

ALTERED ACTIVITIES AND SHAME AMONG CHILDREN REPORTING FOOD  
INSECURITY IN RURAL OREGON

By

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CERTIFICATE OF APPROVAL

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## List of Abbreviations

AAP	American Academy of Pediatrics
BMI	Body Mass Index
TANF	Temporary Assistance for Needy Families
CEP	Community Eligibility Provision
CFS	Child Food Security
CHC	Childhood Hunger Coalition
ERS	Economic Research Service
GED	General Education Development (High School Equivalency Certificate)
HFSSM	Household Food Security Screening Module
IRB	Institutional Review Board
NHANES	National Health and Nutrition Examination Survey
NCO	Nutrition Council of Oregon
ODE	Oregon Department of Education
OHSU	Oregon Health & Science University
RIDGE	Research Innovation and Development Grants in Economics
SD	Standard Deviation
SNAP	Supplemental Nutrition Assistance Program
USDA	United States Department of Agriculture
WIC	Supplemental Nutrition Program for Women, Infants, and Children
YMCA	Young Men's Christian Association

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## **Abstract**

**Background:** Food insecurity refers to the limited or uncertain ability to acquire food in socially acceptable ways for all members of the household. Food insecurity can have detrimental effects for children including poor health, behavior, social, and mental health problems, and decreased academic performance. Several mechanisms have been suggested for how food insecurity may influence these outcomes, but little evidence exists to support a specific mechanism. The aim of our study was to gain better understanding of how children experience food insecurity at the personal level and determine if altered activities and shame may link food insecurity with its negative effects.

**Methods:** We recruited 20 children, between 9-15 years of age, from community settings in rural parts of Oregon. A parent of each child completed a demographic survey and an 18-question survey to assess the degree of household food security. Children completed a 9-question personal food security survey and participated in an in-depth, semi-structured interview. Interviews were recorded, transcribed verbatim, and analyzed using qualitative methods.

**Results:** Children reported food insecurity at the personal level and took responsibility for managing food resources within their home. Children described alterations in their daily activities, changes in behavior and social interactions,

and poor academic performance in response to food shortage. Shame of being food insecure and for using community resources was reported.

**Conclusion:** It is important to consider the social and psychological impact of food insecurity when developing interventions to meet children's emotional, developmental and physical needs.

# Chapter I: Introduction

## Problem and Significance

Household food insecurity refers to the limited or uncertain ability to acquire food in socially acceptable ways for all members of the household. It is a persistent problem in the United States and in 2014, it was estimated to impact nearly 9.4% of households with children.

Children are especially vulnerable to the effects of food insecurity and a number of negative consequences have been reported. Research has indicated that children living in food insecure households are at greater risk of poor physical, psychosocial, and educational outcomes. A direct mechanism to explain why these negative consequences occur in children has not been identified and there is almost no empirical data supporting a specific mechanism.

The lack of an established mechanism is in part due to food insecurity historically being measured at the household level, usually from the parental perspective. However, emerging research in food insecurity has shown that children are able to report their own experience of food insecurity. Since children's experiences differ from those reported by their parents, it is likely that parental reports lack adequate validity and may underestimate childhood food insecurity and its consequences.

Past research has indicated that parents generally attempt to shield children from the negative effects of food insecurity, but more recently, research

has shown that children are aware of food insecurity and take responsibility for it. Additionally, it has been reported that speaking with children directly is the best way to understand childhood experiences. For this reason it is essential to gain information about food insecurity from the child's perspective to better understand what children experience on a personal level.

For this research project, we carried out a qualitative analysis using individual semi-structured interviews with children who were food insecure and living in rural and semi-rural parts of Oregon. We aimed to measure children's awareness and experiences with food insecurity from their own perspective, to better understand the mechanisms linking food insecurity with its negative effects. This insight and understanding of children's own experiences with food insecurity will allow us to development appropriate and effective interventions aimed at meeting children's specific developmental needs.

### **Specific Aims and Hypothesis**

This project used food security assessment surveys, in-depth interview sessions, and qualitative analysis to:

1a) Describe patterns of food insecurity among households in rural Oregon.

*Hypothesis:* Rural households in Oregon will have some degree of marginal, low or very low food security.

1b) Quantify the awareness and experiences with food insecurity among children living in households that are food insecure.

*Hypothesis:* Children are aware of food insecurity in their household and take responsibility for it.

2) Determine if there is evidence of altered daily activities and feelings of shame resulting from childhood food insecurity.

*Hypothesis:* Children experience alterations in daily activities, such as changes in family meal patterns, child work/ leisure time activities, or family altercations, and feelings of shame or embarrassment due to food insecurity.

## Chapter II: Background

### Food Insecurity Defined

Household food insecurity is defined as the limited or uncertain ability to acquire sufficient quantity or quality of food in socially acceptable ways for all household members (Anderson, 1990). Most US households have consistent, dependable access to adequate foods at all times – they are food secure (Coleman-Jensen, 2014). However, a minority of American households experience food insecurity at times when food access is limited by lack of money or other resources. In 2014, 14% of American households, over 17 million people, were food insecure at some time during the year (Coleman-Jensen, 2014).

In 2006, the United States Department of Agriculture (USDA) established two levels of food insecurity with distinct definitions: low and very low food security. The levels of food insecurity differ by the extent and types of changes made to normal household food intake and eating patterns. Very low food security occurs in the household when “food intake of one or more members was reduced and eating patterns were disrupted” (Coleman-Jensen, 2013). Households classified as having low food security typically report reduced access to and quality of foods, while those classified as having very low food security report reduced food intake, in addition to reduced access to and quality of food. For this reason, very low food security was previously referred to as “hunger.” Of the 14% of US households with food insecurity in 2014, 8.4% were classified as

being of low food security, while 5.6% were classified as having very low food security, essentially unchanged from the previous estimate during the 2012-2013 period (Coleman-Jensen, 2014). In 2014, food insecurity at the child level was present in 9.4% of US households, with 8.3% classified as low food security and 1.1% with very low security (Coleman-Jensen, 2014).

### **Food Insecurity in Oregon**

From 2012 to 2014, the average estimate for household food insecurity in Oregon was 16.1%, with 6.3% being of very low food security (Coleman-Jensen, 2014). Despite a cumulative decline in US food insecurity, the prevalence of food insecurity in Oregon has increased from 11.9% (4.2 percentage points) from 2002-2004 and 13.6% (2.5 percentage points) from 2009-2011 (Coleman-Jensen, 2014).

Oregon is a large state known for its rural landscape, which may put Oregonians at an increased risk for food insecurity. The US Census Bureau defines and differentiates among urban and rural areas on the basis of population density. There are two types of urban areas: urbanized areas ( $\geq 50,000$  people,  $\geq 1,000$  people per square mile) and urban clusters (2,500 to 49,999 people,  $\geq 500$  people per square mile). Rural areas are defined as open countryside with population density less than 500 people per square mile and fewer than 2,500 people (Census Bureau, 2010). In 2010, the US Census Bureau reported 98.85% of the land area in the state of Oregon is considered rural. Additionally, it was found that greater than 720,000 people were living in rural parts of Oregon, or

18.97% of the state population. It has been reported that populations living in rural areas are at increased risk of food insecurity for a number of reasons, including a higher concentration of employment in low-wage industries, greater unemployment and underemployment, lower levels of education, less availability of work-support services, and less access to communication and transportation networks (USDA ERS, 2003). In 2014, food insecurity was more common in rural and urban areas than in suburban areas, and it was reported that the highest concentration of food insecurity, 23.6% of households, were living outside metropolitan areas (Coleman-Jensen, 2013).

### **Adverse Effects of Food Insecurity on Children's Health and Development**

Children are especially vulnerable to the effects of food insecurity due to the level of growth and development that occurs during childhood. Food insecurity during childhood has been strongly linked to several negative effects ranging from impaired health and development, poor diet quality and obesity, behavioral, social, and mental health problems, and decreased academic performance.

#### *Effects on Health and Development*

Adverse health and developmental outcomes have been observed among children who experience food insecurity. Weinreb et al. used comprehensive interview sessions and standardized tools to compare the physical health of children from food insecure and food secure households using maternal reports

of 35 chronic health conditions in the previous year. They described that mothers of school-aged children and pre-school aged children from households with very low food security report a significantly higher number of chronic illnesses per year compared to those from food secure households (3.4 vs 1.8,  $p=0.002$  and 2.8 vs 1.9,  $p=0.004$ , respectively), after controlling for environmental, child and maternal factors (Weinreb et al., 2002). In another study, Cook et al. asked 11,539 parents with children ages three or younger to answer questions regarding the health status of their child. They found that children from food insecure households were nearly two times more likely to have their health reported as “fair/poor” (adjusted odds ratio (AOR) = 1.90, 95% confidence interval (CI)= 1.66-2.18) compared to children without food insecurity, and had one-third higher odds of being hospitalized since birth (AOR= 1.31, 95% CI = 1.16-1.48) (Cook et al., 2004). This relationship was found to be dose-dependent, with a higher degree of food insecurity associated with poorer reported health status among children. These results were later confirmed in a second study (Cook et al., 2006). Furthermore, a recent study of 2,254 school-aged children (grades 5 through 10) in Greenland, found that children who experience food insecurity were more likely to report poor or fair self-rated health (1.60, 95% CI = 1.06-1.68,  $p<0.001$ ), medication use within the last month (1.79, 95% CI = 1.41-2.26,  $p<0.001$ ), and physical symptoms of illness, such as headache, stomach ache, and back ache, (1.34, 95% CI = 1.06-1.68,  $p=0.01$ ) more frequently than children who were food secure (Niclasen et al., 2013).

Food insecurity has been shown to impact child development as early as infancy and toddlerhood. Rose-Jacobs et al. examined the degree of developmental risk displayed by children four months to two years old in food insecure households using parental evaluations to assess a number of developmental markers, including expressive and receptive language, fine and gross motor skills, and behavior. Developmental risk was assessed using the Parents Evaluation of Developmental Status (PEDS), which includes 10 questions that meet the American Academy of Pediatrics standards for developmental screening and is largely unaffected by sociodemographic variables. They found that 18% of children from food-insecure households, compared to 13% of children from food-secure households, were reported to be at developmental risk ( $p=0.007$ ). Further analysis revealed children living in food insecure households were two thirds more likely to experience developmental risk (AOR = 1.76, 95% CI = 1.26-2.46,  $p= 0.001$ ) compared to children from food secure households. These results were independent of confounding factors including child variables such as age, gender, history of symptoms or low birth weight, and caregiver variables such as education, employment, and age (Rose-Jacobs et al., 2008).

### *Poor Diet Quality and Obesity*

When food resources are limited, not only is quantity of food for the household affected, but quality as well. In the US, it is easy to access a large quantity of poor quality foods lacking many essential nutrients at very little

financial cost. This, in turn, can result in poor nutrition and nutrient deficiencies that can impact children's health and development. A Canadian study assessed the relationship among household food insecurity and dietary intake in children and adolescents. Comparing food intake information from 24-hour dietary recalls, poorer dietary intakes were observed among adolescents from food insecure households compared to food secure households (Kirkpatrick and Tarasuk, 2008). A higher prevalence of nutrient inadequacy for protein, vitamin A, magnesium, phosphorus, and zinc was observed among adolescents with food insecurity ages 9 to 18 years old, and for folate among girls ages 14 to 18 years, compared to adolescents who were food secure. No significant differences were observed between children, under 9 years old, for dietary quality or nutrient inadequacies.

A study using data from 24-hour recalls to compare nutrient intakes of 1,300 preschoolers found, for most children, the average intake of many nutrients was well above 100% of the recommended daily allowance (RDA). When stratified by food security status, the mean intakes of vitamin E and zinc for children who were food insecure were at 71% and 63% of the RDA, respectively. However, when compared with children who were food secure, no significant differences between groups of preschoolers was seen for any of the studied nutrients (Rose et al., 1997). Another study used data from the Children's Sentinel Nutrition Assessment Program (C-SNAP) from 626 children and reported food insecure children were significantly more likely to have iron

deficiency anemia compared to food secure children (AOR = 2.4, 95% CI = 1.1-5.2), suggesting there may be an association between food insecurity and iron deficiency anemia in children (Skalicky et al., 2006).

Likewise, overconsumption of inexpensive processed type foods, can, over time, increase risk of obesity. Fram et al. (2015) surveyed school-aged children using 24-hour food recalls and observed that a higher level of food insecurity was associated with increased consumption of foods higher in total energy, fat, and sugar (Fram et al., 2015). It was also reported that children with the highest level of food insecurity consumed, on average, 118 calories, 8 grams of sugar, and 4 grams of fat more per day than children who were food secure. Children who were food insecure were also more likely to have a lower level of daily physical activity compared to food secure children ( $p=0.06$ ). These altered food choices and decreased physical activity may put children in food insecure households at a greater risk for abnormal weight gain and obesity.

There is evidence to support an association between food insecurity and obesity among children (Kaur et al., 2015; Dinour et al., 2007; Alaimo et al., 2001; Eisenmann et al., 2011; Garasky et al., 2009; Lohman et al., 2009; Gundersen et al., 2008; Casey et al., 2006; Dubois et al., 2006). However, conflicting data exists, with other studies showing no significant association (Gundersen et al., 2009; Jyoti et al., 2005; Alaimo et al., 2001; Skalicky et al., 2006; Rose et al., 2006).

A recent study evaluated data from the 2001-2010 National Health and Nutrition Examination Surveys (NHANES) to determine the relationship among personal food insecurity at the child level and obesity. Child food insecurity was measured using the USDA HFSSM with eight child-specific questions and five additional questions to measure personal food security. Obesity was measured using body mass index (BMI) and defined as a BMI greater than or equal to the 95th percentile on the age- and sex-specific Centers for Disease Control and Prevention growth charts. A significant association between personal food insecurity and obesity in children ages 6 to 11 years old (OR = 1.81, 95% CI = 1.33-1.248) was found, however there was no association among younger children ages 2 to 5 years old (OR = 0.88, 95% CI = 0.51-1.51) (Kaur et al., 2015).

In contrast, Gundersen and colleagues (2009) used 1999-2002 NHANES data from 2516 children ages 8 to 17 years old, in which 36.6% were identified as being from a food insecure household. They concluded that children who were food insecure were no more likely to be obese than children who were food secure. Unlike previous studies, the authors of this study used multiple measures to define obesity including BMI, waist circumference, triceps skinfold thickness, trunk fat mass, and total body fat.

### *Behavioral, Social, and Mental Health Effects*

In addition to negative outcomes in physical health, food insecurity has been shown to adversely impact children's behavior (Whitaker et al., 2006;

Kleinman et al., 1998), social interactions (Jyoti et al., 2005; Alaimo et al., 2001; Murphy et al., 1998) and mental health (Weinreb et al., 2002; McIntyer et al., 2013; Alaimo et al., 2002; Melchior et al., 2009). These problems can range from aggression, inattention and hyperactivity, anxiety or depression, and inability to get along with others or make friends.

In one study, parents with children ages 6 to 12 years old were asked to assess their child's emotional and behavioral health symptoms using a Pediatric Symptom Checklist (PSC). The average PSC score of children from food insecure households was 18 compared with 8.4 for children from food secure households ( $F= 20.6$ ;  $DF= 2,325$ ;  $p<0.0001$ ) thus, children from food insecure households were significantly more likely to be classified as dysfunctional based on PSC scores, 21% compared to 3% ( $p<0.01$ ) (Kleinman et al., 1998). Thirty-one of the 35 items from the checklist were significantly associated with food insecurity ( $p<0.05$ ), six of which had the highest correlation ( $\geq 2.1$ ) and reflect symptoms of anxiety or depression, fighting, aggression, irritability and stealing.

In a study by Whitaker et al. (2006), 2870 mothers of children 3 years of age were surveyed for food insecurity and behavioral problems. Twelve percent of respondents were identified as food insecure, and after adjusting for confounders, such as sociodemographics, maternal mental health status, alcohol, drug and tobacco use, children from food insecure households were twice as likely to show signs of aggression (AOR = 1.9, 95% CI = 1.4-2.7), anxiety or depression (AOR = 2.2, 95% CI = 1.6-3.1), inattention or hyperactivity

(AOR = 1.9, 95% CI = 1.4-2.8), or generalized behavioral problems (AOR = 2.1, 95% CI = 1.6-2.7) compared to children from food secure households (Whitaker, Phillips, and Orzol, 2006). Additionally, the authors reported that higher levels of food insecurity were associated with higher degrees of child behavioral problems report by the mother.

Alaimo, Olson, and Frongillo (2001) used data from NHANES III (1988-1994) to describe the association between food insecurity with behavioral and psychosocial outcomes in children ages 6 to 11 years old (n=3286) and adolescents ages 12 to 16 years old (n=2063). They reported that children and teenagers with food insecurity were more likely to have psychosocial and behavioral difficulties than food secure children, with the most dramatic difference seen in adolescents from food insecure households. Food insecure adolescents were almost twice as likely to have seen a psychologist (OR = 1.82, p=0.04), have been suspended from school (OR = 1.95, p=0.00), and have difficulty getting along with others (OR = 1.74, p=0.03) (Alaimo et al., 2001).

Serious mental health problems have been reported among adolescents who were exposed to food insecurity during childhood. A 2013, Canadian study examined if childhood food insecurity was associated with long-term mental health outcomes in late adolescence and young adulthood. Children were 0 to 11 years old at baseline and 14 to 25 years old at follow up. Using data from the two cycles of the Canadian National Longitudinal Survey of Children and Youth (NLSCY), they found childhood food insecurity to be an independent risk factor

for depression and thoughts of suicide in late adolescence and early adulthood (McIntyer et al., 2013). In fact, this study reported two-fold higher risk of depression and suicide ideation (OR= 2.9, 95% CI= 1.4-5.8,  $p=0.003$ ) among those who experienced childhood food insecurity alone, a higher risk factor than even maternal depression (OR= 2.3, 95% CI= 1.3-4.1,  $p=0.004$ ).

These results are in agreement with an earlier US study that used data from NHANES III for 754 adolescents. Researchers found that adolescents ages 15 to 16 years old who grew up in a food insecure home were four times more likely to have had mild depression/dysthymia (OR= 4.0, 95% CI= 1.6-10.0), two times more likely to have thoughts of death (OR= 2.0, 95% CI= 1.2-3.3), more than three times more likely to have had the desire to die (OR= 3.4, 95% CI= 1.5-7.5), and five times more likely to have attempted suicide (OR= 5.0, 95% CI= 1.7-14.6) compared to those who had not experienced food insecurity (Alaimo et al., 2002). There was also a high prevalence of food insecurity among adolescents with depressive disorders or attempted suicide, specifically 13% (SE= 6.1) of those with mild depressive disorder, 24% (SE= 7.4) of those with dysthymia, and 26% (SEM= 8.0) of those who had attempted suicide were food insecure.

### *Effects on Academic Performance*

Food insecurity has been shown to negatively impact children's academic performance through lower academic achievement (Alaimo et al., 2001; Joyti et al., 2005; Kelinman et al., 2002; Frongillo et al., 2006) and higher rates of grade

retention (Kleinman et al., 1998; Alaimo et al., 2001) and school absenteeism (Bernal et al., 2014; Kleinman et al., 2002).

A longitudinal study by Jyoti et al. assessed children's academic performance in kindergarten and again in third grade to determine how food insecurity overtime affects academic performance. Using data from the Early Childhood Longitudinal Study-Kindergarten Cohort of 21,000 nationally representative children, it was reported that children who experienced food insecurity during kindergarten had smaller increases in both mathematic (n=11,180,  $\beta$ -coefficient = -2.335,  $p < 0.0001$ ) and reading scores (n=10,758,  $\beta$ -coefficient = -4.387,  $p < 0.0001$ ) in third grade compared to their food secure peers. This difference remained, although weakened, after controlling for confounding variables such as child's age, gender, race/ethnicity, primary spoken language, parental education, and others ( $\beta$ -coefficient = -1.474,  $p = 0.0051$ ;  $\beta$ -coefficient = -0.242,  $p = 0.7222$ , for math and reading respectively).

Two studies report a higher rate of grade retention among children from food insecure households compared to children from food secure households. Alaimo et al. (2001) used NHANES III (1988-1994) data, which measured household food insecurity using the Household Family and Household Youth Questionnaires (proxy interviews) in combination with the Youth and Proxy Questionnaires, and found that food insecure teenagers were two times more likely to have repeated a grade compared to their food secure peers (41.6% vs. 20.7%;  $p < 0.05$ ). While Kleinman et al. (2002), using data from 97 inner city

schools, measured food insecurity by parental reports using an 8-item hunger/food insufficiency questionnaire developed by the Community Childhood Hunger Identification Project (CCHIP), and reported that 25% of food insecure children compared to 12% of food secure children had repeated a grade ( $p < 0.10$ ).

Bernal et al. (2014) reported a link between food insecurity and school absenteeism in children grades 2 through 9 in public schools. Using a cross-sectional design and survey responses obtained from 131 child-mother pairs in peri-urban Venezuela, 9 out of 10 children who reported being absent from school in the last 30 days were food insecure. In addition, it was observed that children who were mildly food insecure were absent from school twice as often, and those who were moderately and severely food insecure were absent three times as often as children who were food secure ( $p\text{-trend} = 0.03$ ) (Bernal et al., 2014).

School based interventions aimed to improve children's access to food have been shown to mitigate some of these educational outcomes, including academic improvement (Kleinman et al., 2002; Frangillo et al., 2006). In the same study by Kleinman et al., researchers found that after six months of participation in free school breakfast programs, students considered at nutritional risk showed significant improvements in attendance, math scores, and behavior (Kleinman et al., 2002). Children who had total energy intakes of  $< 50\%$  of the RDA and/or 2 or more micronutrients that were  $< 50\%$  of RDA were considered to

be at nutritional risk, and there was a significant association between nutritional risk and rates of food insecurity. Prior to participation in the free school breakfast program, children who were at nutritional risk had a school absence rate of 11.5 days per school-year, compared to 6.5 days for children not at nutritional risk ( $F=3.7$ ,  $d.f.= 1$ ,  $p<0.05$ ). In regards to academic performance, children at nutritional risk had a mean grade point average (GPA) ( $M=2.1$ ) significantly lower than those not at nutritional risk ( $M=2.8$ ;  $F=8.5$ ,  $d.f.= 2$ ,  $p<0.001$ ), and a statistically significant difference was observed in individual subject grades for reading (1.9 vs. 2.6,  $p<0.01$ ), math (1.7 vs. 2.7,  $p<0.001$ ), social studies (2.3 vs. 2.6,  $p<0.01$ ) and science (2.4 vs. 2.9,  $p<0.01$ ) of one half to one full letter grade lower than nutritionally adequate peers. Six months following enrollment in the school breakfast program, nutritional risk and academic performance were reevaluated with improvements seen in 32% of participating children.

### **Measuring Household Food Insecurity**

Historically, household food insecurity has been assessed using the 18-item USDA HFSSM, which is often used in research, as well as distributed to US households annually to measure rates of food insecurity at the national level. This screener uses a series of questions about household food conditions during the last 12 months to categorize households as food-secure (0-2 items affirmed), low food security (3–7 scale items affirmed), and very low food security ( $\geq 8$  scale items affirmed). It includes three questions about food conditions of the household as a whole, seven questions about food conditions of adults living in

the household, and, if there are children between the ages of 0 to 17 living in the house, eight questions are included about the children's food situation.

The problem that arises with this method is that adults are typically responsible for completing the surveys, yielding food insecurity measures from the adult perspective only. This method has been considered valid for measuring food insecurity at the child level, however it is grounded in two assumptions; first, that the parent manages all food resources and the way the family members experience food insecurity, and second, that all members of the household experience food insecurity in the same way (Fram et al., 2011, Nalty et al., 2012). For this reason, parental reports may not provide a complete or accurate representation of what children actually experience.

### **Children Can Self-Report Food Insecurity**

Research in other areas, such as bullying and domestic violence, has determined that children are able to reliably report their own experiences, and that children's experiences may be different from adult proxy reports (Sheffler et al., 2009; Varni et al., 2007; Hungerford et al., 2010; Grych et al., 2000; Holt et al., 2008; Najman et al., 2001). One study compared mother and child reports of behavior, learning problems, and mental status of children ages 6 to 16 years old and found, on average, reports between mother and child were only in 80% agreement with one another (Herjanic et al., 1975). In a follow-up study using similar methods, the highest level of agreement was among symptoms that were concrete, observable, severe, and unambiguous, and that children were better

able to report on their own subjective symptoms (Herjanic et al., 1982). For this reason it is suggested that children are likely the best reporters of their own experiences and therefore should be able of self-report their experiences of food insecurity.

Multiple studies exist that show adult and child reports of food insecurity do not align with one another (Nord et al., 2012; Escobar-Alegria et al., 2012; Nord et al., 2013; Bernal et al., 2012; Fram et al., 2013). In one study, Nord et al. (2012) used 2005-2006 NHANES data from 395 children ages 15 to 17 years old. Household food security status was assessed in the NHANES family interview using the USDA HFSSM, reported by the parent or other adult caregiver, and children's personal food security status was assessed as part of the separate medical examination using 5 or 6 food security questions about their own experience with food hardship. Data from both surveys were used to compare children's self-reported personal food security with adult proxy reported food security from the family interview. On average, children self-reported food insecurity more often than adults reported for them, and that adult reports were only weakly associated with adolescent self-reports (Pearson's  $r = 0.13$ ,  $p = 0.004$ ) (Nord et al., 2012). Further, qualitative research by Escobar-Alegria et al. suggests that lack of communication between parents and children regarding difficult situations and joint parent-child effects to protect one another resulted in parents having little knowledge of their children's experiences with food insecurity (Escobar-Alegria et al., 2012).

## **Measuring Children's Personal Food Insecurity**

The findings observed by Nord in 2012, in addition to those reported by Frongillo in 2010, suggest that current methods used to measure prevalence of food insecurity at the child level are inaccurate. Current methods rely on parental reports of children's food insecurity experiences, however, parents are often unaware of their children's awareness of food insecurity (Frongillo, 2010; Escobar-Alegria, 2012) and have the tendency to underreport food insecurity in their children (Nord, 2012). For this reason some researchers believe that the prevalence of child food insecurity may be underestimated.

Food insecurity in children has been reliably measured using a standardized survey with questions adapted from the USDA HFSSM to contain more child-appropriate language for children ages 11 to 13 years old (Connell, 2004). More recently, Fram et al. (2013) developed and validated a survey to measure the degree of child's personal food security using mixed qualitative and quantitative methods comparing parental and child reports of food insecurity (Appendix 2). This survey was developed from their earlier work, in 2011, to measure the domains and subdomains of children's experiences of food insecurity using 9-items to measure the frequency of food insecurity scenarios from the previous 12-months. This survey was used to assess children's awareness and experiences of food insecurity for this study.

Other research has shown that talking with children directly is essential to understand what children experience in food insecure households. Connell et al.

was the first to use qualitative inquiry with children ages 11 to 16 years old to examine children's perspective of food insecurity and use their descriptions to define components of childhood food insecurity (Connell, 2005). Initially, it was found that children would not participate in interviews when questions were directed toward them personally, so instead, they asked children to talk about "kids that they knew" who were "running out of food." Through this process, they were able to determine aspects of food insecurity in childhood that would not have been captured from the adult perspective, such as eating large quantities quickly, dissatisfaction in food quality, and fear of being labeled as "poor." While this study is limited by the fact that children did not report directly on their own experiences, it does give important insight into children's awareness of food insecurity.

### **Children are Aware of Food Insecurity**

Past qualitative research has demonstrated that parents in households with inadequate food resources generally attempt to shield their children from experiencing food insecurity (Radimer et al., 1990; Radimer et al., 1992), however, more recent studies have found that children are not fully protected from it. A 2010, study by Frongillo, Fram, and Jones used qualitative analysis of parent and child interview sessions to better understand their experiences and food resource management. They found that although parents attempted to guard children from experiencing food hardships, children were not fully protected and demonstrated both awareness of food insecurity and responsibility

for managing food resources (Frongillo et al., 2010). In addition, parents did not know that their children were aware of the household's food situation.

Since the findings from Connell et al., studies in the US, Venezuela, and Lebanon have focused on examining children's experiences of food insecurity by speaking with them directly (Nord et al., 2010; Fram et al., 2011; Bernal et al., 2012; Ghattas et al., 2014). In 2011, Fram et al. used semi-structured interviews with US children ages 9 to 16 years old, and compared child responses to separate adult interview responses, to better understand the extent of awareness that children have of food insecurity in their household. They described children's awareness of food insecurity as, "[recognizing and encountering it at a personal level and understanding the experience as being related to not having enough food] (Fram et al, 2011)." They further discovered that children's awareness could be separated into three subcategories: cognitive, emotional, and physical awareness. Cognitive awareness means that children have "knowledge that food is scarce and knowledge of the ways their family manage food problems." Emotional awareness refers to "feelings such as sadness, worry, or anger that children experience related to household food insecurity." Physical awareness means that children experience "physical feelings related to lack of food such as hunger, pain, tiredness, or weakness."

These results were confirmed in Venezuela (n=42, children ages 10 to 17) and Lebanon (n=37, children ages 8 to 12), using qualitative assessment of semi-structured interview sessions children reported cognitive, emotional, and

physical awareness of food insecurity in their household (Bernal et al., 2012; Ghattas et al., 2014).

Further, a qualitative study in Venezuela determined that adolescents are aware that parents attempt to hide the household food situation. Researchers determined that not only are children aware of their own household food hardships, but they notice the food situations of the adults and children in their surroundings. One child said, in reference to another child with food shortage, “They [the children] do notice, but the mother tried to hide it.... I have a neighbor that hides from her children that they don’t have food (Bernal et al., 2012).”

### **Taking Responsibility and Altered Activities from Food Insecurity**

In addition to being aware of household food insecurity, these same studies reported children taking responsibility and participating in coping strategies to manage food resources in the home. Fram et al. (2011) defines participation in managing resources as any change of normal daily activities and behaviors to contribute to adult strategies for managing scarce resources. Researchers were able to describe children taking responsibility for resources in three ways: by participating in adult strategies, initiating their own strategies, and/or generating additional resources to provide food for the family. Ghattas et al. (2014) described coping strategies such as decreasing food intake, prioritizing food for younger siblings, saving money, working to earn additional funds or managing funds that were available. Likewise, Bernal et al. (2012) found that children would work to earn money for food, reduce their quality and quantity of

food intake, find food from waste, ask for support from neighbors or extended family members, and use other strategies to purchase, acquire, prepare, and cook food.

These studies all provide evidence that experiencing food insecurity in childhood is associated with alterations to children's daily activities. A recent quantitative study by Bernal et al. in Venezuela aimed to examine if altered daily activities are a potential mechanism for food insecurity's negative outcomes in children (Bernal et al., 2014). This study used Chi-squared tests and logistic and multiple regression analysis to demonstrate that children's awareness of food insecurity is associated with increased passive chores at home (OR=1.17, 95% CI= 1.02-1.32), cooking at home (OR= 1.21, 95% CI= 1.05-1.38), taking care of siblings (OR=1.15, 95% CI= 1.01-1.31), and doing labor (OR=1.22, 95% CI= 1.04-1.42), (all  $p < 0.03$ ), compared to children who were food secure.

According to the International Labor Organization (ILO), participation in child work activities can negatively impact children's physical and mental development by depriving them of their childhood, their potential and their dignity (ILO, 2012). In addition, child labor interferes with education by denying children the opportunity to attend school, obligating them to leave school early, or requiring them to attempt to combine school attendance with work activities. In the study by Bernal et al. (2014), 19% of school absenteeism was accounted for by child labor alone.

## **Shame from Food Insecurity**

In the previously mentioned study by Connell et al. (2005), feeling ashamed and fearful of being labeled as “poor” as a result of food insecurity was mentioned 14 times in 7 child interviews (Connell et al., 2005). Several children indicated that they did not normally talk to others about their food situation, in part because they had observed other children with food insecurity being made fun of and thought it would be embarrassing to tell others that food was running out in their home. In addition, this study compared interview responses of children living in rural and urban environments. They found that although a greater number of urban children verbally expressed feelings of shame or embarrassment, rural children became more defensive or guarded when asked about their families running out of food, although they showed several non-verbal indicators of feeling shame. Researchers suggested this could be in part due to urban children living in closer proximity to other children with similar food situations, while rural children tend to live further apart. However, more research is needed before a true difference in living environment can be determined. In the 2011 study by Fram et al., children reported feelings of worry due to lack of food and feeling uncomfortable with taking part in coping strategies, such as asking friends for food (Fram et al., 2011).

A 2015, cross-sectional study by Bernal et al. in Venezuela examined the association between shame and, 1) the experience of food insecurity for children, and 2) the management strategies they participate in (Bernal et al., 2015).

Surveys were used to measure food insecurity and management strategies for children, and shame was measured using one item: “did you feel shame if somebody, including friends, knew that you were without food?” It was found that six of the ten food insecurity items were associated with shame and nine of the eleven management strategies were associated with shame. The strongest associated was observed for food insecurity items such as “to have an empty refrigerator” ( $\Upsilon=0.45$ ,  $p<0.01$ ), “feel worried” ( $\Upsilon=0.42$ ,  $p<0.01$ ), “gone to school hungry” ( $\Upsilon=0.29$ ,  $p<0.01$ ), and management strategies such as “run errands for others to obtain money to eat” ( $\Upsilon=0.47$ ,  $p<0.01$ ), “ask for food on loan or credit” ( $\Upsilon=0.41$ ,  $p<0.01$ ), “search for food, such as mangoes, outside the home” ( $\Upsilon=0.40$ ,  $p<0.01$ ), “visit anyone” ( $\Upsilon=0.33$ ,  $p<0.01$ ), “do not eat so another child can eat” ( $\Upsilon=0.31$ ,  $p<0.01$ ), “(parents) eat less so the child can eat” ( $\Upsilon=0.27$ ,  $p<0.01$ ).

Adult studies in the US have shown that food insecurity is associated with feelings of concern and worry (Radimer et al., 1992). Parents from food insecure households in Canada have reported feelings of guilt, shame, embarrassment, and alienation because of food insecurity. They also reported a desire to hide the lack of control over their food situation due to fear of being labeled and uncertainty of what others will think of them (Hamelin et al., 2002). Parents also stated the desire to hide food insecurity as a barrier to seeking or utilizing food resources. In addition, parents identified food insecurity as a cause for disruption in family dynamic, especially at the parent-child level, due to feeling irritable,

decreased communication and being less available. Another study confirmed that parents from food insecure households who experienced feelings of alienation, such as shame, and deprivation, such as guilt, had alterations in household cohesion (Nanama and Frongillo, 2012). Parents also reported that many of the decisions made by household members to manage and cope with food insecurity were shaped by their feelings of alienation, as well as social and cultural norms.

## Chapter III: Methods

### Study Population

We recruited a sample of 20 children between the ages of 9 and 15 years old from a variety of settings in rural and semi-rural parts of Oregon. This sample size was chosen based on past qualitative research with grounded theory methods that determined this number is sufficient to reach theoretical saturation during analysis, meaning that additional sampling will not contribute more information to address our study question. Children were initially recruited from a variety of community settings, including child nutrition programs, federally qualified healthcare centers, food pantries, churches, and others, using flyers to explain details of the study. We aimed to recruit an equal sample of boys and girls within a diverse age range, with the goal of matching participant characteristics with those of the 20 participants recruited and interviewed as part of a larger study in South Carolina.

Interested parents/guardians of potential participants were asked to contact the research team by telephone for additional information and eligibility screening. A Google Voice phone number was provided on the flyer to protect the privacy of the research assistant. Before enrolling in the study, household eligibility was assessed via telephone using preliminary screening questions from the USDA HFSSM to evaluate their household's food situation (Appendix A) and child eligibility (age and spoken language). Verbal consent was obtained by parents/guardians before completing the telephone questionnaire. Household

eligibility criteria included some degree of food insecurity (marginal, low or very low food security). Child eligibility criteria included being within the age range of 9 and 15 years old, live in a rural setting, and ability to speak and understand English. Participants who did not affirm any of the first six questions of the USDA HFSSM were considered to be food secure and were not eligible to participate in the study.

If families qualified for the study, permission was obtained to continue with the additional survey questions about their food situation (12 questions) and survey of household demographic characteristics (11 questions) (Appendix B). The telephone session include 20 questions in total and lasted between 10 and 15 minutes. Appointments for child interview sessions were scheduled at the time of screening for a predetermined place in the child's hometown. If the parent/guardian did not wish to complete the second round of questions over the phone, they were given the option to schedule an appointment for their child's interview and were asked to complete additional questions at that time.

One child per family was chosen to participate in the study. For families with more than one eligible child, participating children were chosen based on age and gender gaps in the sample.

### **Data Collection**

Upon arrival to the scheduled interview session, parents completed a consent and authorization form and children completed an assent form. Participating parents who did not previously complete the additional screening

questions were asked to complete the 18-item USDA HFSSM (Appendix A) and the 11-item Parental Questionnaire about Family Characteristics (Appendix B). Children were asked to complete the 9-item Child Food Security (CFS) survey (Appendix C). The USDA HFSSM was used to determine degree of food insecurity in the household, the Parental Questionnaire about Family Characteristics measured household socio-demographic information, and the CFS survey was used to assess children's personal food security status by measuring awareness and responsibility for food insecurity.

Qualitative data was collected using individual in-depth interview sessions with each child using a semi-structured interview guide (Appendix D). The interview guide contained 20 open-ended questions, with relevant follow-up questions, designed to elicit descriptions about children's experiences with food insecurity directly from their perspective. Key questions addressed: 1) the child's awareness of food insecurity, 2) daily activities and alterations in these activities due to food insecurity, 3) beliefs and feelings about shame due to food insecurity, 4) beliefs and feelings about alterations in daily activities due to food insecurity, 5) compensatory adjustments made in response to altered daily activities and feelings of shame, and 6) experiences with the perceptions of society, family members, and peers. Interview guides contained an opening "icebreaker" question and a final "warming" question to close the session.

Interviews were conducted by a trained research assistant and recorded using two digital tape recorders. Following each interview, the interviewer

recorded field notes to reflect on observations from the session. Interviews were held in a private setting to ensure adequate comfort and confidentiality. To begin the interview process, children were given a brief explanation of the study and given the option to withhold answering questions and withdraw from the interview at any point if they felt it necessary. Each child participated in one interview session lasting 25 minutes to one hour. Families received fifteen dollars cash for their participation in the study. All study documents were submitted and approved by the Institutional Review Board (IRB) at Oregon Health & Science University. This project was in collaboration with a larger study with researchers at the University of South Carolina and funding was provided by the Research Innovation and Development Grants in Economics (RIDGE) Center for Targeted Studies.

## **Data Analysis**

### Specific Aim 1a:

Degree of household food insecurity was assessed based on parental responses to the USDA HFSSM. Households were considered to have marginal food security if 1-2 items are affirmed, low food security if 3–7 items affirmed, and very low food security  $\geq 8$  scale items were affirmed, as described by Coleman-Jensen et al. in the 2014 ERS report on household food security in the US. Prevalence of household food security status was summarized with descriptive statistics.

#### Specific Aim 1b:

To assess children's awareness and experiences with food insecurity, responses from the CFS survey were summarized using descriptive statistics. Each response for "never," "1 or 2 times," and "many times" were counted for each question, and coded as 0, 1, and 2, respectively, to determine a CFS score. Prevalence of children's experiences of food insecurity was calculated by summation of responses overall and by domain and subdomain, as described by Fram (2015). Higher CFS scores indicated increased frequency of awareness and responsibility for food insecurity, and a higher degree of food insecurity.

#### Specific Aim 2:

Recorded interviews were transcribed verbatim, using Verballnk transcription services. Transcript data were coded and analyzed following qualitative research procedures guided by principles of grounded theory described by Strauss and Corbin (2008). Prior to analysis, transcripts were "cleaned" to remove information that could potentially identify participants. Interview transcripts and field notes were used for analysis. Data were analyzed manually to begin and analysis was completed using NVivo software. Nodes were established from key themes that emerged from interviews and all data were sorted and assigned to an appropriate node. As sorting continued, new categories and sub-categories emerged and data were reorganized within nodes. Memoing, or note-taking, of emergent findings was used to assist in data organization. Once the coding process was complete, data were analyzed by

identifying relationships among the established nodes, using quotes from interviews as evidence to support our themes and subthemes. This process was repeated until theoretical saturation was met and a strong understanding of children's experience of food insecurity and how they relate to altered activities and shame had emerged.

Due to the sensitivity of the interview topic and conversation, one potential pitfall in this type of research is that children may become emotional, lose focus or no longer wish to open up about their feelings and experiences. For this reason, two accessory questions were included in our interview guide, as an "ice-breaker" and as a final "warming" question. Although the interview guide for this study mostly contained questions directed towards the individual child, some questions did address observations regarding feelings of shame or embarrassment in children they have seen.

Preliminary interviews in South Carolina found that children's reports of shame were brief and not as detailed as was expected. This may have been due to the placement of the interview questions regarding shame near the end of the interview and that children may have grown tired once this section was reached. To account for this unintended problem, items related to shame were moved to the middle of the interview session to ensure they are adequately addressed. These early interview sessions found it necessary to deviate at times from the structured interview guide and adjust or reorder questions in the interview to flow

naturally with the conversations that emerge in order to gain adequate information. This was also done in our study.

Preliminary interviews also found that children, at times, had a difficult time explaining their feelings to the researcher. For example, children understood the meaning of embarrassment or shame, but were unable to communicate what these feelings felt like to them. When this occurred in our interviews, we encouraged the child to think about their feelings and returned to the question at a later time.

To avoid missed appointments, we followed up by telephone with families the day before their appointment to remind them of the time and location of their scheduled interview. Lastly, to ensure our recorders did not fail to record the interview sessions, two digital recorders were used at the time of the interview and interviews were uploaded onto a password protected laptop immediately following the session.

## **Chapter IV: Results**

### **Rural Environment, Recruiting Strategy, and Interview Setting**

All interviews were carried out in rural and semi-rural settings of Clackamas County, located between Oregon's major metropolitan area of Portland and Mount Hood. For the purpose of our study, rural and semi-rural were defined as any community outside of a major metropolitan area. The highest concentration of employment in the area of our interviews resides within the industries of construction, leisure and hospitality, wholesale and retail trade, durable goods manufacturing, and educational services. In 2013, the county's unemployment rate was 6.8% and the average income was 18% below that of the surrounding metropolitan area (CCEL, 2012). According to a county economic report, the gap in pay wage likely reflects a higher concentration of temporary and part-time employment without benefits. In 2014, 6.9% of children in this region were estimated to be without health insurance (Kids Count Data Center, 2015). In the 2013-14 school year, 36.8% of children in this county were eligible for free or reduced school lunch, 11.8% of children were living in households with incomes below the federal poverty level, and 21.5% were living in food insecure households (Kids Count Data Center, 2015). Rural coastal towns were originally included as a target area for recruiting, but were later eliminated due to time and travel constraints.

Recruiting and data collection took place between the months of July and November of 2015 (Appendix E). Our initial recruiting strategy using flyers and

telephone screening proved to be unsuccessful. The secondary strategy developed to engage participants was to distribute flyers and give a brief oral description of the study to eligible participants in-person. Flyers were distributed at a county fair, federal Summer Meal Programs, and food pantries. Recruiting participants in-person by attending food pantries demonstrated to be the most successful method for enrolling participants and nearly all participants were enrolled in this way.

Several challenges arose during the recruiting and data collection stages. First, we assumed that our flyer would engage participant's interest in the study and invite them to contact us for further information, however only one participant was recruited in this manner. When developing our second recruiting strategy, it was assumed that children and parents would be together at the point of contact for in-person recruiting; this was not the case. There were few occasions where parents and children were together at the food pantries and both able to consent. When only a parent was present, the recruiter screened the parent for eligibility and, the parent, assuming their child would be interested, scheduled an interview. In some cases, this lead to cancelled appointments when the child did not wish to participate. Finally, there were lulls in recruiting and enrolling participants that likely coincided with the timing of receiving monthly financial assistance, benefits, or pay, which likely lead to a decreased need for using community resources. The month of October was particularly slow for recruiting,

and it was necessary to find new locations to recruit from once eligible participants had been exhausted at one location.

Interview locations were chosen at the participant's discretion and included libraries (11 interviews), participant homes (7 interviews), churches (1 interview) and small local businesses (1 interview) (see Appendix F for map of participant zip codes and interview sites). Most interviews were conducted in private, with only the child and interviewer present. Prior to beginning the interview session, to ensure children were as comfortable as possible, children were given the option to allow their parents to be present for the interview.

### **Description of Sample**

Twenty children were successfully enrolled in our study. Participating children had a mean age of  $12.3 \pm 3.6$  years in a range of 9 to 15 years old. More than half of the children in our sample were male (60%; Table 1). The majority of children self-identified as white (85%) and non-Hispanic (80%). The parents involved in the recruiting process were primarily women (85%), with an average age of  $39.7 \pm 7.7$  years. Parents most commonly reported having completed education through the 12<sup>th</sup> grade or obtained a General Education Development (GED) (45%) or completed 1 to 3 years of college (45%). Nearly all participating families lived in rented homes (90%) and the average number of people per household was  $4.8 \pm 1.8$ . Predominant income categories were less than \$16,000 per year (40%) and between \$16,000 and \$34,000 per year (40%). Most children qualified for free or reduced school lunch (90%), 85% of families had

participated in WIC, 80% had participated in SNAP, and 50% had participated in TANF programs at some point in time.

### **Patterns of Food Insecurity Among Households in Rural Oregon**

Based on parental responses to the HFSSM, 11 families experienced low food security (55%) and 9 families experiences very low food security (45%) in the previous 12 months. An affirmative response to any of the items on the CFS survey was considered evidence of child food insecurity (i.e., at least one item was experienced at least “1 or 2 times” in a 12 month period). All participating children reported experiencing food insecurity during the last 12 months, with the average total CFS score being 5.8 (range= 1-14, median= 5, SD= 3.6) on an 18 point scale. Ninety percent of participating children reportedly participated in free or reduced school lunch.

**Table 1:** Demographic characteristics of participating families (n=20)

Variable	n (%)	Mean $\pm$ SD
<b>Child characteristics</b>		
Male	12 (60)	
Female	8 (40)	
Age		12.3 $\pm$ 1.7
CFS score		5.8 $\pm$ 3.6
<b>Child Race</b>		
White	17 (85)	
Asian/ Pacific Islander	1 (5)	
African American/ Black	1 (5)	
Other- Latino	1 (5)	
<b>Child Ethnicity</b>		
Hispanic	4 (20)	
Non-Hispanic	16 (80)	
<b>Parent Characteristics</b>		
Male	3 (15)	
Female	17 (85)	
Age		39.7 $\pm$ 7.7
<b>Level of Education</b>		
Grades 8 or less (elementary)	1 (5)	
Grade 12 or GED	9 (45)	
College 1 year to 3 years	9 (45)	
Graduate Degree	1 (5)	
<b>Household characteristics</b>		
Rent	18 (90)	
Own	1 (5)	
Other	1 (5)	
<b>Number in Household</b>		4.8 $\pm$ 1.8
<b>Household Income</b>		
<\$16,000	8 (40)	
\$16,000-34,000	8 (40)	
\$35,000-49,999	3 (15)	
\$50,000-74,999	1 (5)	
<b>Household Food Security</b>		
Marginal food security	0, (0)	
Low food security	11 (55)	
Very low food security	9 (45)	
<b>Participation in Assistance Programs</b>		
Free/Reduced Lunch	18 (90)	
WIC	17 (85)	
SNAP	16 (80)	
TANF	10 (50)	

## Quantifying Children’s Experiences with Food Insecurity

When assessing CFS scores by domain, 90% of children reported some experience of awareness of food insecurity, with 80% reporting cognitive awareness, 55% reporting emotional awareness, and 35% reporting physical awareness. Two children reported they had not experienced any awareness of food insecurity in the past 12 months (10%). Examining the affirmation responses within the awareness domain, 25% of children responded with at least one affirmative response in all three domains (cognitive, emotional, and physical) (Table 2). For individual domains, 30% of children reported experiencing only cognitive awareness, no children reported experiencing only emotional awareness, and 5% reported experiencing only physical awareness. Further, 25% reported experiencing both cognitive and emotional but not physical awareness, 5% reported experiencing both emotional and physical but not cognitive awareness, and 0% reported experiencing both physical and cognitive but not emotional awareness.

**Table 2:** Affirmative responses by awareness domains of CFS survey (n=20)

<b>Awareness domains</b>	<b># of responses</b>	<b>% of sample</b>
No domains	2	10
All 3 domains	5	25
Cognitive only	6	30
Emotional only	0	0
Physical only	1	5
Cognitive and emotional	5	25
Emotional and physical	1	5
Physical and cognitive	0	0

Assessment of CFS scores for responsibility domains revealed 95% of children had taken responsibility for managing household food resources in the previous 12 months, with 55% participating in adult strategies, 70% initiating their own strategies, and 45% generating their own resources. When examining affirmative responses within the responsibility domain, 15% of children answered with at least one affirmative response in all three domains (Table 3). For individual domains, 15% reported participation only, 15 reported initiation only, and 5% reported generation only, while 20% reported participation and initiation but not generation, 20% reported initiation and generation only but not participation, and 5% reported generation and participation only but not initiation.

**Table 3:** Affirmative responses by responsibility domains of CFS survey (n=20)

<b>Responsibility Domains</b>	<b># of responses</b>	<b>% of sample</b>
No domains	1	5
All 3 domains	3	15
Participation only	3	15
Initiation only	3	15
Generation only	1	5
Participation and initiation	4	20
Initiation and generation	4	20
Generation and participation	1	5

### **Major Qualitative Themes: Altered Daily Activities**

Fourteen themes pertaining to altered child daily activities initially emerged: decreased physical activity, change in leisure activities, increased nap taking or trouble sleeping, adapting to food insecurity/ normalization of food insecurity, preparing for hunger or food shortage, time spent seeking out

alternate food sources, earning or saving money, increased family conflict or altered cohesion, change in family meal-time, change in eating behavior, change in child emotional state, school absenteeism, and less time spend on school work. These themes were combined and condensed into four primary themes based on overlapping characteristics: 1) child awareness of and taking responsibility for food insecurity (i.e. cognitive, emotional and physical awareness, preparing for hunger, seeking out food resources, saving or earning money for food), 2) altered child daily activities (i.e. routine, leisure, physical, resting/ sleeping), 3) behavior and social interactions (i.e. shared mealtime, family conflict, emotional state), 4) negative academic effects (i.e. school absenteeism, decreased performance).

#### *Awareness of Food Insecurity and Taking Responsibility of Food Resources*

In addition to our survey data on children's awareness and taking responsibility of food insecurity, children verbally referenced cognitive, emotional and physical awareness of food insecurity, and taking responsibility for managing food resources.

Children were asked to describe how and when they knew that food was running low in their home. Children responded with the following quotes: *"Um, well I usually check the fridge to see if anything's in there. So I think I would know"* [Boy, 13 yo, O-001], *"I can tell because it looks empty-ish"* [Boy, 12 yo, O-007], *"I would say just like – maybe the occasional peek in the fridge or the cupboard and just seeing what kind of products would usually be there if – and if*

*they aren't there that's when I start knowing we're running out of food"* [Boy, 15 yo, O-015], *"When my mom is looking in the pantries and it's all tired out"* [Boy, 12 yo, O-014], *"Um, when I take – when I look... and see there is not that much food in the fridge or in the cupboards... it is canned or boxed"* [Boy, 13 yo, O-017].

Children associated lack of food with decreased money and were aware that their family's financial situation influenced food security in their home. *"It depends on what we have or can afford and what we don't have and all that"* [Boy, 13 yo, O-017]. *"I know how expensive food is these days"* [Boy, 15 yo, O-015]. *"Usually we just don't have the money"* [Girl, 14 yo, O-004]. In one case, a child was aware that her mother received government assistance for food: *"Because I know we're always going to get some next month, since my mother is on food stamps"* [Girl, 13 yo, O-012].

Our children experienced emotional awareness of food insecurity. They felt "bad" [Boy, 13 y, O-020] or "kind of sad" [Boy, 11 yo, O-016] when food was low at home and associated it as a negative experience. Other children reported that food insecurity was *"frustrating"* [Boy, 12 yo, O-007] and made them feel *"stress[ed]... worried... kind of angry"* [Boy, 9 yo, O-009]. Referring to the monotony of her diet one child said, *"I guess it makes me a little sad to just like, "Oh my gosh, do we have something other than chicken?"* [Girl, 14 yo, O-004].

Physical signs of hunger were described by the children in our interviews. When asked how they felt when food was running low at home children

responded with, *“pretty hungry”* [Boy, 13 yo, O-001], *“If there isn’t anything I’ll get hungry”* [Girl, 13 yo, O-002], *“You’re hungry, you can’t find anything”* [Boy, 11 yo, O-016]. One child described hunger as, *“I get more hungrier, my belly starts to ache and I want more water or something... I guess I get more hungrier while I’m not eating because I need more energy”* [Boy, 11 yo, O-008].

Children described taking responsibility for managing food resources in three ways: 1) preparing for hunger or food shortage, 2) seeking out alternate food sources, and 3) earning or saving money for food. Children prepared for hunger or food shortage by filling up on fluids, storing or saving food and mentally preparing. Child quotes like: *“I start drinking more water... ‘cause there’s nothing really to eat so you have to get something into your body to at least help you with energy. It may not be something that really helps but it does”* [Girl, 15 yo, O-003] and *“I mostly just drink milk”* [Boy, 9 yo, O-009], provide evidence that children may prepare for hunger by filling up on fluids to avoid feeling hungry when there isn’t enough food to eat. Children reported storing or saving food from their school lunch and saving snacks at home for times of hunger. *“I’d scrape something together or sometimes I didn’t eat my lunch, so I’d bring it home because I get hungry and snack a lot”* [Girl, 14 yo, O-004]. *“I might stop eating some stuff throughout the day just to save it for later and stuff”* [Boy, 13 yo, O-020]. Children would mentally prepare for times of hunger as evidenced by this quote: *“It’s the sense – like the feeling that you start to get hungry even though you’re not hungry but you know you’re gonna be hungrier for the next, be it day,*

*week, or month” [Boy, 13 yo, O-020]. When asked how he felt to eat more at school, one boy said, “I feel like it’s a good thing to do. It’s better to be prepared than not prepared at all” [Boy, 15 yo, O-015].*

Children provided multiple examples of alternate food resources they would seek out in times of need. Eating with others (i.e. strangers, family, or friends) was mentioned in several interviews. One child described a time he was walking home from school and was invited by a stranger for a meal: *“I saw this guy.... and he seemed like a very nice guy. When I met him and his family, just one hour later I was about to have a nice barbecue with hot dogs and burgers. But mom got a little worried and I kind of missed all the hot dogs and the burgers”* [Boy, 13 yo, O-001]. It was also common for children to eat meals with family members such as grandparents or to attend weekly church dinners, or eat with friends. *“Like every day I walk my friend like up to Taco Bell up there 'cause she lives in the apartments behind it, so somehow we always get food”* [Girl, 14yo, O-018]. *“We’ll just drive up to my grandma’s and eat with them if we really don’t have anything”* [Boy, 15yo, O-020].

Some children would borrow food from friends, neighbors, or family members. *“Sometimes if we don’t have food we ask our neighbors and also they ask us to share”* [Boy, 12 yo, O-007]. *“I would always try to ask neighbors or something, ask my friends at school if they had any extra food at home, if I could have some”* [Boy, 11 yo, O-008]. *“Sometimes at school, a kid will give us a snack”* [Boy, 12 yo, O-014].

Children participated in gardening programs at school as a way to provide additional food to their family, or would grow vegetables at home. *“At school, I was in a gardening club and I could get to bring home stuff like tomatoes and squash. When we don’t have enough food, I can ask my teacher or my gardening teacher if I can take a couple of things home”* [Girl, 10 yo, O-006]. *“We have vegetables. We have carrots and we have a farm in the back. But we don’t have some of the vegetables”* [Boy, 12 yo, O-007]. One child described his desire to start gardening as a way to provide vegetables and fruit to his family as a way to save money, *“So I don’t – so we don’t always have to go to the store and restock on that kind of fruit or vegetable”* [Boy, 13 yo, O-017].

When food is low at home, children would often rely on school meal programs. *“At school lunch, usually, you get enough to eat and you get filled up and you don’t be hungry after that”* [Girl, 10 yo, O-006]. *“It doesn’t make me feel bad [when food is low] because I know I’ll get food at school or something”* [Boy, 11 yo, O-008]. *“I would usually just eat a lot during lunch”* [Boy, 15 yo, O-015]. One child reported that her father would request she bring home extra food from school, *“I used to do that too, because my dad [would ask] when you’re in school [take] the cereal boxes for breakfast... my dad would tell me to grab some of those and bring them home because he liked them”* [Girl, 14 yo, O-011].

Children also depend on community resources to access food in times of need, such as local food pantries. *“I’ve had ways to get food when there’s none at home. It’s when I would go with my friends and some of them go to the [food*

*pantry] and get like one bread or two pastries. And they'll bring it to the park and I'll just like start snacking" [Girl, 15 yo, O-003]. "I go to the [food pantry]. They give us a food box a lot. They give us so much extra food" [Girl, 11 yo, O-010].*

Two children in our interviews mentioned foraging for food in surrounding woods near their home as a resource they used when food was not available. *"Usually I have enough food in a day, because of school, but if it's on the weekends, I usually [get food] probably from a tree or a bush" [Girl, 13 yo, O-012]. "Sometimes I eat blackberries over on the bush" [Boy, 12 yo, O-014]. The same boy used foraging as a way to fill up and avoid eating meal he disliked at home, "I like to go down to the woods and get berries with my little brother and kind of stuff up on berries. So then if I have to have something, like one of my mom's emergency meals that I don't like, I can say that I don't want anything and I'm full."*

It was common for children to save or earn money to buy food for themselves or their family. Some children would earn money by babysitting for family members or doing work for neighbors. Children would often give the money they earned or saved to their parents to buy food. *"Yeah, sometimes. I babysit, but, uh, sometimes my mom needs to keep the money from babysitting because we're like low that month... So sometimes I don't get the money from it, but that's okay" [Girl, 14 yo, O-004]. "Um, I try to help out a lot by, um, saving money up and, um, giving it to my mom so she can go grocery shopping... sometimes I can help out because sometimes, when I do have enough money*

*saved, then I would give it to my mom so she would get to buy stuff for dinner and lunch or we'd have more groceries"* [Girl, 10 yo, O-006]. *"I've only done it a couple of times. Like my mom, just a couple of days ago, she didn't have enough money to buy milk and bread, so she was going to borrow some of my money"* [Boy, 12 yo, O-014]. Another child described how he would save bottles and deposit them for change to use for food: *"Sometimes I just, like, collect coins and all that and I tell my mom to go, um, change them with her... That's how we get money sometimes... And we get food, or we just sell, um, bottles"* [Boy, 11 yo, O-016].

#### *Altered Child Daily Activities*

Children experienced alterations in their daily routine, leisure, resting/sleeping and physical activities due to food insecurity. Many children reported there were time constraints associated with food insecurity; at times when food was low at home they would be more likely to spend time with their parents doing food related errands that would often take away from their time spent on activities they enjoyed doing. *"I spend a lot of time going to stores with my parents, and I don't get to build stuff out of Legos and do that kind of stuff that I want"* [Boy, 12 yo, O-014], and *"It's like, you're getting more grocering than, like, learning to draw or learning how to paint or read"* [Boy, 11 yo, O-016]. Another young girl reported that leisure activities were less important during times when food was low and she would likely need to take on additional responsibilities: *"If there*

*wasn't enough food, then, I would probably play less often and care about more important things*" [Girl, 10 yo, O-006].

Children discussed that they would skip or avoid their normal leisure activities altogether when food was low: *"I skip playing outside [when we don't have food]. I might skip going to my friends house"* [Boy, 9 yo, O-009]. Other children stated they would skip or avoid time with friends because it made them feel bad that they didn't have food: *"I actually don't hang out with my friends very much. Because... maybe I'll just feel a little bit more down hanging out with them knowing that they might have just a little bit more food than I do"* [Boy, 15 yo, O-015] and *"Usually [when food is low], I'm just like, "Oh, I'm not inviting a friend over today. There's no cookies or Oreos..." because I don't want to show them there's no chips or something... because I want them to be able to eat"* [Girl, 14 yo, O-011].

Other changes in leisure activities included less focus or energy to participate: *"The only thing that really changes is that I can't focus as much... on a normal day I may be able to sit down, play and stay focused for... four hours or something, where on a day where I'm hungry I might only be able to stay focused for two or one and then I have to... either try to find something to eat or try to at least stay focused for a little bit longer"* [Boy, 13 yo, O-020].

Children reported that they were less likely to participate in physical activities when food was low at home. There were two main reasons that children would avoid physical activity: 1) lack of energy due to hunger, and 2) attempting

to save energy and food. Children reported having “less energy” [Boy, 11 yo, O-019] or feeling “less energized” [Girl, 14 yo, O-004] when they didn’t have food. “[When] I don’t get much food... I can’t push myself to my limits. Like, with track, I’m always pushing myself to my limits and trying to push myself further and further. And with exercising, I can’t actually use all my strength and try to beat my personal record” [Boy, 13 yo, O-020] and “I’m more active if I’ve had [a full meal in my stomach]. Sometimes if I have the energy I’ll work out in my room; push-ups, sit-ups, and pull-ups” [Girl, 14 yo, O-004]. Children were also less likely to participate in physical activity as a way to save energy and avoid eating more food: “I try to skip walking home with my friends... whenever I get home I’m not going to eat as much as I did if I walked home because I’d be really tired” [Boy, 11 yo, O-008] and “I might skip exercising so that I don’t get exhausted and... more hungry” [Boy, 13 yo, O-020].

Children were also likely to participate in frequent nap taking or experience altered sleep patterns. Many children reported they often had trouble falling asleep and staying asleep at night: “Sometimes I’m just tossing and turning all night... I just can’t sleep for some reason. It makes me really mad because I feel tired; I just can’t sleep” [Girl, 14 yo, O-004], “I’ve always had trouble sleeping” [Girl, 14 yo, O-011], and “Sometimes I wake up in the middle of the night” [Boy, 10 yo, O-005]. Children were more likely to spend time sleeping during the day when there was less food at home. When asked if napping was any different when food was low at home, a girl responded, “Yeah, I guess, because I’m like, “I

*need a nap"... I would be more likely"* [Girl, 14 yo, O-004]. Another child stated, *"the last time I had PE in eighth period I got so tired so I almost slept the whole day"* [Boy, 12 yo, O-007]. Napping was also referred to as a way to feel "refreshed" when food is low. When asked if he was more likely to nap when food was low, a boy responded, *"Yeah, definitely, just because I, I want to be able to, you know, feel more refreshed because sleeping, you know, it makes the human body feel more refreshed"* [Boy, 13 yo, O-020].

Two children described going to bed early or taking naps to avoid physical signs of hunger. *"I would try to [nap] but not too much... I feel like you're not usually hungry while you sleep... It's just I would say, a fact"* and *"I would usually just eat a lot during lunch... just as much as I could and just come home and try to sleep"* [Boy, 15 yo, O-015]. *"I go to bed earlier when I'm hungry, sometimes I don't though"* [Boy, 13 yo, O-020].

In addition to experiencing alterations in daily activities, a number of children expressed that they had adapted or accepted food insecurity in their home and it had now become a normal part of their routine. *"I usually just try to go about my regular day"* [Boy, 15 yo, O-015], *"It doesn't make me feel any [different]. It's... the same because like it's normal, I guess"* [Girl, 14 yo, O-018], *"I guess it's kind of just, like it feels normal. It doesn't really feel different"* [Boy, 12 yo, O-014].

#### *Behavior and Social Interactions*

Altered behavior and social interactions were common among the children who participated in our interviews. Children experienced alterations in their shared mealtime with family and made changes to their normal eating behaviors. Increased family tension and conflict among family members was common, as well as changes in the children's emotional state due to food insecurity.

Shared mealtime was affected in a number of ways; decreased portion sizes, redistribution of meals among family members, and eating together less frequently were common among food insecure families. It was common for children to notice a decrease in the portion size being served during shared meals, usually dinner. *"We don't eat as much big meals and start to eat, you know, smaller meals... it makes me feel like worse because I know no one really wants to eat less"* [Boy, 13 yo, O-020] and *"usually, there... will be less of something. Like less vegetables or something... there won't be something on the sides, like fruit... or dessert"* [Girl, 14 yo, O-011].

More commonly children reported a redistribution of food among family members during shared meals, where one or more family members would eat less so that there would be enough food for everyone. *"It was sad... because not everyone got to eat... so, like, someone could get... more and the other person would get very little"* [Boy, 11 yo, O-019]. *"But sometimes we have just a certain amount of food. Like, for example... maybe somebody will have more or a bigger amount than somebody else"* [Girl, 10 yo, O-006]. *"In the morning I eat a tiny*

*bowl of cereal. My little brother always eats like a huge bowl*" [Boy, 12 yo, O-014].

Children were aware of their parents attempts to redistribute food to other family members by eating less, waiting for children to finish eating before serving themselves, or skipping meals. *"My mom and dad will usually try to save as much food as they could. So they would probably eat much less than they usually do and they would save it for us kids"* [Boy, 15 yo, O-015]. *"We'll still eat together I guess, but, like, my dad usually tries to wait or, like, wait until we're almost done eating to... eat with us. If we don't want to eat the rest he'll usually just put it on his plate"* [Boy, 11 yo, O-008]. *"[My mom] usually doesn't eat dinner"* [Boy, 12 yo, O-014]. *"Sometimes there might not be enough and so you have to make more or go find something for that person to eat. My mom always has the younger kids or her kids eat first and then she lets the roommates eat"* [Girl, 11 yo, O-010].

It was also mentioned that during times when food was low families would skip eating together or eat together less frequently, the quality of the time spent together during meals was less, and they would spend less time together eating. *"We eat less often together"* [Boy, 13 y, O-001]. *"And sometimes we just go without dinner"* [Boy, 12 yo, O-014]. *"We don't talk as much because there's not a lot to eat and so we usually – you know we eat it and then we're done and we're off on our own again... just the time together is less"* [Boy, 13 yo, O-020]. One girl described that when there was not enough food at home she and her

mother would eat separate meals, which made her feel their relationship had weakened: *“I think it’s really had us float away from each other a lot... because I feel like eating a meal together can really bring people together a lot more than two separate meals”* [Girl, 10 yo, O-006].

Children would make changes to their own eating behaviors when food was low at home as suggested by these quotes made by children: *“I’ll eat like half portions than everyone else will.”* [Girl, 14 yo, O-004], *“I know if there’s not, like, food at home. I know I don’t eat, like, as much”* [Boy, 11 yo, O-008], *“I just usually try to eat less... just like about enough so there’s enough for everyone”* [Boy, 11 yo, O-019], *“I’ll just like, skip snack time”* [Girl, 14 yo, O-011]. One child tried try to compensate for her mother’s eating behavior by offering her meals, *“When we’re like running out of food, like lately, my mom will let us eat and she won’t eat. So like – since I eat with my friends a lot and I eat at school, I was just gonna let my mom eat my dinner”* [Girl, 14 yo, O-018]. Like many other children, one girl reported eating less when food was low but then eating large quantities quickly when there was food available: *“Whenever there’s really not that much food I hold back on eating because basically what we’ve got to do all the time, just hold back on eating. And then when I know that we have the food that’s when it’s just like engulf all of the food that I can get”* [Girl, 15 yo, O-003].

A change in the types of foods eaten by family members was also common among children during times of need. A switch from homemade meals to cheaper convenient type foods was reported. *“[My mom] usually makes not as*

*big of meals, or she makes the more easier meals like mac and cheese, and hamburger helper, stuff like that” [Girl, 13 yo, O-012]. “We’d have like sandwiches and stuff for dinner. And sometimes we have to have leftover cereal” [Boy, 12 yo, O-014].*

Children were asked about their food preferences and the types of foods they want to eat but are not available at home. While some children reported they would like more processed-type foods or snack foods and desserts, the majority of children stated the desire for more fresh produce, meat and fish at home. *“Because vegetables are good. We have vegetables. We have carrots and we have a farm in back. But we don’t have some of the vegetables. Like, I like broccoli and I think we don’t have a broccoli farm,” [Boy, 12 yo, O-007], “I would just like meat products, like... steak or pork or lamb” [Boy, 15 yo, O-015], “Icecream is usually a luxury, but I really like to have that a lot more. If I had more bananas and strawberries, cherries are good, too... I would like to have more lettuce. And cucumbers.” [Girl, 13 yo, O-012], “Seafood... because we rarely get it... it depends if we have the money or not to get the seafood” [Boy, 13 yo, O-017].* Further, children were asked how often it happens that they do not get the foods that they want. Some reported it was *“all the time” [Boy, 12 yo, O-014], “most of the time... most of the year” [Girl, 15 yo, O-003],* or just *“sometimes” [Girl, 10 yo, O-006].* Others reported seasonality to the lack of produce in their home, *“I guess certain times of the year” [Boy, 11 yo, O-008], “We get [fresh*

*produce] occasionally...maybe once every two months we get [it]" [Girl, 13 yo, O-012], "Certain times around the year" [Male, 11 yo, O-016].*

It was common for children to experience an increase in family conflict and altered cohesion within the home environment due to food insecurity. *"If my dad doesn't get his regular meals he'll be crankier easily. So we try to feed my dad... it makes me feel sort of sad because it's just like, "Can we go ten minutes without yelling?" [Girl, 14 yo, O-004]. Children reported an increase in parent arguments when food was low. "They start yelling at each other. Like my dad is always like, "Why did you spend that money and you didn't tell me?" and my mom is like, "Because I thought this would happen. I thought we'd start yelling at each other" [Boy, 12 yo, O-014]. When asked if his parents do anything differently when food starts to run low a boy replied, "They start to fight" [Boy, 11 yo, O-019]. Another child described the importance of home life in making children feel comfortable with getting food, "... if there's something going on with the family it might be a little more difficult to feel like I can get food" [Girl, 15 yo, O-003].*

Children also experienced emotional changes in their behavior due to food insecurity. *"I'm kind of more grumpy... because I kind of need more food... I guess I'm a little more stressed too" [Boy, 12 yo, O-014]. " I guess I'm more cranky, So I'm easy to be irritated" [Girl, 14 yo, O-004]. Changes in emotional behavior can impact children's creative activities, as shown by this statement: "More or less, I feel that when I don't eat as much my imagination gets slightly darker than it usually is, and so, of course, my drawings come out quite a bit*

*different... I think it's because I feel worse when I don't have enough food and so my brain just kinda shifts to worse thoughts" [Boy, 13 yo, O-020].*

### *Academic Impact of Food Insecurity*

Our cohort of children reported negative effects on academic performance due to food insecurity. These changes included decreased performance on schoolwork and school absenteeism. It was common of children to skip homework, forget about their homework, and exert less effort in their schoolwork when food was low. *"[I skip] chores... or maybe homework. It's because it's just like I don't have the energy" [Girl, 14 yo, O-004]. "I feel like I get a lot more sloppy in my schoolwork, you know, messing up quite a bit more and just overall not putting my full effort into it" [Boy, 13 yo, O-020]. "Sometimes I forget to do my homework [when food is low] because I guess, I just start forgetting" [Boy, 11 yo, O-019]. "[I'll skip] finish[ing] my homework. I'll usually do half of my homework, and then I'll eat, and then go back to it... because I'm hungry, I guess" [Boy, 12 yo, O-013].*

Similarly to their leisure activities, children experienced time constraints that interfered with their ability to complete school-related work. Children reported an increase in running food related errands with their parents when food was low at home, which resulted in decreased study time. *"Um, well yeah, I have to run errands with my parents... I guess I have to do it more when there is less food... because we need more food... I can't study. I can't work on [my homework]" [Boy, 12 yo, O-014].* For children, running errands can be a major source of

energy expenditure resulting in less energy for school work: *“I would say [running errands] makes me like tired... and since it makes me tired it’s kind of hard to do the [homework] questions”* [Boy, 11 yo, O-019].

Absenteeism from school was common among the children we interviewed. Although there is no evidence of a direct relationship between food insecurity and missed school reported by the children, it is worth mentioning that all but one child had missed multiple days of school in the previous school year. Children reported missing between 2-100 days of school. In the most extreme cases children stated, *“But throughout the entire school year I had to have missed at least over 100 days”* [Girl, 15 yo, O-003], *“Like putting everything together? Uh, that would be a big number. Maybe around, like, over 100”* [Girl, 14 yo, O-011], *“Probably at least an entire month’s worth”* [Boy, 13 yo, O-020], *“Too many to count”* [Boy, 12 yo, O-014].

Common reasons for missing school included scheduled appointments (i.e. doctor or dentist) and illness. Other reasons include faking illness, familial circumstances, or over-sleeping. *“I fake it... my mom usually doesn’t fall for it, ‘cause I do it a lot. [I fake being sick because] I’m just not in the mood. It’s – I do not sleep. It’s just I have problems... sleeping, so I’m just so tired in the morning, it’s just like, “Okay, I’m just going to fake it today”* [Girl, 14 yo, O-004]. *“When I missed those days, I would either be sick or like, something would happen... like my mom’s old fiancé, they were engaged and then they broke up in the school year and I missed that day”* [Girl, 10 yo, O-006]. *“Being sick... I need to break it*

*but pretending I'm sick because I don't want to go to school"* [Boy, 9 yo, O-009].

*"Because I sometimes accidentally sleep in or I'm sick... I miss school because I can play with my friends... and get some work done and stuff"* [Boy, 12 yo, O-007].

### **Major Qualitative Themes: Shame of food insecurity and using resources**

Children experienced shame and embarrassment related to being food insecure and using food resources. It was clear from the children's responses that they felt shame and embarrassment about being food insecure as evidenced by statements of not routinely talking about their family's food situation and reports of fear of being labeled or judged by others. Alternatively, several children indicated they no longer felt shame or embarrassment related to food insecurity because it had become a normal part of their lives.

#### *Shame in Being Food Insecure*

The majority of children expressed feelings of shame and embarrassment for being food insecure. Many children reported they did not routinely talk about their food situation because they feared they might be judged or labeled as different by others, *"They might make fun of you or tell other persons and they make fun of you, and it goes along"* [Boy, 11 yo, O-016], *"I don't really feel like a lot of people should know stuff like that because if they do they might judge me and I don't really like that"* [Girl, 15 yo, O-003], *"'Cause, like, might make fun of you or something"* [Boy, 11 yo, O-016], and *"...but some of my friends would*

*probably think it's weird"* [Girl, 14 yo, O-011]. Another child stated food insecurity was not a common topic of conversation due to embarrassment, *"I haven't [told anyone] just 'cause it's never something that you really bring up. It's never something that people ask about or anything... I think it's because people don't like possibly making someone feel embarrassed or ashamed if they may feel that way about something, and so human nature is just you don't want someone else to feel that way"* [Boy, 13 yo, O-020].

In addition, when children were asked if they had ever seen a child who did not have enough food at home, many expressed that although they knew of other children but did not talk with them about their food situation because it might be a source of embarrassment for them, *"It might make them very embarrassed if I said that in front of someone else or in front of them. It might make them embarrassed or angry at me for hearing"* [Girl, 11 y, O-010] and *"I don't think so. No one really talks about that... Probably because they're ashamed about it, or they're not comfortable with just saying that something in life has defeated them"* [Girl, 13 y, O-C12].

### *Shame for Using Food Resources*

Children reported a range of emotions related to the use of food resources: feelings of embarrassment, sadness, guilt, and pride were all mentioned by children in relation to borrowing food from others, participating in free or reduced school lunch programs, and use of food pantries.

Many children expressed feelings of shame for seeking or accepting food resources from others. *"...Also the living situation I don't really feel comfortable eating because my mom and I have our own little food supply... we're welcome to eat what they have but I don't really feel comfortable eating"* [Girl, 15 yo, O-003]. Guilt was expressed by children who reported borrowing food from others, *"I always feel bad because I know that they have it but I just feel bad for myself because I know I have to ask and it's just embarrassing, like, asking other people"* [Boy, 11 yo, O-008] and *"...a little glad and a little sad... because they're being nice to me and I don't really want to take their food"* [Boy, 9 yo, O-009].

One child said he felt worse when others would offer him food because he felt his parents could take care of him without assistance, suggesting a sense of pride, *"They're like, 'Oh you don't have very much food. Do you want to have some of ours, because maybe you're running a little low and maybe need more?'"* *And that, in a way, makes me not – I just don't like it even though you're trying to be nice... I feel like my parents can take care of me without their help."* [Boy, 12 yo, O-014].

The use of food pantries or soup kitchens was a source of embarrassment for many children. *"I don't like her going to the food bank. I think its weird because... I just don't like going in there.... It probably makes my mom embarrassed too, like, show everybody in there she doesn't have food. She wants to be like the rest of her family and have money for food and snacks"* [Girl, 14 y, O-011] and *"at first when we started going [to the food pantry], I didn't really*

*like talk about it. I'd be like, "We're going to the store" [Girl, 14 y, O-018]. Another girl stated she would feel less ashamed to receive food from a food pantry if she had done something to earn it, "I would be again, if that became a regular thing... because you're so poor you can't even afford food; it has to be donated to you... feel like I earned it. Do something like donate to food kitchens when I get the money or something" [Girl, 14 y, O-004].*

Although a less common theme, one child discussed that she felt embarrassed to participate in free and reduced school lunch because it made her feel different than children who were able to pay for their lunch. *"My mom most of the time when the school year comes around again and we're signing up for free lunch when I know that we have the money to pay for lunch but she insists... and not be like other kids and actually be able to do that" [Girl, 15 y, O-003].*

Although most children reported they felt a sense of shame or embarrassment associated with food insecurity, two children stated that in the past they had had experienced shame or embarrassment of food insecurity or using resources, but they no longer had these feelings because it became normal for them. *"I used to feel ashamed, but it's just the norm for me now" [Girl, 14 y, O-004] and "I don't really feel embarrassed or anything. It feels a lot normal, kind of like being at the grocery store... because it is a grocery store pretty much" [Girl, 11 y, O-010].*

Finally, although gender differences among child experiences of food insecurity were not a part of our study aims, it is worth noting that some gender

differences in interview responses did arise. The use of sleep as a way to cope with physical symptoms of hunger was limited to responses made by boys in two separate interviews. Male interviewees more commonly mentioned the impact of food insecurity on academic performance, particularly avoiding or suboptimal performance on schoolwork. While children of both genders described shame for using food resources, there were gender differences in the resources that made children feel ashamed. Boys were more likely to feel shame in terms of seeking or accepting food from others, while girls were more likely to feel ashamed for using community resources such as food pantries, or free or reduced school lunch programs. To truly understand the impact of experiencing food insecurity by gender further research should be done.

## Chapter V: Discussion

It is well documented that food insecurity during childhood can impact children's physical and mental health, behavior and social interactions, and academic performance, but an exact mechanism for how these outcomes are linked has not been observed. Our research provides a better understanding of how non-nutritional pathways, such as child activities, behaviors, and emotions may influence these poor outcomes in children ages 9 to 15 years old living in rural and semi-rural parts of Oregon. Children in our study experienced alterations in their daily activities, home environment, school performance, and experienced shame due to food insecurity.

Children in our study reported cognitive, emotional, and physical awareness of experiencing food insecurity; three types of awareness that have been described in previous research (Fram et al., 2011; Bernal et al., 2012). Emotional awareness of food insecurity was described as feelings of sadness, worry, stress, frustration, and anger. Children also reported changes in their emotional state during times of food shortage where they felt irritable, grumpy, or would have "dark thoughts". Food insecurity in children has been associated with behavioral problems (Whitaker et al., 2006; Kleinman et al., 1998) and altered mental health (Weinreb et al., 2002; McIntyer et al., 2013; Alaimo et al., 2002; Melchior et al., 2009), such as aggression, anxiety and depression in a number of studies.

The children in our interviews took responsibility for managing food resources by participating in activities that are not likely to be part of normal childhood and children who are food secure are not likely to experience. Children spent time taking responsibility for managing food related resources by preparing for hunger and food shortages (i.e. filling up on fluids, storing or saving food, eating more at school, mental preparation), seeking out alternate food resources (i.e. foraging, borrowing food, using food pantries), and saving or earning money to buy food. Similar activities have been observed in both qualitative and quantitative studies (Fram et al., 2011; Bernal et al., 2012). Qualitative data from food insecure adults in Canada reported a “preoccupation with access to enough food,” where the fixation on finding food was a source of anxiety and panic for parents (Hamelin et al., 2002). Further, age inappropriate activities can deprive children of their childhood and can be harmful to their physical and mental development (ILO, 2013). These adult-type responsibilities may cause added stress and anxiety for children. One study found that even after controlling for stressful-life events, very-low food security in school-aged children was associated with higher reports of anxiety (Weinreb, 2002).

In our interviews, children reported on several occasions that they felt shame or embarrassment due to food insecurity and did not readily discuss their food situation with others due to fear of being labeled or judged. Children similarly experienced shame in a previous qualitative study, food insecure children were ashamed or afraid of being labeled by others as poor and did not

routinely discuss their food situation (Connell et al., 2005). In the 2015 study by Bernal et al., shame was associated with experiences related to being food insecure such as having an empty refrigerator, feeling worried, and going to school hungry (Bernal et al., 2015). Our children mentioned shame in other knowing or seeing that they did not have food at home, and sited this as a reason to avoid having friends to their house. This stigma associated with food insecurity may play an important role in children's mental well-being. Shame is a major component of many mental health problems. In adults, shame has been examined for its potential role in the development of mental disorders such as anxiety, depression, suicide attempts, self-harm, and aggression (Vizin G and Unoka Z, 2015).

In adults, shame related to food insecurity has been observed as a barrier to utilizing food resources and assistance programs (Hamelin et al., 2002). Australian youth, aged 15 to 24 years, reported shame and embarrassment as reasons for not using food resources (Booth, 2006). Children in our interviews reported feelings of shame associated with accessing and utilizing food pantries, food boxes, free school lunch programs, or borrowing food from others. In a previous study, children reported feeling uncomfortable participating in coping strategies to obtain food, such as borrowing from friends (Fram et al., 2011). Similarly, shame has been associated with several food insecure management strategies in children, including obtaining food on loan or credit, foraging, and running errands for others to eat (Bernal et al., 2015).

Alterations in children's daily activities were observed. Children reported a decrease in many leisure activities due to time constraints and shame associated with food insecurity. Many children participated in creative type leisure activities (i.e. drawing, painting, singing, woodcarving) and described these activities as a way of escapism or relaxation from their normal routine (i.e. schoolwork, chores). There is some evidence that participating in creative activities can have a positive impact on children's behavior, self-confidence, self-esteem, and physical activity (Bungay and Vella-Burrows, 2013). Reduced time spent learning and participating in creative activities may negatively impact the children who routinely enjoy them. Some children skipped or avoided their normal leisure activities with friends when food was low due to shame.

Our children reported decreased participation in physical activity because of food insecurity; they would avoid physical activity as a way to preserve food and energy or decrease their level of physical activity because of low energy levels. Further, during times of food insufficiency, eating patterns within the family would be altered in that there was a switch from more traditional "from-scratch" cooking style to quick to prepare, processed and convenient type foods. This can be expected, as many processed convenient foods are easily accessible and inexpensive. Although results are mixed, there is some evidence that supports an association between food insecurity and obesity in children (Kaur et al., 2015). There is evidence of a relationship among food insecurity and low levels of physical activity and poor diet quality in children (Fram et al., 2015). Another

study showed that children who are food insecure are less likely to participate in physical activity compared with children who are food secure (To et al., 2014). Other changes in eating behavior included eating smaller portions during times when food was low and some children described eating large quantities quickly when food was available.

The children in our study described monotony in their diet and the desire for foods not usually available in their home, mostly fresh fruits and vegetables. A study in California examining the relationship between level of food security and food supply of low-income families with children found a greater level of food insecurity to be associated with lower variety of most foods, particularly fruits and vegetables (Kaiser LL, et al., 2003). When asked to describe the gaps in availability of their desired foods, many of our children explained a seasonal or monthly pattern. Seasonal effects of food insecurity have been observed in earlier studies. One U.S. study examining the impact of seasonally high heating and cooling costs on the degree of household food insecurity found that households experienced substantial seasonal differences in the incidence of very low food security in areas of high winter heating costs and high summer cooling costs, reflecting the financial burden of these conditions and their effect on food access (Nord and Kantor, 2006). Another study reported that for children who participated in the free or reduced school-lunch program, the food insufficiency rate was consistent from January to May and then increased during the summer months of June and July, while food insufficiency among eligible non-participating

children was constant throughout the year (Huang J, et al., 2015). However, a study in the Canadian Arctic showed no significant difference in household food insecurity prevalence by season (May compared to September) (Guo et al., 2015). The timing of many of our interviews during summer months and coinciding with children being on summer vacation indicates less reliance on school meal programs and possibly an increase in food insecurity for our children at the time of their interviews.

Altered sleep patterns were common among our study participants. It was common for children to report disrupted sleep patterns affecting quality (i.e. waking at night, tossing and turning) and quantity of sleep (i.e. difficulty falling asleep). In Mexico, food insecurity has been associated with inadequate sleep duration and poor sleep quality in adults (Jordan et al., 2015). One study has found that food insecurity is associated with increased nap taking in children (Bernal et al., 2014). Participating children reported that they were more likely to nap after school when food was low due to low energy levels, while some used afternoon sleeping as a way to cope with physical symptoms of hunger. These altered sleep patterns may influence both children's mental and physical health, as well as school performance. A U.S. study found an association between food insecurity and frequent insufficient sleep, as well as frequent mental distress in adults (Liu et al., 2014). A large meta-analysis of 34 studies of mixed-methods, found a strong association between sleep duration and overweight/obesity in children; children with shorter sleep duration had a 58% increased risk of

becoming overweight or obese compared with those with longer sleep duration (Chen et al., 2008). Disrupted sleeping patterns have been suggested as one possible mechanism by which food insecurity and childhood obesity are associated (Frongillo and Bernal, 2014). Sleep quality and quantity were both found to be closely related to student learning capacity and academic performance, and sleep loss was associated with poor learning (Curcio et al., 2006). Children in our study cited oversleeping and sleepiness as a reason for missing school. Our children did not cite hunger or food insecurity as the specific cause for their altered sleep patterns, but in a qualitative study in Canada, adults identified anxiety over lack of food as a source of sleep loss (Hamelin et al., 2002). Further, in Burkina Faso feelings of concern, worry, and anxiety due to food insecurity were associated with sleep loss in adults (Nanama et al., 2012). Further research needs to be done to explore the link between food insecurity and disrupted sleep in children.

Food insecurity has been shown to negatively impact children's academic performance (Joyti et al., 2005; Frongillo et al., 2006) and result in school absenteeism (Bernal et al., 2014; Kleinman et al., 2002). Our children described that during times when food was low they would spend less time on homework due to food related time constraints and would have less energy and focus for schoolwork due to hunger. Due to self-reported data it is hard to determine the accuracy in the number of days the children in our study were absent from school in the previous school year. However, it is worth noting that the primary reasons

for missing school included sickness, scheduled appointments, and disinterest (i.e. skipping class, faking sick, over-sleeping). Previous qualitative work found that child food insecurity and child strategies to cope with food insecurity were both associated with higher odds of missing school (Bernal et al., 2014).

The frequency of shared family meals has been positively associated with higher child well-being scores, lower depressive scores and fewer risk-taking behaviors in adolescents, as well as better indicators of family relationship (Utter et al., 2013). Children in our interviews described alterations in their family mealtime during times of food shortage; families ate together less frequently, had decreased quality of interaction and time spent together, or one or more family members would go without eating. The majority of our children reported that eating together with their family was important to them and they would like to eat together just as often or more often. Shared family meals times may provide a unique opportunity to enhance the well-being of adolescents (Eisenberg et al., 2004), an opportunity than may be lessened or lost due to food insecurity.

Increased family conflict and altered cohesion within the home were reported by our children during times of food insufficiency. Children reported an increase in parental tension and disputes, parent mood changes, and a feeling of distance between the child and parent. Qualitative research in Burkina Faso examined that household food insecurity results in irritability and tension among family members, especially the head of the house, which lead to disputes (Nanama and Frongillo, 2012). Disrupted household dynamic, especially in the

parent-child relationship (i.e. irritability, anger, parents less available due to food related time constraints, conversation gaps) was observed in a Canadian study (Hamelin et al., 1999). It has been postulated that household food insecurity negatively impacts children's behavior through distress and altered parenting that affects the quality of care provided by the parent to the child (Nanama and Frongillo, 2012). The evidence provided in our interviews helps support this hypothesis by providing insight into how food insecurity alters household dynamics and parent-child relationships.

### **Study Strengths and Limitations**

A major strength of this study is that by talking with children directly, we were able to gain understanding of their experiences and feelings of food insecurity from their own perspective, as opposed to their parents. We choose to study children ages 9 and 15 years because of their increased likelihood of experiencing altered daily activities and shame, compared to younger children. Additionally, interviews were conducted in the children's hometowns, many of which took place in the child's home, which we hope aided in providing a comfortable environment for children while participating. Another strength is that by recruiting and interviewing children during summer vacation and during the beginning of the school year, we were able to increase the generalizability of our sample by providing perspective from both seasons. This study will help set the foundation for future studies and build on existing research to target children's specific needs when developing appropriate interventions.

The recruiting strategy used for our study increases the potential for sample bias to occur, in that some members of our intended population may not have been included in our sample. Since all 20 of our participating families were recruited from food pantries, we were unable to gather information of children's experiences with food insecurity from families who do not utilize community resources. Therefore, there is a need for further research to determine how these children experience and what they do during food hardships.

One potential limitation is that by asking children additional follow-up questions to probe or dive deeper into their responses, there is a potential to lead children to answer in a particular way. For this reason, appropriate follow-up questions were developed as part of the interview-guide, but in order to gain adequate interview information the interviewer did stray from the guide at her own discretion.

Other studies have compared child interviews with those of their parents as a way to provide further validation. For this study we did not interview parents, however as implemented in South Carolina, this study included a separate parent interviews for comparison with child interviews.

### **Implications and Application of Research Results**

To successfully end hunger at the child level, future interventions should be developed from a thorough understanding of how children experience food insecurity and what they do when faced with food hardship. Many of the current interventions, policies, and programs aimed in providing food assistance are

targeted towards the household as a whole and do not guarantee that children's individual and developmental needs are being met. As previously mentioned, children's experiences often differ from those of their parents, so there is a need to understand food insecurity from the child's perspective to adequately address its consequences in children. Results of this study help to increase understanding of the link between child food insecurity and its negative consequences by advancing understanding of what children do and what they experience when faced with food insecurity. Policy makers, healthcare practitioners and researchers can use these results to better target children's needs specifically when developing or modifying existing policies and programs to protect children.

Potential interventions should be targeted towards normalizing food insecurity for children so that it becomes more personally acceptable and reducing any societal stigma or shame related to experiencing food insecurity and using food related resources. In Oregon, some actions have already taken place to reduce feelings of shame for children. In 2015, policies were set in place to allow universal free school meals, both breakfast and lunch, to all children in schools with a high percentage of low-income children under the Community Eligibility Provision (CEP) (ODE, 2016). Thus far, CEP has been implemented in urban areas and has not yet reached rural communities.

Public health initiatives have been set in place to educate families on the importance of shared meals. In 2013, the Nutrition Council of Oregon launched the Oregon Shared Meals Initiative, a campaign aimed at increasing

awareness of the benefits associated with shared family meals (Oregon Health Authority, 2013). The initiative educates families on the importance of shared meals on adolescent physical and mental health, and strengthening family bonds.

Oregon is one of the first states to implement policies to support school based gardening programs and incentive the use of local agriculture for school meals. The Oregon Farm to School Program and School Gardening Program, supported by Oregon Senate Bill 501, provides grants and reimbursement for school that purchase Oregon grown agriculture and give funding for food/agriculture based educational opportunities (Oregon Department of Education, 2016). Some of our children cited school gardening programs as a resource for bringing fresh produce home for their families.

In 2015, the American Academy of Pediatrics (AAP) released a policy statement recommending pediatricians routinely screen all children for food insecurity and suggesting practitioners familiarize themselves with food assistance resources in which they can direct families in need (AAP, 2015). Routine screening of child food insecurity was first implemented at OHSU's Doernbecher Children's Hospital in 2013, as a pilot project designed to assess feasibility and acceptability of implementing the Oregon Food Bank and Child Hunger Coalition's (CHC) screening algorithm (Oregon Food Bank website, 2010). Doernbecher providers initiated screening using a 2-item screening tool (Hager, 2010), the same screener recommended by the AAP for use by all

practitioners. Following this pilot, routine screening has been expanded to community and public health settings around Oregon, including other medical clinics, as well as Head Start and WIC programs.

In terms of reducing the stigma associated with utilizing community food resources, many food pantries have begun to switch from food box provisions to an independent shopping-style experience for customers, a transition supported by the Oregon Food Bank. Additionally, many food pantries seek and accept donations from local farmers during peak harvest seasons, to increase the provision of fresh fruits and vegetables to their customers. This is important, as many of the children in our interview stated they wish they had more consistent and dependable access to fresh fruits and vegetables.

The results of this study help to develop a theory to link food insecurity with its non-nutritional consequences. In terms of future research, these results support a need for future studies with larger sample sizes and mixed-method designs to further explore altered activities and shame and how they relate to food insecurity. Researchers can build on the results of this study and develop studies to adequately address shame as it relates to food insecurity, the effectiveness of newly implemented school-based interventions in reducing shame, gender differences in the way children experience shame, and exploring differences in altered activities for children living in rural and urban environments.

## Chapter VI: Conclusion

Household food insecurity has been associated with a number of negative consequences for children such as behavior problems, disrupted social interactions, compromised school performance, poor health and dietary intake. Until now, specific mechanisms by which these consequences occur have only been speculated and there is little evidence to support which mechanisms are important. Results from this study aid in providing evidence of the non-nutritional mechanisms, such as behavior, social, and psychological factors, that may impact these poor outcomes for children living in rural and semi-rural parts of Oregon. Children in our study were aware of food insecurity at the personal level and took responsibility for managing food resources for themselves and their household. Altered child activities, social and behavioral changes, and negative academic effects were described. Children experienced shame for being food insecure and for using food related resources, such as food pantries. When developing appropriate programs and interventions to support and protect children from food insecurity, researchers, practitioners, and policy makers should take into account these social and psychological consequences to create and modify programs to be wholly beneficial.

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## Appendix A: USDA Household Food Security Screening Module

<p><b>Transition into Module:</b> These next questions are about the food eaten in your household in the last 12 months, since (current month) of last year and whether you were able to afford the food you need.</p>	
<p><b>Household Stage 1: Questions 1-3</b></p>	
<p>1. The first statement is “(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more.” Was that <u>often</u> true, <u>sometimes</u> true, or <u>never</u> true for (you/your household) in the last 12 months?</p>	<p><input type="checkbox"/> Often true  <input type="checkbox"/> Sometimes true  <input type="checkbox"/> Never true  <input type="checkbox"/> DK or Refused</p>
<p>2. “The food that (I/we) bought just didn’t last, and (I/we) didn’t have money to get more.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?</p>	<p><input type="checkbox"/> Often true  <input type="checkbox"/> Sometimes true  <input type="checkbox"/> Never true  <input type="checkbox"/> DK or Refused</p>
<p>3. “(I/we) couldn’t afford to eat balanced meals.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?</p>	<p><input type="checkbox"/> Often true  <input type="checkbox"/> Sometimes true  <input type="checkbox"/> Never true  <input type="checkbox"/> DK or Refused</p>
<p>4. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food? *</p>	<p><input type="checkbox"/> Yes  <input type="checkbox"/> No (Skip AD1a)  <input type="checkbox"/> DK (Skip AD1a)</p>
<p>5. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?</p>	<p><input type="checkbox"/> Almost every month  <input type="checkbox"/> Some months but not every month  <input type="checkbox"/> Only 1 or 2 months  <input type="checkbox"/> DK</p>
<p>6. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?</p>	<p><input type="checkbox"/> Yes  <input type="checkbox"/> No  <input type="checkbox"/> DK</p>
<p>7. In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?</p>	<p><input type="checkbox"/> Yes  <input type="checkbox"/> No  <input type="checkbox"/> DK</p>
<p>8. In the last 12 months, did you lose weight because there wasn't enough money for food?</p>	<p><input type="checkbox"/> Yes  <input type="checkbox"/> No  <input type="checkbox"/> DK</p>
<p>9. In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?</p>	<p><input type="checkbox"/> Yes  <input type="checkbox"/> No (Skip AD5a)  <input type="checkbox"/> DK (Skip AD5a)</p>
<p>10. [IF YES ABOVE, ASK] How often did this happen—almost every month, some</p>	<p><input type="checkbox"/> Almost every month  <input type="checkbox"/> Some months but not every month</p>

months but not every month, or in only 1 or 2 months?	<input type="checkbox"/> Only 1 or 2 months <input type="checkbox"/> DK
<b>Transition into Child-Referenced Questions: Questions 11-18</b> 11. "(I/we) relied on only a few kinds of low-cost food to feed (my/our) child/the children) because (I was/we were) running out of money to buy food." Was that <u>often</u> , <u>sometimes</u> , or <u>never</u> true for (you/your household) in the last 12 months?	<input type="checkbox"/> Often true <input type="checkbox"/> Sometimes true <input type="checkbox"/> Never true <input type="checkbox"/> DK or Refused
12. "(I/We) couldn't feed (my/our) child/the children) a balanced meal, because (I/we) couldn't afford that." Was that <u>often</u> , <u>sometimes</u> , or <u>never</u> true for (you/your household) in the last 12 months?	<input type="checkbox"/> Often true <input type="checkbox"/> Sometimes true <input type="checkbox"/> Never true <input type="checkbox"/> DK or Refused
13. "(My/Our child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that <u>often</u> , <u>sometimes</u> , or <u>never</u> true for (you/your household) in the last 12 months?	<input type="checkbox"/> Often true <input type="checkbox"/> Sometimes true <input type="checkbox"/> Never true <input type="checkbox"/> DK or Refused
14. In the last 12 months, since (current month) of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK
15. In the last 12 months, did (CHILD'S NAME/any of the children) ever skip meals because there wasn't enough money for food?	<input type="checkbox"/> Yes <input type="checkbox"/> No (Skip CH5a) <input type="checkbox"/> DK (Skip CH5a)
16. [IF YES ABOVE ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?	<input type="checkbox"/> Almost every month <input type="checkbox"/> Some months but not every month <input type="checkbox"/> Only 1 or 2 months <input type="checkbox"/> DK
17. In the last 12 months, (was your child/were the children) ever hungry but you just couldn't afford more food?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK
18. In the last 12 months, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK

\*If none of these items are affirmed, participant is not eligible

## Appendix B: Parent Questionnaire about Family Characteristics

1. Are you:	<input type="checkbox"/> Male <input type="checkbox"/> Female
2. What is your age?	_____
3. What is your ethnicity?	<input type="checkbox"/> Hispanic <input type="checkbox"/> Non-Hispanic
4. What is your race?	<input type="checkbox"/> African American/Black <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> Asian/Pacific Islander <input type="checkbox"/> White <input type="checkbox"/> Multiracial <input type="checkbox"/> Other (please specify)
5. What is the highest level of education that you have completed?	<input type="checkbox"/> Grades 8 or less (elementary/middle) <input type="checkbox"/> Grades 9 to 11 (some high school) <input type="checkbox"/> Grade 12 or GED (high school graduate) <input type="checkbox"/> College 1 year to 3 years (some college or technical school) <input type="checkbox"/> Undergraduate degree (four year degree) <input type="checkbox"/> Graduate Degree
6. Do you own or rent your home?	<input type="checkbox"/> Own <input type="checkbox"/> Rent <input type="checkbox"/> Other arrangements (explain:_____)
7. What is your zip code?	_____
8. Place an X next to the category of your total household income.	<input type="checkbox"/> Less than \$16,000 <input type="checkbox"/> \$16,000 to \$34,999 <input type="checkbox"/> \$35,000 to \$49,999 <input type="checkbox"/> \$50,000 to \$74,999 <input type="checkbox"/> \$75,000 or more
9. How old is your child who will participate in this study?	_____
10. Does your child(ren) received free or reduced lunch at school?	<input type="checkbox"/> Yes <input type="checkbox"/> No
11. Have you ever received any of these benefits?	<input type="checkbox"/> Women Infant and Children (WIC) <input type="checkbox"/> Supplemental Nutrition Assistance Program (SNAP)/Food Stamps <input type="checkbox"/> Temporary Assistance for Needy Families (TANF)

**Appendix C: Child Food Security Assessment\***

1. We can't get the food we want because there is not enough money.	Many times	1 or 2 times	Never
2. I worry about how hard it is for my parents to get enough food for us.	Many times	1 or 2 times	Never
3. I worry about not having enough to eat.	Many times	1 or 2 times	Never
4. I feel hungry, because there is not enough food to eat.	Many times	1 or 2 times	Never
5. I get really tired, because there is not enough food to eat.	Many times	1 or 2 times	Never
6. I act ok when we don't have enough money to buy the foods I want.	Many times	1 or 2 times	Never
7. I try not to eat a lot so that our food will last.	Many times	1 or 2 times	Never
8. I bring food home so that there is enough for everyone to eat.	Many times	1 or 2 times	Never
9. I work to earn money so that we can have enough food.	Many times	1 or 2 times	Never

\*These items were developed and validated by Fram et al., 2013.

## Appendix D: Child Interview Guide

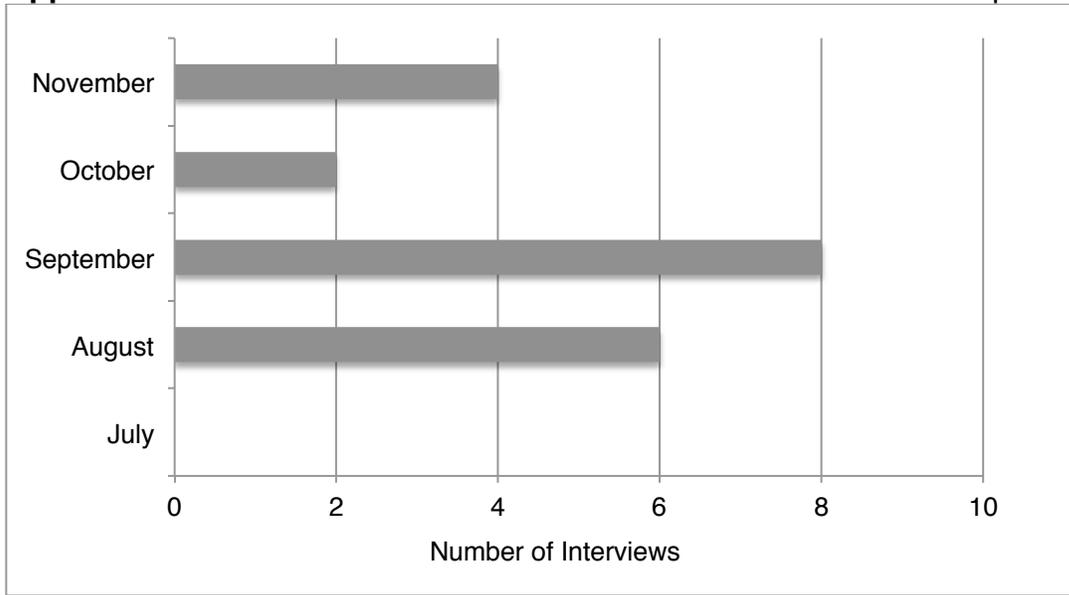
Interview Questions	Follow-up Questions
1. What kinds of things do you like to do after school? [Icebreaker]	
2. Tell me about your family. Who do you live with?	a. How are you related to [person]?
3. What's a normal day during the week like for your family?	a. What you do from the time you wake up until the time you go to bed during the week? On the weekend? What times do you usually do these things? <ol style="list-style-type: none"> <li>i. How often do are these things stopped or interrupted?</li> <li>ii. What may cause things at home to be stopped or interrupted? What things make it better? What things make it worse?</li> <li>iii. Are these activities the same or different than during the school year?</li> </ol> b. How would you describe the noise in your house?           c. How organized (or ordered) are things in your house? <ol style="list-style-type: none"> <li>i. Who keeps things in order at your house? How does s/he keep things in order?</li> </ol>
4. Does your family usually eat together? If so, can you tell me about the times you and your family eat together? Who is there and what is going on?	a. When do you eat together? b. How often do you eat together? c. Where do you eat together? Out/home? Which room in the house? <ol style="list-style-type: none"> <li>i. <i>If not at a dining table</i>, Why do you eat there?</li> </ol> d. Who cooks dinner during the week when your family eats together? On the weekends? e. Who makes your plate? <ol style="list-style-type: none"> <li>i. Does your plate looks like you want it to? If not, why?</li> <li>ii. Who picks what foods go on your plate?</li> </ol> f. How long do you usually eat together?
5. <i>If family doesn't usually eat together</i> , Why doesn't your family usually eat together?	a. How is food usually served in your home? b. When do you usually eat? When do your brother (s)/sister(s) and parent(s) eat?

	c. Where do you usually eat? Where do your brother (s)/sister(s) and parent(s) eat?
6. Think of a time when you usually eat together with your family.	<p>a. What is happening <u>before</u> this time?</p> <p>b. What do you and other family members usually do during the time you eat together? [e.g., talk, watch TV, phone, homework? Other]?</p> <p>c. What do you do <u>after</u> you and your family eats together?</p>
7. What are the best things about eating together as a family? What are the not so good things about eating together as a family?	a. How do you feel after you eat with your family?
8. How important is it for you to eat with your family? Why? What would make this time together good? What makes it not so good? Would you like to eat together as a family more often or less often? Why?	
9. Does your family talk a lot or a little when you eat together? Can you describe the way your family talks to each other when you are eating together?	<p>a. What does your family talk about when you are eating together?</p> <p>b. What would you change about the way you family members talk to each other when you eat together? Why?</p> <p>c. What would you keep the same about the way your family talks at the family meal? Why?</p>
10. Let's think about a time when there isn't enough food for everyone in your home to eat, what is that like? Do you know anyone who doesn't have enough food to eat?	
11. Do you have all the food that you want to eat? If not, why not? What foods or meal(s) would you like to eat, but you don't have at home? (or, but it's not available?)	<p>a. When does this happen? All year long? Or just at some times? (when may be a season, certain time of the month, etc.)</p> <p>b. How do you feel when do you don't have enough food?</p>
12. When there isn't enough food at home, how do you know? How does not having enough food at home make you feel?	<p>a. What do your parent(s) do differently when there isn't enough food at home?</p> <p>i. How do these changes make you feel?</p> <p>ii. How do you think these changes make your parent(s) feel?</p>

	<ul style="list-style-type: none"> <li>b. What do you do differently when there isn't enough food at home? What kind of things do you have to do around the house (e.g. watch a sibling, cook, more chores) when there isn't enough food to eat? <ul style="list-style-type: none"> <li>i. How do these changes make you feel?</li> </ul> </li> <li>c. How does not having enough food change how your family eats together? <ul style="list-style-type: none"> <li>i. Do you eat together less often? How are the foods served different than when you have enough food to eat?</li> </ul> </li> </ul>
<p>13. When you have enough food at home, what kinds of things do you like to do during the week (e.g., visiting friends, playing video games, watching television, using a computer, playing a sport, or taking a nap)? What about afterschool? On the weekend?</p>	<ul style="list-style-type: none"> <li>a. Is this the activity you're most likely to do? Why?</li> <li>b. How do you feel when you are doing this activity (e.g., running) _____?</li> <li>c. If you need to (run or whatever activity)_____some more, do you do it? (Repeat for all activities mentioned by the child)</li> </ul>
<p>14. When you don't have enough food at home, what kinds of things do you like to do during the week? What about afterschool? On the weekend? Is what you do different compared to when there is enough food to eat? How so? Why are things different?</p>	
<p>15. What kinds of things do you skip doing when you don't have enough food?</p>	
<p>16. How many days did you miss school in the last week of school? In the last marking period? Last school year?</p>	<ul style="list-style-type: none"> <li>a. Was your attendance during the last week of school typical?</li> <li>b. What are the main reasons you miss school?</li> <li>c. How do you feel about missing school?</li> </ul>
<p>17. During the summer, do you attend any regularly scheduled summer activity?</p>	<ul style="list-style-type: none"> <li>a. How often do you miss this activity?</li> <li>b. What are the main reasons you miss this activity?</li> <li>c. How do you feel about missing this activity?</li> </ul>
<p>18. What does being ashamed mean to you? What does being embarrassed mean to you? Can you tell me about</p>	

<p>one time that you felt ashamed or embarrassed?</p>	
<p>19. Have you ever seen another child feel ashamed (or embarrassed) for getting food? Why do you think he/she felt ashamed?</p>	<ul style="list-style-type: none"> <li>a. Would you feel okay getting food like him/her? Why or why not?</li> <li>b. If you had to get food from [use responses given by participant] what would you do to not feel ashamed?</li> <li>c. What are some ways you've had to get food when there wasn't enough at home (e.g. borrow from another house, eat with others, or get a gift or donation from someone else)? <ul style="list-style-type: none"> <li>i. How did you feel when you got food from these places? Did others know you got food from these places? If so, how did you feel about them knowing? How did they make you feel about getting food?</li> </ul> </li> </ul>
<p>20. Does anyone ever make you feel ashamed? Why?</p>	<ul style="list-style-type: none"> <li>a. Are there any children that make you feel ashamed? How so?</li> <li>b. Are there any family members, who are grown up, that make you feel ashamed? How so?</li> <li>c. Are there any grown ups, who are not family members, that make you feel ashamed? How so?</li> </ul>
<p>21. Last question, what's your favorite game to play?</p>	

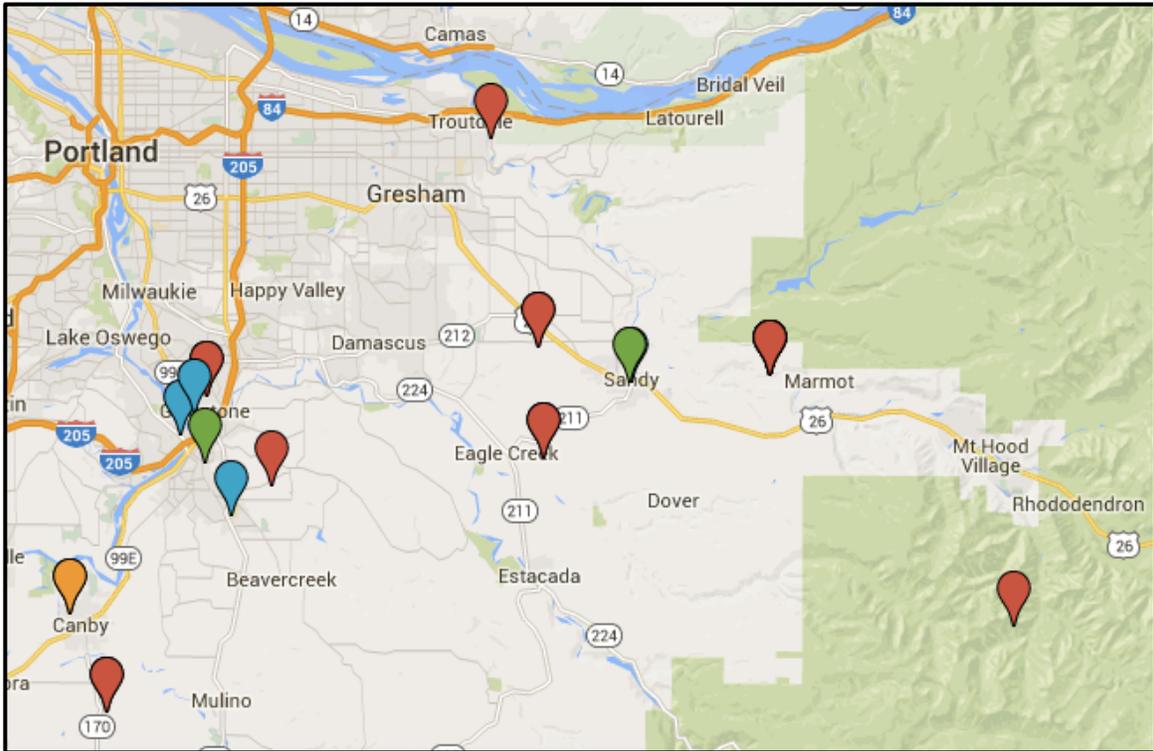
**Appendix E: Timeline of Recruitment and Data Collection: Interviews per Month**



\*Recruiting begins July 13, 2015

\*\*School starts August 28, 2015

## Appendix F: Map of Participant Zip Codes, Interview and Recruiting Sites\*



\*NOTE: One participant provided a California Zip Code, not shown on map

\*\*Red pins represent zip codes of where our participants reside, based on responses from the demographic survey. Green pins represent recruiting sites where participants were successfully enrolled into the study. Unsuccessful recruiting sites are not shown. Blue pins represent public interview sites where child interviews took place. Interviews that took place in participant's homes are not shown. The orange pin represents a single site where both recruiting and an interview took place.