Report 12-768
August 2012

Daphne C. Hernandez, Emily Pressler, Cassandra Dorius, and Katherine Stamps Mitchell

Family Instability, Gender, and Overweight Status in Young Adulthood
Family Instability, Gender, and Overweight Status in Young Adulthood

Daphne C. Hernandez, PhD, MSEd
Department of Human Development Family Studies, Pennsylvania State University

Emily Pressler, MA
Department of Human Development Family Studies, Pennsylvania State University

Cassandra Dorius, PhD
Population Studies Center, University of Michigan

Katherine Stamps Mitchell, PhD
School of Human Ecology, Louisiana State University

Population Studies Center Research Report 12-768
August 2012

Corresponding Author: Daphne C. Hernandez, Department of Human Development Family Studies, The Pennsylvania State University, 110 South Henderson Building, University Park, PA 16802. Phone: 814-867-2245. Fax: 814-863-6207. dch19@psu.edu

Acknowledgements: This research was funded, in part, and by a small grant from the National Center for Family and Marriage Research to the first, third, and fourth author. In addition, the research was funded, in part, by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (K12 HD055882) to the first author. The authors also thank participants of the Pennsylvania State University Building Interdisciplinary Research Careers in Women’s Health Seminar, along with Drs. Leann Birch, Cynthia Chuang, and Marianne Hillemeier for their comments on preliminary drafts.

The authors have indicated they have no financial conflicts of interests to disclose.

Abbreviations:
BMI: Body Mass Index
CNLSY: Children of the National Longitudinal Survey of Youth
NLSY79: National Longitudinal Survey of Youth 1979
ABSTRACT

Purpose: Experiencing family instability during adulthood has an immediate impact on adult women and men’s weight, with adult women gaining weight and adult men losing weight. It is unclear whether experiencing family instability during childhood has a negative accumulating impact on adult weight, placing females at risk for being overweight in young adulthood. We assessed whether female and male young adults differ in overweight status based on the family instability experienced during childhood.

Methods: Data from the Children of the National Longitudinal Survey of Youth 1979 was used to estimate the odds of being overweight in young adulthood based on family instability experienced during childhood (n = 5139). Family instability was measured by young adults’ exposure to family structure transitions from birth to the age of 18 as defined by mother’s formation and dissolution of romantic unions. Body mass index was directly assessed in young adulthood.

Results: A series of logistic regression models predicted the odds of young adults being overweight or obese. Results indicate that cumulative family structure transitions during childhood increase the odds for young adult females born to married mothers to be overweight by 19%. Family instability, however, does not increase the probability for young adult females nor males born to single mothers to be overweight.

Conclusions: Experiencing family instability has a negative accumulating impact on the weight status of young adult females born to married mothers. Interventions during childhood are important to prevent females who experience multiple family transitions from becoming overweight as young adults.

Keywords: BMI, Family instability, NLSY79, Obesity, Overweight, Young adult
IMPLICATIONS AND CONTRIBUTIONS

This is the first study to take a life-span approach to examine the effects of family instability during childhood on young adult weight status. Experiencing family instability during childhood has a negative accumulating impact on weight status in young adulthood, placing females born to married mothers at-risk for being overweight.

INTRODUCTION

The structure of American families has undergone drastic change over the past several decades. For instance, in 1970 only 37% of marriages ended in divorce, compared to 44% in 1995.1 During the same time period, cohabitation became a testing ground for romantic relationships. While only 8% of first marriages were preceded by cohabitation in the late 1960’s,2 this number rose to 65% by 1995.3 The steady growth in cohabiting unions has led to nearly 1 in 5 children today being born to cohabiting parents, and it is estimated that 40% of all children will spend some time in a cohabiting family by age 12.4 Further, at least half of these children will spend some time living in a single parent family, and one-third will live in a household with a biological and non-biological parent.5 As a result of these changes, children today experience greater amounts of family instability than children from earlier birth cohorts.

Previous family research indicates that once a family unit has experienced a transition, they are at a greater risk for experiencing subsequent transitions.6 According to the cumulative risk hypothesis, the accumulation of risk factors (i.e. cumulative family structure transitions such as marriage, divorce, remarriage), rather than any particular risk (e.g., a single divorce), impacts development negatively.7,8 The cumulative negative impact of family instability on well-being9-11 is consistent with the social stress theory which emphasizes how changes in marital and romantic
relationships introduce stress into the entire family unit. In cases of both relationship entrances (e.g., marriage) and exits (e.g., divorce), parental attention and emotional availability are often turned away from the child. In response, the child feels emotionally disconnected, creating ambiguity surrounding parental relationships and expectations.

The rising rates of instability among American families have coincided with population level increases in children’s and adult’s weight status. For instance, five percent of U.S. children between the ages of 2 and 19 were classified as obese between 1971-1974 compared to 17% in 2007-2008. Among adults, the prevalence of obesity has increased from 13% to 32% between 1960 and 2004. Although changes in family structure stability and weight status have been occurring concurrently, there is a lack of research investigating whether being overweight (i.e. BMI ≥ 25) in young adulthood is influenced by the family instability experienced during their childhood. In other words, it is unclear whether the stress that is associated with family instability during childhood could have an accumulating negative impact on weight status in young adulthood. Young adulthood is a critical period to study BMI as this is the life-stage where individuals move out of their parent’s house, begin to form their own romantic unions, and begin to create their own path to financial stability either through employment or advancing their education. However, being obese or experiencing the negative health consequences associated with obesity, such as Type 2 diabetes, cardiovascular disease, hypertension, and high cholesterol, could impair the transition from adolescence into adulthood.

There is some indication that the type of family structure a child experiences influences their risk of being overweight or obese in childhood. For example, research has found that residing in single-mother households compared to two-parent households places children at greater risk for obesity. Yet, this research focuses on family structure at one point in time and
does not consider cumulative changes in family instability throughout childhood. Scholarship on changes in marital status and BMI suggest that family instability influences women and men’s BMI immediately, but in opposite directions. For example, entering or leaving a marriage is associated with adult women gaining weight (i.e. higher BMI levels) and adult men losing weight. If changes in family structure have an immediate, yet opposing, influence on adult women and men’s weight, changes in family structure during childhood could have an accumulating, yet opposite, effect on the weight status in young adulthood. In other words, women’s weight in young adulthood could differ from men’s based on the family instability that occurred during their childhood. Experiencing a greater number of family structure transitions could have a negative accumulating effect on young adult women’s weight, placing them at greater risk for being overweight (i.e. BMI ≥ 25) in young adulthood.

The current study contributes to the literature that has focused on obesity during young adulthood by assessing whether female and male young adults differ in overweight status (i.e. BMI ≥ 25) as a result of family instability experienced during childhood, controlling for factors that influence family instability and children’s weight. We measure family instability by counting the number of family structure transitions children experienced from birth to age 18. We also consider the relationship status the child was born into, as being born into a single parent household (compared to a two-parent household) increases the likelihood of experiencing more transitions during childhood. Based on the literature cited above, we hypothesized that stress resulting from each family transition during childhood has a linear cumulative effect over time, increasing the risk for females (more so than males) to be overweight in young adulthood. In light of the family instability and obesity trends, along with the negative health consequences associated with obesity, investigating the the association between family instability and young
adult overweight status may have important clinical implications for identifying which sex is at greatest risk for being overweight in the presence of childhood family instability.

**METHODS**

Data for this study come from the National Longitudinal Survey of Youth 1979 (NLSY79) and the linked Children and Young Adults file (CNLSY). NLSY data are sponsored by the U.S. Department of Labor and have been compiled through the Ohio State University Center for Human Resource Research. The original NLSY79 data includes a nationally representative sample of 12,686 men and women followed from 1979-2010. The CNLSY has surveyed the biological children of these women every two years since 1986 and represents over 90 percent of all the children born to this cohort. The study was approved by the Institutional Review Boards at the three universities.

**Analytic Sample**

A total of 8,261 children were born to 3,366 NLSY79 mothers between 1970 and 2005. Women were eligible for inclusion if they did not miss more than 5 total or 3 consecutive waves of data collection. The child sample was further restricted to young adults who were at least 20 years old by 2010 (2,699 children were excluded because they were too young), had valid BMI data (407 cases excluded), and were not pregnant during the BMI assessment (16 cases excluded). Multiple imputation was used to impute missing data for five covariates in our models (2.5% of values). A strength of multiple imputation is that all relevant cases are kept in the analyses for accurate parameter estimates and the standard errors are corrected for the amount of missing information. This is in comparison to listwise deletion, which results in a sample that no longer represents the population. The final analytic sample consisted of 5,139 young adults who were born between 1970-1991, with 75% of the sample being born by 1986 (mean = 1984).
**Dependent Variables**

*Body Mass Index.* Direct assessment of young adults’ height (feet and inches) and weight (pounds) was collected bi-yearly starting in 1994. BMI was then calculated based on the first valid survey year in which young adults were 20 years of age or older. The continuous BMI measurements was categorized into the reference criteria for adults outlined by the Center for Disease Control [i.e. underweight (BMI < 18.5 kg/m²), normal weight (BMI = 18.5-24.9 kg/m²), overweight (BMI = 25.0-29.9 kg/m²), and obese (BMI >=30.0 kg/m²)].

**Independent Variables**

*Family Structure Transitions.* The cumulative family structure transition variable was created based on the formation or dissolution of the mother’s romantic unions (e.g., single to marriage; marriage to separation) experienced by the child from birth to age 18. The variable is a count that increases by 1 for each change in family structure during this time. For example, a child born into a single mother household (0 transitions) who then resided with her newly married mother and stepfather (1 transition), followed by living again with her single mother as a result of a separation (1 transition) and later as a result of a divorce (1 transition), would receive a score of 3 (marriage, separation, divorce). Marital separations to divorce are counted as a transition as not all couples who separate end their relationship in divorce. Thus, not counting this transition underestimates family instability and could bias results. The scale of the cumulative family structure transition variable ranged from 0 to 13 but was top coded at 4 due to the small number of individuals experiencing more than 4 transitions (approximately 10% of children).

*Sex.* Young adults’ sex was reported by their mothers at time of birth (1=female; 0 = male).
Covariates

A set of child and mother characteristics were incorporated as covariates in the models to reflect selection factors that could influence both mother’s union instability as well as overweight status in young adulthood. Child characteristics included the child’s age at BMI assessment (in years), race/ethnicity [White (reference), Hispanic, Black], depressive symptoms [1994 Center for Epidemiological Studies Depression Scale (CES-D); 1 = ≥75th percentile; 0 = < 75th percentile], and positive self-esteem [1994 Rosenberg Self-esteem Scale (RSE)]. Mother characteristics included the age at child’s birth (in years), highest education completed at age 23 (years of schooling), employed at child’s birth (1 = employed; 0 = not employed), income below the Federal Poverty Line (FPL) at child’s birth (1 = below FPL; 0 = above FPL), and BMI at age 20.

Although not considered a covariate, mother’s relationship status at the child’s birth was included in the data set as two mutually exclusive variables (married/cohabiting union; single parent household). Separate analyses were conducted for each group because children born to single mothers are more likely to experience greater family structure transitions compared to children born to married or cohabiting mothers. Because only 7% of the mothers reported living in a cohabiting union at the time of the child’s birth, young adults born in a cohabiting union were grouped with young adults born in a married union. Thus, the “married mothers” group consist mostly if women who were married at the time of the birth of the child and some women who were in a cohabiting union at the time of the birth.

Analytic Plan

Descriptive analyses and logistic regression models were performed using STATA 11.1 statistical software (StataCorp LP, College Station, Texas). Weighted descriptive analyses were conducted on non-imputed data, and bivariate associations between gender and each covariate
were investigated. Logistic regression models were conducted on imputed data to predict BMI clinical cutoffs for categorizing adults as overweight or obese. To examine whether the overweight status of female and male young adults differs depending on the family instability they experienced during childhood, a term interacting family structure transitions and sex was included in all the models, along with covariates. All multivariate models employed five mirror data sets imputed with STATA’s ICE command and used in conjunction with the MICOMBINE and the LOGISTIC commands. The standard errors were adjusted using the Huber-White sandwich estimator to account for the lack of independence of observations based on siblings born to the same mother.29,30

RESULTS

The average BMI in our sample during young adulthood was 25 (Table 1). Among young adults who were born to married mothers, young adult females (compared to young adult males) were more likely to have a healthy BMI (59% versus 51%). Young adult males, regardless of their mother’s relationship status at birth, were more likely to be overweight compared to their female peers.

On average, young adults experienced approximately 1.5 transitions during childhood, with 46% reporting zero transitions and 47% reporting two or more. Young adults born to married mothers experienced fewer transitions than young adults born to single mothers (Table 2). Among children born to married mothers, overweight females (BMI ≥ 25) experienced more family structure transitions than overweight males.

Multivariate Regression Models

Table 3 presents the assessment of whether overweight status (i.e. BMI ≥ 25) for female and male young adults differ depending on the family instability they experienced during
childhood, net of all controls. In Panel A, findings indicate that for young adults born to married mothers, cumulative family structure transitions during childhood increased the odds for females (compared to males) to be overweight (i.e. BMI ≥ 25) in young adulthood. Specifically, females who experienced multiple family structure transitions during childhood were 14% more likely to be overweight (BMI 25 – 29.9) in young adulthood. Further, cumulative family structure transitions during childhood increased the odds for females to be overweight and obese (BMI ≥ 25) by 19%. As illustrated in Figure 1, females’ probability of being overweight (BMI ≥ 25) increased as the number of transitions increased, while males’ probability of being overweight stayed fairly constant as the number of transitions increased. In Panel B, findings indicate that for young adults born into single parent households, cumulative family structure transitions during childhood do not significantly increase the odds for females nor males to be overweight in young adulthood.

**Sensitivity Results**

Three additional sets of multivariate models were conducted to test the robustness of the main results. The first two sets of models changed the analytic sample by (1) conducting analyses on non-imputed data and (2) excluding the 7% of women who were cohabiting at the time of the birth from the married mother sample. The third set of models used a modified version of family structure instability that omitted marital separations from the count. The results from the three sets of sensitivity analyses uphold to our main findings (available upon request).

**DISCUSSION**

The goal of this study was to investigate whether the stress associated with family instability during childhood has a negative accumulating impact on young adult weight, placing females at risk for being overweight in young adulthood. We assessed whether female and male
young adults differ in overweight status depending on the family instability they experienced during childhood. The results give partial support for our hypothesis suggesting that there is not an effect for males, but there is an effect for the majority of the females. Specifically, the results indicate that cumulative family structure transitions place females born into married unions at risk of being overweight as young adults. Surprisingly, family instability does not increase the probability of being overweight for females born to single mothers.

Our results indicate that young adults born to single mothers experienced a greater amount of family instability throughout childhood compared to their peers born to married mothers, which maps onto previous research that has focused on family instability during early childhood. In addition, a large proportion of young adults born to single mothers are overweight compared to their peers born into married unions. Although there are differences between young adults born to single mothers compared to young adults born to married mothers, there is limited variability in both the dependent variable (i.e. overweight status) and the independent variable (i.e. family instability) among young adults born to single mothers. The limited variability in the main constructs could be related to the lack of significant findings in the multivariate results. For example, the proportion of females who were overweight (BMI ≥ 25) and the number of transitions they experienced was universally high and did not differ from their male counterparts, who are also likely to be overweight and experience a large number of transitions.

The data (CNLSY and NLSY79) are well suited to establish sex differences in the association between family instability and overweight status among young adults born to married unions; yet, the data lacks information on possible behavioral mechanisms that could provide insight into the processes by which family structure transitions matter for females born into
married unions. For example, the sex differences observed among young adults born to married mothers may be related to the allocation of child and household responsibilities. Research on the allocation of household responsibilities indicates that girls compared to boys spend more time performing housework and caregiving responsibilities.\textsuperscript{31,32} Household responsibilities may further be reallocated when children transition from married, two-parent family structures to single-parent households as a decline in physical activity and an increase in sedentary behaviors have been observed.\textsuperscript{33} There is also a lack of supervision that occurs during periods of family disruption.\textsuperscript{34} The decrease in supervision, along with the increase in sedentary behaviors, provides opportunities for children and adolescents to turn to comfort foods (i.e. foods high in sugar and fat) as a way to cope with the feelings of ambiguity and feelings of parental disconnect during periods of family instability. The overconsumption of comfort foods under stressful situations contributes to a stress-induced food reward dependence,\textsuperscript{35} which is a behavioral response that has been observed more often among females in the past.\textsuperscript{36,37} Thus, the behavioral changes that occur during the periods of family instability could be contributing to females born to married mothers to be at risk of being overweight in young adulthood. Data on children’s dietary intake, physical activity, and sedentary behaviors, along with measures of parents’ supervision and monitoring behaviors, could provide insight into the behavioral mechanisms that contribute to the sex differences in the association between family instability and overweight status in young adulthood.

To gain a better understanding how family instability influences overweight status differently among female and males, future research needs to consider broader measures of weight, such as weight circumference. Previous research has indicated that the association between stress and weight gain is stronger when central adiposity (i.e. waist circumference) is
measured rather than BMI, as the stress-induced food reward dependence cycle mentioned above contributes to an increase in central abdominal fat. The use of BMI (compared to the use of waist circumference) may underestimate how family instability influences weight differently for females and males.

This study contributes to the emerging literature on obesity in young adulthood by focusing on family instability during childhood as a trigger for poor weight status in young adulthood. A strength of the current study was the ability to capture young adults’ experiences with family instability from birth to age 18, as there are limited data sets that have the ability to build a comprehensive picture of family instability during the entire life-stage of childhood and adolescence. However, our measure of family instability is conservative. For instance, the majority of the young adults in the current study were born in the mid-1980s, a time period in which cohabitation was relatively more common than the 1960s; however, not as common as it is two decades later. In our sample, the number of mothers who were cohabiting at the time of birth were few, preventing us from examining the effect of family instability on young adult BMI based on cohabitation at birth. Thus, the measure of family structure instability is conservative and the effects may be more pronounced if the study is replicated in 20 years based on children born between 2000-2010 to cohabiting mothers.

Although findings indicate that family instability during childhood only affects overweight status of females born into married/cohabiting unions, we also found that a great proportion of young adults born to single mothers were overweight themselves. Thus, the current study underscores the importance of practitioners working with children and their families to learn about all the possible stressors in the family environment in order to lower the risk of children being overweight as young adults. Intervention programs aimed at reducing obesity
during childhood need to take into account that any change in the family structure changes family dynamics and increases stress. Increasing the support systems for children, especially females, during times of family instability may help to reduce children’s risk of being overweight as young adults.
References

3. Manning WD, Jones A. Cohabitation and marital dissolution. Paper presented at: Population Association of America; March 30-April 1, 2006; Los Angeles, CA.
Table 1. Weighted Descriptive Characteristics for the Full Analytic Sample and by Maternal Relationship Status at the Child’s Birth, Stratified by Child’s Sex

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Full Analytic Sample</th>
<th>Married/Cohabiting Union</th>
<th>Single Parent Household</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>BMI in Young Adulthood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous, mean (SD)</td>
<td>25.39 (5.33)</td>
<td>24.76 (5.74)**</td>
<td>25.50 (5.00)</td>
</tr>
<tr>
<td>Obese, No. (%)</td>
<td>423 (17%)</td>
<td>157 (16%)</td>
<td>158 (16%)</td>
</tr>
<tr>
<td>Overweight, No. (%)</td>
<td>640 (26%)</td>
<td>186 (19%)**</td>
<td>311 (31%)</td>
</tr>
<tr>
<td>Healthy BMI, No. (%)</td>
<td>1318 (53%)</td>
<td>570 (59%)**</td>
<td>516 (51%)</td>
</tr>
<tr>
<td>Underweight, No. (%)</td>
<td>85 (3%)</td>
<td>53 (6%)**</td>
<td>18 (2%)</td>
</tr>
<tr>
<td>Family Structure Transitions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative, mean (SD)</td>
<td>1.47 (1.57)</td>
<td>1.38 (1.60)</td>
<td>1.27 (1.55)</td>
</tr>
<tr>
<td>0, No. (%)</td>
<td>1141 (46%)</td>
<td>503 (52%)</td>
<td>545 (54%)</td>
</tr>
<tr>
<td>1, No. (%)</td>
<td>206 (8%)</td>
<td>41 (4%)*</td>
<td>63 (6%)</td>
</tr>
<tr>
<td>2, No. (%)</td>
<td>362 (15%)</td>
<td>138 (14%)</td>
<td>119 (12%)</td>
</tr>
<tr>
<td>3, No. (%)</td>
<td>334 (14%)</td>
<td>124 (13%)</td>
<td>132 (13%)</td>
</tr>
<tr>
<td>4+, No. (%)</td>
<td>425 (18%)</td>
<td>160 (17%)</td>
<td>143 (14%)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female, No. (%)</td>
<td>1200 (49%)</td>
<td>996 (100%)</td>
<td>---</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at BMI assessment</td>
<td>21.29 (1.37)</td>
<td>21.25 (1.33)</td>
<td>21.25 (1.32)</td>
</tr>
<tr>
<td>Race/ethnicity, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1730 (70%)</td>
<td>786 (81%)</td>
<td>797 (80%)</td>
</tr>
<tr>
<td>Black</td>
<td>515 (21%)</td>
<td>116 (12%)</td>
<td>99 (10%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>222 (9%)</td>
<td>64 (7%)**</td>
<td>106 (11%)</td>
</tr>
<tr>
<td>Depression, No. (%)</td>
<td>661 (27%)</td>
<td>282 (30%)***</td>
<td>201 (20%)</td>
</tr>
<tr>
<td>Positive Self-esteem, mean (SD)</td>
<td>1.81 (0.40)</td>
<td>1.82 (0.41)*</td>
<td>1.78 (0.38)</td>
</tr>
<tr>
<td>Mother Characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at child’s birth, mean (SD),</td>
<td>23.05 (3.90)</td>
<td>23.44 (3.70)*</td>
<td>23.81 (3.64)</td>
</tr>
<tr>
<td>Education, mean (SD), y</td>
<td>12.08 (2.00)</td>
<td>12.35 (1.84)</td>
<td>12.21 (2.09)</td>
</tr>
<tr>
<td>Employed at child’s birth</td>
<td>896 (40%)</td>
<td>383 (42%)</td>
<td>416 (44%)</td>
</tr>
<tr>
<td>Income below FPL at child’s birth</td>
<td>514 (25%)</td>
<td>142 (17%)</td>
<td>139 (16%)</td>
</tr>
<tr>
<td>BMI at age 20, mean (SD)</td>
<td>22.58 (3.79)</td>
<td>22.29 (3.70)</td>
<td>22.42 (3.51)</td>
</tr>
</tbody>
</table>

Unweighted n | 5139 | 1720 | 1810 | 800 | 809

Abbreviation: BMI, body mass index; FPL, federal poverty line.

Descriptives based on non-imputed data. Significant differences between female and males: ***p < .001; **p < .01; *p < .05.
Table 2. Average Number of Transitions and (Standard Deviations) by Relationship Status at Birth Stratified by BMI Category and Sex

<table>
<thead>
<tr>
<th></th>
<th>Panel A: Married/Cohabiting Union</th>
<th></th>
<th>Panel B: Single Parent Household</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average Number of Transitions = 1.32 (1.57)</td>
<td>Average Number of Transitions = 2.04 (1.45)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Normal BMI (BMI 18.5 – 24.9)</td>
<td>Overweight (BMI 25 – 29.9)</td>
<td>Obese (BMI ≥30)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.37 (1.56)</td>
<td>1.51 (1.60)</td>
<td>1.74 (1.63)&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Male</td>
<td>1.44 (1.58)</td>
<td>1.35 (1.57)</td>
<td>1.29 (1.48)</td>
</tr>
</tbody>
</table>

Descriptives based on non-imputed, weighted data.

<sup>a</sup> Significantly different from males at p < .05.

<sup>b</sup> Significantly different from males at p < .01.

<sup>c</sup> Significantly different from married/cohabiting union at p < .001.
Table 3. Adjusted Odds Ratios (95% CI) Predicting the Association between Family Structure Transitions and Overweight based on Relationship Status at Birth\(^a\)

<table>
<thead>
<tr>
<th>Panel A: Married/Cohabiting Union</th>
<th>Obese vs. Overweight (n = 1565)</th>
<th>Overweight vs. Healthy BMI (n = 2803)</th>
<th>Obese/Overweight vs. Healthy BMI (n = 3411)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Structure Transitions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>0.97 (0.88, 1.07)</td>
<td>0.95 (0.89, 1.29)</td>
<td>0.94 (0.87, 1.01)</td>
</tr>
<tr>
<td>Child Gender</td>
<td>1.08 (0.79, 1.46)</td>
<td>0.50 (0.40, 0.63)**</td>
<td>0.52 (0.43, 0.64)***</td>
</tr>
<tr>
<td>Transitions x Gender</td>
<td>1.12 (0.97, 1.29)</td>
<td>1.14 (1.02, 1.26)*</td>
<td>1.19 (1.08, 1.30)***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: Single Parent Household</th>
<th>Obese vs. Overweight (n = 838)</th>
<th>Overweight vs. Healthy BMI (n = 1210)</th>
<th>Obese/Overweight vs. Healthy BMI (n = 1566)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Structure Transitions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>1.06 (0.92, 1.22)</td>
<td>1.01 (0.90, 1.12)</td>
<td>1.31 (0.93, 1.13)</td>
</tr>
<tr>
<td>Child Gender</td>
<td>1.96 (1.25, 3.06)**</td>
<td>0.86 (0.59, 1.26)</td>
<td>1.11 (0.80, 1.54)</td>
</tr>
<tr>
<td>Transitions x Gender</td>
<td>0.89 (0.74, 1.08)</td>
<td>0.99 (0.84, 1.16)</td>
<td>0.95 (0.83, 1.09)</td>
</tr>
</tbody>
</table>

\(^a\) Models were conducted on imputed data and child and mother covariates listed in Table 1 were included in all models.

\(***p < .001; ** p < .01; *p < .05.\)
Figure 1. Probability of Overweight (BMI >= 25) Based on Cumulative Family Structure Transitions According to Sex

Mothers were Married/Cohabiting at the Time of the Child's Birth
The **Population Studies Center** (PSC) at the University of Michigan is one of the oldest population centers in the United States. Established in 1961 with a grant from the Ford Foundation, the Center has a rich history as the main workplace for an interdisciplinary community of scholars in the field of population studies.

Currently PSC is one of five centers within the University of Michigan’s Institute for Social Research. The Center receives core funding from both the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R24) and the National Institute on Aging (P30).

PSC Research Reports are **prepublication working papers** that report on current demographic research conducted by PSC-affiliated researchers. These papers are written for timely dissemination and are often later submitted for publication in scholarly journals.

The **PSC Research Report Series** was initiated in 1981.

**Copyrights for all Reports are held by the authors.** Readers may quote from this work (except as limited by authors) if they properly acknowledge the authors and the PSC Series and do not alter the original work.

---

Population Studies Center
University of Michigan
Institute for Social Research
PO Box 1248, Ann Arbor, MI 48106-1248 USA
www.psc.isr.umich.edu