” (i.e., intermediary) variables. Specifically, questions examined whether initial levels of responsive relationships between caregivers could lessen the severity of children’s emotional and behavioral challenges through the pathway of attenuated levels of harsh parenting behaviors (O’Brien, 2005).

To answer these questions, basic latent growth curve (LGC) modeling was used to consider mean growth trajectories of teenage parents’ interpersonal relationships, their children’s mental health, and maternal harsh parenting behaviors. Next, parallel process LGC modeling was used to examine how growth curve characteristics (i.e., intercepts and slopes) of responsive parental relationships linked to growth curve characteristics of children’s behavioral trajectories, testing whether these associations were mediated by initial levels of maternal harsh parenting behaviors. Broadly, results suggest that supportive qualities of teenage parents’ couple relationships at birth buffered their children from developing more severe externalizing trajectories from early to middle childhood by reducing initial levels of maternal harsh parenting behaviors. Initial levels of couple supportiveness also directly protected children from developing more severe externalizing trajectories through positive spillover effects of these relationships. For children’s internalizing trajectories, couple supportiveness at birth directly protected children from developing more severe symptoms from early to middle childhood through positive spillover effects of these relationships. Similarly, parents’ supportive coparenting relationships one year after birth directly protected children from developing more severe externalizing trajectories from early to middle childhood through positive spillover effects of these relationships.

Mean Growth Trajectories

Supportive Couple and Coparenting Relationships. To date, this was the first study to use a large national dataset to explore the mean developmental trajectories of supportive qualities of teenage parents' couple and coparenting relationships across the first nine years of parenthood. Gaining a clearer picture of these dynamic interpersonal processes for a large sample of teenage families provides a foundation for future research to develop and test hypotheses about factors that may explain variation in these relationship trajectories. Looking at Table 6, young parents start out with relatively high average ratings of couple supportiveness ($M = 2.55$, $SE = 0.03$) and coparenting supportiveness ($M = 2.41$, $SD = 0.03$), both of which are measured on a 1-to-3 scale. Extant research has often overlooked that teenage parents begin their journey as partners and parents with strength and dedication, which should be considered an inherent resource of these young couples. For example, Toledo-Dreves, Zabin, and Emerson (1995) found that for a group of 89 African-American teenage parents, approximately 94% described their relationship as strong at the time of their pregnancies, of whom 67% maintained relationships two years after giving birth. Additionally, qualitative work with teenage parents has suggested that young couples have a strong desire to raise a family together prior to the birth of their child, yet, come to see families and institutions as driving their relationships apart. Specifically, Mollborn and Jacobs (2015) found that young parents felt additional burdens on their relationships, given that social programs targeting teenage mothers frequently did not accommodate unmarried couples or coparents. For the small number of programs that did engage both mothers and fathers, they often did so in ways that implicitly marginalized dads. For example, though alternative schools for teenage-headed families provided support to mothers and

fathers, services were delivered separately for fathers in a satellite building (Mollborn & Jacobs, 2015).

At the same time, it is not surprising that social programs are hesitant to engage both teenage mothers and their children's biological fathers, given that many couples break-up as their children mature (Furstenberg, 2007). Findings from this dissertation showed significant mean declines in couple and coparenting supportiveness across the first nine years of parenthood, with especially pronounced declines in couple supportiveness shortly after the focal child's birth. These results align with research on relationship quality patterns specific to teenage parents (Gee & Rhodes, 2003; Larson, Hussey, Gilmore, & Gilchrist, 1996) and broadly across married and cohabitating families (Carlson, McLanahan, & Brooks-Gunn, 2008; Mitnick, Heyman, & Smith, 2009). Such studies have suggested that, on average, couples experience lower levels of relationship satisfaction after their child is born, general decreases as time unfolds, and a leveling off or increase in relationship quality as children enter young adulthood (Feinberg et al., 2016; Shultz, Cowan, & Cowan, 2006). In addition to waning levels of couple supportiveness, research also suggests that it is common for unmarried parents to experience declines in coparenting supportiveness and father involvement across time. For example, looking at a sample of nonresidential fathers from the FFCW database, Goldberg (2015) found that levels of coparenting support started out relatively high, but declined over the course of eight years. Importantly, from this vantage point, declines in teenage parents' couple and coparenting supportiveness during the transition to parenthood and across children's early development should be considered normative in context of the transition to parenthood, rather than a reason to exclude young couples from engaging in services together.

Taking a closer look at trajectories of couple and coparenting supportiveness, a handful of important differences are discerned in terms of growth curve characteristics. General comparisons between these growth trajectories can be made given that both are concurrently measured at Y1, Y3, Y5, and Y9 follow-ups, use a 1-to-3 measurement scale, have very similar standard errors, and are based on maternal reports of these relationships. First, couple supportiveness takes on a curvilinear shape, whereas coparenting supportiveness has a linear trajectory, suggesting that couple supportiveness has a greater propensity to change in response to developmental and temporal contexts. Specifically, for parents' couple supportiveness, there are significant declines during the first year of parenthood, followed by a slight rise in supportiveness from Y1 to Y3, and steadier declines from Y3 to Y9. A very slight (non-significant) increase in the level of couple supportiveness from Y1 to Y3 suggests that the quality of these relationships may be a place of stability for some young families or a time when couples attempt to resurrect relationships, which is not uncommon to adolescent relationships (Bunting & McAuley, 2004; Collins et al., 2009). In contrast, coparenting supportiveness has a slower and steadier decline across time, which shows no periods of accelerated growth, decay, or general leveling. More insights are gained by comparing mean scores and rates of change in these relationships at concurrent time periods (Table 6 and Table 6a), which suggest that coparenting supportiveness is consistently rated higher than couple supportiveness and has slower rates of decline across time.

Differences in functional forms, mean scores, and rates of change in couple and coparenting relationships suggest that, though there are significant declines in coparenting supportiveness across time, teenage parents are able to sustain relatively cooperative and practical parental partnerships in the presence of deteriorating romantic relationships. These

findings contrast traditional assumptions about the ways that young, unmarried couples engage in relationships, which has important implications for the ways we understand fathers' relationships with their children. Specifically, extant research has suggested that for unmarried and visiting fathers, father involvement is directly tied to the quality of their romantic relationship with their child's mother; when couples' romantic relationships begins to deteriorate, men will often pull away from their roles as fathers and coparents (Edin, Tach, & Mincy, 2009; Farrie, Lee, & Fagan, 2011). Yet, results from this study paint a different picture about the trajectories of supportive couple relationships and supportive coparenting relationships for teenage-headed families. Rather, findings better align with research which suggests that responsive coparenting relationships have the potential to exist in the presence of dissolved or deteriorating romantic relationships (Feinberg, 2003; McHale, 2007, McHale, Waller, & Pearson, 2012). For example, Futris and Schoppe-Sullivan (2007) found that positive coparenting relationships in teenage-headed families may serve to motivate fathers to take on caregiving responsibilities for their children, regardless of changes in their romantic relationships (Cutrona, Hessling, Bacon, & Russell, 1998). Indeed, such experiences of committed coparenting relationships are echoed in a recent qualitative study with teenage mothers and their children's biological fathers. Specifically, Mollborn and Jacobs (2015) found that coparenting relationships were "very important to teenage parents, even though romantic relationships dissolve(d) over time," (p. 374). Taken together, these types of insights about teenage parents' coparenting relationships are especially important given that positive coparenting relationships have been shown to increase nonresident fathers' involvement with their children (Carlson, McLanahan, & Brooks-Gunn, 2008), which has been shown to be especially beneficial for

children born to adolescent mothers (Cutrona, Hessling, Bacon, & Russell, 1998; Furstenberg & Hughes, 1995).

Children's Externalizing and Internalizing Behavior problems. Trajectories of children's externalizing and internalizing behavior problems showed significant decreases across time, with the former taking on relatively steady declines as children aged from early to middle childhood, and the latter showing faster decreases earlier in children's development and a plateauing effect later in their development. Declines in trajectories of externalizing symptoms are consistent with findings from extant literature, which have found that for typically developing children, disruptive behaviors generally peak around age two and then steadily decrease across time (Gilliom & Shaw, 2004; Stanger, Achenbach, & Verhulst, 1997). Steady decreases in children's externalizing symptoms typically result from the acquisition of skills associated with emotional and behavioral regulation. In particular, as children progress from preschool-age to elementary-age, they build greater aptitude in impulse, attentional, and inhibitory control, which helps them to cope with intense feelings by self-soothing or redirecting thoughts (Raver, Jones, Li-Grining, Zhai, Bub, & Pressler, 2011). For example, Murphy, Eisenberg, Fabes, Shepard, and Guthrie (1999) found that from ages four to ten and six to twelve, parents reported that their children had steady increases in their inhibitory control, while showing decreases in their impulsivity.

In contrast to some theories laid out by developmental and clinical psychologists on internalizing trajectories, findings from this study suggest that mean trajectories of children's internalizing symptoms significantly decreased from age three to age nine. These results diverge from one line of established theory, which posits that for normally-developing children, symptoms associated with anxiety and depression start at low to moderate levels in early

childhood and gradually increase, peaking in adolescence (Bongers, Koot, Van der Ende, & Verhulst, 2003; Gilliom & Shaw, 2004). In addition, research has also shown that from childhood to adolescence, girls may have higher mean starting levels and sharper increases than boys in internalizing behavior problems, including symptoms of anxiety and depression (Keiley, Lofthouse, Bates, Dodge, Pettit, 2003; Leve, Kim, & Pears, 2005). Some research has suggested that increasing rates of internalizing symptoms may be explained by improvements in memory and reflection, which occur from childhood to adolescence, and allow children to anticipate potentially stressful events (Fanti & Henrich, 2010; Kovacs & Devline, 1998).

On the other hand, research has suggested that internalizing symptoms may slightly decrease or remain stable during early to middle childhood, before peaking in adolescence. For example, Aunola and Nurmi (2005) found that for a sample of 196 children surveyed from kindergarten to second grade, mean trajectories of internalizing symptoms took on a curvilinear change pattern, showing a decreasing trend that leveled out over time. In addition, Goldberg and Carlson (2014) examined mean trajectories of children's internalizing behavior problems from early to middle childhood and found that internalizing symptoms remained steady from ages three to nine. Specifically, using a sample of 770 children (boys and girls) with married or cohabitating parents from the FFCW dataset, authors identified that children experienced insignificant declines in internalizing symptoms from age three to age nine, suggesting that children's internalizing symptoms remained stable across time.

Taken together, mean declines in children's internalizing symptoms from age three to age nine are likely revealing the early, initial phases of a curvilinear pattern of growth, with decreases in internalizing symptoms from early to middle childhood prior to an upturn from late childhood to adolescence. Importantly, given that the present study did not include measures of

internalizing symptoms in adolescence and young adulthood, such a hypothesis is not fully warranted. However, longitudinal studies of children's internalizing behavior problems have shown such a pattern of change across time. Notably, Cohen, Andrews, Davis and Rudolph (2017) found that for a community sample of 636 youth, levels of anxiety and depression across seven years of development took on nonlinear growth trajectories. For boys and girls, levels of internalizing symptoms significantly decreased between second and sixth grade (approximately between ages seven and eleven, respectively) before taking on marginally significant increases from seventh to ninth grade (approximately between ages twelve and fifteen, respectively). In sum, authors cited that children experienced a critical juncture or "turning point" in the directionality of mean rates of change in anxiety and depression at age twelve, where symptoms went from decreasing across time to increasing across time.

Maternal Harsh Parenting Behaviors. Mean trajectories of maternal harsh parenting behaviors took on a curvilinear shape, with levels of harsh parenting behaviors staying relatively steady when children were three to five years old and subsequently showing accelerated declines from ages five to nine. Very few studies have modeled harsh or ineffective parenting behaviors longitudinally across time, let alone as a developmental process, which has its own underlying latent trajectory. Rather, it has been more common for extant research to consider harsh parenting as a variable to explain interindividual differences in children's externalizing trajectories (e.g., Miner & Clarke-Stewart, 2008), or in children's conduct problems (e.g., Bradley & Corwyn, 2007; Shaw, Gilliom, Ingoldsby, & Nagin, 2003).

To that end, results from the present study add to and extend a very small body of work that has modeled harsh parenting as a growth curve process. Specifically, Kim, Pears, Fisher, Connelly, and Landsverk (2010) examined maternal harsh parenting behaviors for a community

sample of families who were at-risk for harsh parenting behaviors. Parenting behaviors were measured when children were one, two, and three years old, which were modeled using latent growth curves. As with the present study, unconditional models showed a nonlinear growth curve trajectory, with significant mean increases in harsh parenting earlier in children's development and steadier levels in these behaviors later in young children's development. In contrast to findings from this study, the overall rate of change in maternal harsh parenting showed positive growth, whereas results from this study suggested that, on average, harsh parenting behaviors decreased across time. Yet, given that Kim et al. (2010) did not examine latter time points in children's development (e.g., childhood and late childhood), when harsh parenting behaviors are hypothesized to diminish (Straus & Stewart, 1999), such differential results align with theory. In such a way, lower levels of harsh parenting behaviors may reflect developmental changes in the parent-child relationship or developmental changes in children's emotional regulation. For example, parents may be less likely to engage in aggressive or threatening behaviors as children gain fluency in impulse, attentional, and inhibitory control, which then help facilitate coping behaviors (Raver et al., 2011). Further, higher-level cognitive processes which support reasoning, problem-solving, and perspective taking are beginning to emerge in middle childhood, which may facilitate more cooperative responses to parental redirection or discipline (Lansford et al., 2009).

Mediation Models: Direct and Indirect Effects

Children's externalizing behavior problems. Higher levels of couple supportiveness at birth were associated with lower starting levels of children's externalizing symptoms at age three and slower declines in these symptoms across time. Influences of couple supportiveness were partially transmitted through attenuated levels of maternal harsh parenting behaviors, suggesting

it had direct and indirect effects on children's initial levels of externalizing symptoms. Higher levels of coparenting supportiveness at year one were directly associated with lower starting levels of children's externalizing symptoms at age three and slower declines in these symptoms across time. These findings help to shed light on the different ways that supportive relationships between young parents may protect teenage mothers and children from common risk factors including harsh parenting and externalizing behavior problems (respectively).

Results from this study strongly align with research that has identified parenting as a pathway through which stress and support experienced by adults may influence children's emotional and behavioral development (McHale & Rasmussen, 1998). To date, research has often focused on risk factors that may increase parents' likelihood of using harsh or ineffective parenting strategies to manage their children's behaviors, with much less focus on identifying pathways of resilience (Thornberry et al., 2013). Evidence from this study suggests that supportive couple relationships may reduce more severe externalizing trajectories for children through the pathway of attenuated levels of harsh parenting behaviors.

Research suggests that social support from a partner or another caring adult may reduce feelings of stress and tension, which have commonly been linked to harsh and ineffective parenting strategies for parents and poor emotional and behavioral regulation for young children (Deater-Deckard, 1998). Such thinking is not new, as social support¹⁴ has long been identified as a key ingredient to strong mental health and effective coping (Thoits, 1995) and has been targeted in parenting interventions to support families with children who have diagnosed behavioral disorders (e.g., Sanders, 2008). However, what remains less clear is *how* social

¹⁴ Though there are different types of social support (e.g., informational, material, emotional), this discussion will specifically pertain to emotional social support, which includes acts of love, kindness, esteem, value, encouragement, and understanding.

support buffers individuals from experiences of stressful circumstances, psychological threats, or negative self-appraisals (Thoits, 2011).

One hypothesis suggests that the provision of consistent emotional support from a partner increases feeling of purpose and meaning in context of the family and community. Specifically, when parents are reassured by one another that they belong, are accepted, and valued, feelings of competence and self-worth grow (Thoits, 2011). In such a way, emotionally sustaining relationships between caregivers provide a safe and secure space for parents to build trusting relationships that support a “healthy and effective self.” (Lopez & Brennan, 2000; Thoits, 2011; Waters & Cummings, 2000). Parental beliefs about their partner’s emotional availability and supportiveness during times of stress and adversity is generally considered their *adult attachment organization* (Lopez & Brennan, 2000). Just as young children develop an awareness of their parents’ reliability as a secure emotional base, adults develop this same relational orientation with their partners.

Indeed, adult attachment organization is a relevant theory that may help to explain how emotionally supportive couple relationships mitigate children’s externalizing behavior problems through the pathway of attenuated harsh parenting (Waters & Cummings, 2000). For example, parents who have emotionally reliable and consistent relationships with one another may be better able to regulate emotions and cope with stress, given that they have a stable source of support when times get rough (Mikulincer & Florian, 2001). To that end, secure adult attachments may allow new parents to safely explore and “try out” their new roles as caregivers with more positive expectations about their interpersonal and relational capacities (Mikulincer, Florian, Cowan, & Cowan, 2002; Waters & Cummings). Hence, responsive couple relationships, which help parents to buffer stress, may allow for more sensitive and nurturant care with children

and lessen the need for ineffective parenting behaviors. In turn, these adjustments in parenting may increase children's sense of emotional security and reinforce secure attachments with caregivers, thereby lessening the need to express frustration, anger, or fear through externalizing symptoms.

In a similar vein, parents with responsive coparenting relationships may directly influence their children's behavioral development through social modeling of psychological flexibility and adaptation (McHale, Kuersten-Hogan, & Rao, 2004). Parents who are more skilled at responding to the challenges of co-raising a child in context of extrafamilial demands may be showcasing skill sets associated with emotional adjustment. Specifically, to support effective and truly collaborative coparenting relationships, parents must thoughtfully suppress and express emotions, recognize and adapt to situational demands, and shift mindsets (Kashdan, 2010). By actively observing their parents engaging in flexible and adaptive coparenting relationships, children have opportunities to create mental representations of parental behaviors and encode them into memory. Once integrated into their mental schema, children can access these memories to guide future behaviors (Bandura, 1971). Importantly, psychological flexibility and emotional expression/ suppression have been linked to behavioral regulation in children, which may explain, in part, why parents with these skill sets have children who can better adapt to feelings of frustration, anger, or fear (Cheng, 2003; John & Gross, 2004).

Children's internalizing behavior problems. Findings from this study suggest that higher levels of couple supportiveness at birth were directly associated with lower starting levels of children's internalizing symptoms at age three and slower declines in the total proportion of change in these symptoms from early to middle childhood. Importantly, results from this study did not suggest that initial levels of coparenting supportiveness linked to children's internalizing

trajectories. Such results bring to light that (a) couple supportiveness and coparenting supportiveness may impact young children's emotional adjustment in different ways and (b) that supportive couple relationships may mitigate the development of children's internalizing challenges through social modeling of psychological and cognitive skills associated with stress and coping.

To date, a limited amount of research has explored whether supportive qualities of couple and coparenting relationships may influence children's behavioral outcomes in different ways or whether these relationships tend to have the same types of associations with children's mental health. Results from this study suggest that starting levels and rates of change in children's feelings of anxiety, sadness, and insecurity have stronger connections to emotionally supportive qualities of parents' intimate relationships (i.e., couple supportiveness) than to their coordinated and shared efforts in raising children (i.e., coparenting supportiveness). Such findings contrast research which has suggested that parents' coparenting relationships tend to have more proximal links to children's behavioral challenges by mediating associations between couple relationships and children's adjustment (e.g., Bonds & Gondoli, 2007; Stroud, Meyers, Wilson, & Durbin, 2015).

However, it may be the case that *responsive* couple and coparenting relationships influence children's internalizing behavior problems in different ways than *conflictual* couple and coparenting relationships. Research suggests that though there are direct effects of coparenting conflict on children's internalizing symptoms, associations between supportive coparenting behaviors and child outcomes are often moderated by child and family factors. For example, coparenting interventions targeting effective communication and problem solving have shown that program impacts on parent-reported child internalizing symptoms have been

moderated by gender, with significant effects for boys, but not girls (Feinberg, Jones, Kan, Goslin, 2010). Additionally, the same intervention showed that program effects on parent-reported child emotional problems (e.g., fear and anxiety) were moderated by parental negative communication. Specifically, results suggested that increasing levels of negative communication were associated with increasing levels of emotional problems for children in control groups, while decreasing levels of negative communication were associated with decreasing levels of emotional problems for children in the intervention group (Feinberg, Jones, Roettger, Solmeyer, & Hostetler, 2014). Such findings suggest that coparenting supportiveness may have more complex associations with children's internalizing behavior problems than couple supportiveness and draws attention to the differentiated effects of these responsive relationships on children's internalizing symptoms. Given that this dissertation did not explore moderated effects of coparenting supportiveness on children's internalizing behavior problems, null findings may suggest the need to test plausible moderators, such as child gender.

On the other hand, findings from this study broadly align with work that has considered implications of supportive family relationships on children's prosocial behavior. For example, family relationships that are warm and cohesive have been linked to children's adaptive social skills (McHale, Johnson, & Sinclair, 1999), which may help children cope with more challenging emotional experiences without having to rely on internalizing or externalizing behaviors (McHale & Rasmussen, 1998). To that end, Goldberg and Carlson (2014) examined the association between couple supportiveness and children's internalizing trajectories for stable married and cohabitating families, which were measured when children were three, five, and nine years old. Results suggested that couple supportiveness was directly associated with small, yet significant decreases in levels of children's internalizing symptoms, but only when constructs

were co-occurring at the same point in time. In other words, earlier levels of couple supportiveness did not predict later levels of children's internalizing behavior problems, suggesting that children's behavior was more sensitive to the recent quality of their parents' relationship rather than earlier levels (Goldberg & Carlson, 2014).

The direct link between attenuated trajectories of children's internalizing behavior problems and couple supportiveness may also be explained by parental social modeling of positive self-efficacy and internal locus of control. Self-efficacy is defined as "peoples' beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives" (Bandura, 1991, p. 257); whereas locus of control is the degree to which people believe that outcomes in life are determined by factors within their control (e.g., personal skill development, perseverance) or determined by factors outside of their control (e.g., chance, luck, influence of powerful others) (Ajzen, 1985; Rotter, 1966). Parents with high levels of couple supportiveness – those who feel emotionally supported, valued, and understood by their partners – may be modeling cognitive processes commonly associated with positive self-efficacy and internal locus of control, including adaptive self-regulation, emotional security, and coping (Bandura, 1993; 1999; Kliewer & Sandler, 1992; Parkes, 1984). Specifically, when parents verbally encourage each other when times are tough or provide physical affection (e.g., hugs, hand on shoulder) when their partner is feeling overwhelmed, they are showcasing internal working models of the confidence and assurance in each other's capabilities to perform a particular task or make it through a rough experience. Specifically, the level of confidence that individuals have in their ability to alter or arrest disturbing thought patterns directly relates to the level of stress, anxiety, and depression people experience in threatening or difficult situations (Bandura, 1993). For children and adults with low self-efficacy and external locus of control,

internal narratives and belief systems suggest that they will have little success in controlling disturbing thought patterns related to emotionally threatening situations, which play a central role in anxiety arousal. In such a way, inefficacious thought patterns about controlling internal dialogue may magnify the severity of possible threats and coping deficiencies or impair their level of function (Bandura, 1993; Flett, Blankstein, & Obertinsky, 1996). For children and parents with high self-efficacy and internal locus of control, internal narratives and belief systems suggest that they have the ability to modulate feelings and emotion-related neurological processes (i.e., physiological responses, cognition, and behavior) to support their emotional adjustment (Caprara et al., 2008; Eisenberg & Spinrad, 2004).

Taken together, when parents engage in emotionally supportive and encouraging social exchanges, they are modeling positive cognitive strategies associated with their locus of control and self-efficacy. By actively observing their parents engaging in caring, emotionally responsive social exchanges, children have opportunities to create mental representations of these behaviors and encode them into memory. Once integrated into their mental schema, children can access these coping strategies when they experience uncertainty, stress, or disturbing thoughts and may be less likely to experience symptoms associated with anxiety or depression. In sum, findings suggest that couple supportiveness around the transition to parenthood matter in terms of mitigating children's internalizing behavior problems across time. Parents who demonstrate emotionally responsive and trusting behaviors may be showcasing internal working models of positive self-efficacy and strong internal locus of control, helping children to cope with worry and anxiety (Bandura, 199; Rutter, 1987).

Policy and Practice Implications

Lessons from this study suggest that offering couple and coparenting services to teenage parents may be a valuable investment for programs looking to promote the emotional and behavioral adjustment of children born to adolescent mothers. Federal programs that have aimed to serve expectant or parenting teens have often targeted families' self-sufficiency by prioritizing services to bolster maternal socioeconomic and educational outcomes with much less focus on services to support mothers' and fathers' relational skill sets. Though federal programs and grant initiatives (e.g., Teenage Parent Demonstration, New Chance, Pregnancy Assistance Fund) have been moderately successful in increasing rates of mothers' high school graduation, job training, and employment (e.g., Asheer, Burkander, Deke, Worthington, & Zief, 2017; Maynard, Nicholson, & Rangarajan, 1993), most programs have struggled to promote children's emotional and behavioral well-being, leaving many unanswered questions about how well the developmental and psychosocial needs of families are being met (Reichman & McLanahan, 2001). Indeed, state-funded programs have often struggled to identify program models that adequately meet personal contexts of teenage-headed families, with some bumping-up against public and social climates that devalued and stigmatized experiences of young women and their families (Person et al., 2016).

Given that programs supporting teenage-headed families have a history of overlooking parents' perspectives and lived experiences as relevant building blocks to program development, it is not surprising that many mothers do not readily rely upon social or public institutions for support (Daley, Sadler, & Reynolds, 2013; Mollborn & Jacobs, 2015; Sarri & Philips, 2004). To compound complexities, for those mothers who do access and utilize support services, providers are not uniformly supportive of young mothers. For example, teenage mothers have reported that

service providers (e.g., clinicians, teachers, social service staff) have directly and indirectly communicated disapproval of their situations by stereotyping mothers as unmotivated and irresponsible parents, which has resulted in power imbalances and experiences of stigmatization for young mothers (Dumbrill, 2006; Luttrell, 2004; SmithBattle, 2013; Sykes, 2011). Such experiences may explain why some self-sufficiency and parenting programs have struggled to recruit and maintain mothers or have found that programs had little to no impacts on children's or parents' psychosocial outcomes.

One way for programs to ameliorate some of these issues is to shift perspectives from family deficits to family strengths, underscoring that parents have the capacity to navigate and rebound from crisis or adversity (Walsh, 1996). Broadly, common strengths among families include “faith, flexibility, humor, positive communication skills, problem-solving skills, or mutually supportive and caring relationships,” (U.S. Department of Health and Human Services' Children's Bureau, Office on Child Abuse and Neglect, 2018, p. 16). For teenage-headed families, mothers and fathers often identify their commitment to co-raising a child (i.e., coparenting) as a priority and shared goal, both prior to and after the birth of their child. For other parents, emotional support from their partner helps to facilitate individual goals such as educational attainment, gainful employment, or responsive parenting (Nelson, Tash, Shelton, & Boyer, 2015); support from children's fathers has also been shown to reduce symptoms of depression and buffer negative perceptions about pregnancies (Easterbrooks et al., 2016; Pires, Araújo-Pedrosa., & Canavarro, 2014). In such a way, couple and coparenting relationships may reflect an asset for teenage parents, one that is a touchstone to their family development, yet often overlooked by social support programs as a promising strength to build upon to support healthy families.

Engaging families from a strengths-based perspective has important implications for programs serving teenage-headed families including supporting parents' engagement in services, efficacy and empowerment, and relationship-building capacity (Green, McAllister, & Tarte, 2004). What's more, validating and integrating self-identified strengths of teenage parents into service development may help to create stronger solidarity between teenage parents and services providers. To that end, programs should strongly consider engaging expectant *couples and coparents*, rather than providing services separately to mothers and fathers. This type of programmatic approach may send vital messages to parents that their intimate relationships and shared interests in coparenting are valued by social institutions and practitioners. Given that many teenage parents have voiced that families, social institutions, and support programs disrupt their relationships and often push them apart, identifying these relationships as a resource may be an integral step in setting-up a stronger, strengths-based coparenting framework for families.

For mothers and fathers who want to invest in their couple or coparenting relationships, programs should provide services to help families build skills associated with effective communication, solution-oriented problem solving, and consistent emotional support (Cowan & Cowan, 2014; Mikulincer et al., 2002). Importantly, findings from this study suggest that investing in parents' interpersonal relationships through the provision of support services may be especially promising for children's emotional and behavioral health, in addition to offering benefits to mothers who use ineffective or harsh parenting behaviors. In terms of timing, services may be most beneficial to families if they are delivered very early on in their relationships, possibly during the second or third trimester of pregnancy and provided throughout children's first birthday. Delivering services during the transition to parenthood may be helpful for families, given that it is a window of opportunity to change or develop new behaviors and that supportive

relationships between parents during this time period have been shown to set-up children for more adaptive emotional and behavioral trajectories (Cowan & Cowan, 1995; Feinberg, 2003). On the other hand, programs may want to consider offering services to strengthen couple and coparenting relationships during later periods in families' trajectories, when parental interpersonal relationships may be more stable. Findings from this study suggest that after initial steep declines in couple supportiveness, which occurred in the first year of parenting, couples experienced a period of relationship stability. Specifically, couples showed slight increases in couple supportiveness when children were between one and three years old, suggesting that parents may have bounced back or recovered from initial strains or stresses of parenthood. Identifying time periods during which family systems are emotionally stable may allow programs to “catch a wave of momentum” that is naturally occurring for these families and increase the likelihood of program enrollment or participation.

Limitations

There are a handful of limitations to discuss in association with this study. In context testing indirect effects analyses, two qualifying statements should be made about temporal precedence and the direction of effects among family processes. First, it is well known in the fields of child development and family studies that relationships between children and parents are transactional, and mutually influential processes (e.g., Lengua & Kovacs, 2005; Goldberg & Carlson, 2014; Sameroff, 2009). In other words, parent-child relationships exist in *feedback loops* – bidirectional and reciprocal processes, whereby behaviors of parents and children are both specified as causes and effects of each other (Emerson, 1976; Kline, 2015). Hence, it is acknowledged and recognized that indirect effects captured in this study do not account for the potentiality that characteristics of children's behavioral trajectories may be, in part, shaping the

developmental trajectories of parental relationships or maternal parenting behaviors. It is also noted that the intermediary variable (e.g., maternal harsh parenting trajectories) and outcome variables (e.g., children's externalizing and internalizing trajectories) are measured at the same points across time (e.g., Y3, Y5, Y9), which further complicate and significantly limit any *causal* conclusions about mediation that may be drawn from these analyses.

A second limitation of this study is that it did not include teenage and young fathers' reports on couple and coparenting supportiveness to assess the quality of these relationships in teenage-headed families. Including perspectives of young fathers on studies that explore teenage-headed family systems is important given that relationship challenges between parents have been shown to influence the ways that fathers engage with their children (Kalil et al., 2005). However, teenage and young fathers have traditionally been overlooked in research that has aimed to understand family-based experiences of children born to teenager mothers (Mollborn & Lovegrove, 2011). Most research that has explored relationships between teenage parents has relied upon maternal reports of key family processes (e.g., couple or coparenting conflict) to consider the ways that these relationships develop and change over time or how they link to the well-being of their children. Given that father and mother reports of father involvement among low-income families have differed (e.g., Coley & Morris, 2002) and that teenage fathers' ratings of their prenatal involvement has been linked to their levels of coparenting alliance and partner conflict (Fagan, 2014), making an effort to integrate voices of fathers is necessary to better understand factors that contribute to their engagement and involvement with families.

A final limitation to this study is that growth curve analyses only included three waves of data for key developmental processes, including children's externalizing and internalizing behavior problems and mother's harsh parenting behaviors. At the time of this study, data from

FFCW for Y15 follow-ups was not available, which includes ratings on focal children's internalizing and externalizing behavior problems. Given that four waves of data are optimal for modeling of growth curve processes (Muthén & Muthén 2010) and that internalizing behavior problems tend to increase in adolescence (Bongers, Koot, Van der Ende, & Verhulst, 2003), incorporating this information may be helpful to understanding long-term implications of responsive adult-adult relationships on children's behavioral trajectories.

Conclusions

Despite the aforementioned limitations, this dissertation makes several contributions to early childhood research. The study uses five waves of longitudinal data to explore how trajectories of teenage parents' interpersonal relationships shape the development of their children's mental health from early to middle childhood. By considering emotionally responsive qualities of interpersonal relationships, this study highlights strengths of teenage parents that are often overlooked when thinking about their families. Supportive relationships between young mothers and fathers have the potential to buffer children from developing more severe externalizing and internalizing trajectories. Some of these influences may be indirectly transmitted through attenuated levels of maternal harsh parenting behaviors, which suggests that these relationships matter in terms of supporting both mothers and children. Parents with responsive relationships may be showcasing internal working models of positive self-worth, internal locus of control, or cognitive flexibility, which may help children to cope with anxiety or frustration and help mothers to feel more competent as parents. Family support and early childhood programs for teenage parents should offer services for couple and coparenting relationships prior to and after the birth as an additional pathway to support positive child adjustment and effective parenting behaviors.

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