

**Fast Food Families: Childhood Obesity Differences in Single-Father and
Single-Mother Families**

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Abstract

Children who live in two-parent families are less likely to be obese than children who live in single-parent families. Most of the research on the relationship between family structure and childhood obesity is limited in its conceptualization of family structure, either ignoring single-father families or bunching them in the same category as single-mother families. Although single-mother families are the most common type of one-parent families, the number of single-father families has increased dramatically over the past three decades and thus warrant study. Compared to single mothers, single fathers may provide more economic resources, but lower parenting quality; since both factors have been shown to play important roles in preventing childhood obesity, the net effect of living with a single father compared to a single mother is unclear. In this study, we use data from the Early Childhood Longitudinal Study-Kindergarten Class (ECLS-K) to answer three related questions: (1) Is there a significant difference in the prevalence of obesity among school-age (Kindergarten through 8th grade) children living in single-mother families and single-father families? (2) Do single mothers and single fathers provide different levels of resources (i.e., income, time) and parenting quality? (3) Do differences in parental resources and parenting quality explain differences in childhood obesity between these two family types? Results from this study will make an important contribution to the literature on the impact of fathering on children's well-being, and to the role that parents and the family environment play in childhood obesity.

Introduction

The high incidence of childhood obesity in the U.S. is a serious public health concern (Ogden et al., 2010). Although the problem of childhood obesity is multifaceted, the family plays a major role in a child's health (Gruber & Haldeman 2009; Huffman, Kanikireddy, & Patel 2010). One key characteristic of the family that is associated with childhood obesity is family structure. Research finds that children who live in two-parent families are less likely to be obese than children who live in single-mother families (Chen & Escarce 2010; Gabel & Lutz 2000; Gibson et al. 2007; Huffman et al., 2010; Tremblay & Willms 2003). Differences are generally attributed to the lower level of financial resources and parental time availability in single-mother families. Parents' financial resources and time influence a child's weight via the food parents provide and the activities they can afford, as well as their ability to monitor and regulate the child's eating and activity patterns.

Although informative, prior studies linking family structure and child obesity are limited in their conceptualization of family structure. Children living in single-father families are either collapsed into a broad category of single-parent families¹, or, more commonly, excluded from analyses citing small sample sizes. As a result, virtually nothing is known about the level of obesity among children residing in this family structure. This is problematic given that single-father families are one of the fastest growing family types in the U.S (U.S. Census Bureau 2010). Furthermore, research on

¹ In our study, we define single-parent families as families with one biological parent residing in the home. Families comprised of one biological parent and a step-parent or cohabiting partner are included in our study, but categorized separately from single-parent families. We also include two-biological parent families (married or cohabiting) in our study, but the main focus is the comparison between children living in single-mother and single-father families.

gender and families suggests that single fathers are unique from single mothers in ways that likely influence a child's risk of obesity. For example, compared to single mothers, single fathers may provide more for their children in terms of economic resources, but less in terms of quality parenting; both of these factors have been shown to play important roles in preventing childhood obesity.

In this study, we aim to fill this gap by addressing the following set of questions:

1. Is there a significant difference in the prevalence of obesity among children living in single-mother families and single-father families?
2. Do single mothers and single fathers have different levels of parental resources (income, time) and parenting skills?
3. Do differences in parental resources and parenting quality explain the difference in the prevalence of childhood obesity between single-mother and single-father families?

Background

Childhood obesity is one of the most prominent public health concerns in the U.S. The level of childhood obesity is currently at an all time high, with approximately 17 percent of children between the ages of 2 and 19 classified as obese, and an additional 17 percent classified as "at risk" of being obese (Ogden et al. 2010). Childhood obesity is a serious social problem because it is related to multiple negative outcomes, such as lower academic success (e.g., Clark, Slate, & Viglietti 2009), lower future economic success (e.g. Ball et al. 2004; Merten, Wickrama, & Williams 2008), and a higher likelihood of chronic disease, including obesity, and depression later in life (Merten et al. 2008).

Two major “modifiable” factors that impact a child’s likelihood of being obese are the amount of food he/she eats and the amount of exercise he/she does (reviewed in Goran, Reynolds, & Lindquist 1999). Both are influenced by a number of factors, including the child’s parent(s) and family environment (Gruber & Haldeman 2009; Huffman, Kanikireddy, & Patel 2010), which are the focus of our study. Parents influence children’s weight indirectly by the food they purchase and provide for their children, and through the physical activities they encourage/enroll their children in. Parents may also influence their children’s weight, perhaps more broadly, through their parenting quality and beliefs concerning proper nutrition (Gable & Lutz 2000; McConley et al. 2010). For instance, by requiring children to partake in regular family meals, parents are able to better monitor, supervise, and control their children’s diets and activities, leading to better health outcomes (Sen 2006).

Family Structure and Childhood Obesity

Research finds that children from two-parent families are less likely to be obese than children who live in single-mother families (Chen & Escarce 2010; Gabel & Lutz 2000; Gibson et al. 2007; Huffman et al., 2010; Tremblay & Willms 2003). Most researchers agree that family structure is a proxy for a constellation of factors that affect children’s health and well-being, mainly parental time availability, parental support and financial resources².

² Of course, there are additional differences between one-parent and two-parent families that may contribute to differences in childhood obesity. For instance, compared to children living with two parents, children living with a single parent may have less opportunity for outdoor recreation and exercise because they are more likely to live in dangerous neighborhoods (French, Story, & Jeffrey 2001) and to attend schools with non-existent physical education programs. Both of these differences are likely to lead to less physical activity, overall, and thus higher levels of obesity, all else constant. Here we are reviewing the *major* differences.

Single mothers have significantly less time and money than two-parent families (McLanahan & Sandefur 1994), and time and money are necessary to buy and prepare healthy home-cooked meals (reviewed in Gable & Lutz 2000), and to play with children or facilitate participation in organized physical activities. Indeed, studies show that, compared with children from two-parent households, children living in female-headed households have less healthy diets (Bowman & Harris 2003; Huffman et al., 2010; Ziol-Guest 2009) and spend more time watching television/videotapes and less time participating in sports (Trembly & Willms 2003). These differences are important to studies on obesity, because television viewing is positively associated with children's weight and risk of obesity (Bowman & Harris 2003; Trembly & Willms 2003), and physical activity is negatively associated with risk of obesity (Goran et al., 1999).

Another factor that varies by family structure and may explain differences in childhood obesity is parenting quality. Single mothers, on average, experience more stress and economic pressures, which may lead to lower parenting quality (Thomson, Hanson, & McLanahan 1994). McConley et al. (2011) find that single mothers do indeed report lower levels of parenting quality³ compared to married parents, which, in turn, is related to lower activity levels, less healthy diet, and more sedentary behavior among their children.

Single-Father Families and Children's Well-Being

Previous research on the relationship between family structure and childhood obesity has not focused on single-father families, typically citing the small number of such families. Data from 2002 indicate, however, that about 5 percent of children live

³ McConley et al. (2011) define parenting quality as the amount of cohesion and nurturance within the family, and focus on "the extent of encouragement and guidance that children receive from a mother figure" (p.347).

with a single father, up from 1 percent in 1970 (U.S. Census Bureau, 2004). The rapid growth of single fathers has prompted researchers and policymakers to begin asking questions about the consequences for the children growing up in such families (Brown 2010; Eggebeen, Snyder, & Manning 2006).

A small set of studies has examined how living with a single father impacts adolescents' well-being. Some of these studies find no substantive differences between teens living with a single father versus a single mother with respect to teen births (McLanahan & Sandefur 1994), problem behavior (Downey, Ainsworth-Darnell, & Dufur, 1998), educational performance (Downey 1994), or test scores (Mulkey, Crain, & Harrington 1992). Others find that adolescents living with a single father are more likely to use drugs (Hoffman & Johnson 1998), to have problems in school (Harris, Cavanagh, & Elder 2002), to have low GPAs (Heard 2007), to be involved in delinquent behavior (Eitle 2005), and to have more delinquent friends (Turchi & Noonan 2011).

Only one study that we are aware of explores the relationship between living with a single-father and children's health status. Bramlett and Blumberg (2007) find that children in single-father families have *better* overall physical health compared to children living with a single mother or children living with two biological parents. The authors are unable to determine whether the association is due to selection (i.e., healthier children are more likely to live with single-father) or causal in nature (i.e., solo fathers have a positive effect on children's health) because their data are cross-sectional.

Differences Between Single Fathers and Single Mothers

In this section, we summarize empirical studies that have compared single fathers and single mothers on the three key parental characteristics hypothesized to impact childhood obesity: income, time, and parenting quality.

Income. Research shows that single fathers earn substantially more income and are less likely to be poor compared to single mothers (Casper & Bianchi 2001; McLanahan & Sandefur 1994). Socio-economic status is negatively associated with childhood obesity, and so we might expect the prevalence of childhood obesity to be lower in single-father families compared to single-mother families.

Empirical evidence suggests, perhaps surprisingly, that single fathers' higher income does not translate into healthier diets for their children. Ziol-Guest, DeLeire, and Kalil (2006) find that single fathers, compared to single mothers, buy *fewer* grains, vegetables, fruits, and meat and beans (i.e., healthy foods) and spend *more* money on food away from home (i.e., unhealthy foods). In corroboration with this, Fan et al. (2010) show that households headed by single men (not necessarily fathers) spend a larger portion of their food budget on fast food and alcohol; households headed by single women allocate their food budget in a more balanced manner⁴. The authors speculate that the gender differences in food expenditures are due to gender role socialization, whereby men are less likely than women to prepare nutritious meals at home, and only cook "special occasion meals" (i.e., cookouts, barbeques, etc.).

⁴ Somewhat contradictory, Stewart and Menning (2009) find that children living in single-father families are significantly less likely to eat fruits and vegetables compared to children living in two-biological married parent families, but did *not* find poorer eating habits of children in single-father families compared to single-mother families.

Single fathers' higher income also may not translate into better access to health care. Children living in single-father households are more likely than those in homes headed by a single mother to lack health insurance (Brown 2010; Leininger & Ziol-Guest 2007). Again, these findings are puzzling, given that single-mother families are significantly more impoverished than single-father families. Researchers speculate that because most family support programs target single mothers, single fathers may be unaware of resources, such as free health insurance (Brown 2010). Additionally, Leininger and Ziol-Guest (2007) suggest that fathers may simply be more willing than mothers to take risks, resulting in lower levels of health insurance for their children.

Time. Current research does not provide a clear picture as to whether there are differences between single fathers and single mothers with respect to time availability. Single mothers may have more time available for their children because they are less likely to be employed in the labor market and work fewer hours when employed, compared to single fathers (Meyer & Garasky 2003). But it is unclear whether fathers and mothers in single-parent households translate the available time they do have in the same way. Because of different expectations of what it means to be a good father versus a good mother, single fathers may be less likely to spend free time playing with their child or helping him/her play a sport or engage in other healthy activities.

It is important to recognize that in single-parent families the level of non-residential parental involvement will also play a role in children's health. For example, Menning and Stewart (2008) find that the level of involvement from non-residential fathers plays a significant role in the amount of fruits and vegetables eaten by children living with a single mother. This relationship differs based on the gender of the child and

the fathers' education levels, but overall, children with a more involved non-residential have a higher risk of being obese and a lower risk of being under weight compared to children with non-involved fathers. In a follow-up piece, Stewart and Menning (2009) find that differing levels of non-residential father involvement impacts the children's eating behaviors, which in turn significantly impacts obesity levels.

Finally, family composition may differ significantly between single-father families and single-mother families and this may affect the amount of time the residential parent has to spend with his/her child(ren). As the number of children in the home increases, the amount of time the residential parent has to spend with each child will decrease. If single fathers are less likely to have multiple children living with them, they will likely have more time available to spend with their child compared to single mothers.

Parenting Quality. Clinical research finds that children who report having a closer and more supportive relationship with their parents have lower BMI levels (Crossman, Sullivan, & Benin 2006). Differences in the way that mothers and fathers are socialized to parent their children (e.g. monitoring children's nutrition, exercise and health) may play a significant role in the types of relationships that they have with their children: women are socialized to perform more childcare and spend more time interacting with their children than are men, and this may in turn lead to obesity differences between children in single-mother and single-father families. Additionally, a review of parenting in lesbian, gay, and heterosexual families highlights the benefits for children living in two-mother families compared to other family forms (Biblarz & Stacy 2010). This research finds that lesbian co-parents (biological or not) score higher on parenting quality compared to heterosexual co-parenting couples, highlighting the advantage of having

“two mothers” in the home. Prior research that examines gender differences in parenting skills among single parents is limited, but generally suggests minor differences in favor of mothers (Amato 2000; Downey 1994; Dufur et al. 2010; Turchi & Noonan 2011).

Current Investigation

In the current study, we extend prior research on family structure and childhood obesity by focusing on a comparison of children living in single-father and single-mother families. We hypothesize that, compared to single mothers, single fathers will provide more for their children in terms of economic resources, but less in terms of quality parenting, including values for healthy lifestyles. Differences in time availability between single mothers and single fathers are unclear. Since economic resources, time availability, and parenting quality have all been shown to play important roles in preventing childhood obesity, the net effect of living with a single father compared to a single mother is unclear.

Data and Sample

The ECLS-K data are a nationally representative survey of both public and private schools in the United States. The study follows a class of kindergarteners through their 8th grade year (1998-2007). A total of 21,260 kindergartners throughout the nation participated. Data were collected from the students, parents of the students, and teachers of the students. These data provide extensive information about children’s family environment, their health, and health behaviors. The longitudinal design and large number of children living in single-father families also make the data ideal for our research.

We use six waves of data from the ECLS-K (spring and fall of Kindergarten, and spring of 1st, 3rd, 5th, and 8th grade). The analytic sample includes those children with non-missing BMI, sex, age, and family structure data. Multiple imputation will be used to help correct for missing data on the control variables (Rubin 1987). The unit of analysis is the child-year, with each child contributing a maximum of six child-year records.

Measures

The dependent variable is *child obesity status*, based on the child's Body Mass Index (BMI), sex, and age. Children with an age- and sex-specific BMI exceeding the 95th percentile are classified as obese. The primary independent variable is *family structure*, measured with a series of dummy variables. For the purposes of our study, the focus is on differences between children living in (1) single-father and (2) single-mother families. In these families, the residential parent is the biological parent, and he/she is not living with a romantic partner. We also categorize five different types of two-parent families: (3) married biological, (4) stepfather/biological mother, (5) stepmother/biological father, (6) biological mother cohabiting with romantic partner, and (7) biological father cohabiting with romantic partner. A final category, (8) other, is also included to capture families in which there are no biological parents present (e.g. grandparents, foster, adoptive, etc.).

Child variables. We include variables measuring the *child's participation in structured physical activities* and *level of physical exercise*, the *child's time spent in sedentary activities* (i.e., computer/video games and watching television/DVDs), and the *child's diet* (i.e., frequency of eating healthy/unhealthy foods, frequency of eating breakfast). We also measure three important demographic control variables: *child's age*,

gender, and *race/ethnicity*. Finally, the amount of time the child spends with the non-residential parent is also included.

Parent variables. The three main parent variables included in our study are financial resources, time availability for the child, and parenting quality. Each of these is measured with multiple indicators. *Financial resources* are defined as any earned income, income received for child support, or cash payments from welfare. *Time availability* is measured with variables indicating parental hours worked in the labor market. We also measure how much time the residential parent spends playing with his/her child.

Parenting quality is measured with a set of three measures tapping parent-child interaction, rule setting, and monitoring/family cohesion. Direct parent-child interaction is measured with data on the amount of time parents report doing different activities with the child in a typical week (e.g. reading books together, playing sports, etc.). Rule setting is measured with an indicator of whether or not parents enforce a limit on the amount of television watched per day. We measure parental monitoring/family cohesion with indicators of how often the family eats breakfast and dinner together, which is negatively correlated with child obesity levels (Crossman et al. 2006; Gable, Chang, & Krull 2007).

Several parental controls are also included in our analysis, including *parent's health*, *age*, *race/ethnicity*, and *marital status* (e.g., divorced, never-married, widowed). Single parents' marital status is an important control because it is likely that there are significant differences between single fathers' marital status and single mothers' marital status. Furthermore, the way in which the parent *became* a single parent may be related to a number of the key variables in our models. Riseman (1986), for instance, finds that fathers who fought to gain custody report stronger and closer relationships with their

young children, compared to fathers who were passive receptors (i.e., widowed or abandoned) or negotiated custody.

Household variables. We also include a set of household controls, measuring the parent's perceived *safety of the family's neighborhood, census geographic region* (Northeast, Midwest, South, and West) and *urbanity* (1= urban, 0= not urban). The number of siblings in the home and presence of other non-romantically involved adults (i.e. grandparent, aunt) in the home are also controlled because they are expected to impact the amount of time a parent has available for the child.

Models

We answer our first two research questions by presenting weighted summary statistics of childhood obesity and parental resources by family type. The data presented in this first table will be comprised of single-year cross-sections pooled across the six years to maximize sample size. We will use simple statistical tests (i.e., chi-square tests and t-tests) to assess whether the proportions/means are statistically different by family type.

In order to address our third research question (i.e., Do differences in parental resources and parenting quality explain the difference in the prevalence of childhood obesity between single-mother and single-father families?), we will estimate structural equation models (SEM). These models allow us to use observed measures for latent constructs, such as parent-child closeness and support. Additionally, SEM techniques allow us to measure the unique (and combined) impact of our observed variables in the model *simultaneously*, reducing error in our measurement parameters.

In addition to using SEM, our analyses will control for unobserved fixed child-level factors (a virtue of the longitudinal nature of the data). For example, it is possible that children who live with a single father differ in unobservable ways from those who live with a single mother. Fathers might be less likely to seek custody of children in poor health, or courts might be reluctant to grant custody to fathers of children in poor health (Garasky and Meyer 1995). If so, living with a single father will appear to be causally linked to the likelihood of obesity, when it is at least partially due to selection processes. By using longitudinal data, we are able to follow the same children over time and observe how changes in family structure affect the likelihood of being obese, while controlling for unobserved fixed child-level variables.

In our SEM analyses, we measure family type in two different ways. In some models, we allow family type to have a cumulative influence on children's obesity (i.e., duration or years spent in various family structures), and in others we examine how *current* family structure is related to obesity status. In order to answer our research question, we estimate models predicting childhood obesity as a function of family structure and control variables. Next, we add parental resources and parenting quality measures to the model; this will allow us to determine whether differences in these measures mediate the link between family type and childhood obesity.

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