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The past century has seen increased attention towards the occurrence of union dissolution, cohabitation, and nonmarital childbearing. Families are becoming increasingly complex and contemporary cohorts of children in the United States are likely to experience one or more family transitions (Brown, Stykes, & Manning, 2016). Multiple family transitions are defined as repeated changes in a child's family structure and are often measured as a count of the entrances and exits by a biological parent's romantic partners or spouses into or out of a child's household (Fomby & Osborne, 2015). This can include marriage, divorce, remarriage, cohabitation, dissolution of a cohabiting relationship, and death of a partner. The purpose of the current study is to examine the direct and indirect effects of multiple family transitions on changes in children's BMI percentile.

The data used are from the first five waves of the Fragile Families and Child Well-Being Study (FFCW). The FFCW is a longitudinal study of 4,898 children who were born between 1998 and 2000 from 20 cities in the United States. The results demonstrated that multiple family transitions were not directly associated with a change in children's BMI percentile. The only indirect effect involved socioeconomic status, such that multiple family transitions from year 1 to year 5 were negatively associated with SES at age 5 and SES was negatively associated with change in children's BMI percentile at age 9. The findings illustrate that SES has an important role on the

relationship between multiple family transitions and change in children's BMI percentile during a developmentally sensitive period and interventions focused on improving economic well-being have the potential to reduce child obesity rates and health disparities.

THE DIRECT AND INDIRECT EFFECTS OF MULTIPLE FAMILY TRANSITIONS
ON CHANGES IN CHILDREN'S BMI PERCENTILE: EXAMINING THE
ROLE OF FAMILY PROCESSES

by

Savannah A. Sommers

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Approved by

Committee Chair

APPROVAL PAGE

This thesis, written by Savannah A. Sommers, has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

Committee Chair _____

Committee Members _____

Date of Acceptance by Committee

Date of Final Oral Examination

TABLE OF CONTENTS

	Page
LIST OF TABLES.....	v
LIST OF FIGURES	vi
CHAPTER	
I. INTRODUCTION	1
Multiple Family Transitions	2
Theoretical Foundations.....	4
Family Stress Theory	4
Conceptual Model.....	8
II. REVIEW OF THE LITERATURE	10
Indirect Effects of Family Processes.....	10
Maternal Parenting Stress	10
Harsh Parenting.....	13
Coparenting Quality.....	15
Socioeconomic Status	17
Proposed Study	19
Hypotheses	22
III. METHODS	23
Participants.....	23
Measures	24
Multiple Family Transitions	24
Maternal Parenting Stress	25
Harsh Parenting.....	26
Coparenting Quality.....	27
Socioeconomic Status	28
Child BMI Percentile	29
Statistical Analyses	30
Direct and Indirect Path Model.....	31
IV. RESULTS	33
Preliminary Analyses	33

Descriptive Statistics and Correlations	33
Primary Analyses	34
Hypothesis Testing.....	34
Maternal parenting stress	34
Harsh parenting.....	35
Coparenting quality.....	35
Socioeconomic status.....	36
V. DISCUSSION	37
Multiple Family Transitions	38
Strengths and Limitations	45
Future Directions	46
REFERENCES	50
APPENDIX A. TABLES.....	62
APPENDIX B. FIGURES	66

LIST OF TABLES

	Page
Table 1. Descriptive Statistics.....	62
Table 2. Correlations for Variables of Interest	63
Table 3. Direct and Indirect Effects of Multiple Family Transitions	65

LIST OF FIGURES

	Page
Figure 1. Multiple Family Transitions Conceptual Model	66
Figure 2. Multiple Family Transitions Path Model	67

CHAPTER I

INTRODUCTION

In the past century there has been increased attention to the occurrence of union dissolution, cohabitation, and nonmarital childbearing. The nuclear family has been considered the norm for many decades even though in 2016 only 69%, compared to 88% in 1960, of children lived with two parents (Pearce et al., 2018). These changes in family structure are not new and have been occurring since the 1980's, when family structures that deviate from the "norm" started to become more socially acceptable. In fact, recent statistics demonstrate that over 40% of childbirths occur to unmarried mothers, and half of these are to cohabiting couples (Manning, Brown, & Stykes, 2015). It has been argued that these changes are partially a result of the stabilization of divorce rates, more positive perceptions of cohabitation, and the presence of single-family homes (Coontz, 2015; Gentry, Kennedy, Paul, & Hill, 1995).

Consequently, families are becoming increasingly complex in nature and contemporary cohorts of children in the United States have a high likelihood of experiencing one or more family transitions (Brown, Stykes, & Manning, 2016; Fomby & Bosick, 2013). In fact, 50% of children in the United States spend their time in at least two different types of family structures (Brown et al., 2016). Family structure has been an area of interest for researchers who aim to understand the nature of families and how close relationships can have short-term and long-term impacts on child development.

Beginning in the early 1900's, there has been increased attention to understand how changes in family structure affect individual members (Wu & Martinson, 1993), as well as what kinds of changes are associated with more adaptive outcomes (Lee & McLanahan, 2015).

Multiple Family Transitions

The literature has used a variety of definitions of family structure transitions. Multiple family transitions are defined as repeated changes in a child's family structure and are often measured as a count of the entrances and exits by a biological parent's romantic partners or spouses into or out of a child's household (Fomby & Osborne, 2015). These transitions can include marriage, divorce, remarriage, cohabitation, dissolution of a cohabiting relationship, and death of a partner. Much of the literature has labeled repeated changes in family structure as family instability or family turbulence. The issue with using this terminology is that it assumes all family transitions will result in a negative outcome. This is incorrect as there are circumstances where experiencing a family transition can be beneficial for families because it leads to an escape from a high conflict and unhealthy environment. Therefore, I will use the term multiple family transitions when discussing the experience of one or more changes in family structure.

Trends in research have demonstrated that as families grow increasingly more complex so does the likelihood that children will experience at least one change in family structure. It is estimated that by age 15, 35% of children born to married parents and 78% who are born to cohabiting parents will have experienced one family transition, typically a union dissolution (Tach, 2015). Moreover, over 25% of children will experience two or

more family transitions by the time they are 12 years old (Cavanagh & Fomby, 2019). It is important to examine the ways in which the accumulation of changes affect individual family members. Specifically, it is important to assess how these changes impact child development, because the first two decades of our lives are spent interacting with some of the most influential agents—our primary caregivers.

The perspective that multiple family transitions results in adverse outcomes is based in the assumption that a stable home context is the optimal environment for child rearing (Bloome, 2017). To the extent that this assumption is correct, experiencing multiple transitions during childhood may lead to an unstable and unpredictable living environment. Therefore, such instability may indirectly affect children by creating negative changes in parenting and family processes. Experiencing a change in structure, as well as other changes in family functioning, can lead to an environment of chronic stress that can have serious consequences for child development.

Research on multiple family transitions has typically focused on their associations with children's socio-emotional, cognitive, and behavioral outcomes. Specifically, there have been links established between multiple family transitions and increased externalizing behavior, delinquency, and antisocial behavior (Fomby & Cherlin, 2007; Fomby & Osborne, 2015; Mitchell et al., 2015). Multiple family transitions have also been associated with lower verbal ability (Cooper, Osborne, Beck, & McLanahan, 2011; Lee & McLanahan, 2015) and less frequent college attendance (Fomby & Bosick, 2013). Less scholarly attention has been directed towards examining the relationship with physical health outcomes, even though previous research has suggested that there is a

relationship between family living arrangements and children's health (Bzostek & Beck, 2011). Specifically, it has been argued that children who do not live in a two-parent household are more likely to be obese (Amato, 2005; Augustine & Kimbro, 2015; Chen & Escarce, 2010). To the extent that this is correct, it would be valuable to further examine whether current family structure is associated with higher BMI percentile or if this relationship is better explained by the experience of multiple changes in family structure.

Childhood obesity has become global concern, as 13.9% of preschool-aged children (2-5 years old) and 18.4% of school-aged children (6-11 years old) are obese (CDC, 2017). Obesity rates have been significantly increasing since 2000 (CDC, 2017) and it is important to investigate the factors that may be associated. This is critical as childhood obesity has been shown to be associated with worse health and socioeconomic well-being in adulthood (Case, Fertig, & Paxson, 2005). Considering these lasting effects, there is reasonable evidence to support the need to further examine the relationship between multiple family transitions and changes in children's BMI percentile. Having a better understanding of the processes that explain the relationship is important for the development of future interventions aimed at reducing obesity rates and improving children's overall health (McGovern et al., 2008).

Theoretical Foundations

Family Stress Theory

Family stress theory explores how some families can thrive when faced with stressors, and how others weaken when experiencing similar challenges (Hill, 1949;

1958). Importantly, family stress theory recognizes that all families encounter stressors throughout the life course. Stressors are considered to be a normative part of the life course and differences in family adjustment that occur are not because some families face stressors, and some do not. Rather, it is the balance between how severe the stressor is and the resources that are available to address the stressor(s) that cause variability in adjustment between families and the individuals within them. The associated hardships and how individuals perceive stressors is also important in how families adjust. Stressors are defined as life events or changes that impact the family unit and that have the ability to change the family system (McCubbin & Patterson, 1983). The stressors that families experience typically tend to have large impacts on the relationships among family members (Conger & Elder, 1994). Considering this, it is appropriate to use family stress theory to explore how changes in family structure can affect children's overweight/obesity status through family processes. A variant of McCubbin and Patterson's (1983) Family Adjustment and Adaptation Response (FAAR) model will be used to guide the current study.

It is beneficial to use the FAAR model because it recognizes that stressors seldomly occur at once, as there is often an accumulation of stressors and associated hardships that occur and families have to attempt to maintain balance by using the resources and coping mechanisms that are available (McCubbin & Patterson, 1983). A variant of the adaptation phase of the FAAR model will be used as a theoretical guide, such that the experience of multiple family transitions will reflect stressor pileup. Changes in family structure can be viewed as stressors because they are a life event that

has the potential to produce change in the family social system (Patterson, 1988). During the adaptation phase, the family attempts to restore balance in the system by acquiring new adaptive resources and coping behaviors (Patterson, 1988). Resources can include, but are not limited to, money, emotional health, and family cohesion. Family processes are important resources that families draw upon when experiencing changes in family structure (Olson, Waldvogel, & Schlieff, 2019). The decisions and behaviors of parents can have important implications for children's development both immediately and long-term. Among the ways that family transitions can affect children is through changes in parenting and coparenting quality. Parents are some of the most influential agents in children's lives, and children are less likely to have poorer developmental outcomes if parents exhibit a supportive relationship, sensitive parenting behaviors, and positive psychological well-being. The home context is further impacted by the amount of economic resources available in the household, often viewed as household income. This is in part due to the fact that household income aids in creating a predictable and safe home environment for children. It is clear that parenting and other family process variables are important resources that families draw upon during stressful periods.

Considering this, family stress theory provides an acceptable framework for studying the different effects of family structure transitions on individual and family development. Application of family stress theory would be grounded in the basic notion that experiencing a family transition is a stressful experience and multiple changes in structure would place individuals in the family system at an increased risk for potentially undesirable changes in family functioning. Furthermore, how families balance resources

with the demands of multiple stressors can influence overall adaptation. Adaptation varies on a continuum from bonadaptation to maladaptation and is reflective of the ability of the family to restructure and consolidate (McCubbin & Patterson, 1983).

Bonadaptation is referred to as the positive outcome as it promotes individual and family development, whereas maladaptation is viewed as the poorer outcome because it reflects continued imbalance in individual or family functioning.

Given adequate time, families are likely to adapt to a change in family structure and adjust accordingly. This is a result of having an appropriate amount of resources available to counter the demands faced. Some of the most important resources include family integration and adaptability. Family integration includes coherence and unity in the family, whereas family adaptability is the ability to meet obstacles and change behavior (McCubbin & Patterson, 1983). Parenting and coparenting quality are processes that can facilitate family integration and adaptability. The ability of parents to work together and use effective parenting strategies is important for families to be able to be united and successfully overcome obstacles. Likewise, families who have greater resources and are better prepared to cope with stressors are more likely to have coping strategies that will help them meet the challenges experienced. In comparison, families that experience multiple changes in family structure may have fewer available resources and would be more likely to be negatively affected by such changes.

Multiple family transitions are an example of the accumulation of stressors, as the change in structure is a stressor but so are additional sources of strain (e.g., lack of communication, growth and development of children, and harsh parenting) that typically

follow. Additionally, families have to attempt to cope with and adapt to the stress of family transitions. If the family is unable to adapt and make changes to its lifestyle and roles then it may lead to a maladaptive outcome. It is not the change in family structure itself, but the lack of sufficient and appropriate resources to balance the demands of family structure changes that may ultimately result in an adverse outcome or, in this study, children being more likely to be overweight.

Conceptual Model

Borrowing from family stress theory (Hill, 1949) and the FAAR model (McCubbin & Patterson, 1983), the current conceptual model (Figure 1) recognizes that a period of change, like a change in family structure, can be a stressful experience that affects all members of the family system. Multiple family transitions, as opposed to a single-family transition, can amplify the stressful experience as changes in the household are more frequent and there is less time and fewer resources to adapt to each successive transition. Multiple family transitions were measured from the time children were one year old until the time they were five years old in order to assess early stressors in children's lives. The first few years of a child's life are a critical period for biological, cognitive, and social development and experiencing multiple stressors early on can impede development in these areas. Greater exposure to stressors early in life has been found to be associated with weight gain in children through direct metabolic changes and maladaptive coping behaviors (Gundersen, Mahatmya, Garasky & Lohman, 2010).

Importantly, the current conceptual model emphasizes the role of family process variables in the relationship between multiple changes in family structure and child

outcomes. It may not be that repeated changes in family structure are entirely responsible for worse developmental outcomes, but it could be the case that changes in family structure also have indirect effects on children through family processes (Forman & Davies, 2003). The family process variables of interest were measured when children were five years old to reflect the resources and support available to families after experiencing a stressor. Therefore, I propose that multiple family transitions will be associated with a greater change in child BMI percentile. Furthermore, the current model includes maternal parenting stress, harsh parenting, coparenting quality, and socioeconomic status as variables that may indirectly explain the ways in which multiple family transitions do or do not affect children's overweight/obesity status. Various aspects of the home environment were included in attempt to better understand the mechanisms involved.

CHAPTER II

REVIEW OF THE LITERATURE

The increased diversity in living and marital arrangements during the past two decades has created an influx of research that is aimed at understanding the consequences of such changes. However, gaps in the literature have been created by a focus on only examining family transitions as a change in structure. Thus, the role that family processes have in these transitions has been overlooked and the underlying mechanisms that are associated with adverse health outcomes are largely unknown (Cherlin, 2010; Panico, Bartley, Kelly, McMunn, & Sacker, 2019). As a result, we have a very narrow understanding of what factors help explain the association between multiple family transitions and children's weight outcomes. The following section is directed towards discussing important empirical work that highlights the need to consider the possible indirect effects of parenting, coparenting, and household factors on multiple family transitions.

Indirect Effects of Family Processes

Maternal Parenting Stress

Parenting stress is defined as the perception that the demands of parenting surpass the resources that are available (Cooper et al., 2009). It has been found that parenting stress is negatively associated with the effectiveness of parenting behaviors (Choi & Becker, 2019), suggesting that the effects of feeling overwhelmed by parenting demands

can have consequences for how parents interact with their children. Experiencing a change in family structure is one way that can contribute to experiencing feelings of parenting stress. In fact, it has been found that mothers who experienced at least two-family transitions in a one or two-year period reported twice as much parenting stress compared to mothers who experienced one family transition (Cooper et al., 2009).

This is particularly true for mothers, who often experience changes in social and economic support when the change in family structure involves the exiting of a biological or social father. Changes in economic capital are common as families have to transition from dual-earner to single-earner income (Womack et al., 2018). Further, mothers face additional stressors as they have to increase the number of hours spent working and time spent away from their children. This can increase the amount of parenting stress felt as mothers balance more demands with potentially less available resources. Likewise, the exiting of an intimate partner from the household can drastically reduce the amount of social support for mothers. Mothers who have to adjust to a single-parent household often take on twice the amount of parenting responsibilities, as non-resident father involvement tends to decrease over time (Goldberg & Carlson, 2015). This decrease in physical and emotional aspects of social support may increase the amount of parenting stress that mothers feel (Cooper et al., 2009).

Similarly, the formation of new family structures can also impact maternal parenting stress as mothers gain additional resources, but also need to adapt to new roles and routines within the household. Periods immediately following a new union formation can be characterized by stress and instances of household chaos as family members work

towards adjusting to these changes. These periods may leave caregivers overwhelmed by the stress of parenting, thus reducing their responsiveness to child needs (Conger et al., 2010; Schultz, Izard, & Ackerman, 2000). Nonetheless, new union formations can also reduce the amount of maternal parenting stress because of the addition of social and economic resources. The addition of another parental figure in the household allows for shared household, parenting, and economic responsibilities (Cooper et al., 2019).

Maternal stress has been found to be a risk factor for children being overweight and childhood obesity in cross-sectional and longitudinal studies (Koch, Sepa, & Ludvigsson, 2008; Lohman, Stewart, Gundersen, Garasky, & Eisenmann, 2009; Tate, Wood, Liao, & Dunton, 2015) and has been justified by the ability of maternal stress to alter parenting behaviors and household context. In fact, there has been some research that has examined the relationship between maternal parenting stress and childhood BMI, and the results demonstrated a significant positive association between maternal stress and children's overweight status as young as three years old (Stenhammar et al., 2010). Likewise, Panico, Bartley, Kelly, McMunn, and Sacker (2019) examined the effects of changes in family structure on children's BMI and also included parenting and household variables to help explain different trajectories. The results suggested that multiple changes in structure from birth to age five were associated with higher BMI scores at age five and this was in part explained by lower levels of parental well-being. This suggests that the psychological well-being of mothers is important for early periods of development. This is most likely due to the idea that maternal parenting behaviors can be influenced by their well-being and mental health (Conger et al., 1992).

Harsh Parenting

The quality of parent-child relationships after or when experiencing a family transition can act as a protective factor for children's negative outcomes (Dunn, 2014). If parent-child relationships after a family structure transition are warm and supportive, then children will be at a lesser risk for problems. In fact, there has been evidence that supportive parenting is an important correlate of children's well-being in various family structure types (Bastaits & Mortelmans, 2016). However, stressors, such as multiple family transitions, can alter parenting behaviors and in turn affect children's physical and psychological adjustment (Conger et al., 1992). As previously discussed, the period following a family transition is usually chaotic as family members need to redefine roles and routines in their lives. Parenting is one aspect that can be challenged during this period. If a parent feels that the demands of coping with the stressor and associated hardships outweigh the available resources, the stress can lead to poor quality parenting. This can be characterized as being emotionally or physically unavailable or abusive, both of which are known to be detrimental to children's development (Deater-Deckard & Scarr, 1996).

The relationship between parenting behaviors and children's internalizing and externalizing behaviors has been well established (Amato & Fowler, 2002; Beyers, Bates, Pettit, & Dodge, 2003; Williams et al., 2009). The extent to which parenting behavior is associated with childhood obesity is less known and warrants further investigation. It is important to examine the effects of parenting to better understand the ways in which environmental factors contribute to children's weight gain. Research that has been

directed at examining this association has largely focused on parental feeding practices (Birch et al., 2001; Cardel et al., 2012; Frenn et al., 2013; Polfuss & Frenn, 2012).

Moreover, the studies that have focused on parenting styles have found associations with obesity (Agras, Hammer, McNicholas, & Kraemer, 2004; Kakinami et al., 2015; Morawska & West, 2012; Yavuz & Selcuk, 2018).

Another aspect that is important to consider are the specific behavioral strategies used by parents (Berge, Wall, Bauer, & Neumark-Sztainer, 2010). Parenting behaviors have the ability to influence childhood obesity by impacting the daily activities, emotion regulation skills, and eating behaviors of their children (Rhee et al., 2006). Parents are among the most influential agents in children's lives and have the ability to shape their growth and development. Specifically, harsh parenting has been found to have a lasting negative influence on physical health (Brody et al., 2013; Miller, Chen, & Parker, 2011; Wegman & Stetler, 2009). Harsh parenting is defined as the use of negative affect, physical aggression, and emotionally impulsive reactions to punish or discipline children (Rueger, Katz, Risser, & Lovejoy, 2011). The use of harsh parenting may also interfere with the ability of parents to respond quickly and effectively to their child's needs. As a result, children have difficulties with regulating their emotions and practicing health promotive behaviors (Schofield, Conger, Gonzales, & Merrick, 2016). Longitudinal work has demonstrated that adolescents who experienced harsh parenting showed significant increases in BMI (Schofield et al., 2016). Further, the researchers found that these differences persisted into young adulthood, demonstrating that harsh parenting practices have the potential to have lasting effects. Negative physical, verbal, or emotional

behaviors can aid in creating an undesirable home environment. Parents may also unintentionally model behaviors for their children and if these behaviors are inappropriate then they may pave the way for future child behavioral problems. Harsh parenting can create a chronic stressful environment that not only alters critical physiological responses but also effects emotional and behavioral responses in children.

Coparenting Quality

Parents' ability to coparent effectively, whether living together or not, is important for their children's development and family life (Goldberg & Carlson, 2015). Coparenting refers to the quality of the relationship between parents, including how they support each other and cooperate when making decisions for their child (Lamela et al., 2016; McHale, Kuersten-Hogan, & Rao, 2004). Importantly, coparenting is not limited to parents who live together and can extend to non-residential parents and single-parents (McHale, Kuersten-Hogan, & Rao, 2004). However, the ability to coparent may be easier for parents who live together, as there is a greater likelihood that there are clear roles and responsibilities within the household. By contrast, parents who live apart have to actively work to communicate on roles and responsibilities with one another because of role and boundary ambiguity (Furstenberg & Cherlin, 1991).

Coparenting quality can be particularly challenged when faced with a relationship dissolution or divorce. Parents' previous relationships with each other and with their new partners can have a large influence on the quality of coparenting that occurs (Carlson & Hognas, 2011; Goldberg & Carlson, 2015; Waller, 2012). Specifically, parents' relationship quality while together has been demonstrated to predict more supportive

coparenting, whereas maternal new relationship formation has been associated with lower coparenting quality (Goldberg & Carlson, 2015). The combination of new union formation and decline in coparenting quality may be a result of increased parental conflict or unclear parenting expectations (Carlson & Hognas, 2011). To promote a better coparenting relationship, ideally parents will be able to have a cooperative relationship with one another; if that is not possible, hopefully they will at least be able to communicate clearly with one another about issues pertaining to the children.

Parent's relationship quality over time is also important for children's well-being and may offset the risks associated with divorce and relationship dissolution (Ahrons, 2006). Experiencing multiple family transitions may not be entirely responsible for poorer child outcomes and it could be the high conflict and unsupportiveness in the parent relationship that is contributing to the increased risk and vulnerability. This is typically labeled as conflicted coparenting and results in poor parental relationships and less involved fathers (Waller, 2012). When parents demonstrate cooperative coparenting styles, however, characterized by low conflict and high support (Waller, 2012), fathers are more involved and engaged in their child's life. This suggests that the ability to put differences aside and work together to support parenting efforts is important for continued father involvement and potentially child outcomes. Therefore, coparenting may mitigate some of the risks associated with experiencing multiple family transitions.

Coparenting support also has an important role for children's physical health. A lack of support and the presence of high parental conflict can create a stressful environment for children as they are exposed to the conflict and at times experience

triangulation. Triangulation occurs when children are involved in their parents' conflicts and are forced to pick sides or try and lessen the conflict (Minuchin, 1974). Living in an environment of chronic stress has been found to alter physiological responses and have an effect on a variety of health outcomes. Specifically, chronic stress has been linked with increased body fat and obesity (Björntorp, 2001). Using data from the Fragile Families and Child Well-Being study, Bzosteck and Beck (2011) found a significant positive relationship between father support of mothers at age five and child health at age five, including lower obesity rates. These results contribute to the argument that a supportive relationship between parents can minimize the likelihood of a stressful environment. Thus, coparenting support has the potential to act as a protective factor for childhood obesity.

Socioeconomic Status

Additionally, there can be a change in the resources that are available to families as a result of changes in family structure. Changes in income are common in families who experience a change in family structure, specifically if this change involves the exiting of a parental figure (Womack et al., 2018). Often, there is a decrease in income as families have to transition from dual-earner to single-earner income status. A large majority of the work that has examined economic consequences of family transitions has focused on the lasting effects of divorce (Smock, 1993; Smock, Manning, & Gupta, 1999; Tach & Eads, 2015), and has found that divorced women are typically worse off financially and men have better economic well-being (Fine, Demo, & Sommers, in press). In addition to having worse economic well-being, women typically remain the

primary caregiver for children after a divorce and have to devote more time and money to taking care of their children or paying for childcare services (Altintas & Sullivan, 2016; Bianchi, Sayer, Milkie, & Robinson, 2012).

Given that contemporary couples are now more likely to delay marriage or cohabitate beforehand, there is a need to examine the economic consequences of the dissolution of cohabiting couples as well. Avellar and Smoch (2005) used nationally representative data and found that post dissolution, men had an income loss of about 10%, whereas women experienced a loss of about 30%. Considering that two-fifths of all children will spend some time in a cohabiting family by age 12 (Kennedy & Bumpass, 2008), the drastic loss of income for women is concerning. Loss of economic resources in itself is likely to be detrimental for children's development, but it can also contribute to increased chaos in the household and maternal stress as mothers are forced to balance between work and family life and adjust accordingly.

It should be noted however that family transitions are not always a negative experience and union formations can benefit women and children. In fact, children who are born to single mothers and later experience the entrance of another parental figure have had drastic increases in household income (Ribar, 2015). This can be attributable to an additional income and other assets that are beneficial to an improved economic well-being and household environment.

As the economic resources that are available to families largely shape the household environment, it is essential to consider the ways in which children's physical health can be influenced. Wang (2001) examined the relationship between socioeconomic

status, measured by family income, and childhood obesity. The researcher found that in the United States, children of low SES groups were at a higher risk for obesity. This may partially be explained by the fact that those in higher SES groups have different lifestyle activities, such as having greater access to healthy foods such as fruits and vegetables (Wang & Lim, 2012). Although low-income children may be more at risk to become obese, findings from the National Health and Nutrition Examination Survey from 2005-2008 have demonstrated that most obese children are not low income, with 62% of children living in households that ranged from 130% to 350% of the poverty level (Ogden, Lamb, Carroll, & Flegal, 2010). This suggests that SES is an important factor in obesity risk, but there may also be other factors that are responsible for childhood obesity other than economic resources. Additionally, research has shown that childhood obesity rates are inversely related to the head of the household's level of education (Ogden et al., 2010; Stenhammar et al., 2010). Mother's highest education level is an important economic factor when considering available resources, as mothers who have a higher education also tend to have higher incomes (Kalil & Ryan, 2010).

Proposed Study

Using family stress theory, the purpose of the present study is to build upon the family transitions literature and help advance the understanding of how changes in family structure over time affect children's weight status. First, there is a conceptual issue in the literature where some researchers intend to examine the effects of multiple family transitions but only measure family structure at one time point (Gosselin, Babchishin, & Romano, 2015; Thiede, Kim, & Slack, 2017). Therefore, when only current family

structure is being assessed, the cumulative effects of multiple family transitions are largely ignored. This is problematic because prior research has typically labeled family structures that are not biological two-parent households as deficient. However, it may not be the type of structure, but the cumulative change in who is and is not present in the household that is associated with negative outcomes.

Furthermore, the current study will consider the effects of multiple family transitions on children's weight by examining the ways in which parenting and other family process variables indirectly affect children's changes in BMI percentile. This is an area that has been under researched and as a result there is a lack of understanding of how multiple family transitions have particular consequences for children. Therefore, the current study will make a novel contribution to the field by emphasizing how maternal parenting stress, harsh parenting behaviors, coparenting quality, and socioeconomic status indirectly affect the relationship between multiple family transitions and childhood overweight/obesity status. Including multiple process variables in a single study allows the opportunity to identify the most salient variables that are important when considering the development of future interventions.

Additionally, the current study will be focused on childhood overweight/obesity as an outcome. Much of the family transitions literature has focused on psychological, socioemotional, and behavioral outcomes (Cavanagh & Fomby, 2019) and there is only a small body of work that has looked at the associations with obesity and health outcomes (Augustine & Kimbro, 2015; Bzostek & Beck, 2011; Garasky, 2009; Panico et al., 2019; Schmeer, 2012). Nonetheless, it is important to investigate the relationship between

multiple family transitions and childhood overweight/obesity because of the ways in which household context and psychosocial factors can contribute to health outcomes.

Obesity is a global concern and researchers typically tend to examine individual factors, like nutrition and exercise, as predictors without examining the role of families and close relationships. Furthermore, identifying the mechanisms that facilitate the lasting effects of multiple family transitions is important for clinicians and future intervention development aimed at assisting families during stressful periods. By understanding the ways in which multiple family transitions directly and indirectly affect children's developmental outcomes, findings can inform areas of family life that are important areas to intervene in. This can include, but is not limited to, interventions and policies that are aimed at enhancing parents' ability to provide their children with sensitive and responsive care, improving the ability of parents to communicate and support one another, and enhancing economic well-being to improve socioeconomic inequalities.

The current study used data from the Fragile Families and Child Wellbeing study to examine the direct and indirect effects of multiple family transitions on changes in children's BMI percentile. A prospective longitudinal design was used to assess how transitions experienced when children were one year old to five years old were associated with family process variables at age five and changes in children's BMI percentile at age nine.

Hypotheses

Hypothesis 1. There will be a positive association between multiple family transitions experienced from year one to year five and changes in children's BMI percentile at age nine.

Hypothesis 2: Maternal parenting stress will indirectly affect the relationship between the number of family transitions and changes in BMI percentile, such that more family transitions will be positively associated with greater feelings of maternal parenting stress, which will be positively associated with greater changes in BMI percentile at age nine.

Hypothesis 3. Harsh parenting behaviors will indirectly affect the relationship between multiple family transitions and changes in BMI percentile, such that more family transitions will be positively associated with harsh parenting behaviors, which will be positively associated with greater changes in BMI percentile at age nine.

Hypothesis 4: Coparenting quality will indirectly affect the relationship between the number of family transitions and changes in BMI percentile, such that more family transitions will be negatively associated with coparenting quality, which will be negatively associated with changes in BMI percentile at age nine.

Hypothesis 5: Maternal socioeconomic status will indirectly affect the relationship between the number of family transitions and changes in BMI percentile, such that more family transitions will be negatively associated with socioeconomic status, which will be negatively associated with changes in BMI percentile at age nine.

CHAPTER III

METHODS

Participants

The data used for the current study are from the Fragile Families and Child Wellbeing Study (FFCW). The FFCW is a national longitudinal study that purposefully oversampled for nonmarital births to have a diverse set of family structures. The FFCW includes 4,898 children born between 1998 and 2000 from 20 cities in the United States that had populations over 200,000. Baseline data were collected in the hospitals that the focal child was born in and the families were followed up with when the child was 1, 3, 5, 9, and 15 years old. During each wave, a core phone interview was conducted, and supplemental in-home interviews were given to mothers and their children. Parent interviews included questions on attitudes, relationships, parenting behavior, demographic characteristics, mental and physical health, economic status, and neighborhood characteristics.

Data for the current study came from core interviews at year 1, 3, and 5, and in-home assessments at year 5 and 9. The mean age of mothers in the FFCW was 25 years old and approximately 75% of mothers in the FFCW were not married to the biological father at the focal child's birth. The FFCW sample was diverse in race, 21.4% White mothers, 48.8% Black mothers, 26.0% Hispanic mothers, and 3.5% identifying as other.

Demographic information on fathers was also collected at baseline; the mean age of fathers was approximately 28 years old and 18.9% identified as White, 50.7% as Black, 26.6% as Hispanic, and 3.5% as other. The sample also included 52.5% male focal children and 47.5% female children.

Measures

Multiple Family Transitions

To assess changes in family structure, mothers were asked a series of questions about who has and who currently lives in the home since the last interview. This measure does not include noncohabiting dating relationships. The approach being used is consistent with other studies in the field that are using the FFCW to examine outcomes associated with multiple changes in family structure (Cooper, 2009; Osborne et al., 2012). One variable was created to determine the number of family transitions experienced between ages 1 and 5. At each wave, mothers were asked questions about their relationship with the focal child's father (e.g., married, separated or divorced, no relationship, or unknown). If mothers were not in a romantic relationship with the father, then they were asked questions about their current relationship status (e.g., if they were married/cohabiting with a social father or single). Using the questions about the mother's relationship with the focal child's father and the mother's current relationship status, a set of variables was created to determine mother's family structure at each wave. In order to calculate the number of transitions experienced between each wave, another variable was created using the current family structure variable. Current family structure variables

were compared between each wave to calculate whether no changes, one change, or two changes occurred. One change in family structure could be a result of a) entering a relationship with the focal child's biological father, b) entering a relationship with a social father, or c) exiting a relationship and becoming single. Two changes in family structure can occur when the mother a) exits a relationship with the focal father and enters a relationship with a social father or b) exits a relationship with a social father and enters a relationship with the focal father. This is based in the assumption that the mother was single before entering a new relationship. After completing this for each wave, the transitions variables were summed to create an overall number of transitions experienced. Over four years, 47.4% ($n = 2,264$) did not experience any transitions, 21.6% ($n = 1,033$) experienced one, 8.3% ($n = 395$) experienced two, and 0.7% ($n = 31$) experienced three or more transitions.

It is important to note that while the FFCW dataset allowed us to capture multiple changes in structure, it was not possible to capture a change if the mother reported cohabiting or being married to a social father at each wave. There were no questions that asked whether the social father was the same person at the previous wave; therefore, it could not be determined if a change in structure occurred.

Maternal Parenting Stress

Maternal parenting stress was assessed at year five and mothers were asked a set of questions that were adapted from the Parenting Stress Index (Abidin, 1995). Mothers were asked the extent to which they agreed or disagreed with the following statements: "Being a parent is harder than I thought it would be," "I feel trapped by my

responsibilities as a parent,” “I find that taking care of my child(ren) is much more work than pleasure,” and “I often feel tired, worn out, or exhausted from raising a family.” Responses ranged from 0 (*strongly disagree*) to 3 (*strongly agree*). For scoring, the four items were summed and the mean score was computed. Higher scores reflect greater feelings of parenting stress. The alpha coefficient for maternal parenting stress was .66.

Harsh Parenting

Harsh parenting was measured when children were five years old. Harsh parenting was a latent variable for this study and consisted of psychological aggression and physical assault as manifest variables. Mothers answered 10-items adapted from the Parent-Child Conflict Tactics Scale that included questions on psychological aggression and physical assault. Psychological aggression consisted of five items that reflected behavior by parents like rejection and depreciation that results in injury to a child (Straus & Field, 2003), such as “shouted, yelled, or screamed at” and “called him/her dumb or lazy or some other name like that” ($\alpha = .61$). The physical assault subscale included five items that inquired about physical punishment used on the child, such as mother “spanked him/her on the bottom with their bare hand” and “shook him/her” ($\alpha = .60$). The psychological aggression and physical assault subscales correlated moderately ($r = .61, p < .01$).

For each question, mothers were asked the number of times they demonstrated this parenting behavior in the past year. Items were measured on an 8-point scale ranging from 0 (*never happened*), 1 (*not in the past year, but has happened before*), 2 (*once*), 3 (*twice*), 4 (*3-5 times*), 5 (*6-10 times*), 6 (*11-20 times*), and 7 (*more than 20 times*). Never

happened and did not happen in the past year were combined to reflect that this behavior did not occur in the past year. Higher scores reflected higher levels of psychological aggression and physical assault. The entire scale demonstrated adequate internal reliability ($\alpha = .76$).

Coparenting Quality

The quality of the coparenting relationship between mothers and fathers was assessed when children were five years old. The Fragile Families dataset included six questions that asked the extent to which parents trusted, respected, supported, and coordinated with one another. The items included were: 1) “When (father) is with (child), he acts like the father you want for your child,” 2) “You can trust (father) to take good care of (child),” 3) “He respects the schedules and rules you make for (child),” 4) “He supports you in the way you want to raise (child),” 5) “You and (father) talk about problems that come up with raising (child),” 6) “you can count on (father) for help when you need someone to look after (child) for a few hours.” Response choices were 1 (*always true*), 2 (*sometimes true*), 3 (*rarely true*), and 4 (*never true*). Response options “rarely true” and “never true” were combined to reduce positive skewness, which is also consistent with previous studies that have assessed coparenting quality in the Fragile Families dataset (Goldberg & Carlson, 2015; Kamp-Dush et al., 2011). Items were reverse scored so that higher scores demonstrated higher levels of coparenting quality. To ensure that coparenting quality is being measured, rather than only father support for mother, both mother- and father-report of coparenting quality were used. Overall coparenting quality was constructed by summing the mother and father scores and an

overall mean score was computed. Cronbach's alphas for the mother and father subscales were .89 and .87, respectively. The two subscales were moderately correlated with one another ($r = .37, p < .01$). Cronbach's alpha for the overall coparenting quality scale was .872.

Socioeconomic Status

Mothers reported on the total household income when their child was five years old and a variable computed by the Fragile Families team was used. Mothers were asked to provide an exact dollar amount for their total income, but if unable to do so then they were asked to provide a range for their income. For those who reported a range, imputed dollar amounts were used based on others who provided an income in the same range but included an exact dollar amount (Fragile Families Public Guide 0-5). Imputations were also used if mothers did not report any type of income. All imputations were based on relationship status, age, race/ethnicity, immigrant status, employment history in the last year, earnings, the total number of adults in the household, and if welfare was received or not.

Mother's highest reported education at year five (some high school, high school diploma, some college, and college degree or higher) was used and included any schooling attended or completed since the last year. If there were no new reports of educational attainment, then responses from the previous wave were used. Mother's income and education were standardized first, and these items were moderately correlated ($r (2998) = .35, p = .000$). Then, scores were summed together to compute an overall maternal socioeconomic status variable.

Child BMI Percentile

The dependent variable of child BMI percentile at age nine was initially assessed by collecting height and weight measurements. Height measurements were taken in centimeters using a stadiometer and weight was measured in pounds by interviewers during the in-home survey. For height measurements, the interviewer took two measurements and, if necessary, a third measurement was taken if the first two measurements had a difference of two or more centimeters. For weight measurements, the interviewer took two measurements and, if necessary, a third measurement if the weight difference was greater than or equal to two pounds. Child's body mass index (BMI) was calculated at age nine by dividing the weight in kilograms by the height in meters squared. Per the guidelines from the Center for Disease Control, average or healthy weight for children is considered between the 5th and less than the 85th percentile, overweight status is considered between the 85th and less than the 95th percentile and obese status is of equal to or greater than the 95th percentile (CDC, 2011).

Focal children who were classified as underweight (less than the fifth percentile) were excluded from the analyses. Children who were classified as underweight were excluded because being underweight does not necessarily indicate that they are healthier than those who are overweight or obese. Excluding those who were underweight allowed for those who were classified as normal weight to be the reference group. A categorical variable for child BMI percentile was used, and children were classified as having BMI percentiles that were 1) normal or average weight or 2) overweight/obese.

Statistical Analyses

The data were analyzed in multiple steps. First, the distribution of variables was examined, and missing data were evaluated. Father report of coparenting quality was used in addition to mother-report to compute overall coparenting quality and fathers had a noticeably lower completion rate than mothers, with 78% completing the surveys compared to 100% of mothers (Bendheim-Thoman Center for Research on Child Wellbeing, 2008). Missing data were addressed using full-information maximum-likelihood estimation methods (FIML), allowing for estimation of the model using all available data. Next, descriptive statistics were generated for each of the key variables. Then, simple correlations were used to identify control variables (e.g., maternal age, maternal race, child gender, low birth weight, and child BMI percentile at age 5). Mother reports on maternal age, maternal race, child gender, and low birth weight were used. Child BMI percentile at age 5 was assessed by experimenters using the same protocol as described at age 9. A series of dichotomous variables were created for maternal race and White was used as the referent group. The first variable was scored as (1) Black and (0) all other races. The second variable was scored as (1) Hispanic and (0) all other races. The third variable was scored as (1) Other and (0) all other races. Low birth weight was a dichotomous variable defined as the child weighing less than 5,000 grams at birth.

Bias corrected bootstrapped confidence intervals using 1,000 bootstrap draws were used to assess indirect effects; confidence intervals that cross zero suggest a nonsignificant indirect effect. Using bias corrected bootstrapped confidence intervals is a recommended contemporary approach as it has the ability to control and check the

stability of results, and is more valid and powerful than other methods for testing indirect effects, thus reducing the likelihood of a Type I error (Hayes, 2009; Muthén et al., 2016).

Direct and Indirect Path Model

Structural equation modeling (SEM) with Mplus version 7.4 (Muthén & Muthén, 2017) was used to examine the direct and indirect effects (through maternal parenting stress, harsh parenting, coparenting quality, and SES) of multiple family transitions on changes in children's BMI percentile. One path model was used to simultaneously test all six hypotheses (See Figure 2).

Using this statistical approach allows the total associations to be decomposed into direct and indirect associations, allowing for powerful tests of hypotheses. Total effects, or total associations, are defined as the association between the independent variable and the dependent variable that include both the direct and indirect effects (Muthén, 2011; Robins, 2003). Direct effects, or direct associations, are defined as the association between the independent variable and dependent variable independent of the indirect pathway (Hayes, 2009). There will be support for a direct effect (hypothesis 1) if the coefficient between the number of family transitions and change in children's BMI percentile is negative and statistically significant. Indirect effects, or indirect associations, are demonstrated as the product of the relationship between the independent variable and intervening variable, and the relationship between the indirect variable and the dependent variable (Hayes, 2009). There will be support for indirect effects (hypotheses 2-5) if there are significant associations between multiple family transitions and the intervening variable (maternal parenting stress, harsh parenting, coparenting quality, and SES), and

significant associations between the indirect variable and changes in child BMI percentile. For example, when testing hypothesis 2, an indirect effect involving maternal parenting stress would be found if there were a significant positive effect between the number of family transitions and maternal parenting stress *and* a significant inverse effect between maternal parenting stress and change in children's BMI percentile. For Hypothesis 2 to be supported, the product of the relations involving maternal parenting stress would need to be significant in the expected direction. Hypotheses 2-6 were all tested in this manner.

CHAPTER IV

RESULTS

Preliminary Analyses

Descriptive Statistics and Correlations

Preliminary analyses were conducted to examine the distributions of the variables. Descriptive statistics and bivariate correlations were conducted for all variables and are found in Table 1. Correlations were conducted to determine which variables should serve as covariates. Mother race, focal child low birth weight, and focal child BMI percentile at age five were correlated with the outcome variable of child's BMI percentile at age nine and thus were controlled for in subsequent analyses (See Table 2). Mother race and focal child low birth weight were assessed at birth.

The associations between multiple family transitions and changes in BMI percentile at age 9 differed for the various racial groups. The relationship was stronger for Black children than White children ($\beta = 0.55, p < 0.01$). Similarly, the relationship was stronger for Hispanic children than White children ($\beta = 0.51, p < 0.01$). The relationship was also stronger for those who identified their race as "Other" compared to White children ($\beta = 0.19, p < 0.01$). There was a significant negative association between focal child low birth weight and change in BMI percentile at age 9 ($\beta = -0.06, p < 0.01$). There was also a significant relationship between BMI percentile at age 5 and BMI percentile at age 9 ($\beta = 0.59, p < 0.01$).

Primary Analyses

Hypothesis Testing

One path model was used to examine the direct and indirect effects of multiple family transitions on change in children's BMI percentile. Bias corrected bootstrapped confidence intervals were used to test the indirect effects. The model demonstrated good fit ($\chi^2 = 48.54$, $df = 34$, $p = .05$, $RMSEA = 0.01$; $CFI = 0.97$). Due to high amounts of missing data on the covariates, *Mplus* syntax recommended the estimation of means for each of the covariates. Given that *Mplus* uses FIML to handle missing data, which corrected for the missing values on the covariates, there were 3,723 cases retained. A mean-and variance-adjusted weighted least squares (WLSMV) estimator was used because the dependent variable of interest is categorical. WLSMV is a robust estimator that does not assume that the data are normally distributed and provides the best option for modeling categorical data (Brown, 2006).

Contrary to hypothesis 1, there was no direct effect between multiple family transitions experienced when children were ages 1 to 5 years old and change in children's BMI percentile at age 9 ($\beta = -0.01$, $p = 0.59$). However, there were significant indirect effects, as presented below.

Maternal parenting stress. Hypothesis 2 stated that maternal parenting stress would indirectly affect the relationship between multiple family transitions and change in children's BMI percentile, such that more family transitions would be positively associated with greater feelings of maternal parenting stress, which would be positively associated with change in BMI percentile at age nine. Path estimates are reported in

Table 3 and significant coefficients in Figure 2. There was a significant positive association between multiple family transitions experienced when children were ages 1 to 5 years old and maternal parenting stress when children were 5 years old ($\beta = 0.05$, $p = 0.06$). However, maternal parenting stress when children were 5 years old was not significantly associated with change in children's BMI percentile at age 9 ($\beta = -0.03$, $p = 0.23$). There was no significant indirect path; therefore, hypothesis 2 was not supported.

Harsh parenting. Hypothesis 3 stated that harsh parenting behaviors would indirectly affect the relationship between multiple family transitions and change in BMI percentile, such that more family transitions would be positively associated with harsh parenting behaviors, which would be positively associated with change in BMI percentile at age nine. There was a significant positive association between multiple family transitions experienced when children were ages 1 to 5 years old and harsh parenting when children were 5 years old ($\beta = 0.10$, $p < 0.01$). However, harsh parenting at age 5 was not significantly associated with change in children's BMI percentile at age 9 ($\beta = 0.05$, $p = 0.11$). Hypothesis 3 was not supported, as there were no indirect effects.

Coparenting quality. Hypothesis 4 stated that coparenting quality would indirectly affect the relationship between the number of family transitions and change in BMI percentile, such that more family transitions would be negatively associated with coparenting quality, which would be negatively associated with change in BMI percentile at age nine. There was a significant negative association between multiple family transitions experienced when children were ages 1 to 5 years old and coparenting quality when children were 5 years old ($\beta = -0.31$, $p < 0.01$). However, coparenting quality at age

5 was not significantly associated with change in children's BMI percentile at age 9 ($\beta = 0.05, p = 0.12$). Because there was no significant indirect path, hypothesis 4 was not supported.

Socioeconomic status. Hypothesis 5 stated that maternal socioeconomic status would indirectly affect the relationship between the number of family transitions and change in BMI percentile, such that more family transitions would be negatively associated with socioeconomic status, which would be negatively associated with change in BMI percentile at age nine. There was a significant negative association between multiple family transitions experienced when children were ages 1 to 5 years old and SES when children were 5 years old ($\beta = -0.19, p < 0.01$). There was also a significant negative association between SES at age 5 and change in children's BMI percentile at age 9, such that lower SES at age 5 was associated with increases in BMI percentile at age 9 ($\beta = -0.12, p < 0.01$).

Indirect effects were examined using bias-corrected bootstrapped confidence intervals with 1,000 bootstrap draws. The results demonstrated one statistically significant indirect association that showed a negative association between multiple family transitions and SES, which, in turn, was negatively associated with change in children's BMI percentile. This overall indirect association ($\beta = 0.02, 99\% \text{ CI } [0.01, 0.04]$) suggested that SES indirectly affected the overall link between multiple family transitions and change in children's BMI percentile. Thus, Hypothesis 5 was supported.

CHAPTER V

DISCUSSION

The current study aimed to better understand the ways in which multiple family transitions relate to childhood overweight/obesity status. The direct and indirect effects were examined in order to further understand the role that family processes have on this relationship. Much of the literature on family structure has focused on the role that current family structure has for multiple child outcomes (Gosselin, Babchishin, & Romano, 2015; Thiede, Kim, & Slack, 2017), whereas the cumulative effects of multiple changes in structure has been explored less frequently. Further, the role of family processes on the relationship between multiple family transitions and children's outcomes has been scarcely investigated. As a result, we have a lack of understanding of the ways in which multiple changes in structure affect children and the mechanisms by which this occurs.

The focus of the current study was on child obesity, as obesity rates overall have become a global concern (CDC, 2017). Nearly 20% of school-aged children are obese (CDC, 2017) and it is necessary to investigate the factors that are associated with childhood obesity to identify areas where intervention can be beneficial. The early effects of multiple family transitions on children's BMI percentile is one area that should be explored, as family context during the first few years of children's lives is salient for

developmental outcomes (Cavanagh & Huston, 2008). Obesity in particular is largely preventable, but once developed it is challenging to reverse (Wang & Lim, 2012). As described below, there was only one significant pathway in the proposed model—SES indirectly affected the relationship between multiple family transitions and change in child BMI percentile. Notably, the current study controlled for child BMI percentile at age 5; therefore, rather than predicting BMI percentile at age 9, changes in BMI percentile from age 5 to age 9 were assessed. By controlling for earlier ages of BMI percentile, there is a loss of variability in the data, but this strategy allows for the opportunity to explore if there are any increases or decreases in BMI percentile during this time.

Multiple Family Transitions

The results suggested that there was no direct association between multiple family transitions and change in child BMI percentile; therefore, hypothesis 1 was not supported. The current findings do not support previous findings of direct effects of multiple family transitions on child BMI (Bzostek & Beck, 2011; Schmeer, 2012). Both the Bzostek and Beck and Schmeer studies also used data from the FFCW study as well, the dataset that is used most frequently when examining the effects of changes in family structure on children's BMI at age five.

The difference in findings may be a result of different approaches to measuring multiple family transitions and children's BMI. First, the current study assessed change in children's BMI percentile from age five to age nine and the previous studies mentioned measured BMI at age five (Bzostek & Beck, 2011) and change in BMI from age three to

age five (Schmeer, 2012). Further, Bzostek and Beck (2011) also used a dichotomous variable for BMI percentile, but used greater than the 95th percentile as the indicator of overweight/obesity although greater than the 95th percentile is reflective of those who are categorized as obese. The current study used a cutoff of greater than the 85th percentile as this is consistent with CDC guidelines on classifying overweight status; therefore, the current study had a larger sample size in the overweight/obesity category. There were also differences in how multiple family transitions were assessed, as Schmeer (2012) examined differences in type and stability of union status and the current study was focused only on the effects of the number of family transitions experienced. Thus, the current study examined the cumulative effects of multiple family transitions, whereas Schmeer (2012) explored how various family structure contexts may have different outcomes for children, such that some transitions may be more stressful than others.

Further, the current study used different control variables than Bzostek and Beck (2011) and Schmeer (2012) used. The current study controlled for maternal race, child low birth weight, and child BMI percentile at age five. By contrast, Bzostek and Beck (2011) controlled for mother's age, educational attainment, race/ethnicity, child sex, child low birth weight, and parity. Schmeer (2012) controlled for the following variables at age three: child overweight status, child sex, child age, maternal education level, maternal religiosity, maternal race, maternal employment status, number of children in the household, poverty status, receiving temporary assistance for needy family (TANF) support, maternal depression, maternal self-report health, maternal BMI, and paternal BMI. Further, Schmeer (2012) also controlled for the following variables at age five:

poverty status, receiving TANF support, maternal depression, maternal BMI, and the number of children in the household. Differences in the control variables used may help explain the difference in findings between studies.

The lack of significant direct effects may be because only the number of family transitions experienced was examined, rather than the number and type of transitions. The current study was guided by family stress theory, where a change in family structure was viewed as a stressor and the accumulation of stressors, irrespective of the type of change in family structure, can have lasting consequences. As such, it was expected that there would be an association between multiple family transitions and change in children's BMI percentile. However, it may be the case that the type of transition is equally as important as the number of transitions experienced, such that certain types of transitions may have differential outcomes because of the ways in which they alter family functioning (Brown, 2006).

There was an indirect effect of multiple family transitions on change in children's BMI percentile through SES. The results indicated that the more family transitions that were experienced, the lower SES mothers reported, and the greater change in children's BMI percentile at age nine. Even when multiple psychosocial stressors were present in the model, SES had a unique indirect effect. Experiencing multiple changes in family structure may be linked with lower SES as a result of the frequent changes in who is and is not a part of the household. It may also be attributed to maternal educational status, as previous research has shown lower maternal education to be associated with less healthy food choices and eating behaviors (Cribb et al, 2011). The significant negative

association between SES and change in children's BMI percentile supports previous findings that children from a lower SES are at a higher risk of being obese (Ogden et al., 2010; Wang, 2001).

There was no evidence of an indirect effect of maternal parenting stress on the relationship between multiple family transitions and change in children's BMI percentile; therefore, hypothesis 2 was not supported. Consistent with previous literature (Cooper et al., 2009), there was a significant association found between multiple family transitions and maternal parenting stress, such that a greater number of family transitions experienced was associated with increased maternal parenting stress. However, maternal parenting stress was not associated with change in children's BMI percentile. It is possible that stress from the parenting domain by itself is not linked with change in children's BMI percentile and rather the experience of role overload, where one perceives there is too much to do (on a number of dimensions) given the current resources (Coverman, 1989), is associated with children's BMI. A measure like the 13-item Role Overload scale (Reilly, 1982) might be beneficial to examine the strain that mothers feel in their daily roles. It may be that there is an association with change in children's BMI percentile when stress from multiple life domains is high rather than stress experienced in only one domain.

Contrary to hypothesis 3, there was no evidence of an indirect effect of harsh parenting on the relationship between multiple family transitions and change in children's BMI percentile. The significant association between multiple family transitions and harsh parenting is consistent with previous research that has examined the ways in which

family transitions are associated with parenting behaviors (Beck, Cooper, McLanahan, Brooks-Gunn, 2010). However, the lack of significant association between harsh parenting and change in children's BMI percentile is not consistent with previous findings (Brody et al., 2014; Miller, Chen, & Parker; Schofield et al., 2016). Empirical studies have shown that parenting behaviors have longitudinal effects on children's health outcomes. However, studies often use observational assessments of parenting behaviors in addition to self-reports of parenting behaviors and the current study only relied on mother's self-report of parenting behaviors. Differences in findings may be attributed to the lack of sufficient time between our measurement of harsh parenting at age 5 and change in children's BMI percentile at age 9. The occurrence of harsh parenting over time is known to be linked with long-term adverse health outcomes (Schofield et al., 2016), as consistent exposure has been found to "get under the skin" and alter physiological responses in addition to emotional and behavioral responses. The measure of harsh parenting used in the current study is only reflective of behaviors used in the past year; therefore, the current results are reflective of relatively short-term harsh parenting behaviors. It may be that measuring harsh parenting behaviors longitudinally to assess chronicity would demonstrate associations with change in children's BMI percentile.

Furthermore, the results demonstrated no indirect effect of coparenting quality on the relationship between multiple family transitions and change in children's BMI percentile, thus hypothesis 4 was not supported. There was a significant association between multiple family transitions and coparenting quality, but no significant

association between coparenting quality and change in children's BMI percentile. The lack of significant indirect effects may partially be due to the fact that most of the parents in the FFCW reported relatively high levels of coparenting quality ($M = 5.48$) with a maximum of 6.0, which suggests the possibility that a ceiling effect (and an associated lack of variability) may have reduced the power of this analysis.

Taken together, the findings from the current study inform the larger literature on the effects of multiple family transitions, as the role of processes has largely been ignored. The current findings demonstrate that while there were no direct effects of multiple family transitions on change in children's BMI percentile, SES has an important role in this relationship. Results from the current study showed that multiple family transitions were associated with lower maternal SES. It may be that as families experience more changes in family structure they have less resources available and a lower income, especially if this change includes the exit of a parental figure (Womack et al., 2018). Research has demonstrated that after the experience of a divorce or relationship dissolution both men and women experience a loss of income, with women typically being worse off financially (Avellar & Smoch, 2005; Tach & Eads, 2015). Additionally, women tend to remain the primary caregiver after experiencing a change in family structure and at times may have to dedicate more time and money towards expenses and childcare (Altintas & Sullivan, 2016). The economic resources that are available to families also have the ability to influence children's weight status. The results from the current study demonstrated that SES was negatively associated with a change in children's BMI percentile, such that lower SES at age 5 was associated with

increases in BMI percentile at age 9. A possible explanation is that high SES families have a greater advantage of having relaxed budget constraints. Thus, this may allow for more access to nutritious foods and household and neighborhood environments that may prioritize physical activity and non-obesogenic food in comparison to other needs (Baker, Schootman, Barnidge, & Kelly, 2006; Drewnowski & Darmon, 2005). Baker et al. (2006) found that low-income neighborhoods were less likely to have access to food outlets (i.e., supermarkets) and the food that was available was less likely to allow community members to make healthy choices and meet the recommended dietary intake (i.e., fast food restaurants). Thus, this may be one possible explanation for the relationship between SES at age 5 and increases in BMI percentile at age 9. Another possible explanation is that mothers who had a lower educational status may utilize feeding strategies that are not beneficial for child weight management. Previous research has shown that mothers with higher educational status had higher scores on control over children's eating (e.g., limiting unhealthy food and increasing consumption of healthy food) and lower scores on emotional feeding (e.g., food for comfort and food as a reward) (Saxton et al., 2009). It may be that mothers who have a higher educational status are more knowledgeable of nutritious foods and model eating behaviors that are beneficial for child weight management. The current study demonstrates that SES indirectly effects the relationship between multiple family transitions and change in child BMI percentile during a developmentally sensitive period, and appropriate intervention is needed to help decrease rates of child obesity and health disparities in low SES families.

Strengths and Limitations

The current study has several strengths. First, the Fragile Families and Child Wellbeing Study is a national longitudinal study that purposefully oversampled for nonmarital births. By doing so, it allowed for a better understanding of the experiences of a population that is largely understudied. Further, the use of longitudinal data provided a better understanding of the direct effects of multiple changes in family structure and the indirect effect of SES. The current study measured changes in family structure during the early years of children's lives, from one year old to five years old, which are known to be critical years that have lasting effects on multiple child outcomes. Thus, a strength of this study is the ability to assess early levels of family transitions and relate these changes to change in children's BMI percentile at a later age. Previous research has shown that childhood obesity is associated with worse health and socioeconomic well-being in adulthood (Case, Fertig, & Paxson, 2005). The current finding that socioeconomic status indirectly affects the relationship between multiple family transitions and change in child BMI percentile suggests that SES plays an important role in the development of childhood obesity early in life, which then has implications for later SES status. The current results demonstrate that assisting families in reducing family-level stressors, in this case an emphasis on economic stressors, has the potential to be beneficial in reducing child obesity and as a result, improve later health and SES. Additionally, the inclusion of multiple process variables to better understand the ways in which multiple family transitions are indirectly associated with childhood overweight/obesity status is a strength in itself, as most research considering the effects of multiple family transitions has largely

ignored family processes. The current study tested multiple intervening variables in one model and by doing so we were able to control for several demographic and family-related variables.

However, there are some limitations that should be considered when interpreting the findings from this study. First, there was no precise measure of experiencing a family transition at each wave. As a result, multiple questions had to be used to construct the variable of current family structure status at each wave. Then, differences between waves were compared. Due to the limited information about current family structure status (e.g., with focal child father, with social father, or single), there was a maximum of two family transitions that could happen at each wave and a total of four family transitions that could occur between the years one and five. It is likely that these results are underestimating the number of family transitions that are experienced, as variability was artificially decreased, resulting in reduced statistical power.

Future Directions

The current findings raise important questions about the ways in which multiple family transitions influence family functioning and development. The current study examined the direct and indirect effects of multiple family transitions on change in BMI percentile at age 9. The lack of significant findings may demonstrate that the number of family transitions experienced is not as salient as the type of transition experienced, or a combination of number and type of transitions experienced. It would be beneficial for future research to explore associations between type of family transition experienced and change in child BMI percentile, as some transitions may be more stressful than others

(e.g., divorce may be more stressful than is the dissolution of a relationship).

Furthermore, considering both the type and number of transitions experienced in the same analyses would allow for a fuller understanding of the effects of multiple family transitions.

Additionally, future research should consider examining differences in the timing of family transitions experienced. Parents are some of the most influential agents in the first five years of a child's life, as children spend most of their time with family members and rely on them to meet their needs. Whereas after the first five years, children begin to spend more time with their peers and become more autonomous. As such, it may be that family transitions experienced in early childhood are more influential than those experienced later (Cavanagh & Huston, 2008).

Another important area for future research is to further explore racial differences and similarities. The current findings demonstrated associations between mothers who identified as a minority race and multiple family transitions, such that those who identified as a racial minority experienced more family transitions during the 5-year period. Additionally, there were associations between maternal race and change in child BMI percentile, such that mothers who identified as a racial minority had children with a greater change in BMI percentile from age 5 to age 9. These findings are important for future work in many ways. First, racial minorities appear to be at an increased risk to experience multiple changes in family structure and it would be useful to utilize a within-group approach to determine if there are differences in how these transitions are experienced (e.g., are relationship dissolutions more stressful for some racial groups than

others). Furthermore, African American and Hispanic children are at an increased risk for being overweight/obese, 22% and 25.8% respectively (CDC, 2019). Considering that both groups are at an increased risk of experiencing multiple family transitions and childhood obesity, it is necessary for future research to further explore mediators and moderators of this relationship.

Finally, it would be beneficial to explore moderators of the paths from multiple family transitions to changes in children's BMI percentile. The current study found one significant indirect relationship, but it would be beneficial to explore the moderating effects of family process variables as well. For example, maternal parenting stress may have a moderating effect, as the effects of multiple family transitions on change in children's BMI may be stronger for children with mothers who experience high levels of parenting stress. Furthermore, it would be interesting to explore if parental feeding practices moderate the relationship between multiple family transitions and change in children's BMI percentile. It is possible that monitoring children's eating behaviors and encouraging the consumption of nutritious foods can act as a protective factor for child weight gain during periods of change. Additionally, it would be useful to examine the moderating effects of child self-regulation on the relationship between multiple family transitions and change in children's BMI percentile. Children's self-regulatory abilities may mitigate the risks associated with changes in family structure on children's BMI as self-regulation has been found to be particularly important for many child outcomes, particularly obesity (Francis & Susman, 2009; Graziano, Calkins, & Keane, 2010). Future studies should include a focus on potential moderators of the relationship between

multiple family transitions and changes in children's BMI percentile to better understand potential protective and risk factors.

REFERENCES

- Abidin, R. (1995). Parent Stress Inventory, 3rd Edition. Odessa, FL: Psychological Assessment Resources.
- Agras, W. S., Hammer, L. D., McNicholas, F., & Kraemer, H. C. (2004). Risk factors for childhood overweight: a prospective study from birth to 9.5 years. *The Journal of Pediatrics*, *145*, 20-25.
- Ahrons, C. (2007). Family ties after divorce: Long term implications for children. *Family Process*, *46*, 53-65.
- Amato, P. R., & Anthony, C. J. (2014). Estimating the effects of parental divorce and death with fixed effects models. *Journal of Marriage and Family*, *76*, 370-386.
- Andersson, Gunnar. 2002. Children's experience of family disruption and family formation: Evidence from 16 FFS countries. *Demographic Research* *7*: 343–64.
- Avellar, S., & Smock, P. J. (2005). The economic consequences of the dissolution of cohabiting unions. *Journal of Marriage and Family*, *67*, 315-327.
- Baker, E.A., Schootman, M., Barnidge, E., Kelly, C., 2006. The role of race and poverty in access to foods that enable individuals to adhere to dietary guidelines. *Preventing Chronic Disease* *3*, 1–11.
- Bendheim-Thoman Center for Research on Child Wellbeing. (2008). Introduction to the Fragile Families Public-Use Data: Baseline, One-Year, Three-Year, and Five-Year Telephone Data. Princeton, NJ: Office of Population Research, Princeton University.

- Berge, J. M., Wall, M., Bauer, K. W., & Neumark-Sztainer, D. (2010). Parenting characteristics in the home environment and adolescent overweight: a latent class analysis. *Obesity, 18*, 818-825.
- Beyers, J. M., Bates, J. E., Pettit, G. S., & Dodge, K. A. (2003). Neighborhood structure, parenting processes, and the development of youths' externalizing behaviors: A multilevel analysis. *American Journal of Community Psychology, 31*, 35-53.
- Bianchi, S. M., Sayer, L. C., Milkie, M. A., & Robinson, J. P. (2012). Housework: Who did, does or will do it, and how much does it matter?. *Social Forces, 91*, 55-63.
- Birch, L. L., Fisher, J. O., & Davison, K. K. (2003). Learning to overeat: Maternal use of restrictive feeding practices promotes girls' eating in the absence of hunger. *American Journal of Clinical Nutrition, 78*, 215–220.
- Bloome, D. (2017). Childhood family structure and intergenerational income mobility in the United States. *Demography, 54*, 541-569.
- Brody, G. H., Yu, T., Beach, S. R., Kogan, S. M., Windle, M., & Philibert, R. A. (2014). Harsh parenting and adolescent health: a longitudinal analysis with genetic moderation. *Health Psychology, 33*, 401.
- Brown, S. L., Stykes, J. B., & Manning, W. D. (2016). Trends in children's family instability, 1995–2010. *Journal of Marriage and Family, 78*, 1173-1183.
- Bzostek, S. H., & Beck, A. N. (2011). Familial instability and young children's physical health. *Social Science & Medicine, 73*, 282-292.

- Cardel, M., Willig, A. L., Dulin-Keita, A., Casazza, K., Mark Beasley, T., & Fernández, J. R. (2012). Parental feeding practices and socioeconomic status are associated with child adiposity in a multi-ethnic sample of children. *Appetite, 58*, 347–353.
- Carlson, M. J., & Högnäs, R. S. (2011). Coparenting in fragile families: Understanding how parents work together after a nonmarital birth. *Coparenting: A Conceptual and Clinical Examination of Family Systems*, 81-103.
- Cavanagh, S. E., & Fomby, P. (2019). Family instability in the lives of American children. *Annual Review of Sociology, 45*.
- Chen, X., Beydoun, M. A., & Wang, Y. (2008). Is sleep duration associated with childhood obesity? A systematic review and meta-analysis. *Obesity, 16*, 265-274.
- Chen, A. Y., & Escarce, J. J. (2010). Peer reviewed: Family structure and childhood obesity, early childhood longitudinal study—kindergarten cohort. *Preventing Chronic Disease, 7*.
- Cherlin, A.J. (2010). Demographic trends in the United States: A review of research in the 2000s. *Journal of Marriage and Family, 72*, 402-419. doi: 10.1111/j.1741-3737.2010.00710.x
- Choi, J. K., & Becher, E. H. (2018). Supportive coparenting, parenting stress, harsh parenting, and child behavior problems in nonmarital families. *Family Process*.
- Choi, J. K., Kelley, M. S., & Wang, D. (2018). Neighborhood Characteristics, Maternal Parenting, and Health and Development of Children from Socioeconomically Disadvantaged Families. *American Journal of Community Psychology, 62*, 476-491.

- Coe, J. L., Davies, P. T., & Sturge-Apple, M. L. (2017). The multivariate roles of family instability and interparental conflict in predicting children's representations of insecurity in the family system and early school adjustment problems. *Journal of Abnormal Child Psychology*, *45*, 211-224.
- Conger, R. D., Conger, K. J., Elder Jr, G. H., Lorenz, F. O., Simons, R. L., & Whitbeck, L. B. (1992). A family process model of economic hardship and adjustment of early adolescent boys. *Child Development*, *63*, 526-541.
- Coontz, S. (2015). Revolution in intimate life and relationships. *Journal of Family Theory & Review*, *7*, 5-12.
- Cooper, C. E., McLanahan, S. S., Meadows, S. O., & Brooks-Gunn, J. (2009). Family structure transitions and maternal parenting stress. *Journal of Marriage and Family*, *71*, 558-574.
- Coverman, S. (1989). Role overload, role conflict, and stress: Addressing consequences of multiple role demands. *Social Forces*, *67*, 965-982.
- Deater-Deckard, K., & Scarr, S. (1996). Parenting stress among dual-earner mothers and fathers: Are there gender differences? *Journal of Family Psychology*, *10*, 45.
- Drewnowski, A., Darmon, N., 2005. The economics of obesity: dietary energy density and energy cost. *American Journal of Clinical Nutrition* ,*82*, 265S–273S.
- Fomby, P., & Bosick, S. J. (2013). Family instability and the transition to adulthood. *Journal of Marriage and Family*, *75*, 1266-1287.
- Fomby, P., & Cherlin, A. J. (2007). Family instability and child well-being. *American Sociological Review*, *72*, 181-204.

- Fomby, P., & Osborne, C. (2017). Family instability, multipartner fertility, and behavior in middle childhood. *Journal of Marriage and Family, 79*, 75-93.
- Forman, E. M., & Davies, P. T. (2003). Family instability and young adolescent maladjustment: The mediating effects of parenting quality and adolescent appraisals of family security. *Journal of Clinical Child and Adolescent Psychology, 32*, 94-105.
- Francis, L. A., & Susman, E. J. (2009). Self-regulation and rapid weight gain in children from age 3 to 12 years. *Archives of Pediatrics & Adolescent Medicine, 163*, 297-302.
- Frenn, M., Pruszyński, J. E., Felzer, H., & Zhang, J. (2013). Authoritative feeding behaviors to reduce child BMI through online interventions. *Journal for Specialists in Pediatric Nursing, 18*, 65-77.
- Fulkerson, J. A., Story, M., Mellin, A., Leffert, N., Neumark-Sztainer, D., & French, S. A. (2006). Family dinner meal frequency and adolescent development: Relationships with developmental assets and high-risk behaviors. *Journal of Adolescent Health, 39*, 337-345.
- Gentry, J. W., Kennedy, P. F., Paul, C., & Hill, R. P. (1995). Family transitions during grief: Discontinuities in household consumption patterns. *Journal of Business Research, 34*, 67-79.
- Goldberg, J. S., & Carlson, M. J. (2015). Patterns and predictors of coparenting after unmarried parents part. *Journal of Family Psychology, 29*, 416.

- Gosselin, J., Babchishin, L., & Romano, E. (2015). Family transitions and children's well-being during adolescence. *Journal of Divorce & Remarriage*, *56*, 569-589.
- Graziano, P. A., Calkins, S. D., & Keane, S. P. (2010). Toddler self-regulation skills predict risk for pediatric obesity. *International Journal of Obesity*, *34*, 633-641.
- Haines, J., McDonald, J., O'Brien, A., Sherry, B., Bottino, C. J., Schmidt, M. E., & Taveras, E. M. (2013). Healthy habits, happy homes: randomized trial to improve household routines for obesity prevention among preschool-aged children. *JAMA Pediatrics*, *167*, 1072-1079.
- Hale, L., Berger, L. M., LeBourgeois, M. K., & Brooks-Gunn, J. (2011). A longitudinal study of preschoolers' language-based bedtime routines, sleep duration, and well-being. *Journal of Family Psychology*, *25*, 423.
- Hales, C. M., Carroll, M. D., Fryar, C. D., & Ogden, C. L. (2017). Prevalence of obesity among adults and youth: United States, 2015–2016.
- Hammons, A. J., & Fiese, B. H. (2011). Is frequency of shared family meals related to the nutritional health of children and adolescents?. *Pediatrics*, *127*, e1565-e1574.
- Hill, R., Boulding, E., Dunigan, L., & Elder, R. A. (1949). *Families under stress: Adjustment to the crises of war separation and reunion* (p. 141). New York, NY: Harper.
- Jones, B. L., & Fiese, B. H. (2014). Parent routines, child routines, and family demographics associated with obesity in parents and preschool-aged children. *Frontiers in Psychology*, *5*, 374.

- Kakinami, L., Barnett, T. A., Séguin, L., & Paradis, G. (2015). Parenting style and obesity risk in children. *Preventive Medicine, 75*, 18-22.
- Kalil, A., & Ryan, R. M. (2010). Mothers' economic conditions and sources of support in fragile families. *The Future of Children, 20*, 39-61.
- Kalinowski, A., Krause, K., Berdejo, C., Harrell, K., Rosenblum, K., & Lumeng, J. C. (2012). Beliefs about the role of parenting in feeding and childhood obesity among mothers of lower socioeconomic status. *Journal of Nutrition Education and Behavior, 44*, 432-437.
- Kennedy, S., & Bumpass, L. (2008). Cohabitation and children's living arrangements: New estimates from the United States. *Demographic Research, 19*, 1663.
- Koch, F. S., Sepa, A., & Ludvigsson, J. (2008). Psychological stress and obesity. *The Journal of Pediatrics, 153*, 839-844.
- Lamela, D., Figueiredo, B., Bastos, A., & Feinberg, M. (2016). Typologies of post-divorce coparenting and parental well-being, parenting quality and children's psychological adjustment. *Child Psychiatry & Human Development, 47*, 716-728.
- Larkin, S. J., & Otis, M. (2019). The Relationship of Child Temperament, Maternal Parenting Stress, Maternal Child Interaction and Child Health Rating. *Child and Adolescent Social Work Journal, 36*, 631-640.
- Lee, S., Hale, L., Chang, A. M., Nahmod, N. G., Master, L., Berger, L. M., & Buxton, O. M. (2018). Longitudinal associations of childhood bedtime and sleep routines with adolescent body mass index. *Sleep, 42*, 202.

- Lee, D., & McLanahan, S. (2015). Family structure transitions and child development: Instability, selection, and population heterogeneity. *American Sociological Review, 80*, 738-763.
- Manning, W. D., Brown, S. L., & Stykes, B. (2015). Trends in births to single and cohabiting mothers, 1980–2013. *National Center for Family & Marriage Research*.
- McCubbin, H. I., & Patterson, J. M. (1983). Family transitions: Adaptation to stress. *Stress and the family*/edited by Hamilton I. McCubbin & Charles R. Fisley.
- McGovern, L., Johnson, J. N., Paulo, R., Hettinger, A., Singhal, V., Kamath, C., ... & Montori, V. M. (2008). Treatment of pediatric obesity: a systematic review and meta-analysis of randomized trials. *The Journal of Clinical Endocrinology & Metabolism, 93*, 4600-4605.
- McHale, J. P., Kuersten-Hogan, R., & Rao, N. (2004). Growing points for coparenting theory and research. *Journal of Adult Development, 11*, 221-234.
- Miller, G. E., Chen, E., & Parker, K. J. (2011). Psychological stress in childhood and susceptibility to the chronic diseases of aging: moving toward a model of behavioral and biological mechanisms. *Psychological Bulletin, 137*, 959.
- Miller, A. L., Lumeng, J. C., & LeBourgeois, M. K. (2015). Sleep patterns and obesity in childhood. *Current Opinion in Endocrinology, Diabetes, and Obesity, 22*, 41.
- Mitchell, C., McLanahan, S., Notterman, D., Hobcraft, J., Brooks-Gunn, J., & Garfinkel, I. (2015). Family structure instability, genetic sensitivity, and child well-being. *American Journal of Sociology, 120*, 1195-1225.

- Morawska, A., & West, F. (2013). Do parents of obese children use ineffective parenting strategies?. *Journal of Child Health Care, 17*, 375-386.
- O'Connor, E. A., Evans, C. V., Burda, B. U., Walsh, E. S., Eder, M., & Lozano, P. (2017). Screening for obesity and intervention for weight management in children and adolescents: evidence report and systematic review for the US Preventive Services Task Force. *Jama, 317*, 2427-2444.
- Ogden, C. L., Lamb, M. M., Carroll, M. D., & Flegal, K. M. (2010). Obesity and Socioeconomic Status in Children and Adolescents: United States, 2005-2008. NCHS Data Brief. Number 51. *National Center for Health Statistics*.
- Olson, D. H., Waldvogel, L., & Schlieff, M. (2019). Circumplex model of marital and family systems: An update. *Journal of Family Theory & Review, 11*, 199-211.
- Panico, L., Bartley, M., Kelly, Y. J., McMunn, A., & Sacker, A. (2019). Family structure trajectories and early child health in the UK: Pathways to health. *Social Science & Medicine, 232*, 220-229.
- Polfuss, M., & Frenn, M. (2012b). Parenting behaviors of African American and Caucasian families: Parent and child perceptions, associations with child weight, and ability to identify abnormal weight status. *Journal of Pediatric Nursing, 27*, 195–205. doi:10.1016/j.pedn.2011.03.012
- Reilly, M. D. (1982). Working wives and convenience consumption. *Journal of Consumer Research, 8*, 407-418.

- Rhee, K. (2008). Childhood overweight and the relationship between parent behaviors, parenting style, and family functioning. *The ANNALS of the American Academy of Political and Social Science*, 615, 11-37.
- Rhee, K. E., Lumeng, J. C., Appugliese, D. P., Kaciroti, N., & Bradley, R. H. (2006). Parenting styles and overweight status in first grade. *Pediatrics*, 117, 2047-2054.
- Ribar, D. C. (2015). Why marriage matters for child wellbeing. *The Future of Children*, 11-27.
- Schofield, T. J., Conger, R. D., Gonzales, J. E., & Merrick, M. T. (2016). Harsh parenting, physical health, and the protective role of positive parent-adolescent relationships. *Social Science & Medicine*, 157, 18-26.
- Sleddens, S. F., Gerards, S. M., Thijs, C., De Vries, N. K., & Kremers, S. P. (2011). General parenting, childhood overweight and obesity-inducing behaviors: a review. *International Journal of Pediatric Obesity*, 6, e12-27.
- Smith, S. R., Hamon, R. R., Ingoldsby, B. B., & Miller, J. E. (2012). *Exploring family theories*. New York, NY: Oxford University Press.
- Snell, E. K., Adam, E. K., & Duncan, G. J. (2007). Sleep and the body mass index and overweight status of children and adolescents. *Child Development*, 78, 309-323.
- Spagnola, M., & Fiese, B. H. (2007). Family routines and rituals: A context for development in the lives of young children. *Infants & Young Children*, 20, 284-299.
- Spencer, R. A., & Komro, K. A. (2017). Family economic security policies and child and family health. *Clinical Child and Family Psychology Review*, 20, 45-63.

- Stenhammar, C., Olsson, G. M., Bahmanyar, S., Hulting, A. L., Wettergren, B., Edlund, B., & Montgomery, S. M. (2010). Family stress and BMI in young children. *Acta Paediatrica, 99*, 1205-1212.
- Straus, M. A., & Field, C. J. (2003). Psychological aggression by American parents: National data on prevalence, chronicity, and severity. *Journal of Marriage and Family, 65*, 795-808.
- Tach, L. (2015). Social mobility in an era of family instability and complexity. *The ANNALS of the American Academy of Political and Social Science, 657*, 83-96.
- Tate, E. B., Wood, W., Liao, Y., & Dunton, G. F. (2015). Do stressed mothers have heavier children? A meta-analysis on the relationship between maternal stress and child body mass index. *Obesity Reviews, 16*, 351-361.
- Thiede, B. C., Kim, H., & Slack, T. (2017). Marriage, work, and racial inequalities in poverty: Evidence from the United States. *Journal of Marriage and Family, 79*, 1241-1257.
- Thullen, M., Majee, W., & Davis, A. N. (2016). Co-parenting and feeding in early childhood: Reflections of parent dyads on how they manage the developmental stages of feeding over the first three years. *Appetite, 105*, 334-343.
- Waller, M. R. (2012). Cooperation, conflict, or disengagement? Coparenting styles and father involvement in fragile families. *Family process, 51*, 325-342.
- Wang, Y. (2001). Cross-national comparison of childhood obesity: the epidemic and the relationship between obesity and socioeconomic status. *International Journal of Epidemiology, 30*, 1129-1136.

- Wang, Y., & Lim, H. (2012). The global childhood obesity epidemic and the association between socio-economic status and childhood obesity.
- Wegman, H. L., & Stetler, C. (2009). A meta-analytic review of the effects of childhood abuse on medical outcomes in adulthood. *Psychosomatic Medicine*, *71*, 805-812.
- Williams, L. R., Degnan, K. A., Perez-Edgar, K. E., Henderson, H. A., Rubin, K. H., Pine, D. S., ... & Fox, N. A. (2009). Impact of behavioral inhibition and parenting style on internalizing and externalizing problems from early childhood through adolescence. *Journal of Abnormal Child Psychology*, *37*, 1063-1075.
- Womack, S. R., Taraban, L., Shaw, D. S., Wilson, M. N., & Dishion, T. J. (2019). Family turbulence and child internalizing and externalizing behaviors: Moderation of effects by race. *Child Development*, *90*, e729-e744.
- Yavuz, H. M., & Selcuk, B. (2018). Predictors of obesity and overweight in preschoolers: The role of parenting styles and feeding practices. *Appetite*, *120*, 491-499.
- Zvara, B. J., Mills-Koonce, W. R., Garrett-Peters, P., Wagner, N. J., Vernon-Feagans, L., Cox, M., & Family Life Project Key Contributors. (2014). The mediating role of parenting in the associations between household chaos and children's representations of family dysfunction. *Attachment & Human Development*, *16*, 633-655.

APPENDIX A

TABLES

Table 1

Descriptive Statistics

	<i>N</i> (%)	<i>M</i>	<i>SD</i>
Mother's age (years)	3723	25.28	6.04
Father's age (years)	3723	27.92	7.16
Mothers' Race			
White	798 (21.4)		
Black	1816 (48.8)		
Hispanic	969 (26.0)		
Other	131 (3.5)		
Mothers' Education (Year 5)			
Less than a high school degree	941 (25.3)		
High School Degree or Equivalent	964 (25.9)		
Some college, technical school	1309 (35.2)		
College or graduate degree	507 (13.6)		
Household Income (Year 5)	3154	49,388.72	53,957.94
Focal child's gender			
Male	1953 (52.5)		
Female	1770 (47.5)		
Focal Child Low birth weight	3620		
No	3288 (88.3)		
Yes	332 (8.9)		
Focal Child BMI Percentile at Year 5			
Average weight	1273 (34.2)		
Overweight/Obese	712 (19.1)		
Maternal Parenting Stress	3636	1.57	.82
Harsh Parenting			
Psychological Aggression		8.65	5.11
Physical Assault		5.50	4.88
Coparenting Quality	2452	5.34	.58
SES	2737	0.07	2.76
Child BMI Percentile at Year 9			
Average weight	1637 (57.5)		
Overweight/Obese	1211 (42.5)		
Total Family Transitions (Year 1-Year 5)	3723	.52	.51

Note: N = 3,723

Table 2

Correlations for Variables of Interest

	1	2	3	4	5	6	7	8	9	10	11	12
1. Multiple Family Transitions	1											
2. Maternal Parenting Stress	.05**	1										
3. Psychological Aggression	.08**	.19**	1									
4. Physical Assault	.08**	.16**	.61**	1								
5. Co-parenting quality	-.30**	-.16**	-.16**	.15**	1							
6. SES ^a	-.18**	-.09**	-.06**	-.08**	.13**	1						
7. BMI age 5 ^b	-.03	.00	.01	.02	.02	-.02	1					
8. Low birth weight	.04*	.01	.02	-.00	-.07**	-.05*	-.05*	1				
9. Mother race-Black	.14**	.02	.14**	.23**	-.13**	-.13**	-.05*	.11*	1			
10. Mother Race-Hispanic	-.06**	-.01	-.11**	-.15**	.08**	-.21**	.09*	-.08**	.59**	1		
11. Mother Race-Other	-.04*	.01	-.02	-.03	.17	.12**	-.04	-.02	-.19**	-.13**	1	
12. BMI age 9 ^c	-.00	-.02	.01	.03	.01	-.09**	.53**	-.04*	.03	.07**	-.03	1

*Note: *p < .05, **p < .01*

^a Computed by standardizing income and maternal education and then summing the two items

^b 1 = normal weight, 2 = overweight/obese

^c 1 = normal weight, 2 = overweight/obese

Table 3

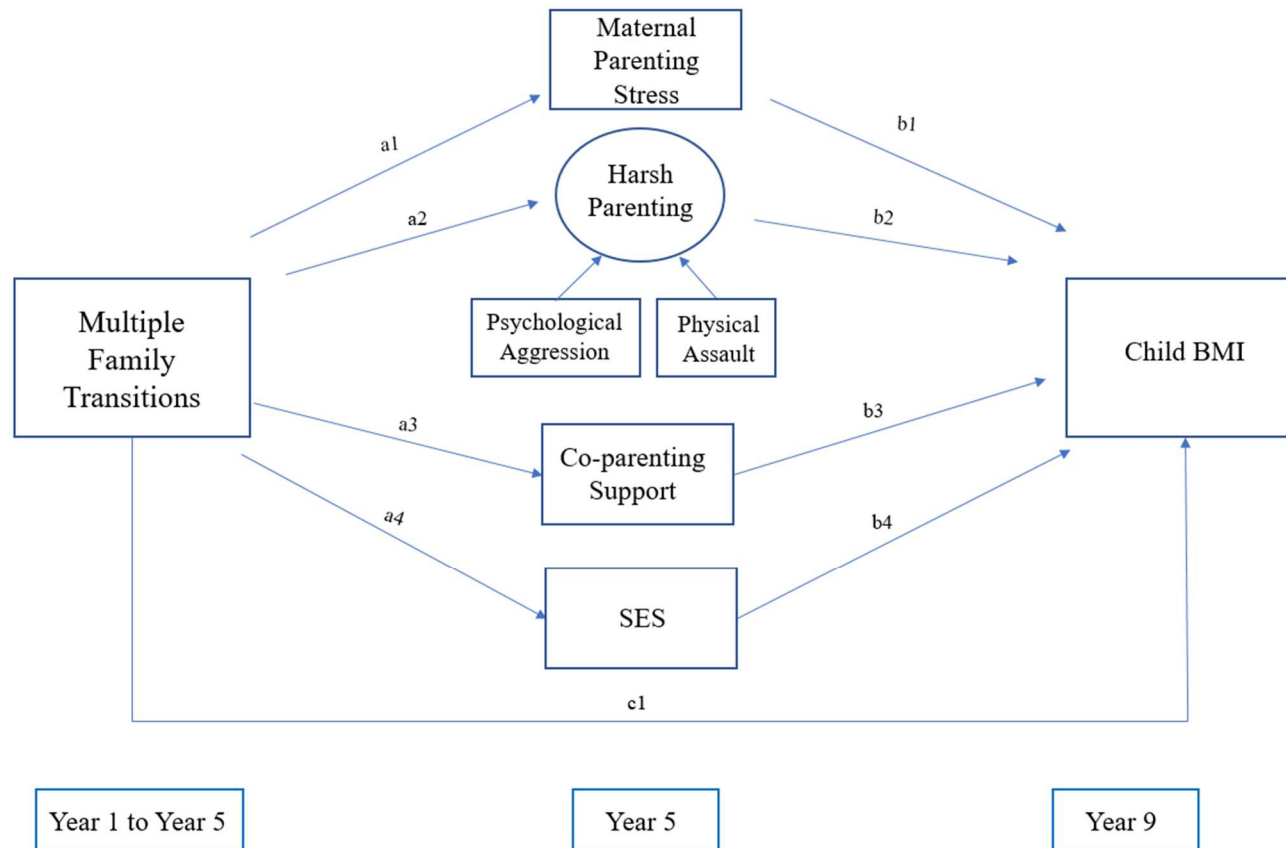
Direct and Indirect Effects of Multiple Family Transitions

Effect (Path)	Standardized Parameters	95% CI	99% CI	p-value
<i>Direct effect path estimates</i>				
Multiple family transitions → Child BMI	-.01	[-0.07, 0.04]	-	0.59
<i>Indirect path estimates</i>				
Multiple family transitions → maternal parenting stress → Child BMI	-.00	[-0.01, 0.00]	-	.30
Multiple family transitions → harsh parenting → Child BMI	.01	[-0.00, 0.01]	-	.13
Multiple family transitions → coparenting quality → Child BMI	-.02	[-0.04, 0.00]	-	.13
Multiple family transitions → SES → Child BMI	.02	[0.01, 0.04]	[0.01, 0.04]	.00

Note: Standardized estimates and confidence intervals were estimated using bias corrected bootstrapped confidence intervals.

APPENDIX B

FIGURES



99

Figure 1. Multiple Family Transitions Conceptual Model.

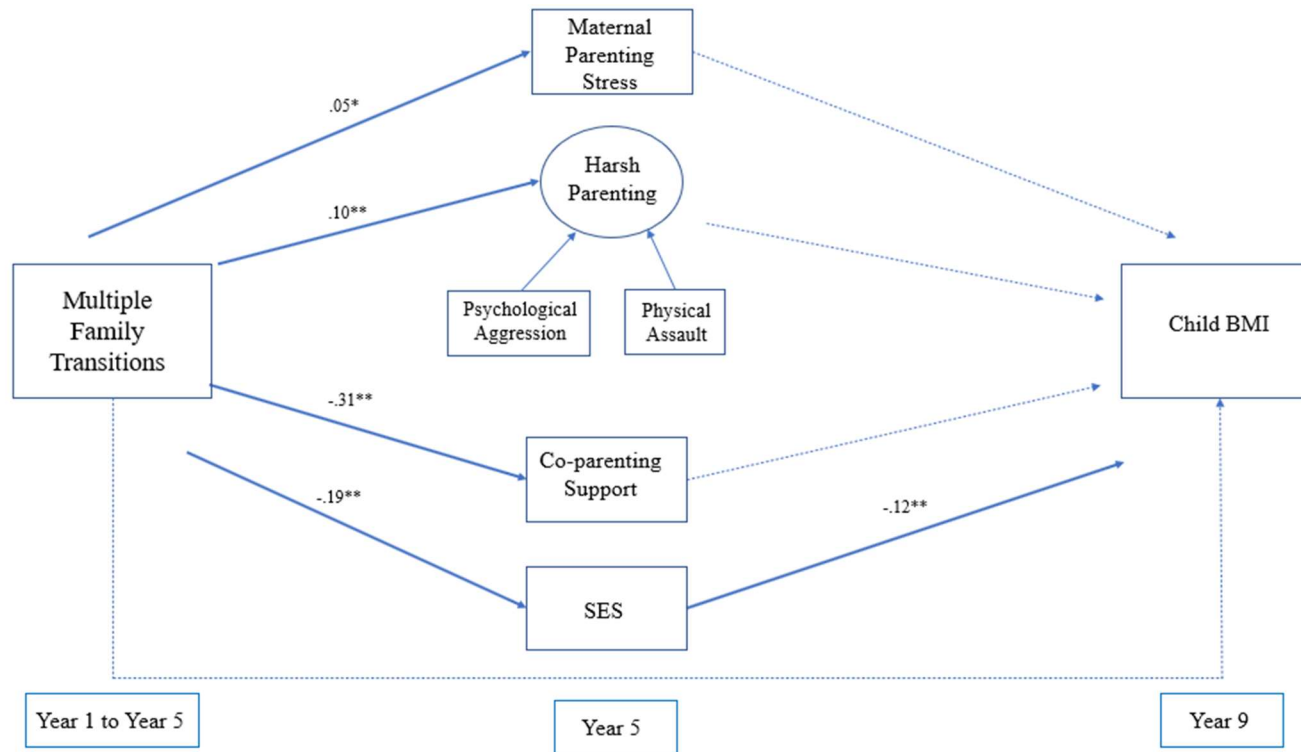


Figure 2. Multiple Family Transitions Path Model.

Note: Path estimates are standardized. Significant pathways are bolded. All indirect variables were correlated but are not depicted in order to enhance readability. Maternal race, focal child low birth weight, and focal child BMI at age 5 were controlled for in the model but are not depicted in the model above.

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