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PARENTING SATISFACTION, EFFICACY, AND DEPRESSIVE SYMPTOMS PREDICT  
PARENT FEEDING AMONG MOTHERS OF TODDLER PARTICIPATING IN THE WIC  
PROGRAM

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## ABSTRACT

**Background:** Early intervention is needed to prevent childhood obesity. Parenting behaviors and practices surrounding child feeding, including parent psychosocial factors, play a significant role in the development of child self-regulation mechanisms and subsequent development of overweight and obesity. Maternal symptoms of depression are related to suboptimal parenting practices and child well-being, whereas parenting competence has a protective effect. However, it is less clear whether increased parenting competence moderates the positive association between depressive symptomology and child weight, particularly among low-income families.

**Objective:** The primary aim of this study was to examine the influence of maternal parenting competence and maternal depressive symptomology on parental feeding styles and practices in 317 mothers of toddlers aged 12 to 36 months enrolled in the Special Supplemental Women, Infants, and Children (WIC) program.

**Methods:** Cross sectional data were analyzed using an existing November 2012 survey. Measures include the Center for Epidemiologic Studies Depression Scale to assess maternal depressive symptomology, the Parenting Sense of Competence scale to measure maternal satisfaction and efficacy, the Child Feeding Styles Questionnaire to assess parent feeding styles, and the Structure and Control in Parent Feeding to assess parent feeding practices.

**Results:** Increased parenting sense of competence was correlated with positive feeding styles ( $p < 0.001$ ) and structure-based feeding practices ( $p < .0001$ ). Conversely, maternal depressive symptomology was associated with authoritarian feeding styles ( $OR = 2.43$ ) and control-based, coercive feeding practices ( $p = .0001$ ). High parenting competence moderated the

positive relationship between depressive-symptomology and parent use of control-based feeding practices ( $p=0.03$ ).

**Conclusions:** Maternal depression and parenting competence are related to feeding practices and styles which influence weight behaviors in young children. Increasing maternal parenting competence may be an important factor in targeting childhood obesity, particularly among at risk lower socioeconomic households that are more likely to be obese and where maternal depression is more prevalent.

*Keywords:* WIC, depression, parenting competence, feeding styles, feeding practices

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# **Chapter 1**

## **Literature Review**

### **Obesity Prevalence and Global Burden**

Overweight and obesity are global health problems that resulted in an estimated 3.4 million deaths worldwide in 2010 (Ng, Fleming, Robinson, Thomson, Graetz, Margono, & Abraham, 2014). This is concerning given that obesity is linked to increased risk of several chronic diseases, including type 2 diabetes, insulin resistance, dyslipidemia, pulmonary and orthopedic disorders, and psychological consequences (Lifshitz, 2008), and is attributed to over 430,000 deaths in the United States each year (Mokdad, Marks, Stroup & Gerberding, 2004). Further, obese adults are 20% more likely to die from cardiovascular disease (CVD) or all other causes than normal weight adults (Borrell & Samuel, 2013). The preponderance of overweight and obesity is not limited to adults and creates a major public health challenge in children as well. In 2012, 17% of children in the United States were classified as obese (Ogden, Carroll & Flegal, 2014). Among children, overweight is defined as a body mass index (BMI) at or above the sex-and-age-specific 85<sup>th</sup> percentile of The Centers for Disease Control and Prevention (CDC) growth charts; obesity is defined as a BMI at or above the 95<sup>th</sup> percentile (CDC, 2016; National Center for Health Statistics, 2015). Children with excess weight are at risk for higher morbidity during childhood and excess weight during adulthood (National Center for Health Statistics 2015). Forty percent of those overweight in childhood will remain overweight into adulthood (Lifshitz, 2008). Similarly, 75-80% of obese adolescents will remain obese into adulthood (Lifshitz, 2008). Current literature suggests that efforts to decrease obesity risk should

begin during childhood. Prevention of obesity in childhood is crucial given the increased risk of chronic disease and the limited ability of the healthcare system to treat such conditions (Lifshitz, 2008).

### **Sociodemographic Disparities in Obesity**

**Socioeconomic status.** Significant disparities exist among rates of obesity. Obesity rates are higher among low-income individuals compared to their higher-income counterparts (Singh, Siahpush & Kogan, 2010; Wang, 2001). Children in households with low income, low education levels, and high unemployment levels experienced an increase of obesity prevalence from 23% in 2003 to 33% in 2007 (Singh, Siahpush & Kogan, 2010). In 2007, children living in households below the federal poverty line had 243% and 187% increased odds of obesity and overweight, respectively, compared to children living in households above the federal poverty line (Singh, Siahpush & Kogan, 2010). Children from “high unemployment households” also experienced increased odds for obesity and overweight (Singh, Siahpush & Kogan, 2010).

### **The Women, Infants, and Children Program**

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program of the United States Department of Agriculture (USDA) offers nutritional education, food services, breastfeeding support, and resources for healthcare and social services to low-income, at-risk pregnant mothers, post-partum mothers, infants up to one year, and children under age 5 (Johnson et al 2015; WIC 2017). Mothers who are breastfeeding their infants receive

benefits up to one year and non-breastfeeding mothers can receive benefits up to six months postpartum (WIC, 2017). The WIC program supports women with incomes at or below 185% of the Federal Poverty Level (FPL). The current federal poverty level for a family of four in the continental United States is defined as an annual household income of at or below \$24,600 (U.S. Department of Health and Human Services, 2017). Unlike other major food insecurity programs, such as the Supplemental Nutrition Assistance Program (SNAP), WIC is not an entitlement program, thus women and children eligible for participation are not necessarily enrolled if there is not enough funding.

Besides supplementing families' food supply, WIC also aims to improve nutritional knowledge and healthy feeding behaviors among participants. Participants use WIC vouchers at authorized supermarkets to purchase specific foods (e.g. milk, whole wheat bread) according to their food package, or maximum monthly allowance (WIC, 2015; WIC, 2017). This contrasts sharply with SNAP, previously referred to as "food stamps," which imposes few restrictions surrounding what participants can purchase. WIC participants may purchase breakfast cereal, fruit, milk, vegetables, yogurt, canned fish, cheese, infant cereal, tofu, infant fruits and vegetables, whole wheat bread or other whole grains, infant food meat, infant formula, soy beverages, juice, eggs, legumes, and peanut butter (WIC, 2017). Extensive requirements exist for each of these categories. For instance, many of these foods are not eligible for purchase with WIC vouchers if they contain added sugars, fats, and oils (WIC, 2017). Food packages differ by child age and whether the mother is pregnant, fully breastfeeding, mostly breastfeeding, or not breastfeeding (WIC, 2015). Mothers who are breastfeeding receive more food to encourage breastfeeding over formula feeding (WIC, 2015).

**WIC Demographics.** White women and children comprise the largest racial group (59%) enrolled in WIC, followed by black, American Indian/Alaska Native, Asian, and Pacific Islanders (Thorn, 2015). Of white women and children, 42% are Hispanic (Thorn, 2015). The number of participants who identify as Hispanic is disproportionate to the United States population in which only 18% of Americans are Hispanic (Kaiser Family Foundation, 2016). Approximately 75% of WIC participants reported incomes of lower than 100% of the FPL (Thorn, 2015). In April 2014, 9.3 million women, children, and infants were enrolled in WIC. Approximately 76% of these participants were children under age 5. The majority of WIC participants are children ages 1-4 years old (Thorn, 2015).

The USDA Food and Nutrition Service estimated that in 2013, the population eligible to receive WIC benefits was 14.19 million. In 2013, 60.2% of the population eligible for WIC opted to enroll (Johnson, Giannarelli, Huber, & Betson, 2015). Among WIC participants, obesity rates among children aged 2-4 years old decreased from 14.6% in 2010 to 13.7% in 2014 (Thorn, 2015). The rate of obesity among children in WIC is higher than that of the general U.S. population, which is consistent with the trend of obesity disproportionately affecting low-income children (CDC, 2017).

### **Toddler Feeding Recommendations**

To understand parent feeding styles and practices, one must understand recommendations for toddlers. The American Heart Association and the American Academy of Pediatrics (AAP) recommends parents incorporate low-fat dairy products into a regular diet for this age group to

avoid excessive saturated fat and cholesterol. The AAP also recommends that 100% fruit juice be limited to a maximum of 4-6 ounces/day and should only be fed from a cup since young toddlers are generally able to self-regulate calorie intake. Parents are discouraged from forcing children to finish meals (Gidding, Dennison, Birch, Daniels, Gilman, Lichtenstein... & Van Horn, 2006).

### **Parenting Feeding Practices**

Parents play an important role in shaping what their children eat and the development of their self-regulation skills, which in turn impacts body weight (Savage, Rollins, Kugler, Birch, & Marini, 2017). Control-based feeding practices (CFP) involve restriction, pressure to eat, coerciveness, and invasiveness from parents and have been associated with increased child eating in the absence of hunger and higher BMI in early childhood and into adulthood (Rollins, Loken, Savage & Birch, 2014; Savage, Rollins, Kugler, Birch & Marini, 2017; Schlam, Wilson., Shoda., Mischel., & Ayduk, 2013). These practices are parent-centered as opposed to child-centered (Rollins, Savage, Fisher & Birch, 2015). Examples of CFP include using food as a reward, pressuring a child to eat, and praising a child when s/he has finished all the food on a plate (Dev, McBride, Speirs, Donovan & Cho, 2014). Parents in low-income households are more likely than those in higher-income households to practice controlling feeding (Wehrly, Bonilla, Perez, & Liew, 2014). In a moderately sized cross-sectional study, low-income parents were significantly more likely to utilize restrictive feeding and to pressure their children to eat (Wehrly, Bonilla, Perez, & Liew, 2014). Even when parents use controlling feeding to increase consumption of healthier foods, efforts are counterproductive given that coercive feeding is

associated with decreased liking of these foods (Galloway, Fiorito, Francis, & Birch, 2006; Galloway, Fiorito, Lee, & Birch, 2005).

Controlling feeding practices are associated with negative feeding outcomes in toddlers, such as lack of self-regulation, overeating, eating in the absence of hunger, and developing excess weight (Harris, Mallan, Nambiar, & Daniels, 2014). One type of CFP is restricting children's intake of foods that parents do not want their children eating (often energy dense, high sugar and fat foods). However, this practice has the opposite of the desired effect of discouraging these foods and may instead promote dysregulated eating by promoting children's interest in and consumption of high energy dense foods (Rollins, Savage, Fisher & Birch, 2015). Maternal restriction is linked to higher BMI in children age 3 (Rifas-Shiman, Sherry, Scanlon, Birch, Gillman, & Taveras, 2010). Parental CFP is theorized to disrupt a child's intrinsic ability to regulate and respond to hunger and satiety cues via extrinsic controlling feeding (Faith, Scanlon, Birch, Francis, & Sherry, 2004; Gregory, Paxton, & Brozovic, 2010; Harris, Mallan, Nambiar, & Daniels, 2014).

One study examined the impact of CFP on eating in the absence of hunger (EAH) in children ages 3-4 years old (Harris, Mallan, Nambiar, & Daniels, 2014). EAH is theorized to occur when children are unable to properly regulate intake and thus experience a heightened response to external food cues (Francis & Birch, 2005). EAH is measured by feeding child participants a standardized meal and then exposing them to energy dense snacks 15 minutes later (Harris, Mallan, Nambiar, & Daniels, 2014). EAH is calculated by summing the calories consumed from the snacks (Harris, Mallan, Nambiar, & Daniels, 2014). In young boys, but not girls, maternal pressuring to eat was positively associated with EAH (Harris, Mallan, Nambiar,

& Daniels, 2014). Other aspects of CFP, such as restriction and monitoring, were not associated with EAH in either boys or girls (Harris, Mallan, Nambiar, & Daniels, 2014).

Conversely, structure-based feeding practices are child-centered, responsive, and focused on routines and rules that comprise the home environment (Savage, Rollins, Kugler, Birch, & Marini, 2017). Structured feeding involves setting clear limits and establishing consistent routines keeping in mind the child's perspective as well as using consistent feedback for the child's behavior (Rollins, Savage, Fisher & Birch, 2015). Structure-based feeding practices are non-invasive and provide children with support to allow development of self-regulation skills, limits, and consistent eating practices (Savage, Rollins, Kugler, Birch, & Marini, 2017). For example, structure-based feeding involves the parent(s) setting a consistent meal schedule and allows a child to practice autonomy and decide when s/he feels full. These practices allow moderate access to palatable foods, consider the child's perspective when portioning foods, and allow the child to determine when s/he feels full in order to develop self-regulated eating behaviors (Rollins, Savage, Fisher & Birch, 2015). For example, structured feeding practices regarding portion sizes consider the child's perspective by serving child-size portions and allowing the child to determine when s/he is full (Rollins, Savage, Fisher & Birch, 2015). In contrast, controlling feeding practices around portion sizes might involve taking food away or invoking guilt in the child to eat or not eat food (Rollins, Savage, Fisher & Birch, 2015). Other strategies for structure-based feeding practices involve peer or parent modelling of healthful eating behaviors (Dev, McBride, Speirs, Donovan & Cho, 2014; Draxten, Fulkerson, Friend, Flattum & Schow, 2014). Children of parents who model eating adequate amounts of fruits and vegetables, for instance, are more likely to meet fruit and vegetable recommendations than

children whose parents do not model these behaviors (Draxten, Fulkerson, Friend, Flattum & Schow, 2014).

### **Parenting Feeding Styles**

Feeding styles differ from parenting feeding practices in that feeding styles refer to the “specific emotional climate” surrounding feeding interactions (Blissett, 2011). Parenting feeding styles have traditionally been based on the parenting style typologies originally proposed by Baumrind in 1966: authoritative, authoritarian, and permissive. They reflect parents’ overall feeding styles across most feeding situations (Ventura & Birch, 2008). Feeding styles have been expanded and are now generally classified into four categories: *authoritative*, *authoritarian*, *indulgent*, and *neglecting* (Blissett, 2011). An authoritative style, which is generally regarded as the most beneficial and supportive style, is characterized by high demandingness and high warmth (Blissett, 2011). Responsive feeding styles are embedded in an authoritative style of parenting (Hughes, Shewchuk, Baskin, Nicklas, & Qu, 2008; Hurley, Black, Papas & Caulfield, 2008). The authoritarian style involves high demandingness and low warmth, indulgent involves low demandingness and high warmth, and neglectful involves low demandingness and low warmth (Blissett, 2011).

## Psychosocial Parent Factors Affecting Feeding

**Maternal depression.** Results from the National Epidemiologic Survey of Alcohol and Related Conditions suggest that maternal depression is a significant public health issue in the United States: an estimated 1 in 10 children have a mother who suffers from Major Depressive Disorder (MDD) in a given year (Ertel, Rich-Edwards & Koenen, 2011). In 2010, 10% of mothers experienced depression and rates of maternal depression were higher among women with low education or income, white or Native American racial status, and those who were not married (Ertel, Rich-Edwards & Koenen, 2011). Depression is more common among women living in rural areas (Simmons, Braun, Charnigo, Havens & Wright, 2008). This relationship is further exacerbated by higher rates of poverty among rural women versus women living in more urban areas (Simmons, Braun, Charnigo, Havens & Wright, 2008).

Feeding practices can be heavily influenced by maternal depression, and may impact child weight outcomes (Goulding, Rosenblum, Miller, Peterson, Chen, Kaciroti, & Lumeng, 2014). Depressed mothers are more likely than non-depressed mothers to employ intrusive and coercive interactions with their children, according to a 2000 meta-analysis (Lovejoy, Graczyk, O'Hare & Neuman, 2000). Low socioeconomic status acted as a moderator to strengthen the relationship between maternal depression and coercive feeding (Lovejoy, Graczyk, O'Hare & Neuman, 2000). Lower income mothers suffering from depression have additional economic barriers which inhibit their ability to cope with stressors; this impacts patience and responsiveness in child feeding (Lovejoy, Graczyk, O'Hare & Neuman, 2000). This explains why lower income mothers may experience higher rates of depression and thus employ controlling

feeding practices. A 2008 study that examined a statewide sample of WIC mothers reported mothers exhibiting stress, anxiety, or depression experience increased risk for nonresponsive feeding styles (Hurley, Black, Papas & Caulfield, 2008). According to Savage & Birch, mothers who report depressive symptoms are more likely to employ negative feeding practices, such as feeding to soothe, compared to non-depressed mothers (Savage & Birch 2015). Further, in a relatively large sample of low-income urban families, mothers with moderate to severe depression were more likely to have children with overweight or obesity than non-depressed mothers (Gross, Velazco, Briggs, & Racine, 2013). Children of depressed mothers were also more likely than children of non-depressed mothers to eat at restaurants more frequently and consume sugary beverages, and they were less likely to eat a regular breakfast (Gross, Velazco, Briggs, & Racine, 2013). Similarly, depressed mothers were more likely to use obesity-promoting feeding practices, such as using food as a reward, than non-depressed mothers (Gross, Velazco, Briggs, & Racine, 2013). Non-depressed mothers were more likely than depressed mothers to model healthy eating and set limits on their child's food intake (Gross, Velazco, Briggs, & Racine, 2013).

**Efficacy and competence.** Self-efficacy is broadly defined as one's ability to accomplish a task and exert control over one's own behaviors and environment (Bandura, 1977; Bandura, 1982). Higher perceived self-efficacy is linked to effective coping behaviors and lower emotional arousal (Bandura, 1982). Living in poverty is linked to lower self-efficacy (Callander & Schofield, 2016; Sun, Buys & Wang, 2012). Within Callander & Schofield's longitudinal study, poor mental health explained much of the variance in the relationship between poverty and low-self efficacy (Callander & Schofield, 2016).

For mothers, increased self-efficacy is related to more positive parent-toddler interactions (Tucker, Gross, Fogg, Delaney & Laporte, 1998). In a 2009 cross-sectional study, Australian mothers who exhibited depressive symptoms, as well as anxiety, low parenting satisfaction and efficacy, and higher levels of stress, were more likely to practice controlling feeding styles (authoritarian) and practices (Mitchell, Brennan, Hayes & Miles, 2009). Conversely, mothers who reported higher levels of parenting efficacy were more likely to practice authoritative feeding styles than mothers who reported lower efficacy levels (Mitchell, Brennan, Hayes & Miles, 2009). Similarly, in a 2011 cross-sectional study, mothers who rated themselves lower in self-efficacy were more likely to use food to soothe their infants' or toddlers' distress than mothers who rated themselves as higher in self-efficacy (Stifter, Anzman-Frasca, Birch, & Voegtline, 2011). Evidence suggests that social support may counteract negative mental health factors to increase self-efficacy by providing instrumental help with caregiving (Leerkes & Crockenberg, 2002). As evidenced by these findings, parent feeding is a result of a complex interplay of psychosocial factors, such as socioeconomic status, mental health, and efficacy. A

clear link between parenting competence and parent feeding exists, but it is less evident how parenting competence and maternal depression interact to predict feeding styles and practices.

## Chapter 2

### Study Aims

**Study Aim 1:** To examine the relationship between presence of maternal depressive symptoms and feeding styles and practices.

**Hypothesis 1:** Maternal depressive symptomatology will correlate with controlling feeding practices and negative feeding styles.

**Study Aim 2:** To examine the relationship among parenting sense of competence, including efficacy and satisfaction, and feeding styles and practices.

**Hypothesis 2:** Higher scores on the Parenting Sense of Competence Scale will be associated with positive feeding styles and structured feeding practices.

**Study Aim 3:** To examine whether maternal depressive symptomatology and parenting competence interact to impact feeding styles and practices.

**Hypothesis 3:** The positive association between maternal depressive symptomatology and maternal report of controlling feeding practices and negative feeding styles will be moderated by parenting competence such that this association will be observed among women with lower parenting competence, but not among women with higher parenting competence.

## Chapter 3

### Methods

**Participants.** These data were from a cross-sectional survey examining feeding practices among low-income mothers enrolled in WIC. Participants were mothers of toddlers enrolled in the Pennsylvania WIC. Mothers were required to be at least 18 years old, have a child aged 1-3 years, and be able to read and speak English to be eligible for participation. A total of 430 survey packets were mailed to participants with prepaid return envelopes along with an implied informed consent packet. A total 334 participants returned the survey. Three hundred seventeen (317) surveys were complete and were used for this analysis, which comprised a 60.7% response rate. Participants received a \$30 gift card for completing the survey. The Pennsylvania State University Institutional Review Board approved all study procedures prior to recruitment of participants.

**Background characteristics.** Demographics measures were collected and included age, race, education level, employment status, marital status, and number of occupants living in the household.

**Body Mass Index and Weight Status.** Maternal height and weight were self-reported.

Recommendations for BMI by the Centers for Disease Control and Prevention (CDC) were used to classify overweight and obesity. BMI is calculated by dividing weight (pounds) by height (inches) squared and multiplying by a conversion factor of 703 (Centers for Disease Control and Prevention, 2017). For adults (both men and women), a BMI of 25.0-29.9 is considered overweight and a BMI  $\geq 30$  is considered obese (Centers for Disease Control and Prevention, 2017).

**Center for Epidemiologic Studies Depression Scale (CES-D).** Women completed the CES-D questions as part of the survey. The CES-D scale is a brief, 20-item, self-report survey designed to assess the presence of depressive symptoms in an individual among the general population (Radloff, 1977). Unlike previously validated measures, this measure is not used for clinical intake and diagnosis (Radloff, 1977). The CES-D emphasizes current depressive symptoms and focuses on depressed mood. An individual can be classified as exhibiting depressive symptoms with a score of  $\geq 16$  out of 20. See Appendix A.

**Parenting Sense of Competence.** The PSOC scale was developed by Johnston & Mash, 1989 and is a validated scale to measure parenting efficacy and satisfaction. The scale consists of 17 items which are answered on a 6-point scale from “strongly disagree” to “strongly agree” (Johnston & Mash, 1989). The Cronbach alpha for the entire scale is 0.79. The scale also contains two subscales: satisfaction and efficacy. Efficacy is an instrumental scale which measures competence, ability, and problem-solving skills ( $\alpha=0.76$ ) (Johnston & Mash, 1989). Satisfaction is an emotional scale which measures parenting motivation, anxiety, and frustration ( $\alpha=0.75$ ) (Johnston & Mash, 1989). See Appendix B.

**Caregiver's Feeding Styles Questionnaire.** The CFSQ was designed to reflect Baumrind's 1966 parenting styles (Hughes, Cross, Hennessy, Tovar, Economos, & Power, 2012). The CFSQ measures parents' predominant feeding styles and consists of two dimensions: responsiveness and demandingness (Hughes, Cross, Hennessy, Tovar, Economos, & Power, 2012). The CFSQ is a 17-item self-report measure that uses a 5-point Likert scale (Hughes, Cross, Hennessy, Tovar, Economos, & Power, 2012). Convergent validity has been established in comparison to other validated parenting feeding measures, such as the Child Feeding Questionnaire and the Parenting Dimensions Inventory (Hughes, Cross, Hennessy, Tovar, Economos, & Power, 2012). These two dimensions are used to further categorize parents into four feeding typologies: authoritarian, authoritative, indulgent, and uninvolved (Hughes, Cross, Hennessy, Tovar, Economos, & Power, 2012). An authoritarian style is defined by high demandingness and low warmth, authoritative by high demandingness and high warmth, indulgent by low demandingness and low warmth, and uninvolved by low demandingness and low warmth (Hughes, Cross, Hennessy, Tovar, Economos, & Power, 2012). Recommended cutoff points for low-income samples are 2.80 for the demandingness scale and 1.16 for the responsiveness scale (Hughes, Cross, Hennessy, Tovar, Economos, & Power, 2012). Participants scores can be deemed low if less than or equal to the cutoff (Hughes, Cross, Hennessy, Tovar, Economos, & Power, 2012). See Appendix C.

**Structure and Control in Parent Feeding.** The Structure and Control in Parent Feeding (SCPF) was developed by Savage, Rollins, Birch, and Marini in a population of WIC mothers and is used to assess factors of structure and control in parent feeding. The structure super factor ( $\alpha=0.84$ ) contains the two factors of limiting exposure ( $\alpha=0.79$ ) and mealtime routines ( $\alpha=0.75$ ); the control super factor ( $\alpha=0.76$ ) contains two factors of restriction ( $\alpha=0.77$ ) and pressure to eat ( $\alpha=0.73$ ). The structure super factor positively correlates with the responsive feeding behaviors, while the control super factor was positively correlates with the demandingness factor from the CFSQ. Questions on the SCPF are based on self-report and a 5-point Likert scale (0=never, 4=always) (Savage, Rollins, Birch, & Marini, 2017). See Appendix D.

### **Statistical Analyses**

The author of this thesis was primarily responsible for generating the aims and hypotheses for this research. All data were analyzed using SAS software (version 9.4) with the help of Emily Hohman, PhD. Descriptive information was generated for each variable of interest and continuous distributions were assessed for normality. Means, proportion, standard errors, odds ratios, t-test, chi-square, regressions, and correlations were estimated using SAS. We generated linear regression models to examine the relationship between depression symptomology score, parenting competence score, and SCPF feeding styles. Similarly, we used logistic regression to examine the relationship between depressive symptomology, parenting sense of competence and CFSQ feeding practices. We also tested the interaction between maternal depressive symptomology and parenting competence and the subsequent effects on feeding styles and practices. Statistical significance was defined as  $p<0.05$ .

## Chapter 4

### Results

#### Maternal and Child Characteristics

A complete list of descriptive variables are outlined in Table 1. The mean (SD) maternal age was 29.1(6.9) years. The mean maternal BMI was 29.6 (6.9), meaning the average participant was classified as overweight. Nearly 70% of the mothers identified as non-Hispanic white. The second most common race was black or African-American (19.2%). Nearly 40% had completed high school and 31% completed some college or technical school. Approximately a quarter of the mothers were working full-time and 10.9% were unemployed. Nearly 40% of the women were married and approximately 41% were single. The majority of mothers had 1-2 children living in the household with them. Approximately 50% of the sample resided in a rural area.

The average age of children in the study was 27.7 (11.9) months, with a range of 0.9 months to 4.9 years. The sample was approximately evenly split with regard to child biological sex (50.5% female). Similar to the maternal characteristics, the majority of children were non-Hispanic white (59.5%) with the second most common race being black or African-American (19.7%). Fourteen percent of the children were classified as multi-racial.

With regard to feeding styles, the majority of mothers (52%) were classified as indulgent ( $n=164$ ), with the next most common style being authoritative ( $n=81$ ). See Table 2 for a complete list of percentages. For feeding practices, the mean structure score was 2.89 and the mean control score was 1.67. See Table 3 for a complete list of mean feeding scores. The mean maternal depression score was 10.1 (9.4), with approximately a quarter of mothers meeting the

criteria for depressive symptomology. Maternal depressive symptoms were positively correlated with several aspects of negative feeding styles and practices, such as authoritarian feeding style, lack of structured feeding, and pressure to eat.

## **Maternal Depression**

### **Feeding Styles**

Mothers exhibiting depressive symptoms experienced a higher likelihood of authoritarian feeding styles ( $OR=2.43$ , 95%  $CI=1.08-5.49$ ), compared to non-depressed mothers. However, depressive symptomology was not significantly related to other negative feeding styles such as indulgent or uninvolved feeding.

### **Feeding Practices**

Depressive symptomology was negatively associated with the structure-based feeding superfactor ( $B=0.013$ ,  $p<.0001$ ) as well as negatively associated with the subscales limiting exposure ( $B=0.012$ ,  $p=.0001$ ) and mealtime routines ( $B=0.012$ ,  $p<.0001$ ). See Figure 1. Mothers reporting depressive symptoms were less likely to limit exposure to unhealthy food or practice consistent mealtime routines compared to non-depressed mothers. Depressive symptomology was not significantly correlated with the control super factor; however, was positively associated with the pressure to eat subscale ( $B=0.012$ ,  $p=.004$ ), but not the restriction factor. See Table 5.

## Parenting competence

### Feeding styles.

High parenting competence was negatively associated with controlling feeding practices. Logistic regression was used to explore the relationship between CFSQ feeding style and parenting sense of competence. Greater parenting competence score among mothers correlated with a lower risk for authoritarian feeding ( $OR=0.12$ ,  $p<.0001$ , 95%  $CI= .06 - .25$ ) compared to authoritative feeding. Similarly, greater PSOC efficacy was associated with lower risk of authoritarian or uninvolved feeding styles [( $OR=0.24$ ,  $p<.000$ , 95%  $CI=0.14-0.43$ ), ( $OR=0.38$ ,  $p=.001$ , 95%  $CI=0.21-0.68$ )]. A similar pattern existed in the satisfaction subscale in relation to feeding style. A greater parenting satisfaction score was associated with lower odds of authoritarian parenting ( $OR= 0.22$ ,  $p<.000$ , 95%  $CI= 0.12 -0.42$ ).

### Feeding practices

Correlation tests demonstrated that high parenting competence structure-based feeding practices were strongly correlated ( $p<0.0001$ ). A greater sense of parenting efficacy ( $p<.0004$ ) and parenting satisfaction ( $p<.0001$ ) also correlated with structured feeding. Linear regression was performed to examine the association between parenting competence and structure-based feeding. Greater parenting competence score was associated with greater structured feeding ( $B= 0.18$ ,  $p<.0001$ ). Linear regression also showed that higher parenting competence was positively associated with the SCPF structure subscales: limiting exposure ( $B=0.18$ ,  $p<.000$ ) and consistent mealtime routines ( $B=0.17$ ,  $p<.0001$ ). See Figure 2. Similarly, higher parenting competence was

negatively correlated with the SCPF control subscales: pressure to eat ( $B=-.018, p=.008$ ) and restriction ( $B=-0.19, p=.028$ ).

General linear regression was used to determine the relationship between parenting competence and controlling feeding practices. Mothers with greater parenting competence scores reported lower levels of control-based feeding than mothers with lower parenting competence ( $B=-0.18, p=.003$ ). Similarly, mothers with higher levels of satisfaction from the PSOC subscale exhibited lower levels of control-based feeding ( $B=-0.18, p<.000$ ) and less pressure to eat ( $B=-0.19, p=.0004$ ) than mothers with lower levels of satisfaction. See Figure 3. Score in the PSOC efficacy subscale was not associated with controlling feeding. See Table 6.

### **The moderating effect of parenting competence on the association between depression and control-based feeding**

Maternal depressive symptomology and parenting competence were strongly inversely correlated. Greater depressive symptomology was correlated with lower parenting competence ( $r= -0.46, p<.0001$ ), efficacy ( $r= -0.28, p<.0001$ ), and satisfaction ( $r= -0.48, p<.0001$ ). See Table 4.

### **Feeding practices.**

Both maternal depressive symptomology ( $p<.0001$ ) and parenting competence ( $p<.007$ ), impacted the structure feeding style. However, multiple linear regression analysis yielded no significant interaction between depressive symptoms and competence to influence structured feeding. Both predictors have a main effect on the structured feeding outcome, but they do not

interact. The same is true for the structure subscales: both depressive symptomology and parenting competence have a main effect on exposure and mealtime routines, however, the predictors do not interact.

When included in the same model, only parenting competence, not depressive symptomology, exhibited a main effect on control-based feeding ( $B=-0.18$ ,  $p<.009$ ). Again, maternal depressive symptomology and parenting competence do not interact to impact controlling feeding. With regard to the restriction and pressure to eat subscales of controlling feeding, no significant interaction between competence and depressive symptomology occurred.

### **Feeding styles.**

There was a significant interaction between depressive symptomology and parenting competence on feeding style. Among women with elevated depressive symptoms, greater parenting competence score was associated with lower risk for authoritarian feeding ( $OR=0.023$ ,  $p=.056$ , 95%  $CI= 0.003-0.153$ ) and uninvolved feeding ( $OR=0.006$ ,  $p=.001$ , 95%  $CI= <0.001-0.119$ ) compared to authoritative feeding. Among non-depressed women, parenting competence was only associated with lower risk for authoritarian ( $OR=0.17$ , 95%  $CI=0.07-0.45$ ,  $p=0.001$ ) compared to authoritative feeding. Thus, a greater sense of parenting competence may lessen the negative effect of maternal depressive symptoms on uninvolved feeding styles.

## **Chapter 5**

### **Discussion**

This study demonstrates an important link between parent psychosocial factors and subsequent feeding styles and practices. As hypothesized, greater parenting competence was associated with positive feeding styles and feeding practices among this sample of low-income mothers enrolled in WIC. Mothers who reported greater parenting competence were more likely to limit exposure to unhealthy foods and create consistent mealtime routines for their toddlers. In contrast, mothers who exhibit a diminished sense of parenting competence reported greater use of control-based practices and less use of positive, structure-based feeding practices, compared to mothers with higher parenting competence. Not surprisingly, mothers with lower parenting competence were more likely to pressure their children to eat and restrict intake of certain foods, compared to mothers with higher parenting competence. Findings from these data also indicate that maternal depressive symptomology negatively correlates with structure-based feeding, although, parenting competence was a protective factor in the relationship between depressive symptomology and authoritarian and uninvolved feeding styles.

My finding of depressive symptomology lessening the likelihood of structure-based feeding is consistent with the findings of a study by Goulding, Rosenblum, Miller, Peterson, Chen, Kaciroti, & Lumeng, 2014 who assessed the impact of maternal depressive symptoms on feeding practices in low-income mothers of children ages 4-8 years old. Greater than 30% of the mothers reported depressive symptoms (CES-D score  $\geq 16$ ) among a relatively similar population of low-income mothers reporting depressive symptoms. However, in Goulding et al's sample, approximately 1/3 of the mothers were Hispanic, while in my sample, most mothers were non-

Hispanic white. The present study focused on toddlers while Goulding et al reported that mothers with depressive symptoms were more likely than mothers without depressive symptoms to pressure their children to eat, exert higher demandingness, have the television playing during meals, and were less likely to eat with their children. These results are similar to my findings in that mothers with depression were more likely to exhibit an authoritarian feeding style and were less likely to provide consistent mealtime routines (a component of structured feeding).

Contrary to my hypothesis, maternal depressive symptomology did not correlate with overall controlling feeding practices. However, a significant positive relationship exists between the pressure to eat and depression. Thus, mothers who report depressive symptoms were more likely to report pressuring their children to eat. These results differ from a recent study by Barrett, Thompson & Bentley, 2016 which found that the presence of maternal depression was not associated with a pressuring feeding style. One potential explanation for this is that several differences in design exist between our two studies. Barrett, Thompson & Bentley, 2016 examined healthy low-income, African-American mother-infant dyads ( $n=160$ ) in a cross-sectional design that involved home visits. This sample differs from my sample in sample size, racial characteristics, and child age. The authors suggest that maternal depressive symptomology and satisfaction did not influence feeding styles because maternal self-esteem is a more salient predictor for this population.

In our data, parenting competence and depressive symptomology impacted feeding practices independently. For the majority of outcomes, the interaction between depressive symptomology and competence was insignificant. In other words, parenting competence and depression have significant main effects on feeding styles and practices, but do not interact. The same is true for the subscales: mealtime routines, limit exposure, restriction, and pressure to eat.

However, parenting competence is a protective factor in the relationship between depressive symptomology and higher likelihood of uninvolved or authoritarian feeding styles.

Mothers who reported depressive symptoms were more likely to report authoritarian feeding styles, which are often coercive and intrusive. Contrary to my hypothesis, maternal depressive symptomology did not correlate with other negative feeding practices such as indulgent or uninvolved. Study findings with regard to maternal depressive symptoms and negative feeding styles differ from another study by Hurley, Black, Papas & Caulfield, 2016. This study found that maternal depressive symptomology was associated with forceful, indulgent, and uninvolved feeding styles in a sample of mother-infant dyads (n=702) enrolled in the WIC program. Hurley et al.'s study is similar to the current study in that participants were low-income mothers enrolled in the WIC program and depression was a main predictor for feeding style. Hurley et al obtained a larger, statewide sample and instead used the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PHQ) to evaluate depression rather than the CES-D. The sample was also more racially and ethnically diverse than the sample in the current study. Participant dyads were mother-infant rather than mother-toddler. One possible explanation for our differences in findings is perhaps maternal depression has a more significant impact on feeding style during infancy than during toddlerhood.

Conversely, mothers with a higher sense of parenting competence experienced a decreased risk for authoritarian feeding styles. The same relationship existed when examining the relationship between the PSOC subscales, efficacy and satisfaction, and feeding styles. Mothers with increased efficacy and satisfaction scores experienced a decreased risk of authoritarian feeding compared to mothers with lower efficacy or satisfaction scores. Increased score on the efficacy subscale was also protective against uninvolved feeding. Interestingly,

parenting competence overall acted as a moderator in the relationship between depressive symptomology and negative feeding styles.

In summary, mothers with higher depressive symptomology reported an authoritarian feeding style and less use of structure based feeding practices compared to mothers without depressive symptomology. In contrast, mothers with greater competence were more likely to report greater use of structure-based feeding practices and less use of control-based practices and authoritarian feeding style. Lastly, mothers with depression symptomology, but high parenting competence, experienced a decreased risk for authoritarian or uninvolved feeding, compared to mothers with depressive symptomology and lower parenting competence. Therefore, interventions focusing on improving parenting sense of competence may be protective in preventing negative feeding styles as a result of maternal depressive symptomology.

This study exhibits several strengths. Rich data were collected through varying measurements and verified questionnaires. Further, participants were evenly divided between rural and urban geographic locations. Rural populations are often understudied, and thus, this study fills a gap. Toddlers are also less studied compared to infants and less is known about feeding practices in toddlers. Lastly, this study included measures of positive feeding styles and practices. Many more studies examine solely negative feeding practices as opposed to exploring what factors predict structure-based and other positive feeding styles.

This study is subject to several limitations. First, the data were based on maternal self-report and are subject to recall and social desirability biases. The study was also cross-sectional in nature which limits the ability to examine changes over time. Lastly, this sample consisted of mostly white non-Hispanic women and thus was not racially diverse. Future research should examine the impact of psychosocial predictors in a more racially diverse framework.

Increases in total parenting competence score serves as a protective factor in the relationship between depression and controlling feeding styles. Given our low-income sample, this is an important finding. Children in low-income households experience greater risk for obesity than their higher income counterparts. Depression is more easily targeted than low-income. With these findings, WIC clinics should focus on preventing and addressing depression and fostering parenting competence.

This study fills an important gap in the literature because it enhances our understanding of the salient effects of parenting competence and maternal depression on feeding styles and practices in an at-risk population. Further, feeding styles and practices have been shown to either prevent or promote the development of obesity. Understanding the psychosocial factors which inhibit or facilitate positive feeding practices are crucial to developing child self-regulation mechanisms and preventing childhood obesity.

This study lays the groundwork for larger, longitudinal studies which examine the development of feeding styles and practices over time. A future study could examine how changes in maternal depressive symptomology over time impact feeding styles and feeding practices and child weight. The study could also examine changes in parenting competence, efficacy, and satisfaction over time and how this impacts feeding styles, practices, and child weight. Future interventions should employ objective measurements, in addition to self-report, such as videotaping parent-child interactions to understand how maternal report differs from actual feeding behavior and whether this difference is significant. Future interventions should target parenting competence in order to prevent the negative effects of depression on feeding practices, which may subsequently impact childhood obesity.

Table 1 Maternal and child demographics (n=317)

Characteristic	Mean (SD) or Percent
<b>Maternal characteristics</b>	
BMI	29.6 (7.3)
Age	29.1 (6.9)
Race	
White	68.5
Black or African American	19.2
Latino or Hispanic	5.5
Asian	2.0
Education	
8 <sup>th</sup> grade or less	1.0
Some high school	11.0
High school graduate	39.7
Some college/technical school	31.0
Completed college	11.0
Post graduate training/degree	6.5
Employment status	
Full-time	24.2
Working part-time	21.5
Student	43.4
Unemployed	10.9
Marital status	
Married	39.9
Divorced	7.7
Single	40.5
Not married, living with partner	10.3
Widowed	0.6
Other	1.0
Number of children (under 18 y) in household	
1	33.7
2	38.1
3	16.0
4	8.3
5	2.9
6	1.0
Number of people in household (including mother)	
2	10.0
3	30.6
4	27.7
5	18.3
6	9.3
7	3.5
8	0.6
<b>Child characteristics</b>	
Age (months)	27.7 (11.9)
Sex	
Female	50.5
Male	49.5
Race	
Non-Hispanic White	59.5
Black or African-American	19.7
Latino or Hispanic	6.7
Multi-racial	14.1

**Table 2 Frequency of participant feeding style categories**

<b>Feeding Style Frequency</b>	<b>Percent</b>
Indulgent	52.2
Authoritative	25.8
Authoritarian	11.8
Uninvolved	10.2

Table 3 Participant mean feeding practice scores

<b>Feeding Practice Score</b>	<b>Mean (sd)</b>
<i>Structure</i>	2.90
Limiting exposure	2.7
Mealtime routines	3.1
<i>Control</i>	1.7
Pressure to eat	1.6
Restriction	1.8

**Table 4 Correlations among continuous predictors**

	1	2	3	4
1. Total depression score	1.00			
2. Total parenting competence scores	-0.46***	1.00		
3. Parenting efficacy	-0.28***	0.82***	1.00	
4. Parenting satisfaction	-0.48***	0.87***	0.44***	1.00

\*p<.05, \*\*p<.001, \*\*\*p<.0001

**Table 5 Correlations among maternal depression and structure and control outcomes**

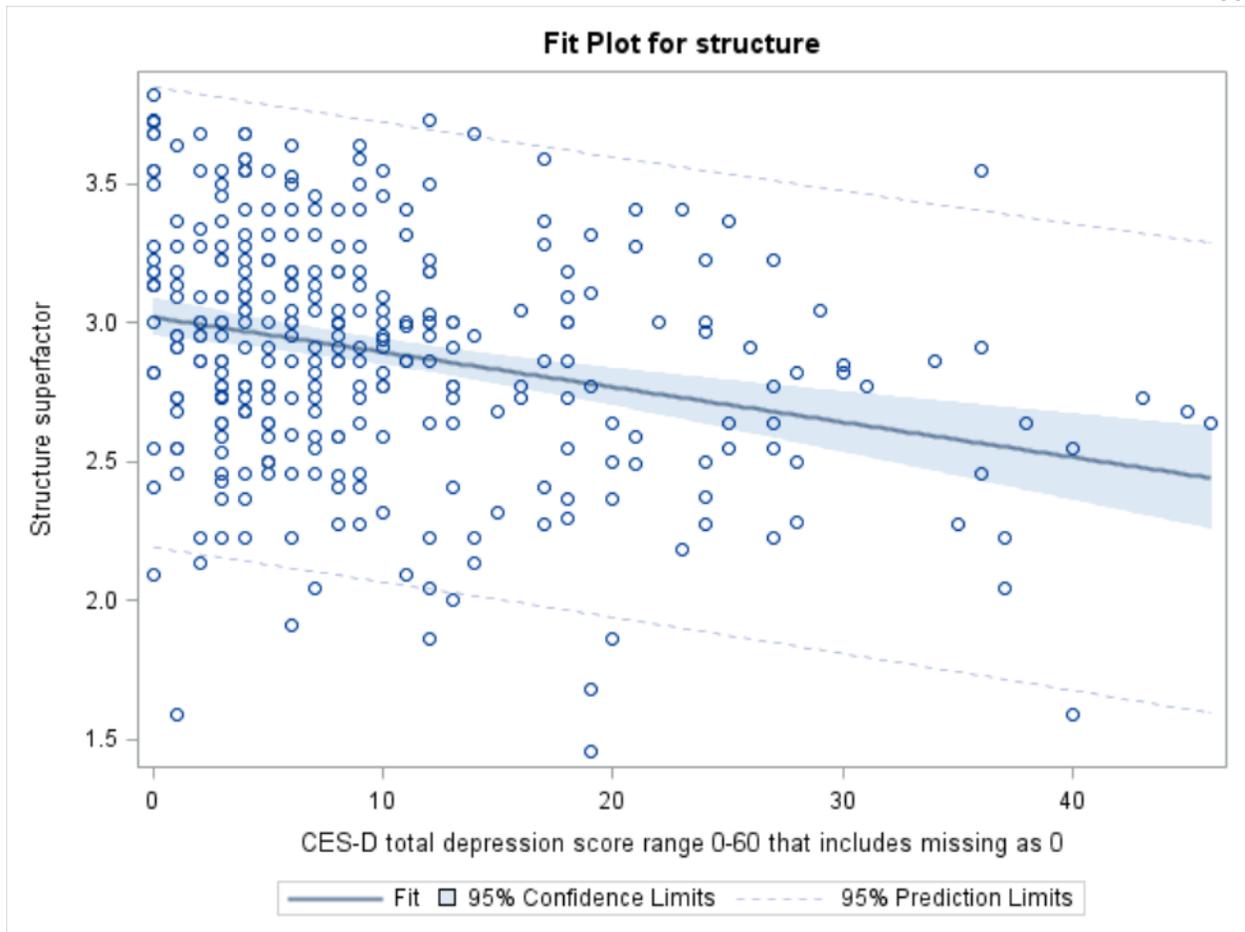
	<u>Structure super factor</u>	<u>Limit exposure</u>	<u>Consistent mealtime routines</u>	<u>Control super factor</u>	<u>Pressure to Eat</u>	<u>Restriction</u>
<u>Total Depression Score</u>	-.027***	-0.21***	-0.26***	0.08	0.16*	-0.01

\*p<.05, \*\*p<.001, \*\*\*p<.0001

**Table 6 Correlations among parenting competence and structure and control outcomes**

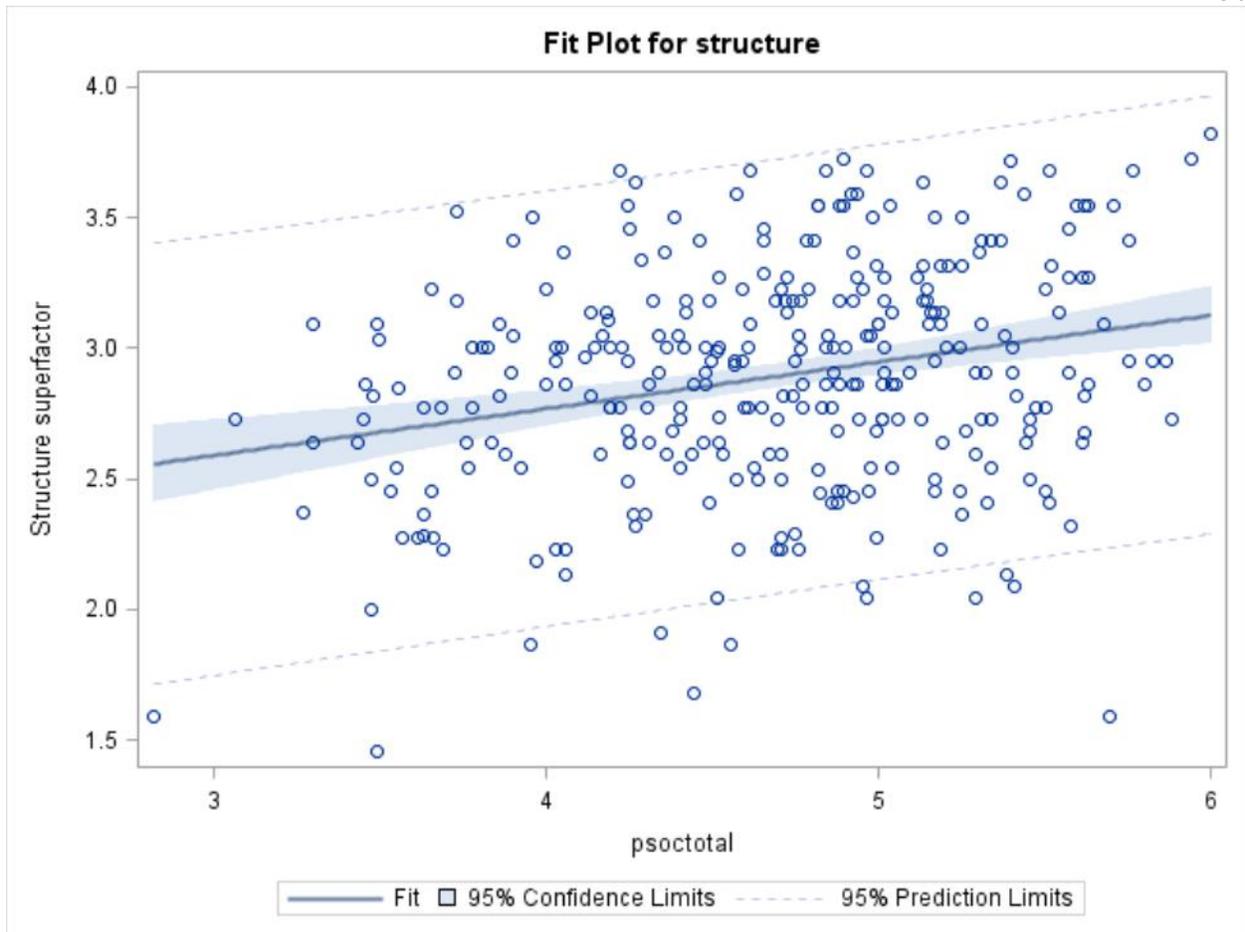
	<u>Structure super factor</u>	<u>Limit exposure</u>	<u>Consistent mealttime routines</u>	<u>Control super factor</u>	<u>Pressure to Eat</u>	<u>Restriction</u>
<u>Total Parenting Competence Score</u>	0.25***	0.21**	0.23***	-0.17*	-0.15*	-0.13*
<u>Efficacy</u>	0.20**	0.15*	0.20**	-0.07	-0.04	-0.06
<u>Satisfaction</u>	0.24***	0.21**	0.20**	-0.21**	-0.20**	-0.14*

\*p<.05, \*\*p<.001, \*\*\*p<.0001



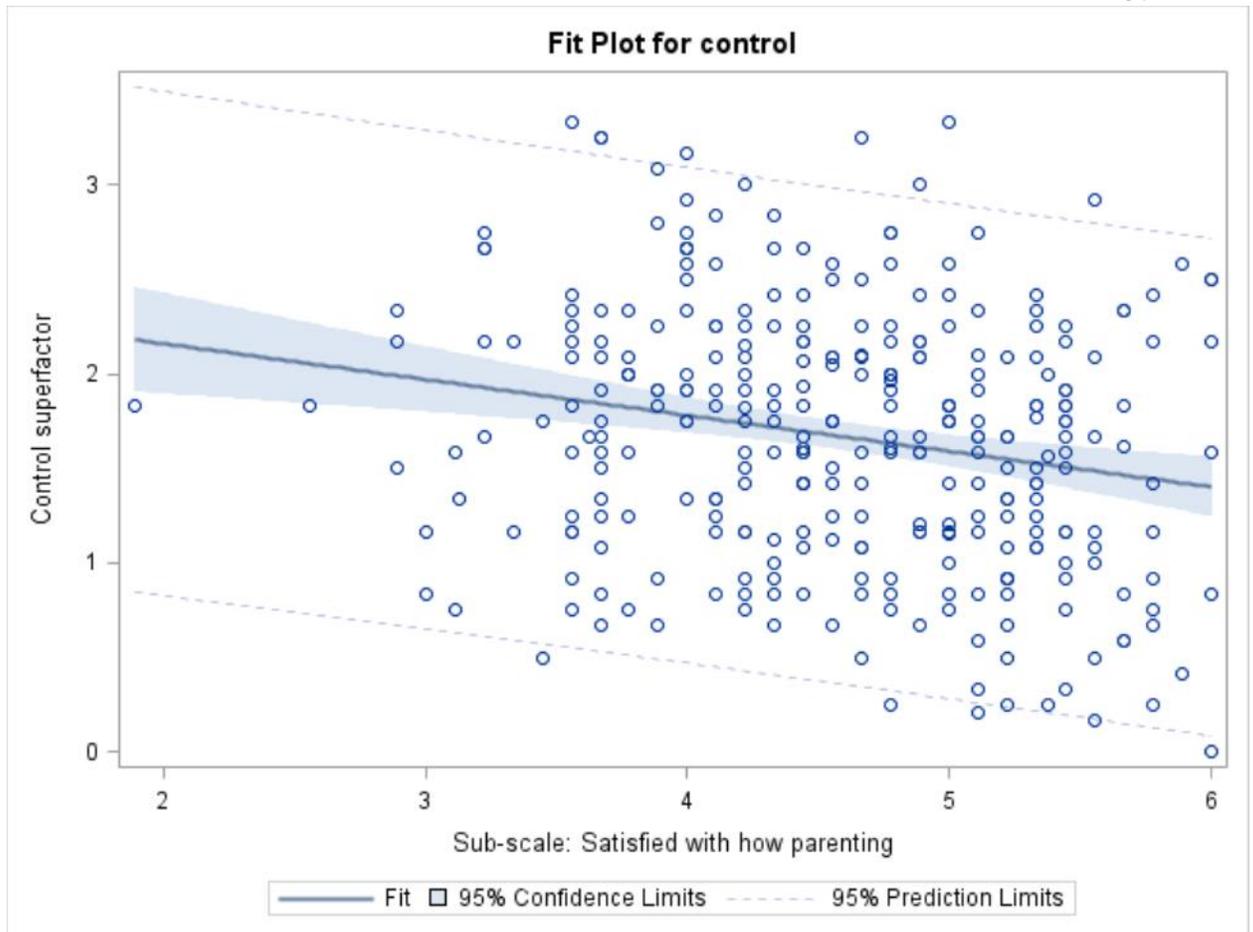
**Figure 1. Regression predicting structure from depression score.**

The above figure demonstrates the negative relationship between maternal depression and structured feeding practices. As depression score increases, structured feeding practices decrease.



**Figure 2. Regression predicting structure from total parenting competence score.**

A positive relationship exists between parenting competence and structured feeding. As overall parenting competence score increases, structured feeding also increases.



**Figure 3. Regression predicting control-based feeding from parenting satisfaction score.**

The above figure demonstrates that as score on the parenting satisfaction dimension of the PSOC scale increases, controlling feeding decreases.

## Appendix A.

### Center for Epidemiologic Studies Depression Scale

Start here

1	2	3	4	5
Rarely/not at all	Some	Often	Most Days	Does not apply
(<1 day)	(1-2 days)	(3-4 days)	(5-7 days)	

The following questions ask about your feelings during the past week. Using the scale above, indicate your answer by writing the corresponding number beside each statement to tell us how each statement describes your feelings during the past week.

1.	I was bothered by things that don't usually bother me.		11.	My sleep was restless.	
2.	I did not feel like eating, my appetite was poor.		12.	I was happy.	
3.	I felt I could not shake the blues, even with the help of my family.		13.	I talked less than normal.	
4.	I felt that I was just as good as other people.		14.	I felt lonely.	
5.	I felt depressed.		15.	People were unfriendly.	
6.	I had trouble keeping my mind on what I was doing.		16.	I enjoyed life.	

7.	I felt that everything I did was an effort.		17.	I had crying spells.	
8.	I felt hopeful about the future.		18.	I felt that people disliked me.	
9.	I thought my life had been a failure.		19.	I felt like I couldn't do what I needed to do.	
10.	I felt fearful.		20.	I felt sad.	

## Appendix B

### Parenting Sense of Competence

Listed below are a number of statements. Please respond to each item indicating your agreement or disagreement with each statement by writing the corresponding number (1-6) in each box. Please choose only one response for each statement.

1	2	3	4	5	6
Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
					a
The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired.					
					1
Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age.					
					e
I go to bed the same way I wake up in the morning - feeling I have not accomplished a whole lot.					
I do not know what it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.					
My mother was better prepared to be a good mother than I am.					
I would make a fine model for a new mother to follow in order to learn what she would need to know in order to be a good parent.					
Being a parent is manageable, and any problems are easily solved.					

	A difficult problem in being a parent is not knowing whether you're doing a good job or a bad one.	
	Sometimes I feel like I'm not getting anything done.	
	I meet my own personal expectations for expertise in caring for my child.	
	If anyone can find the answer to what is troubling my child, I am the one.	
	My talents and interests are in other areas, not in being a parent.	
	Considering how long I've been a mother, I feel thoroughly familiar with this role.	
	If being a mother of a child were only more interesting, I would be motivated to do a better job as a parent.	
	I honestly believe I have all the skills necessary to be a good mother to my child.	
	Being a parent makes me tense and anxious.	

### Appendix C. Child Feeding Style Questionnaire

<i>These questions deal with <b>YOUR</b> interactions with your preschool child during the dinner meal. Circle the best answer that describes how often these things happen. If you are not certain, make your best guess.</i>  <i>How often during the dinner meal do YOU....</i>		Never	Rarely	Some times	Most of the Time	Always
1.	Physically struggle with the child to get him or her to eat (for example, physically putting the child in the chair so he or she will eat).	1	2	3	4	5
2.	Promise the child something other than food if he or she eats (for example, "If you eat your beans, we can play ball after dinner").	1	2	3	4	5
3.	Encourage the child to eat by arranging the food to make it more interesting (for example, making smiley faces on the pancakes).	1	2	3	4	5
4.	Ask the child questions about the food during dinner.	1	2	3	4	5
5.	Tell the child to eat at least a little bit of food on his or her plate.	1	2	3	4	5
6.	Reason with the child to get him or her to eat (for example, "Milk is good for your health because it will make you strong").	1	2	3	4	5
7.	Say something to show your disapproval of the child for not eating dinner.	1	2	3	4	5
8.	Allow the child to choose the foods he or she wants to eat for dinner from foods already prepared.	1	2	3	4	5
9.	Compliment the child for eating food (for example, "What a good boy! You're eating your beans").	1	2	3	4	5
10.	Suggest to the child that he or she eats dinner, for example by saying, "Your dinner is getting cold".	1	2	3	4	5
11.	Say to the child "Hurry up and eat your food".	1	2	3	4	5

## Appendix D. Structure and Control in Parent Feeding (SCPF) Questionnaire

**Circle the best answer that describes how often these things happen.**

- |     |   |       |        |           |       |        |
|-----|---|-------|--------|-----------|-------|--------|
| 1.  | I avoid buying sweets or desserts that I don't want my child to eat.                                | Never | Rarely | Sometimes | Often | Always |
| 2.  | I let my child eat sweets (ex. cookie, cake, candy, freeze pops, ice cream) anytime during the day. | Never | Rarely | Sometimes | Often | Always |
| 3.  | I avoid eating snacks or sweets in front of my child that I don't want him/her to eat.              | Never | Rarely | Sometimes | Often | Always |
| 4.  | I serve my child sweets or desserts (ex. cookie, cake, candy, freeze pops, ice cream).              | Never | Rarely | Sometimes | Often | Always |
| 5.  | I have clear rules about when my child can eat snacks or sweets.                                    | Never | Rarely | Sometimes | Often | Always |
| 6.  | I serve my child sugar sweetened drinks (ex. fruit drink, soda, iced tea, or sports/energy drinks). | Never | Rarely | Sometimes | Often | Always |
| 7.  | I serve small child size helpings at snack time.  | Never | Rarely | Sometimes | Often | Always |
| 8.  | I keep a lot of snack foods (potato chips, cheese puffs, tortilla chips) in my house.               | Never | Rarely | Sometimes | Often | Always |
| 9.  | I hide foods that I don't want my child to eat.   | Never | Rarely | Sometimes | Often | Always |
| 10. | If my child is eating too much I take some of it away.  | Never | Rarely | Sometimes | Often | Always |
| 11. | I avoid taking my child to places where he/she might ask me for sweets, snacks, or junk food.       | Never | Rarely | Sometimes | Often | Always |
| 12. | I let my child watch TV while eating.   | Never | Rarely | Sometimes | Often | Always |
| 13. | I get upset when my child eats too many snacks or salty foods without asking.                       | Never | Rarely | Sometimes | Often | Always |

14.	I serve my child French fries.	Never	Rarely	Sometimes	Often	Always
15.	My child eats with me or another caregiver at a table each night.	Never	Rarely	Sometimes	Often	Always
16.	I let my child eat directly out of regular-sized snack bags (ex. Bags of chips/pretzels, box of cookies, candy, etc.)	Never	Rarely	Sometimes	Often	Always
17.	I give my child the same amount of snacks as I serve myself.	Never	Rarely	Sometimes	Often	Always
18.	When my child is drinking too much of a sugar-sweetened beverage, I take the cup/bottle away or pour some out.	Never	Rarely	Sometimes	Often	Always
19.	I have my child sit down in a chair/highchair at home when eating meals.	Never	Rarely	Sometimes	Often	Always
20.	At mealtimes, I give my child the same amount of foods as I would serve myself.	Never	Rarely	Sometimes	Often	Always
21.	I let my child eat snack foods anytime during the day.	Never	Rarely	Sometimes	Often	Always
22.	My child drinks milk at dinner every night.	Never	Rarely	Sometimes	Often	Always
23.	If I did not control my child's eating, he/she would eat much less than he/she should.	Never	Rarely	Sometimes	Often	Always
24.	If my child seems full, I encourage him/her to finish his/her food anyway.	Never	Rarely	Sometimes	Often	Always
25.	I praise my child after each bite to encourage him/her to finish his/her food.	Never	Rarely	Sometimes	Often	Always
26.	I keep a lot of fresh fruits and vegetables in my home.	Never	Rarely	Sometimes	Often	Always
27.	I try to get my child to finish his/her food.	Never	Rarely	Sometimes	Often	Always
28.	I keep a lot of sweets/desserts (candy, ice cream, cake, pies, pastries) in my home.	Never	Rarely	Sometimes	Often	Always

29.	I like to have complete control over what types of sweets and snacks my toddler is able to eat (is given).	Never	Rarely	Sometimes	Often	Always
30.	I serve my child a green, yellow, or orange vegetable each day.	Never	Rarely	Sometimes	Often	Always
31.	I have all of my child's favorite foods at home.	Never	Rarely	Sometimes	Often	Always
32.	If my child doesn't like what we are eating, I fix something else for my child to eat.	Never	Rarely	Sometimes	Often	Always
33.	I try to get my child to eat even if s/he doesn't seem hungry or says "I'm not hungry".	Never	Rarely	Sometimes	Often	Always
34.	I have very firm rules about what types of foods I allow my child to have (with no exceptions).	Never	Rarely	Sometimes	Often	Always
35.	My child eats at scheduled meal and snack times, not in-between.	Never	Rarely	Sometimes	Often	Always
36.	I serve small child size helpings at meals.	Never	Rarely	Sometimes	Often	Always
37.	My child eats breakfast at about the same time and place (e.g., at kitchen table or at school each morning).	Never	Rarely	Sometimes	Often	Always
38.	I have to trick, distract, play with, or praise my child to get him/her to finish his/her food.	Never	Rarely	Sometimes	Often	Always
39.	My child eats dinner at about the same time each night (within 15 minutes).	Never	Rarely	Sometimes	Often	Always
40.	I let my child have sugar sweetened drinks (ex. fruit drink, soda, iced tea, or sports/energy drinks) anytime during the day.	Never	Rarely	Sometimes	Often	Always
41.	I do not allow other people to give sweets and snacks to my child without asking me.	Never	Rarely	Sometimes	Often	Always
42.	In my home, I hide snack foods from my child that I don't want my child to eat.	Never	Rarely	Sometimes	Often	Always
43.	I try not to eat unhealthy foods when my child is around.	Never	Rarely	Sometimes	Often	Always
44.	I offer my child his/her favorite foods as a reward for good behavior.	Never	Rarely	Sometimes	Often	always

45.	I withhold sweets/desserts from my child in response to bad behavior.	Never	Rarely	Sometimes	Often	Always
46.	I offer food to get my child to do what I want him/her to do.	Never	Rarely	Sometimes	Often	Always
47.	I offer my child a "treat" or dessert" for eating everything on his/her plate.	Never	Rarely	Sometimes	Often	Always
48.	If I've told my child "No, you can't have it," I'm likely to give it to him/her anyway.	Never	Rarely	Sometimes	Often	Always
49.	I am likely to give my child whatever he/she wants to eat.	Never	Rarely	Sometimes	Often	Always
50.	I offer my child a "treat" or "dessert" to get my child to eat his/her vegetables.	Never	Rarely	Sometimes	Often	Always

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# Academic Vita of Emily C. DuBartell

## EDUCATION

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**The Pennsylvania State University | The Schreyer Honors College**

**University Park, PA**

*College of Health and Human Development | Bachelor of Science in Biobehavioral Health*

*Graduation: May 2018*

**Schreyer Honors Scholarship Recipient** – Fall 2014-Spring 2018

## RESEARCH AND INTERNSHIP EXPERIENCE

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**Geisinger Medical Center Henry Hood Center for Health Research**

**Danville, PA**

*May 2016-Present*

*Senior Intern, Epidemiology and Health Services Research*

- Designed and presented cross-sectional research study examining gender differences in the relationship between sexual assault and obesity in children and adolescents using data from Youth Behavior Risk Assessment Survey.
- Currently developing mixed-methods research project examining the impact of provider communication on the understanding of the link between HPV and cervical cancer in Geisinger patients diagnosed with cervical cancer.
- Served as a Research Assistant for numerous projects under department director, Dr. Sharon Larson.
- Trained in developing quantitative coding schemas.
- Trained in qualitative data collection, coding and transcribing.
- After first summer of internship, remained on board as flex employee and was promoted to Senior Intern the next summer.
- Two-time presenter invitee to Susquehanna Valley Undergraduate Research Symposium.
- Developed proficiency in STATA statistical software.

**Center for Childhood Obesity Research**

**University Park, PA**

*Spring 2016-Present*

*Honors Research Assistant in Nutritional Sciences*

- Working towards completion of honors thesis examining the relationship between maternal self-efficacy and depression and the consequent impact on structured vs. responsive feeding behaviors in mother-toddler dyads enrolled in the State College Women, Infants, and Children (WIC) program.
- Trained in qualitative video coding and basic statistical analysis using SAS software.
- Disseminated nutrition information and assisted with food preparation and presentation for children and parents enrolled in the Head Start program.
- Developed proficiency in SAS, RedCap, and SPSS statistical software.

**Sleep, Health and Society Research Lab**

**University Park, PA**

*Fall 2015-Spring 2016*

*Undergraduate Research Assistant in Biobehavioral Health*

- Participated in research involving the effects of sleep deprivation on biological and psychological functions in healthy young men during an 11-day inpatient clinical trial study.
- Assisted in project involving hair cortisol collection as biomarker of stress level during inpatient sleep deprivation study.
- Serve as scheduling coordinator to schedule general weekly meetings with Private Investigators, graduate students and undergraduates.

**HealthWorks Peer Education and Health Promotion**

**University Park, PA**

*HIV Prevention Interventionist*

*Fall 2016-Spring 2017*

- Counseled students before and after undergoing HIV testing to develop a personalized Risk Reduction Plan and address other concerns.
- Used motivational interviewing techniques to raise doubt, facilitate change, discuss barriers, and motivate clients to change risky behaviors.

*Body Image and Eating Disorder Awareness Team Leader*

*Spring 2016- Present*

- Spearheaded projects during Love your Body Week and National Eating Disorder Awareness Month to increase positive body image and decrease disordered eating patterns among students using evidence-based techniques.
- Led several social media campaigns celebrating authentic beauty for people of all backgrounds.
- Speaker in Body Monologues 2016 and 2017, a spoken word performance targeting body image issues.

*Peer Health Educator*

*Fall 2015-Present*

- Active member of several health promotion teams: Health Disparities, Skin Health, Safer Sex, Nutrition, and Body Image.
- Trained speaker for Stress Less, Safer Sex and Mission Nutrition programs which are delivered to campus audiences such as fraternities, sororities, and freshman seminar classes.

**SENIOR HONORS THESIS** (*in progress*)

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**DuBartell, E., Hohman, E. Examining the Relationship between Parenting Sense of Competence, Depression, and Feeding Styles in Low Income Mothers of Toddlers: A Cross-Sectional Analysis.** *The Center for Childhood Obesity Research, The Pennsylvania State University, University Park, PA, USA, 2017.*

**POSTER PRESENTATIONS**

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**DuBartell, E. A Mixed-Methods Examination of the Association between Provider Communication and Patient Understanding of the Link between HPV and Cervical Cancer in Population of Rural Cervical Cancer Patients.** *Susquehanna Valley Undergraduate Research Symposium, Bloomsburg, PA, USA, 2017.*

**DuBartell, E., Nault, J. Examining the Relationship between Childhood Sexual Assault and Obesity Risk: A Cross-Sectional Study.** *Susquehanna Valley Undergraduate Research Symposium, Bloomsburg, PA, USA, 2016.*

**STUDY ABROAD EXPERIENCE**

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- Traveled in Brazil as an embedded part of an honors Contemporary Latin American Studies course.
- Studied health care, political, economic, and social issues in Brazil through direct experience.
- Explored six different cities (*Belo Horizonte, Recife, Rio de Janeiro, Olinda, Brasilia, and Ouro Preto*) during a three-week period to apply concepts learned in classroom course.

**WORK EXPERIENCE**

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**Penn State University Libraries**  
**University Park, PA**

*Life Sciences Library Reference Assistant*

*Fall 2017-Present*

- Recorded patron data specific to the life sciences library.
- Provided support to student and faculty patrons by providing anatomical models and study materials, retrieving books, and organizing research topics.
- Assisted in shelving books according to Library of Congress System

**ATHLETIC EXPERIENCE**

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**Penn State Club Crew Team**

*Varsity Rower, ACRA Academic All-American*

- Trained during rigorous early morning workout 6 days (18 hours) per week to prepare for

**University Park, PA**  
*Fall 2016-Present*

intercollegiate races during both the fall and spring seasons.

- Competed and placed first in the Mid-Atlantic Rowing Conference (MARC) Championships (April 2016).
- Enhanced team-building, communication

**Penn State Club Cross Country Team**

- Participate in rigorous runs of varying mileage five days per week.
- Finisher in the Philadelphia Half Marathon 2016 and raised several hundred dollars to benefit Penn State Dance MaraTHON.
- Teaches determination, dedication and endurance that can be applied to all areas of life.