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Associations Among Parenting Style and Parental Feeding Practices on Adolescent Self-Efficacy for Diet and Obesity in African American Adolescents

Haylee Loncar

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ASSOCIATIONS AMONG PARENTING STYLE AND PARENTAL FEEDING PRACTICES ON
ADOLESCENT SELF-EFFICACY FOR DIET AND OBESITY IN AFRICAN AMERICAN
ADOLESCENTS

by

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ABSTRACT

Previous literature has demonstrated relationships between parenting factors and child health. However, few studies have investigated such associations in African American and adolescent samples. The proposed study aimed to investigate the relationships between parenting factors (parenting style and parental feeding practices), and adolescent self-efficacy for diet, and adolescent body mass index (BMI) in African American families. Baseline data were collected from 241 African American parent-adolescent dyads enrolled in the Families Improving Together (FIT) for Weight Loss trial. Adolescents self-reported their perceptions of their caregiver's parenting style and feeding practices, as well as perceptions of their own self-efficacy for diet. Weight and height were objectively measured and used to calculate BMI for parents and adolescents. Based on Family Systems Theory and Social Cognitive Theory, it was hypothesized that autonomy-supportive parenting (authoritative parenting and parental feeding responsibility) would be associated with lower adolescent BMI, where controlling parenting practices (parental feeding restriction and parental concerns about adolescents' eating and weight) would be associated with higher adolescent BMI. In addition, based on past literature it was anticipated that autonomy-supportive parenting practices (authoritative parenting and parental feeding responsibility) would be related to greater adolescent self-efficacy for diet, while controlling parental feeding practices (restriction and monitoring of adolescent diet, concern for adolescent weight, and pressure-to-eat at mealtimes) would be associated with lower adolescent self-efficacy to eat healthfully. In

support of hypotheses, results indicated that authoritative parenting was associated with lower adolescent zBMI and positively associated with adolescent self-efficacy for diet. As expected, parental concern was positively associated with greater adolescent zBMI. However, findings regarding parent monitoring and restriction were more complex. Parental monitoring was shown to be positive for youth, where parental restriction was associated with lower adolescent self-efficacy for diet. The results of this study emphasize the importance of the parent-adolescent relationship in adolescent weight-related outcomes. In addition, they highlight the potential benefits of autonomy-supportive parenting across cultures.

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Introduction

Overweight and obesity affects nearly one-third of adolescents in the United States (Ogden, Carroll, Kit, & Flegal, 2016). This is a major public health concern, as adolescent obesity has been shown to be predictive of serious health conditions, such as type 2 diabetes and high blood pressure (Glickman, Parker, Sim, Del, & Cook, 2012). African American adolescents are also disproportionately affected by these conditions, with nearly 40% being overweight or obese (Ogden, Carroll, Kit, & Flegal, 2014). These concerns necessitate an evaluation of factors that may contribute to adolescent obesity and its health disparities. Recent family-based research has indicated that parents have considerable influence on adolescent health behaviors and health outcomes (Golan & Crow, 2004; Gruber & Haldeman, 2009; Smetana, Campione-Barr, & Metzger, 2006). Parenting factors that affect adolescent development of self-regulatory skills and self-efficacy are especially predictive of adolescent weight-status (Burton, Wilder, Beech, & Bruce, 2017; Holland et al., 2014).

Past research has widely supported the influence of parenting style on adolescent BMI (Berge, Wall, Loth, & Neumark-Sztainer, 2010; Kim et al., 2008; Shloim, Edelson, Martin, & Hetherington, 2015; Sleddens, Gerards, Thijs, de Vries, & Kremers, 2011). Parenting styles are comprised of parental attitudes and behaviors that affect parent-adolescent interactions and relationship characteristics (Baumrind, 1971; Fuemmeler et al., 2012). Specifically, parenting styles are characterized by the degree of responsiveness (warmth) and demandingness (control) that parents practice with their adolescents

(Baumrind, 1971). Four parenting styles are typically represented in literature: authoritative (high warmth, moderate control), authoritarian (low warmth, high control), permissive (high warmth, low control), and neglectful (low warmth, low control; Baumrind, 1971; Maccoby & Martin, 1983). Parenting style is especially meaningful during adolescence, as it is a critical period of development that requires increased autonomy and independence (Smetana et al., 2006). Authoritative parenting provides the structure and appropriate independence that is required for adolescents to develop self-efficacy and self-regulation during this time (Biglan, Flay, Embry, & Sandler, 2013; Steele, Daratha, Bindler, & Power, 2011). These skills are essential for the development of positive adolescent health behaviors and healthy adolescent weight-status (O’Dea & Wilson, 2006). Parenting styles that are overly controlling (authoritarian) or lack control (permissive) hinder the development of these critical skills (Berge et al., 2010; Kim et al., 2008; Shloim et al., 2015; Sleddens et al., 2011).

Prior literature has suggested that culture influences adolescent responses to parenting style (Hill, Bromell, Tyson, & Flint, 2007). Some studies have demonstrated that African American parents are more likely to practice authoritarian parenting (low warmth, high control) with their children. While authoritarian parenting has been characterized by stern and rigid parenting behaviors, some studies suggest that greater parental control may elicit a sense of safety and nurturance among underserved African American adolescents (Hill et al., 2007) and that authoritarian parenting may be associated with better health outcomes in adolescents (Baumrind, 1972; Hill et al., 2007). However, this perspective has not been entirely supported by literature (Shloim et al., 2015; Sleddens et al., 2011; Vollmer & Mobley, 2013). In fact, authoritarian parenting

has been shown to hinder the self-efficacy and self-regulation development that is critical throughout adolescence (Tan & Holub, 2010; Steinberg, 2001). Furthermore, Steinberg and colleagues have indicated that authoritative parenting produces better health outcomes for youth of all ethnicities (Steinberg, 2001). However, it is unclear how variations in parenting styles may be associated with African American adolescents' health because this population has been underrepresented in previous literature. The impact of parenting styles on health behaviors has not been studied in an entirely African American adolescent sample.

Parenting styles are characterized by a number of behaviors, including parental feeding practices. Parental feeding practices are known as behaviors that parents engage in which affect their child's eating (Gevers, Kremers, de Vries, & van Assema, 2014). The most commonly measured parental feeding practices include perceived responsibility for child diet, restriction of unhealthy foods, concern for child weight and eating behaviors, monitoring child dietary intake, and pressuring child to eat during mealtimes (Birch et al., 2001a). While the influence of parental feeding practices on child weight has primarily been studied with preschool-aged children, literature also supports a relationship between parental feeding practices and adolescent BMI (Shloim et al, 2015; Vollmer et al., 2013). Specifically, parental feeding practices that are characteristic of autonomy-supportive parenting (authoritative) have been associated with healthier weight-status among adolescents (Burton et al., 2017; Holland et al., 2014; Shloim et al., 2015). In addition, literature has demonstrated that some parental feeding practices, such as providing adolescents autonomy for healthy meals or ensuring healthy foods are available at home, promote adolescent development of self-efficacy for health behaviors

and dietary self-regulation (Holland et al., 2014; LeCuyer, Swanson, Cole, & Kitzman, 2011). To fill this literature gap, the present study focuses on variations in parental feeding practices within African American families and the relationship with adolescent health.

In all, prior research has demonstrated that parenting style and parental feeding practices are related to adolescent BMI and may be important in understanding adolescent self-efficacy for diet. The proposed study aims to expand on this literature in a number of ways. First, the present study will evaluate the relationship between parenting factors (authoritative parenting and parental feeding practices) and adolescent BMI in African American families. Secondly, this study aims to examine the relationship between parenting factors (authoritative parenting and parental feeding practices) and adolescent self-efficacy for health behaviors in African American families.

Chapter 1

Theoretical Underpinnings: Influences on Adolescent BMI

1.1 Family Systems Theory

The Family Systems Theory (FST) highlights the importance of the family system in understanding and explaining individual behavior (Broderick, 1993). According to FST, families' functionality hinges on the types of interactions members have with each other. Some interactions, such as warm and supportive parent-child exchanges, have been associated with a number of desirable health outcomes, including improvements in adolescent overweight and obesity (Biglan et al., 2013; Kitzman-Ulrich et al., 2010; Parletta, Peters, Owen, Tsiros, & Brennan, 2012; Shloim et al., 2015; Wilson et al., 2015). These familial exchanges are characteristic of an authoritative parenting style. Past research has widely supported a relationship between authoritative parenting behaviors and positive adolescent health outcomes. One review found that children with authoritative parents were more likely to eat nutritiously, engage in physical activity, and have healthier BMIs when compared to children with non-authoritative parents (Sleddens et al., 2011). Moreover, familial interactions go beyond parent-adolescent communication and support. Specifically, parental feeding practices influence family behavior and relations. Parents who feel greater responsibility for their adolescent's dietary intake have adolescents with healthier BMIs (Holland et al., 2014). In contrast, controlling parental feeding practices have been associated with higher negative adolescent health outcomes. Restrictive feeding practices, for example, limit children's ability to recognize hunger

and satiety cues on their own. This inhibits the development of dietary self-regulation and increases focus on restricted foods and eating in the absence of hunger (Fisher & Birch, 1999).

Culture is also an important element that may characterize the quality of familial interactions. For instance, some literature suggests that African American adolescents perceive authoritarian parenting (low warmth, high control) as nurturing and feel a sense of love and security (Hill et al., 2007). However, other studies have suggested that the influence of parenting style on adolescent BMI is consistent across cultures and ethnicities (Kitzman-Ulrich et al., 2010; Steinberg, 2001; Van Der Horst & Sleddens, 2017), with authoritative considered to be optimal for desired outcomes. In the present study, the FST will contribute to the understanding and interpretation of the study outcomes.

1.2 Social Cognitive Theory

Social cognitive theory (SCT) is considered a theory of reciprocal determinism where behavior, personal (cognitive) factors, and environmental factors interact and influence each other (Bandura, 1986). SCT considers self-efficacy to be an essential determinant for health behaviors (Bandura, 1977; Bandura, 1998) which is important in understanding self-regulation. The SCT notes that self-efficacy is a critical prerequisite for behavior participation, where one who believes he/she is capable of performing the behavior is more likely to increase engagement in the behavior over time. In addition, successful mastery of health behaviors improves self-efficacy and reinforces the behavior. SCT also highlights the importance of self-regulation in this cycle and according to the theory, the degree of self-efficacy helps identify where self-regulatory

skills need to be improved (Bandura, 2004). Recognition and improvement of self-efficacy and self-regulation is essential for long-term behavior maintenance. Using SCT as a guiding framework, the present study will evaluate the association of parenting factors on adolescent self-efficacy for health behaviors (dietary intake).

Chapter 2

Effects of Parenting Factors on Adolescent Obesity

2.1 Parenting Style

Recent literature largely supports a relationship between parenting style and child BMI. However, it is important to note that the majority of prior research has been conducted in younger samples. Such literature has regularly demonstrated the relationship between authoritative parenting and healthier child weight status (Sleddens, et al., 2011; Shloim, et al. 2015). The scope of the present review is limited to studies with adolescent samples, a less represented population for this topic. Nevertheless, a number of studies have demonstrated mixed support for the associations between parenting styles and adolescent BMI (Shloim et al., 2015; Sleddens et al., 2011; Vollmer & Mobley, 2013). In some studies, authoritative parenting (high in warmth and responsiveness) has been associated with healthier adolescent BMI (Berge et al., 2010; Kim et al., 2008; Sleddens et al., 2011). In a cross-sectional study by Kim and colleagues (2008), investigators found that maternal authoritative parenting was a significant predictor of healthier adolescent BMI (13-15, 22% minorities; Kim et al., 2008). Although results of this study provide support for the association among authoritative parenting and adolescent weight status, the causal inferences are limited with this study design. (Kim, et al., 2008). However, the influence of parenting style on adolescent BMI has also been assessed in longitudinal studies. For instance, Berge and colleagues (2010) assessed the influence of maternal parenting style on adolescent BMI over a 5-year

follow-up (11-18 years, 18.7% African American). The results of this study indicated that maternal authoritative parenting style predicted a lower, healthier BMI in adolescents 5 years later, which may suggest that it is a protective factor for obesity in adolescents (Berge et al., 2010). These findings support the present study's proposed hypothesis that authoritative parenting will be associated with healthier adolescent BMI.

Only five of thirteen relevant studies included African American participants in their studies examining parenting factors and adolescent obesity (Fuemmeler; Gable & Lutz; Berge; Lane; Hennessy) and most of these studies have been aggregated across ethnicity and racial groups. This is significant, as some studies have suggested that the influence of parenting style on adolescent health differs culturally (Hill et al., 2007; LeCuyer & Swanson, 2017). Specifically, some literature has indicated that authoritarian parenting (low in warmth and high in control) is associated with better adolescent health in minority families (Baumrind, 1972). However, some studies that included African American families found that authoritarian parenting was associated with higher adolescent BMI (Berge, et al., 2010; Fuemmeler, et al., 2012). In a recent longitudinal study, Fuemmeler and colleagues (2012) also found that authoritarian parenting style was associated with greater increases in BMI for adolescents (11-21 years, 17.1% African American). Another longitudinal study found that maternal authoritarian parenting was predictive of higher adolescent BMI (11-18 years, 18.7% African American) in sons (Berge et al., 2010). In their cross-sectional study, Kim and colleagues also found that maternal authoritarian parenting was associated with higher adolescent BMI (13-15 years; Kim et al., 2008). Furthermore, permissive parenting (high nurture and low responsiveness) has also been associated with higher adolescent BMI. For instance,

Gable and Lutz (2000) found that permissive parenting was associated with child obesity (6-10 years, 6% African American; Gable & Lutz, 2000). In their cross-sectional study, Humenikova and Gates (2008) also reported that higher adolescent BMI (9-12 years, race not reported) was significantly associated with permissive parenting (Humenikova & Gates, 2008). Several investigators who conducted reviews of the literature also reported that permissive parenting was regularly associated with higher child BMI (Shloim et al., 2015; Vollmer & Mobley, 2013).

Several past studies have also reported no association between parenting style and adolescent BMI (Hennessy et al., 2010; Taylor et al., 2011). Hennessy and colleagues (2010) found no significant relationship between parenting style and child BMI (6-11 years, 49% African American; Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2010). Similarly, a cross-sectional study of Australian children found no significant relationship between parenting style and child weight (7-11 years; Taylor, Wilson, Slater, & Mohr, 2011). However, both of these studies highlighted that specific parental feeding practices, such as parental restriction of adolescent diet, were significantly related to higher adolescent BMI. In summary, given these findings, it was hypothesized in the proposed study that authoritative parenting style would be associated with lower BMI in African American adolescents.

2.2 Parental Feeding Practices

A substantial amount of literature exists that demonstrates the association between parental feeding practices and adolescent weight-status (Faith, Scanlon, Birch, Francis, & Sherry, 2004; Shloim et al., 2015) The most commonly studied feeding behaviors are

consistent with those measured in the Child Feeding Questionnaire (CFQ) which include responsibility, restriction, weight concern, monitoring, and pressure to eat during mealtimes (Birch et al., 2001). Parental feeding practices are especially critical, as they may influence dietary self-regulation development in adolescents (Hennessy, et al., 2010). Further, recent literature has suggested that dietary self-regulation influences adolescent weight throughout adulthood (Connell & Francis, 2014).

Responsibility. The responsibility dimension of feeding practices is designed to evaluate perceived parental responsibility for feeding behaviors, such as feeding their child, providing nutritious foods, and being involved in food portioning (Birch et al., 2001; Kaur et al., 2006). Five previous studies evaluated parental responsibility in relation to adolescent BMI outcomes. In their randomized-controlled trial, Holland and colleagues' (2014) found that increases in parental perceived responsibility were associated with lower adolescent BMI (7-11 years, 17.1% African American; Holland et al., 2014). Similar to the present study, Holland and colleagues (2014) evaluated only overweight and obese adolescents in their study sample (Holland et al., 2014). However, other studies did not find a relationship between parental responsibility and adolescent weight-status (Burton et al., 2017; Gray et al., 2010; Kaur et al., 2006; Schmidt et al., 2017). In their cross-sectional study Kaur and colleagues (2006) found that parental responsibility was not significantly related to adolescent BMI (10-19 years, 55% African American; Kaur et al., 2006). The adolescents of this study ranged in BMI, with 51.8% classified as having a normal BMI (Kaur et al., 2006). In addition, Gray and colleagues (2010) found no association between adolescent BMI and parental responsibility in their cross-sectional study (7-17 years; 39.8% African American). Schmidt and colleagues

evaluated this relationship in 982 German youth, but also found no association among parental responsibility and adolescent BMI (2-13 years). Only one previous study assessed this relationship in an exclusively African American sample (Burton et al., 2017). Although Burton and colleagues (2017) did not find that parental responsibility was associated with adolescent BMI, the relationship is still understudied in African American adolescents. Specifically, parental responsibility for their adolescents' diet may be perceived differently in African American families. Given the developmental age of adolescents in this study, parental responsibility was not hypothesized to be associated with lower adolescent BMI. Parental responsibility was included as an exploratory analysis, however, we expected it overall to trend in a positive direction such as more responsibility the lower the adolescent BMI.

Restriction. Restriction is a parental feeding practice that involves control of adolescent dietary intake, such as restricting adolescent junk food consumption. Less parental restriction has frequently been associated with healthier adolescent BMI (Blissett & Bennett, 2013; Burton et al., 2017; Gray, Janicke, Wistedt, & Dumont-Driscoll, 2010; Kaur et al., 2006; Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2013; Schmidt et al., 2017; Towner, Reiter-Purtill, Boles, & Zeller, 2015). For instance, investigators in a recent randomized controlled trial found that lower parental restriction in adolescents' diets was associated with lower BMI in a sample of overweight and obese adolescents (7-11, 17.1% African American; Holland et al., 2014). Conversely, many recent studies have found that greater parental restriction was related to greater adolescent BMI (Burton, et al., 2017; Gray et al., 2010; Loth et al., 2013; Towner, et al., 2015). In their cross-sectional study of African American families, Burton and colleagues

(2017) found that greater parental restriction was associated with higher adolescent BMI (12-19 years; Burton et al., 2017). Towner and colleagues (2015) also found that parental feeding restriction was associated with adolescent overweight and obesity (8-16 years, 41% African American; Towner et al., 2015). These results are consistent with cross-sectional studies by Gray and colleagues (2010) and Loth and colleagues (2013), both of which found that greater parental restriction in adolescent diets was related to higher adolescent BMI (Gray et al., 2010; Loth et al., 2013). Only one previous study reported contrasting results (Campbell et al., 2010). In their longitudinal study, Campbell and colleagues (2010) found that greater maternal restriction during early adolescence (10-12 years) was not associated with higher adolescent BMI three years later. Despite this single inconsistency, for the present study it was hypothesized that greater parental feeding restriction would be associated with greater adolescent BMI overall.

Concern. Parental concern in feeding involves the degree to which a parent is concerned about their adolescent becoming overweight, losing control of their eating, or maintaining a healthy diet (Kaur et al., 2006). Many recent studies have found that less parental concern in feeding is related to healthier adolescent BMI (Burton et al., 2017; Gray et al., 2010; Holland et al., 2014; Kaur et al., 2006; Schmidt et al., 2017). For example, in their randomized controlled trial, Holland and colleagues (2014) found that less parental concern for adolescent weight and eating behaviors was associated with healthier adolescent weight (7-11 years; 17.1% African American; Holland et al., 2014). Additionally, a number of cross-sectional studies have demonstrated that greater parental concern is associated with higher adolescent weight. In Burton and colleagues' (2017) study of African American families, greater parental concern was related to higher

adolescent BMI (12-19 years; Burton et al., 2017). Another recent cross-sectional study found that higher parental concern was associated with greater adolescent overweight and obesity (2-13 years; Schmidt et al., 2017). More so, Gray and colleagues (2010) found that adolescents (7-17 years, 39.8% African American) were more likely to have a higher BMI if their parent endorsed greater parental concern (Gray et al., 2010). Kaur and colleagues found consistent results in their cross-sectional study of adolescents (10-19 years, 55% African American) and their families (Kaur et al., 2010). Consistent with current literature, for the present study it was hypothesized that greater parental concern would be associated with higher adolescent BMI.

Monitoring. Parental monitoring includes tracking adolescents' consumption of unhealthy foods, such as high fat foods or sugar-sweetened beverages (Kaur et al., 2006). Recent findings on the influence of parental monitoring and adolescent BMI have been inconsistent. In studies where African American families are most represented, results indicated that parental monitoring was not associated with adolescent BMI (Burton et al., 2017; Hennessy et al., 2010; Kaur et al., 2006). In their cross-sectional study of African American adolescents (12-19 years), Burton and colleagues (2017) found no association between parental monitoring and older adolescents BMI. However, it is notable that Burton and colleagues (2017) found that greater monitoring was associated with higher BMI in younger youth (Burton et al., 2017). In contrast, a cross-sectional study by Kaur and colleagues (2006) did not find a relationship between parental monitoring and adolescent BMI (10-19 years; 55% African American; Kaur et al., 2006). Additionally, another study found that parental monitoring did not predict BMI in younger adolescents (6-11 years; 49% African American; Hennessy et al., 2010). However, some studies

found an association between adolescent BMI and parental monitoring, demonstrating that greater parental monitoring was related to higher adolescent BMI (Schmidt et al., 2017; Towner et al., 2015). In their cross-sectional study, Towner and colleagues (2015) found that higher parental monitoring was positively related to adolescent BMI (8-16 years, 49% African American; Towner, et al., 2015). Schmidt and colleagues (2017) also found that greater parental monitoring was associated with higher BMI sample of German children (2-13 years; Schmidt et al., 2017). Given these findings, the present study integrated, parental monitoring as an exploratory analysis. and we expected that overall there might be a positive association between monitoring and adolescent BMI.

Pressure to Eat. Pressure to eat involves parents' inclination to pressure their adolescent to eat more during mealtimes (Birch et al., 2001; Kaur et al., 2006). Recent literature seems to be consistent in demonstrating that greater parental pressure to eat is associated with lower adolescent BMI. In their cross-sectional study of African American adolescents (ages 12-19), Burton and colleagues (2017) found that higher parental pressure to eat was related to lower adolescent BMI (Burton et al., 2017). In contrast, another cross-sectional study reported that parental pressure to eat was associated with lower BMI in a sample of younger adolescents (6-11 years, 49% African American; Hennessy et al., 2010). A cross-sectional study with German youth (2-13 years) also found that greater parental pressure to eat was associated with lower youth BMI (Schmidt et al., 2017). However, adolescents were of mixed weight-statuses in each of these studies. In most of the reviewed studies, however, parental pressure to eat at mealtimes was not significantly associated with adolescent BMI (7-17 years, 39.8% African American; Gray et al., 2010; 7-11 years, 17.1% African American; Holland et al., 2014;

10-19 years, 55% African American; Kaur et al., 2006; 12-16 years, 27.4% African American; Loth et al., 2013; 8-16 years, 41% African American; Towner et al., 2015). However, parental pressure to eat was included as an exploratory analysis and overall we expected there might be a positive association between parent pressure and adolescent BMI.

2.3 Study Purpose & Hypotheses

In summary, many studies have demonstrated that parenting style and parental feeding practices have been significantly associated with adolescent BMI. In addition, some literature that demonstrates that parenting style and parenting practices may play a role in understanding adolescent self-efficacy for diet. However, there are a number of ways that the present study uniquely contributes and expand understanding of these factors.

First, this study aimed to assess the influence of authoritative parenting style on adolescent BMI in African American families. The literature on child development has indicated that adolescence is a period where authoritative parenting is especially critical for adolescent health. Of the recent studies that have included African American families, some results indicated that authoritative parenting was predictive of lower adolescent BMI (Berge et al., 2015; Kim et al., 2008; Sleddens et al., 2011). However – few-to-none have looked only at AA families in past studies.

Authoritative parenting is characterized by autonomy-supportive parenting behaviors, including parental feeding practices (Baumrind, 1971). Greater parental perceived responsibility for the adolescent's diet is characteristic of authoritative

parenting as it involves a balance between parental nurturance and expectations for adolescents (Shloim et al., 2015). There have been mixed findings on the associations between parental perceived responsibility and adolescent BMI (Burton et al.; Gray et al., 2010; Holland et al., 2014; Kaur et al., 2006; Schmidt et al., 2017). However, African American families have been widely underrepresented in the literature, and the authoritative qualities of parental responsibility may be related to healthier BMI in these families. More so, some parental feeding practices are not characteristic of authoritative parenting and are associated with higher adolescent BMI. Namely, greater parental restriction of unhealthy foods and greater parental concern for adolescent weight has been related to higher adolescent BMI (Blissett & Bennett, 2013; Burton et al., 2017; Gray et al., 2010; Kaur et al., 2006; Loth et al., 2013; Schmidt et al., 2017; Towner et al., 2015). Past literature on adolescent development has indicated that dietary restriction during adolescence could inhibit dietary self-regulation and self-efficacy (Constanzo & Woody, 1985; Fisher & Birch, 1999; Hennessy et al., 2010; LeCuyer et al., 2011). More so, the literature suggests that greater concern for adolescent weight is related to lower adolescent dietary self-regulation and self-efficacy, and in turn related to greater adolescent BMI (Burton et al., 2017; Gray et al., 2010; Holland et al., 2014).

These results suggest that autonomy-supportive, authoritative parental feeding practices are related to higher dietary self-regulation and self-efficacy in adolescents, while more controlling, authoritarian practices may be associated with lower dietary self-regulation and self-efficacy in adolescents. Recent literature has indicated mixed findings on the association between adolescent BMI and parental monitoring of adolescent dietary intake and pressuring their adolescent to eat during meals. Therefore, the present study

hypothesized that parental monitoring, parental responsibility, and parental pressure would be exploratory variables.

In summary, the proposed study hypothesizes that:

Aim 1. Authoritative parenting styles, feeding practices would be significantly predictive of adolescent zBMI in African American adolescents, such that:

- a. Authoritative parenting will be associated with lower adolescent zBMI.
- b. Greater parental restriction of unhealthy foods and greater parental concerns about adolescent weight would be associated with higher zBMI.

Secondarily, the proposed study aims to assess the influence of authoritative parenting and feeding practices on adolescent self-efficacy for diet in African American adolescents. Past literature has indicated that parenting styles and behaviors are related to adolescent self-efficacy development (Kremers, Brug, De Vries, & Engels, 2003; Pearson, Ball, & Crawford, 2012). However, limited literature exists that describes the relationship between parenting factors and African American adolescent self-efficacy for diet. Previous research has demonstrated a positive relationship between autonomy-supportive parenting (consistent with authoritative parenting) and adolescent self-efficacy (Kremers et al., 2003; Pearson et al., 2012). In addition, past literature has indicated that some parental feeding practices, such as parental responsibility for adolescent diet, increase adolescent development of self-efficacy and self-regulation for eating behaviors (Connell & Francis, 2014; Fisher & Birch, 1999). While parental involvement and responsibility is still important in adolescent development, past research suggests that excessive parental control during these years could inhibit self-efficacy and self-

regulation development in adolescents (Fisher & Birch, 1999; Hennessy et al., 2010; Holland et al., 2014; LeCuyer et al., 2011). Therefore, the present study hypothesizes that authoritative parenting style and greater parental perceived responsibility for feeding would be associated with greater self-efficacy for diet in adolescents. Additionally, the present study hypothesizes that parental feeding practices high in control (greater restriction, monitoring, concern for adolescent weight, and parental pressure to eat) would be associated with lower self-efficacy for diet.

In summary, the proposed study hypothesizes that:

Aim 2. Autonomy-supportive parenting practices (authoritative parenting style and parental perceived responsibility) would be associated with greater adolescent self-efficacy for diet, such that:

- a. Authoritative parenting style and greater parental perceived responsibility for adolescent feeding will be associated with greater adolescent self-efficacy for diet (see Figure 2.1).

Aim 2b. Some parental feeding behaviors (parental restriction, monitoring, concern for adolescent weight, and pressure to eat at mealtimes) may also be associated with self-efficacy for diet to varying degrees, but few previous studies have evaluated these associations. Parental feeding behaviors were included as an exploratory analysis, such that:

- b. Greater parental restriction, monitoring, concern for adolescent weight, and pressure to eat in feeding will be associated with lower adolescent self-efficacy to eat a nutritious diet (see Figure 2.2).

The existing literature primarily supports the hypotheses that autonomy-supportive parenting is related to positive adolescent health outcomes, including adolescent weight-status and self-efficacy for health behaviors. However, African American families have been underrepresented in present literature, thus this study fills an important gap in the literature by focusing solely on overweight African American adolescents.

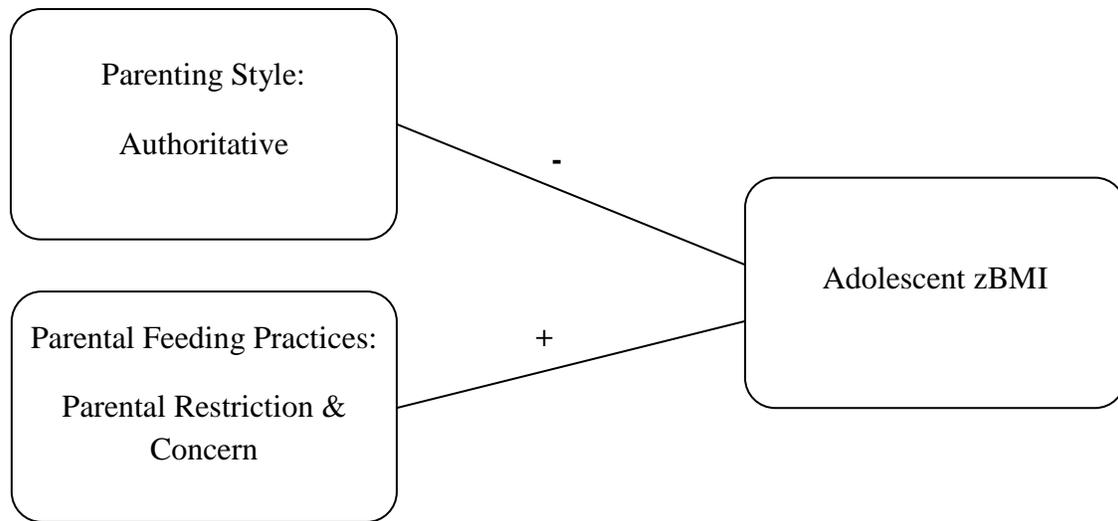


Figure 2.1. Hypothesized model for relationships between parenting factors and adolescent zBMI.

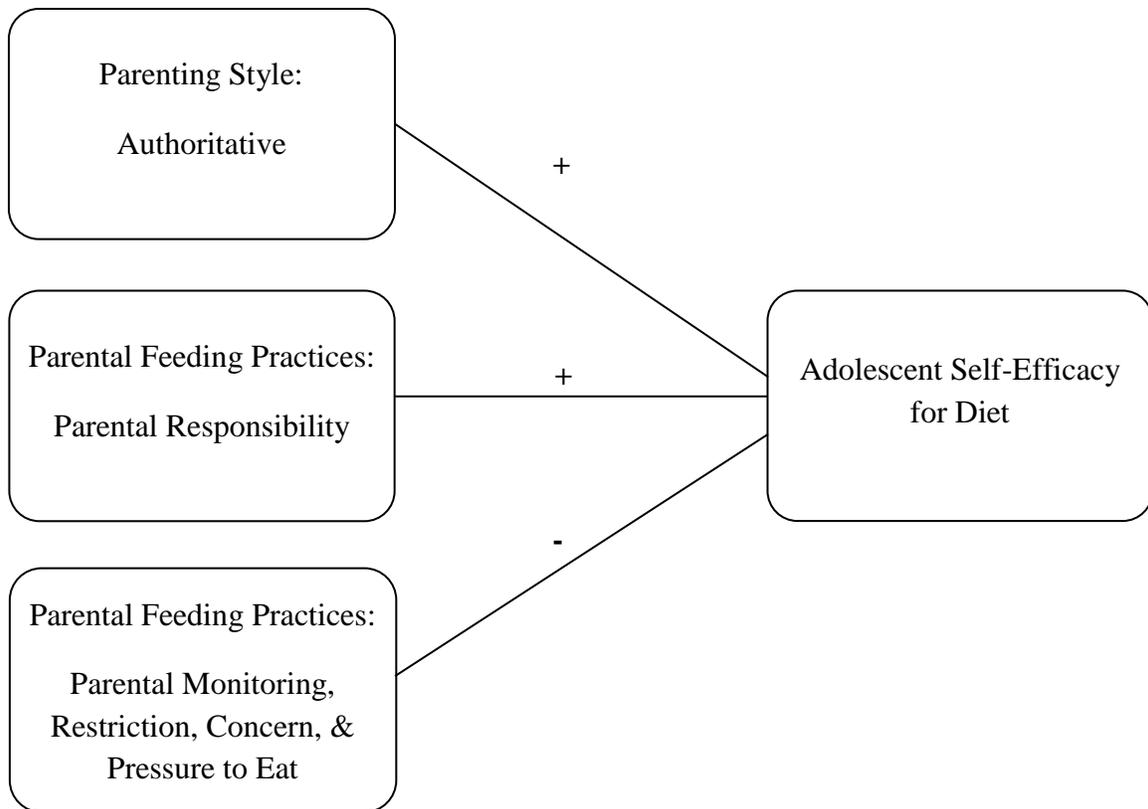


Figure 2.2. Hypothesized model for relationships between parenting style and adolescent self-efficacy for diet.

Chapter 3

Methods

3.1 Participants

Data were collected from 241 African American parent-adolescent dyads that were enrolled in the Families Improving Together (FIT) for Weight Loss randomized controlled trial (Alia, Wilson, St. George, Schneider, & Kitzman-Ulrich, 2013; Wilson et al., 2015). Participants were recruited through culturally-relevant local events, festivals, advertisements or through collaboration with local pediatric clinics and parks and recreation partners (Huffman et al., 2016). Eligible families met the following criteria: 1) had an African American adolescent between 11-16 years of age, 2) participating adolescent was overweight or obese, as defined by having a BMI $\geq 85^{\text{th}}$ percentile for their age and sex, 3) had an in-home caregiver willing to participate with the adolescent, and 4) had internet access. Adolescents with medical or psychiatric conditions that would affect their diet or ability to exercise were excluded from the study. Caregivers and/or adolescents that were currently enrolled in another weight loss or health program were also excluded. All participants signed informed consent forms prior to participation and were given \$20 compensation for their baseline participation in FIT.

3.2 Study Design

Project FIT evaluates the efficacy of a family-based motivational weight-loss intervention as compared to a basic health education program for African American

families. The current study is cross-sectional, and will only evaluated baseline data of the longitudinal randomized controlled FIT trial. Full methods and procedures for Project FIT have been previously published (Wilson et al., 2015).

3.3 Procedures

At the beginning of the program, FIT families attended two orientation sessions (run-in). During this time, the parent-adolescent dyads completed anthropometric measurements (height and weight) and psychosocial surveys. Weight and height measures were obtained using a Seca 880 digital scale and a Shorr height board, respectively. Adolescent BMI was calculated using these measures with Center for Disease Control (CDC) growth charts, then standardized to BMI z-scores (zBMI) using the statistical analysis system (SAS) program. Adolescent provided self-reported data on perceived parenting style, parental feeding styles, self-efficacy for diet, and self-efficacy for physical activity with psychosocial surveys.

3.4 Measures

Demographic Information. Socioeconomic status was measured using self-reported parent education. Responses range from ‘never attended school,’ ‘grades 1-8 (elementary),’ ‘grades 9-11,’ ‘grades 12 or GED (high school graduate),’ ‘college 1 year to 3 years (some college or technical school),’ ‘college 4 years or more (college graduate),’ and ‘graduate training or professional degree.’ Yearly income was reported in ranges, which included ‘less than \$10,000’ ‘\$10,000 to \$24,999,’ ‘\$25,000 to \$39,999,’ ‘\$40,000 to \$54,999,’ ‘\$55,000 to \$69,999,’ ‘\$70,000 to \$84,999,’ and ‘\$85,000 or more.’ Regarding marital status, parents identified as ‘married,’ ‘separated,’ ‘divorced,’

‘widowed,’ ‘never married,’ or ‘in an unmarried couple.’ Parents reported the number of children living in the home with them. Responses ranged from 1 child to 7 children. Sex was measured at the time of consent through parent-report data. Age was calculated using the child birthdate and date of the measurement appointment. Objective measures were taken to assess parent BMI at baseline.

Predictor Measures.

Parenting style. Parenting style was measured using six items from an adolescent self-report measure, the Authoritative Parenting Index (API; Jackson, Henriksen, & Foshee, 1998). Informed by Baumrind’s parenting styles (authoritative, authoritarian, permissive, and neglectful; 1977), the API consists of two subscales of responsiveness and demandingness. Responses are reported using a 5-point Likert scale ranging from “not at all like them” to “exactly like them.” Sample items include “My parents make me feel better when I am upset,” and “My parents have rules that I must follow.” This scale has been validated for diverse samples (Jackson et al., 1998). The demandingness and responsiveness subscales were found to be reliable for adolescents in the present study ($\alpha = 0.65$ and 0.78 respectively). Participants in this study responded to 3 items for each subscale (responsiveness, demandingness) for a total of 6 scored items. Previous studies have demonstrated construct validity of these measures (Huffman et al., 2017; Jackson et al., 1998).

Child feeding questionnaire. The Child Feeding Questionnaire (CFQ; Birch et al., 2001) was used to evaluate parental feeding practices and feeding styles. Items in this questionnaire were modified to reflect the adolescent’s perspective on their parent’s

feeding practices (rather than the parent's perspective on their own style). The scale consisted of five subscales measuring five dimensions of feeding: perceived parental responsibility, parental restriction, parental concern, parental monitoring, and parental pressure-to-eat. This scale has been validated for use with adolescents, and each dimension is sufficiently reliable (monitoring: $\alpha = 0.88$; restriction: $\alpha = 0.72$; concern: $\alpha = 0.82$; responsibility: $\alpha = 0.60$; Kaur et al., 2006). Goodness of fit analyses indicated that each of the seven dimensions were valid in the measure (Kaur et al., 2006). Responses for each dimension are scored on a 5-point Likert scale.

Responsibility. The responsibility dimension of the CFQ consists of 3 items and assessed parental feeding responsibility from the adolescent's perspective. Sample questions include "When home, how often is my parent responsible for preparing my meals?" and "How often is my parent responsible for deciding if I have eaten the right kind of foods?" Responses range from '1 = never' to '5 = always.'

Restriction. The restriction dimension of the CFQ consists of 12 items and assessed parental feeding restriction from the adolescent's perspective. Sample items include "Does my parent intentionally keep some foods out of my reach?" and "If my parent did not guide or regulate my eating, I would eat too many junk foods." Responses range from '1 = disagree' to '5 = agree.'

Concern. The concern dimension of the CFQ consists of 3 items and assessed parental concern for their adolescent's risk for being overweight from the adolescent's perspective. Sample questions include "How concerned is my parent about me eating too

much?” and “How concerned is my parent about me becoming overweight?” Responses range from ‘1 = unconcerned’ to ‘5 = concerned.’

Monitoring. The monitoring dimension of the CFQ consists of 3 items that evaluated parental monitoring of adolescent diet from the adolescent’s perspective. Sample questions include “How often does my parent keep track of the sweets (candy, ice cream, pies, pastries) that I eat?” and “How often does my parent keep track of the high-fat foods that I eat?” Responses range from ‘1 = never’ to ‘5 = always.’

Pressure-to-eat. The pressure-to-eat dimension of the CFQ consisted of four items that assessed the adolescent’s perspective of how often parents pressure them to eat. Sample questions include “I should always eat all the food on my plate.” And “If I say ‘I’m not hungry,’ my parent tries to get me to eat anyway.” Responses range from ‘1 = never’ to ‘5 = always.’

Self-Efficacy Measure.

Adolescent self-efficacy for diet. Adolescent self-efficacy for diet was measured using a modified version of the Self-Efficacy for Eating Habits Scale (Sallis et al., 1988). The adapted scale has previously demonstrated predictive validity to specifically evaluate self-efficacy for healthy eating in African American adolescents (Wilson et al., 2002). This adolescent self-report measure consists of 10 items that are related to relapse prevention and behavioral skills. Adolescents are asked to rate how confident they are that they could continue to eat nutritiously for at least six months when experiencing specific challenges. Sample items include “How sure are you that you can stick to eating healthfully when eating with family” and “How sure are you that you can stick to eating

healthfully when the only snack close by is from a vending machine?” Responses are scored on a 5-point Likert scale that ranges from ‘1 = I know I cannot’ to ‘5 = I know I can.’

Anthropometric measures.

Adolescent zBMI. Adolescent BMI was measured using height, weight, and age at the time of data collection measurements. Height and weight measurements were taken at the first group session (orientation period) and again at the third group session (first session after condition randomization). An average height and an average weight will be calculated using these two measurements. The CDC growth curves for child BMI will be used to assess this measure. Statistical Analysis Software (SAS) will be used to standardize adolescent BMI (zBMI) for comparison.

Chapter 4

Statistical Analyses

4.1 Missing Data

Three parents (1.24%) and one adolescent (0.41%) did not complete the baseline psychosocial measures. Given the minimal missing data overall for the study, these participants will be dropped in the final analysis.

4.2 Preliminary Analyses and Assumptions

Assumptions for the multiple regression analyses were met. To address the assumption of normality, histograms of the standardized residuals were assessed. Scatterplots of the standardized residuals and predicted values were evaluated to assess for homoscedasticity. A Durbin-Watson test was used to assess independence of errors. Lastly, a Cook's distance measure was used to check for influential points in the data.

4.3 Data Analysis

A hierarchical multiple regression analysis was conducted to assess the effects of authoritative parenting style, parental feeding practices including perceived responsibility restriction, and concern about weight on adolescent zBMI. Adolescent age, adolescent sex, parent education, and parent BMI were included as covariates in each model due to their known associations with adolescent zBMI. Adolescent age at the time of data collection was coded in years and mean centered. Sex was coded '1' for males and '0' for females. The research questions examined the following regression equations.

Aim 1. Adolescent zBMI Equations.

Equation 1. $zBMI = \beta_0 + \beta_1Age + \beta_2Male + \beta_3Parent\ Education + \beta_4Parent\ BMI + \varepsilon,$

Equation 2. $zBMI = \beta_0 + \beta_1Age + \beta_2Male + \beta_3Parent\ Education + \beta_4Parent\ BMI + \beta_5Authoritative\ Parenting\ Style + \beta_6Feeding\ Responsibility + \beta_7Feeding\ Restriction + \beta_8Feeding\ Concern + \varepsilon$

where β_0 is the intercept, β_{1-4} are the effects of covariates (age, sex, parent education, parent BMI), β_{5-7} assesses the effects of parenting factors (authoritative parenting and parental feeding practices), and ε is the residual. The β coefficients for these factors will each be assessed to answer the research questions.

In addition, a separate hierarchical multiple regression analyses was conducted to assess the effects of authoritative parenting style and parental feeding practices (perceived responsibility, restriction, monitoring, concern, and pressure-to-eat) on adolescent self-efficacy for diet. Adolescent age, adolescent sex, parent education, and parent BMI were included as covariates in each model due to their known associations with adolescent self-efficacy.

Aim 2. Adolescent Self-Efficacy for Diet.

Equation 1. Adolescent Self-Efficacy for Diet = $\beta_0 + \beta_1Age + \beta_2Male + \beta_3Parent\ Education + \beta_4Parent\ BMI + \varepsilon,$

Equation 2. Adolescent Self-Efficacy for Diet = $\beta_0 + \beta_1Age + \beta_2Male + \beta_3Parent\ Education + \beta_4Parent\ BMI + \beta_5Authoritative\ Parenting\ Style + \beta_6Feeding$

$$\text{Responsibility} + \beta_7 \text{Feeding Restriction} + \beta_8 \text{Feeding Monitoring} + \beta_9 \text{Feeding Concern} + \beta_{10} \text{Feeding Pressure-to-Eat} + \varepsilon$$

where β_0 is the intercept, β_{1-4} are the effects of covariates (age, sex, parent education, parent BMI), β_{5-10} assesses the effects of parenting factors (authoritative parenting and parental feeding practices), and ε is the residual. The β coefficients for these factors will each be assessed to answer the research questions.

4.4 Power

Power for a hierarchical multiple regression was calculated a priori using the power analysis program G*Power. The a priori power analysis for Aim 1 and Aim 2a indicated that in order to achieve statistical power ($1 - \beta$) of .80, with $\alpha = .05$, a sample size of 98-242 is needed to detect a small ($f^2 = .06$; $d = .12$) to medium ($f^2 = .15$; $d = .30$) effect size. The a priori analysis for Aim 2b indicated that in order to achieve statistical power ($1 - \beta$) of .80, with $\alpha = .05$, a sample size of 68-196 is needed to detect a small ($f^2 = .05$; $d = .10$) to medium ($f^2 = .15$; $d = .30$) effect size. These effect sizes are consistent with recommended effect sizes for research in social sciences (Cohen, 1988; Cohen, West, & Aiken, 2003). Thus, the current sample size of 241 should yield sufficient power for detecting the hypothesized results.

Chapter 5

Results

5.1 Demographic Data

Demographic data are presented in Table 1. Adolescents were an average age of 12.83 years old ($M_{AGE} = 12.83$ $SD = 1.75$). Adolescents had an average zBMI of 2.05 ($M_{zBMI} = 2.05$, $SD = 0.50$), and the majority was over the 90th percentile for their BMI ($M_{BMI\%} = 96.61\%$, $SD = 4.25$). Parents were an average age 43.18 years old ($M_{PAGE} = 43.18$, $SD = 8.65$), and had an average BMI of 37.49 ($M_{BMI} = 37.49$, $SD = 8.34$). Caregivers were married (34.4%). The majority of adolescents were female (64%). Regarding education, the majority of parents had less than a 4-year college degree ($n = 137$, 56.8%). In addition, the majority of caregivers were female (95.9%). Overall, the sample was primarily low-income with the median yearly income for families was between \$25,000 and \$39,999. The number of children in the households ranged from 1 to 7, with an average of 2.05 children in the home (See Table 5.1).

5.2 Correlation Analyses

Correlation analyses are presented in Table 2. Adolescent zBMI was significantly correlated with parent BMI ($r = 0.39$) and parental concern ($r = 0.17$). Authoritative parenting was correlated with parental responsibility ($r = 0.39$), concern ($r = 0.33$), restriction ($r = 0.23$), monitoring ($r = 0.36$), and self-efficacy for diet ($r = 0.20$). Parental responsibility was also correlated with self-efficacy for diet. Several parental feeding

factors were correlated with each other, which are depicted in Table 2. Notably, self-efficacy for diet was correlated with parental concern ($r=0.18$; $r=0.14$), pressure-to-eat ($r=0.14$; $r=.019$), and monitoring ($r=0.18$; $r=0.18$), respectively. In addition, adolescent age was correlated with parental responsibility ($r=-0.23$), where younger adolescents perceived greater parental responsibility. In addition, parental restriction was correlated with adolescent age ($r=-0.21$), where younger adolescents perceived greater parental restriction. Lastly, adolescent sex was correlated with parental concern ($r=-0.19$), where adolescent girls perceived greater parental concern (See Table 5.2).

5.3 Parenting Factors and Adolescent zBMI

A hierarchical regression model was used to examine whether authoritative parenting style and adolescent-perceived parental feeding styles (responsibility, concern, and restriction) were significant predictors of adolescent zBMI (Table 3). The first step of the model included covariates (parent BMI, adolescent sex, adolescent age, and parent education) and was significant ($F(4,227) = 10.93, p < 0.05$). This step accounted for 16% of the variance in adolescent zBMI ($R^2 = 0.16$). Parent BMI was the only significant covariate related to adolescent zBMI ($B=0.02, SE=0.05, p < 0.05$). The second step of the model, which examined the relationship between authoritative parenting style and parental feeding style on adolescent zBMI, was also significant ($F(8,223) = 8.19, p < 0.05$). The second step of the model accounted for 22% of the variance in adolescent zBMI ($\Delta R^2 = 0.07, p < 0.05$).

Specifically, authoritative parenting style ($B=-0.07, SE=0.03, p < 0.05$) predicted adolescent zBMI such that greater authoritative parenting was associated with lower adolescent zBMI scores. Adolescent-perceived parental concern for their adolescent's

eating behaviors ($B=0.13$, $SE=0.03$, $p<0.05$) predicted adolescent zBMI, such that greater parental concern was associated with greater adolescent zBMI scores. No other findings were significant (See Table 5.3).

5.4 Parenting Factors and Adolescent Self-Efficacy for Diet

Another hierarchical regression model was used to examine whether authoritative parenting style and parental feeding styles (responsibility, concern, restriction, monitoring, and pressure-to-eat) were significant predictors of adolescent self-efficacy for diet (Table 4). The first step of the model included covariates (parent BMI, adolescent sex, adolescent age, and parent education) and was significant ($F(10, 227) = 2.02$, $p<0.05$). This step accounted for 3% of the variance in adolescent self-efficacy for diet ($R^2 = 0.03$). The second step of the model included authoritative parenting style and adolescent-perceived parental feeding styles (responsibility, concern, restriction, monitoring, and pressure-to-eat), and was also significant ($F(10, 221) = 3.86$, $p<0.05$). This step of the model (authoritative parenting style and parental feeding styles) accounted for 15% of the variance in adolescent self-efficacy for diet ($\Delta R^2 = 0.11$, $p<0.05$).

Specifically, authoritative parenting style ($B=0.18$, $SE=0.07$, $p<0.05$) predicted adolescent self-efficacy for diet such that greater authoritative parenting was associated with greater adolescent self-efficacy for diet. Adolescent-perceived parental monitoring of their eating behaviors ($B=0.17$, $SE=0.08$, $p<0.05$) significantly predicted self-efficacy for diet, such that greater parental monitoring was related to greater adolescent self-

efficacy for diet. Conversely, greater parental restriction ($B=-0.26$, $SE=0.08$, $p<0.05$) was significantly related to lower adolescent self-efficacy for diet (See Table 5.4).

Table 5.1. Demographic Data for Total Sample (n = 242)

Variable	Value
Adolescent Age <i>M(SD)</i>	12.83 (1.75)
Adolescent Sex (Female), (%)	64%
Parent Education <i>N (%)</i>	
Less than 4 Year College Degree	137 (56.8%)
4 Year College or Professional Degree	100 (42.2%)
Parent BMI <i>M(SD)</i>	37.49 (8.34)
Parent Age <i>M(SD)</i>	43.18 (8.65)
Parent Income*	\$25,000-\$39,999
Parents Married, <i>N (%)</i>	83 (34.4%)
Children in Home, <i>MI(SD)</i>	2.05 (1.20)
Adolescent zBMI <i>M(SD)</i>	2.05 (0.50)
Adolescent BMI Percentile	96.61 (4.25)

*Note. *indicates median value reported

Table 5.2. Correlations Among Adolescent zBMI, Parenting Style, & Parental Feeding Practices

	1	2	3	4	5	6	7	8	9	10	11	13
1.Adolescent Sex	-											
2.Adolescent Age	0.00	-										
3.Parent Education	-0.14	0.04	-									
4.Parent BMI	0.10	-0.06	-0.15*	-								
5.Adolescent zBMI	0.04	-0.12	-0.02	0.39*	-							
6.Authoritative Parenting	-0.09	-0.05	0.00	0.03	-0.07	-						
7.Responsibility	0.02	-0.23*	-0.05	0.08	0.01	0.39*	-					
8.Concern	-0.19*	-0.07	0.00	-0.01	0.17*	0.33*	0.43*	-				
9.Restriction	-0.03	-0.21*	-0.04	0.06	0.11	0.23*	0.43*	0.36*	-			
10.Pressure	-0.09	-0.12	-0.02	0.02	0.00	0.06	0.23*	0.15*	0.41*	-		
11.Monitoring	-0.03	-0.12	0.02	0.01	0.11	0.36*	0.53*	0.40*	0.47*	0.30*	-	
13.Self-Efficacy for Diet	-0.10	-0.09	-0.09	0.10	-0.04	0.20*	0.18*	0.18*	0.00	0.14*	0.18*	-

Note. * indicates correlations significant with alpha criteria of 0.05. Column headings correspond to row names.

Table 5.3. Regression Analyses Predicting Adolescent zBMI

	B	SE	t	p	R ²	ΔR ²
Step 1: F(4,227) = 10.93, p<0.05					0.16	
β ₀	2.03	0.05	42.8	<0.01*		
β ₁ Adolescent Age	-0.02	0.02	-1.16	0.25		
β ₂ Adolescent Male	0.02	0.06	0.26	0.80		
β ₃ Parent Education	0.04	0.06	0.69	0.49		
β ₄ Parent BMI	0.02	0.00	6.38	<0.01*		
Step 2: F(8,223) = 8.19, p<0.05					0.23	0.07
β ₀	2.02	0.05	43.64	<0.01*		
β ₁ Adolescent Age	-0.02	0.02	-1.28	0.20		
β ₂ Adolescent Male	0.05	0.06	0.84	0.40		
β ₃ Parent Education	0.05	0.06	0.82	0.42		
β ₄ Parent BMI	0.05	0.02	6.69	<0.01*		
β ₅ Authoritative Parenting	-0.07	0.03	-2.10	0.04		
β ₆ Responsibility	-0.60	0.04	-1.78	0.08		
β ₇ Restriction	0.03	0.03	0.87	0.39		
β ₈ Concern	0.13	0.03	3.73	<0.01*		

Note. * indicates correlations significant with alpha criteria of 0.05

Table 5.4. Regression Analyses Predicting Adolescent Self-Efficacy for Diet

	B	SE	t	p	R ²	ΔR ²
Step 1: F(4,227) = 2.02, p<0.05					0.03	
β ₀	0.14	0.10	1.36	0.18		
β ₁ Adolescent Age	-0.05	0.04	-1.31	0.19		
β ₂ Adolescent Male	-0.13	0.13	-0.95	0.34		
β ₃ Parent Education	-0.16	0.10	1.19	0.24		
β ₄ Parent BMI	0.01	0.01	1.62	0.11		
Step 2: F(8,223) = 8.19, p<0.05					0.15	0.11
β ₀	0.12	0.10	1.19	0.24		
β ₁ Adolescent Age	-0.04	0.04	-1.10	0.27		
β ₂ Adolescent Male	-0.13	0.13	-0.95	0.34		
β ₃ Parent Education	-0.19	0.13	-1.45	0.15		
β ₄ Parent BMI	0.01	0.01	1.72	0.09		
β ₅ Authoritative Parenting	0.18	0.07	2.62	0.01*		
β ₆ Responsibility	0.04	0.08	0.43	0.67		
β ₇ Restriction	-0.26	0.08	-3.37	<0.01*		
β ₈ Monitoring	0.17	0.08	2.15	0.03*		
β ₉ Concern	0.07	0.07	0.10	0.32		
β ₁₀ Pressure to Eat	0.13	0.07	1.96	0.05		

Note. * indicates correlations significant with alpha criteria of 0.05

Chapter 6

Discussion

This study evaluated the relationships between parenting factors, adolescent zBMI, and adolescent self-efficacy for dietary intake. The results indicated that among our sample of low-income African American families, parents with greater authoritative parenting style had adolescents with healthier zBMIs and greater self-efficacy for eating a healthy diet. In addition, the results demonstrated that parental feeding practices were also associated with adolescent zBMI and self-efficacy for diet. Adolescents who reported that their parents were more concerned about their eating and weight status had higher zBMIs. Furthermore, adolescents who reported that their parents restricted their access to unhealthy foods had lower self-efficacy for diet, while adolescents with parents who simply monitored their dietary intake had greater self-efficacy to eat nutritiously. Thus, parental control to some extent was positively associated with a healthier self-efficacy score among African American adolescents.

Previous literature has considered authoritative parenting to be associated with beneficial health outcomes, such as healthier adolescent BMI (Collins, Duncanson, & Burrows, 2014; Fuemmeler et al., 2012; Shloim et al., 2015; Sleddens et al., 2011). However, past researchers have failed to adequately represent African American adolescents in their studies. In fact, few studies have focused exclusively on African American adolescents and their families. More so, in most studies African American

families account for less than 20% of the total sample (Fuemmeler et al., 2012; Gable & Lutz, 2000; Berge et al., 2010a; Lane et al., 2013; Hennessy et al., 2010; Kim et al., 2008). Of the past studies, only two studies found an association between authoritative parenting and adolescent BMI (Berge et al., 2010a; 11-18 years, 18.7% African American; Kim et al., 2008; 13-15 years; 22% minorities). In their longitudinal study, Berge and colleagues (2010) collected data from adolescents (11-18 years, 18.7% African American) over 5 years. Consistent with Berge and colleagues (2010), our study found that greater authoritative parenting was associated with healthier adolescent BMI. Berge and colleagues also found that maternal authoritarian (high control, low warmth) parenting predicted higher adolescent BMI 5 years later for sons, while maternal neglectful parenting predicted higher adolescent BMI in daughters (Berge et al., 2010). Kim and colleagues (2008) included 106 adolescents (13-15 years; 22% minorities) in their cross-sectional study and also found that authoritative parenting was associated with healthier adolescent BMI (Kim et al., 2008). Alternatively, Hennessy and colleagues (2010) included 49% African American youth, but found no association between parenting style and adolescent BMI. However, Hennessy and colleagues (2010) evaluated this relationship in younger children (6-11 years) rather than adolescents (Hennessy et al., 2010). Taken together, our study is consistent with Berge and colleagues (2010) and Kim and colleagues (2008). However, the present study did not evaluate associations with authoritarian parenting. Importantly, this study expands on previous research by demonstrating that authoritative parenting is associated with healthier BMI in an exclusively African American sample.

Some research on parenting has suggested that authoritarian parenting (low warmth, high control) may be associated with better health-related outcomes in some minority populations (Hill et al., 2007). Specifically, some scholars propose that authoritarian parenting in response to risky environments (unsafe neighborhoods) may be perceived as nurturing and, in turn, be associated with better adolescent health (Hill et al., 2007). However, the present study found that adolescents who perceived their parents as authoritative had healthier zBMIs. This result is consistent with the overall findings on weight-related benefits of authoritative parenting across predominantly white populations (Berge et al., 2010; Kim et al., 2008; Sleddens et al., 2011). Taken together, these results suggest that authoritative parenting was associated with healthier adolescent weight-status in African American families and that autonomy-supportive parenting styles are important for health promotion in this population. Further research is needed to replicate these findings in other samples of solely African American adolescent populations.

In the present study, authoritative parenting was also found to be positively associated with adolescents' self-efficacy to eat nutritiously. Specifically, adolescents who reported that their parents practiced an authoritative parenting style had greater self-efficacy to eat healthfully. This finding indicates that warm and nurturing parenting was associated with greater adolescent self-confidence and self-regulation specific to diet. This study is the first to assess the relationship between authoritative parenting and adolescent diet-specific self-efficacy. However, literature has demonstrated that self-efficacy and self-regulation are critical for healthy adolescent development and are related to a multitude of positive health outcomes, including healthy weight (Blair & Diamond, 2008; Calkins & Fox, 2002; Francis & Susman, 2009; Pennington, Snyder, &

Roberts, 2007; Seeyave et al., 2009; Tsukayama, Duckworth, & Toomey, 2008). For example, in their longitudinal study, Tsukayama and colleagues (2010) evaluated weight status in 844 adolescents (15 years; 10% African American). They found that adolescents with greater self-regulation were less likely to become overweight in early adulthood (Tsukayama et al., 2010). In another longitudinal study, Francis and Susman (2009) found that failure to self-regulate in early childhood was related to excessive weight gain in early adolescence (Francis and Susman, 2009). In addition, Seeyave and colleagues (2009) found that self-regulation during early childhood was predictive of overweight risk during adolescence. Specifically, children who were unable to delay gratification at age 4 were more likely to be overweight at age 11 in a primarily white sample (Seeyave et al., 2009). In addition, previous literature has asserted that autonomy-supportive parenting creates a nurturing environment for adolescents, which supports positive health and development (Wilson et al., 2017; Bandura, 2004; Biglan et al., 2013). For instance, autonomy-supportive parenting may foster the development of the autonomy, competence, and relatedness, which are considered basic human needs (Ryan & Deci, 2000). Taken together, the results from the present study have implications for understanding the importance of parenting in self-efficacy and self-regulation development in African American adolescents.

A novel contribution of this study is its assessment of parental feeding practices in an adolescent population. This study is only the second study to assess this relationship in an entirely African American sample (Burton et al., 2017; 12-19 years, 100% African American). In the present study, parental feeding practices were related to both adolescent zBMI and adolescent self-efficacy for eating a healthy diet. Notably,

adolescents who reported that their parents were more concerned about their eating and weight had greater zBMIs. This result is consistent with previous studies, including Burton and colleagues' (2017) study with African American adolescents (Burton et al., 2017; Gray et al., 2010; Holland et al., 2014; Kaur et al., 2006; Schmidt et al., 2017). Burton and colleagues (2017) included 212 adolescents (12-19 years; 100% African American) in their cross-sectional study. Consistent with the present study, they found that high parental concern was related to higher BMI in adolescents (Burton et al., 2017). Greater parental concern was related to higher BMI in a number of studies with a subset of African American participants (Kaur et al., 2006; Gray et al., 2010). Holland and colleagues (2014) found similar associations in their randomized controlled trial with 170 adolescents (7-11 years; 17.1% African American). Their results indicated that after a family-based weight loss intervention, decreased parental concern was associated with decreased youth BMI (Holland et al., 2014). In contrast to the present research, these studies enrolled youth of various weight-statuses (underweight, normal, overweight, obese). One possible factor in the relationship between parental concern and adolescent BMI is parent-adolescent interactions. Consistent with past research, the results of the present study suggest that greater parental concern about adolescent eating behaviors may be associated with poorer weight-related outcomes in African American adolescents. Further longitudinal research is needed to determine causality.

In this study, parental feeding practices were also associated with adolescent self-efficacy to eat nutritiously. Notably, this study is the first to assess the relationship between parental feeding practices and adolescent diet-specific self-efficacy. Results indicated that adolescents who reported that their caregiver restricted their access to

unhealthy foods (parental restriction) had lower self-efficacy for diet, whereas adolescents who indicated their caregivers monitored (parental monitoring) their dietary intake had greater self-efficacy for diet. Though the relationship between parental feeding practices and adolescent self-efficacy has not previously been studied, past research has demonstrated that parental restriction is associated with other adolescent health-related outcomes, such as BMI (Blisset & Bennett, 2013; Burton et al., 2017; Gray et al., 2010; Holland et al., 2014; Kaur et al., 2006; Loth et al., 2013; Towner et al., 2015). Specifically, research has indicated that greater parental restriction of adolescent diet was associated with greater adolescent BMI. For instance, Burton and colleagues (2017) found that parental restriction of their adolescents' diet was associated with higher BMI in 212 African American adolescents (12-19 years; 100% African American). However, this was the only study to assess this relationship in an entirely African American sample (Burton et al., 2017). Kaur and colleagues (2006) assessed this relationship in a diverse sample of 260 adolescents and also found that greater parental restriction was associated with higher adolescent BMI (10-19 years; 55% African American). This finding is consistent with other studies where African American adolescents accounted for less than half the sample (Gray et al., 2010; Holland et al., 2014; Loth et al., 2013; Towner et al., 2015). Although the present study did not find these associations with adolescent zBMI, it demonstrated that parental restriction and parental monitoring were significantly related to self-efficacy in this solely African American adolescent population.

Results of the present study also indicated that adolescents who reported their caregivers simply monitored (parental monitoring) their dietary intake had greater self-efficacy for diet. Interestingly, parental monitoring was only associated with adolescent

BMI in one previous study (Burton et al., 2017) and these findings were in the opposite direction whereby greater monitoring with younger African American adolescents was associated with higher BMI. However, literature suggests that greater parental monitoring may support healthy development of self-regulation and self-efficacy in adolescents (Birch et al., 2001a; Golan, 2006; Kitzman et al., 2010; Wilson et al., 2015). Taken together, the associations between parental feeding practices and adolescent dietary self-efficacy could have broader implications for adolescent weight-status. However, further research is needed to provide further evidence and determine the direction of these relationships in longitudinal and interventional studies.

Limitations of the present study should be considered when interpreting these results. This study examined cross-sectional data from an ongoing randomized control trial, which prevents interpretation of directionality in the conclusions. It should be noted that study sample has limited variability, as all adolescents were overweight or obese and were African American. Thus, results of the current study may not be generalizable to families with normal-weight adolescents or families of non-African American descent.

Overall, the present study provides novel perspectives to existing literature. It is one of the first studies to assess relationships between parenting style, parental feeding practices, adolescent weight-status, and adolescent self-efficacy for diet in a solely African American adolescent population. Specifically, this study adds to the understanding of authoritative parenting in minority populations, such as African American families. In addition, it builds on developmental literature that emphasizes the importance of parenting styles and practices during adolescence in African American families (Smetana et al., 2004). More so, the results of this study suggest that the parent-

adolescent relationship should be considered in future weight-related parenting interventions.

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