

From Parents to Children:
The Role of Moderating Childhood Factors in the Intergenerational Transmission of Food
Insecurity

Name: Marleen van Aalst

Student Number: 5614422

Academic Supervisor: Fenella Fleischmann

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Abstract

Food insecurity exists when there is a lack of access to sufficient, safe, nutritious food to maintain a healthy and active life. Researchers have found different associations of food insecurity such as poorer school performance, internalizing and externalizing problem among children, poorer physical and mental health among adults, and difficulties making ends meet, leading to trade-offs in other areas. This study looks at the intergenerational transmission of food insecurity and the conditions under which it takes place. It was found that the use of food stamps in childhood is a significant predictor of food insecurity in adulthood. A household head's education was a protective factor as was his/her general health. Unemployment, presence of children and presence of mental health issues were risk factors. If a child grew up in a household in which the mother completed more years of education, this weakened the intergenerational transmission of food insecurity. Intergenerational transmission of food insecurity was stronger for Hispanic families. It was concluded that intergenerational transmission of poverty exists and although moderation effects are small, this study can provide an informative starting point for future research and policies and interventions aimed at breaking the cycle.

Introduction

Food security exists “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” (Food and Agriculture Organization, 1996). When there is a lack of access, food insecurity exists. There are several reasons why food insecurity might occur such as low income, mobility issues, or inadequate food distribution and choice (Clifton, 2004; Kalina, 2001). Characteristics of households experiencing food insecurity as well as common issues associated with food insecurity have been researched thoroughly. Researchers have found negative correlations with children's academic performance, mental and physical health (Alaimo, Olson, & Frongillo, 2001; Alaimo, Olson, & Frongillo, 2002; Melchior, et al., 2012; McLaughlin et al., 2012) as well as adults' mental and physical health (Casey et al, 2004; Garg, Toy, Tripodis, Cook, & Cordella, 2014; Heflin, Siefert, and Williams, 2005; Whitaker, Phillips, and Orzol, 2006; Melchior et al., 2009; Tarasuk, Mitchell, McLaren, & McIntyre, 2013; Stuff et al., 2004). It was found that food insecure households engage in coping strategies to make ends meet, often resulting in trade-offs with other basic needs. The rent-food dichotomy is an example, in which rent often takes the priority over nutritious food (Kalina, 2001). These trade-offs are associated with parents' level of anxiety, stress, and depression,

which have negative impacts on their children (Knowles, Robinowich, Ettinger de Cuba, & Cutts, 2016; Tarasuk et al., 2015).

Social policy can influence food security indirectly. When social assistance is reduced or becomes conditional, one can expect a rise in food insecurity as there is less money available to spend on food and basic needs. Currently, food assistance programs (i.e. Supplemental Nutrition Assistance Program and Women Infant and Children, hereafter SNAP and WIC) aim to directly alleviate food insecurity. Policies trust that welfare benefits can treat the financial strain that might be associated with food insecurity. Although both have been found to alleviate food insecurity, they offer only a temporary solution for one component of the issue. In addition, once a family becomes ineligible for SNAP benefits, these are reduced immediately, leaving no time for a family to adjust. This means they may remain food insecure or may re-experience food insecurity due to other associated factors or difficulties as simple as budgeting.

There is evidence that experiences of food insecurity reoccur and that intergenerational transmission of food insecurity exists. From a policy and interventions perspective, to truly make a sustainable difference it is important to not only address the different correlates of food insecurity, but also to understand to what extent food insecurity is transmitted across generations and under what conditions this intergenerational transmission is stronger or weaker. Policy and interventions should treat the issue holistically, looking at all associated factors, in order to treat food insecurity and the intergenerational transmission of it (Hernandez, 2016a, b).

Most research on food insecurity is based on cross-sectional data or has found a bi-directional relationship. There is therefore a lot of potential for longitudinal research in the field of food insecurity. Because of its close link to poverty and the well-documented intergenerational transmission of poverty, it is highly likely that there is a connection between food insecurity across generations as well. This notion has been picked up by other researchers. Recently, Hernandez (2016a) called for the evaluation of intergenerational transmission of food insecurity and published a study looking at the issue (Hernandez, 2016b). She found that 58% of her sample of low-income, foreign-born Latino mothers had experienced food insecurity both as a child and adult and 38% as an adult or as a child. This study is, to my knowledge, the first to examine the intergenerational transmission of food insecurity. Because the sample is very specific, Hernandez's study (2016b) cannot be generalized broadly and although based on her results it seems that food insecurity is more often than not transmitted across generations, it is

unclear why it was transmitted across generations for the majority but not for a smaller group of her sample. The current study will look at the extent to which food insecurity is transmitted from parents to children and explore the factors that contribute and protect against the intergenerational transmission of food insecurity. In addition, the data used in the current study allows for testing on a larger, nationally representative sample of the United States including different racial origins.

First, a theoretical model will be discussed to explain the extent and conditions under which intergenerational transmission occurs. A review of the literature will provide an overview of known associations of food insecurity which then leads to the current study's analysis of risk – and protective factors related to the intergenerational transmission of food insecurity.

Theoretical Exploration

The intergenerational transmission of food insecurity has not been researched extensively, however the intergenerational transmission of poverty has. The current study borrows from literature on intergenerational transmission of poverty to inform the theoretical basis for the intergenerational transmission of food insecurity. It is important to keep in mind that, although poverty and food security are closely related, they are two distinct concepts. It has been shown that many households under the poverty line do not qualify as food insecure and because there are households above the poverty line that do (Gundersen, 2013). Because the two concepts are related but not the same and the intergenerational transmission of poverty has been well documented, it is important to understand if intergenerational transmission of food insecurity exists to effectively treat the issue beyond treating the poverty or low-income aspect of it. Alleviating financial strain may offer a short-term solution, however once families are no longer eligible for support, they may still be or re-experience food insecurity due to associated factors such as mental health issues. (Hernandez, 2016a). To treat food insecurity, policy makers need to appreciate the positive effects programs such as SNAP and WIC can have, however need to look at solutions beyond these programs thinking about a more sustainable approach when trying to target food insecurity and the intergenerational transmission.

Poverty and Low Income

Due to the high association between poverty and food insecurity, risk factors for poverty and experiencing food insecurity are very similar. Research has found that poverty is positively correlated with internalizing and externalizing problems in children (McLeod and Shanahan,

1993). Adults who live in poverty are more likely to live with a mental illness and/or drug abuse problem (Bruce, Takeuchi, and Leaf, 1991) and parental mental health issues are a risk factor for poor mental health in children and may mediate the relationship between poverty and children's mental health. There is a positive relationship between poverty and experiences of depression and anxiety, especially for single mothers. Single mothers attempted to generate income and cut expenses by cutting back on recreational activities and buying cheaper clothes and food (Mcloyd and Wilson, 1991). Lastly, poverty is often related to housing instability.

Intergenerational transmission

Wagmiller and Adelman (2009) found that children who experience poverty are more likely to experience poverty in early adulthood. They also found that the longer the period of poverty in one's childhood, the more likely they are to experience poverty in early adulthood. This has often been described as the cycle of poverty, or better termed as the intergenerational transmission of poverty (Wagmiller and Adelman, 2009). Based on this finding and given the association between poverty and food insecurity, this study on the intergenerational transmission of food insecurity expects that the number of years of food stamp use in childhood is a significant predictor for food insecurity in adulthood (H_1).

Theoretical Model

This study builds on Rutter's (1987) model of risk and protection. His model essentially states that a factor like poverty is transmitted across generations when risk factors (risk mechanisms) outweigh protective factors (protective mechanisms). An example would be that married couples are less likely to be food insecure, so marriage could be seen as a protective factor, weakening the association of food insecurity between parents and children. In contrast, poor mental health would be a risk factor, strengthening the intergenerational link.

To explore the intergenerational transmission of food insecurity using Rutter's model (1987), it is assumed that factors from one's parents and parental household can influence the extent to which food insecurity is transmitted from parents to children. Other risk and protective factors, known to be associated with food insecurity and more generally with the intergenerational transmission of poverty, are expected to moderate the relation between food insecurity in childhood and adulthood. A review of the literature below will give insight into known associations of food insecurity treated as both predictors and moderators in the current study.

Characteristics of Food insecurity

According to the United States Department of Agriculture Economic Research Service (2015), 14% of U.S. households experienced food insecurity at some point during 2014.

Households with children had an increased prevalence of food insecurity of 19.2% in 2014. In 9.8% of households only adults experienced food insecurity and in 9.4% of households both children and adults experienced food insecurity (Coleman-Jensen, Gregory, & Rabbitt, 2015a).

The concept of food insecurity can be broken down into two subcategories: low food security and very low food security. Households that experienced low food security (8.4% in 2014) are defined as “households [that] obtained enough food to avoid substantially disrupting their eating patterns or reducing food intake by using a variety of coping strategies, such as eating less varied diets, participating in federal food assistance programs, or getting emergency food from community food pantries” (Coleman-Jensen, Gregory, & Rabbitt, 2015a,b).

Households experiencing very low food security (5.6% in 2014) are defined as when “normal eating patterns of one or more household members were disrupted and food intake was reduced at times during the year because they have insufficient money or other resources or food” (Coleman-Jensen, Gregory, & Rabbitt, 2015a,b). For the purpose of the current study, food insecurity will refer to individuals experiencing any level of food insecurity, as factors that contribute or protect against food insecurity are very similar.

Previous studies have identified household characteristics that increase the risk of food insecurity.

Socio-demographic factors. As discussed previously, households with children have a higher prevalence of food insecurity (increased prevalence among households with children under age six). Households with children in which couples were married experienced less food insecurity than the national average. In contrast, single-parent households were more likely to be food insecure. Other socio-demographic pointers to increased prevalence of food insecurity include Hispanic, and non-Hispanic Black households, and households in rural areas (Coleman-Jensen, Gregory, & Rabbitt, 2015a). Based on what is known about socio-demographic factors associated to food insecurity, it is expected that the relation between food insecurity in childhood and as an adult is weaker for those who grow up with married parents (H₂) and stronger for those of non-white descent (H₃). In addition, it is expected that households with a single Head, non-

White descent, and children have higher food insecurity scores than households with a married Head, of White descent and without children (H₄).

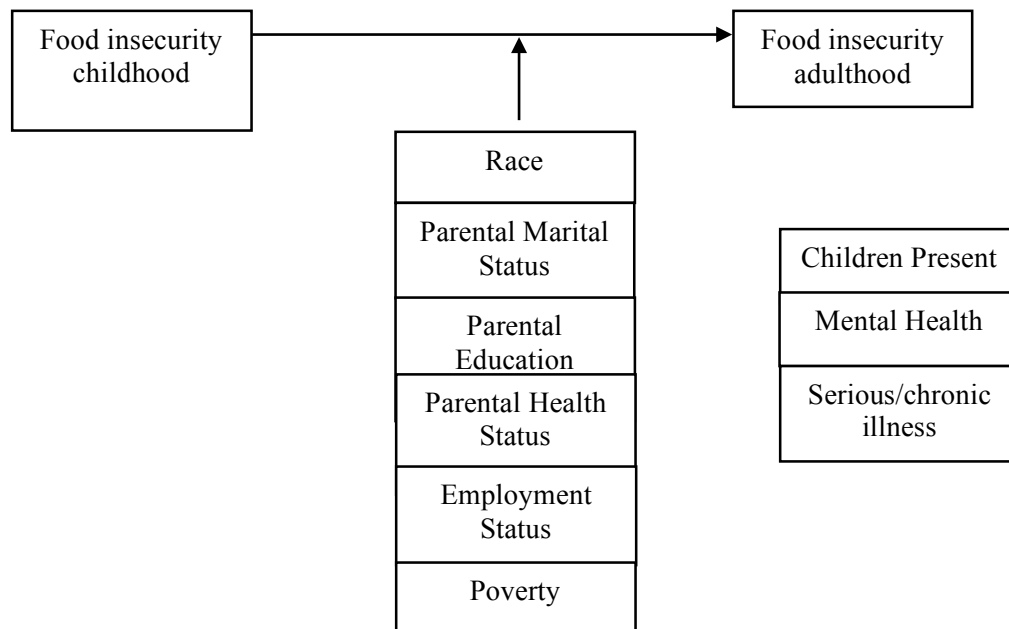
Socio-economic factors. It was found that food insecurity is correlated with low education and that low-income households (185% below poverty threshold, with poverty line at \$24,008) have a higher prevalence of food insecurity (Townsend, et al., 2001). It is therefore expected that the relation between food insecurity as children and adults is weaker for those who grew up with an adult who completed more grades of education (H₅) and stronger for those who grew with poor parents (H₆). In addition, it is expected that adults who completed more grades of education have lower food insecurity scores (H₇) and that those who grow up with poor parents have higher food insecurity scores (H₈).

Health. Over and above these socio-demographic factors, chronic health conditions were found to be associated with increased odds of household food insecurity (Tarasuk, et al., 2013). Other studies also found that food security was negatively associated with adults' self-reported health (Stuff, et al., 2004; Walker, et al., 2007). Therefore, the relation between food insecurity as children and as adults is expected to be weaker for those whose parents reported better general health (H₉). It is expected that households with a Head or Wife who report better general health have lower food insecurity scores (H_{10a}) and that a chronic/serious condition of one adult is related to higher food insecurity scores (H_{10b}).

Maternal mental health. Researchers found that maternal depression and generalized anxiety disorder is positively associated with household food insecurity and children's poorer reported health (Casey et al 2004; Garg, Toy, Tripodis, Cook, Cordella, 2014; Whitaker, Phillips, and Orzol, 2006). These findings are particularly important when thinking about the 9.8% of the households with children in which only the adults are food insecure. Even when children do not experience food insecurity, they may be affected by the negative consequences of their mothers' mental health issue. It can be hypothesized that households in which an adult experiences mental health issues have higher food insecurity scores (H₁₁). Theoretically, it would also be expected that the intergenerational link is stronger for households with an adult with mental health issues. This expectation could not be tested due to unreliable data on mental health in the dataset used in the current study.

This thesis will thus explore to what extent food insecurity is transmitted from parents to children and if race, parents' marital status, education, poverty, employment status, and physical health moderate this relationship.

Figure 1 Visual of moderating factors and risk-and protective factors



Research Design

Data

The current study uses the Panel Study of Income Dynamics (hereafter: PSID) from the University of Michigan. The Survey Research Center at the University of Michigan collects data from a nationally representative panel that has been interviewed annually since 1968 (bi-annually since 1997). To analyze intergenerational transmission of food insecurity and the factors contributing to or limiting the transmission, longitudinal data over one's life-course and preferably generations is required. The PSID is appropriate as it has allowed for data to be collected from changing and newly-formed household compositions, which allows researchers to follow families over time.

The PSID Panel refers to a household as a Family Unit (hereafter FU). A FU consists of a Head and may contain a Wife (female in married couple), "Wife" (cohabiting female) and/or children as well as (non-)relatives. If a romantic partner of the opposite sex moved in less than

one year before the interview they are coded as boyfriends or girlfriends and typically there is no data available for them. If they remain in the FU for more than a year, females will be coded as 'Wife' and males will remain (or become) Head in the next wave. Due to the lack of distinction between Wife and 'Wife' in the interviews, all Wives/'Wives' will be referred to as 'Wife' in the remainder of the text. Lastly, a split-off FU is a son or daughter who has moved out of the original FU and has established their own FU. In earlier waves FU Heads provided answers, however more recently PSID accepts Wives acting as a proxy to provide answers (Survey Research Center, 2015).

For this study, the Cross-Year Individual file, with information on the FU's Head and Wife and the Family Public Index Data file including FU-level information were used.

Measures

Because this study aims to determine transmission of food insecurity from parents to children and the conditions under which this happens, most measures were measured for the time period during which the individual still lived with their parents (childhood factors). Exceptions are the dependent variable (hereafter DV), variables measured in 1999 (the year the DV was measured, hereafter split-off factors) as discussed below, and the variable reflecting whether split-off Head's parents were poor. This means that though N=7015, only N=4079 qualified to be part of this analysis: individuals that lived with their parents (in original FU), at some point moved out to start their own FU (split-off), and had a value available for the dependent variable (hereafter DV).

Dependent variables. The items included in the 1999 PSID survey to determine food (in)security (Appendix A) are identical to the Household Food Security Survey Module (hereafter HFSS). The PSID contained five additional items, that were omitted from the analysis to comply with the standards of measuring food security in the United States (Economic Research Service, 2012).

Respondents, split-off Heads/Wives, were asked to answer questions such as "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more" and to rate whether this was often true (1), sometimes true (2), or never true (3) (Survey Research Center, 1999). The variable was recoded to reflect affirmative and non-affirmative answers (1=often/sometimes true; 0=never true). Omitted from this analysis were the eight questions pertaining to children in the FU. Questions included items such as "(I/We) couldn't feed

([NAME OF CHILD]/the children) a balanced meal because (I/we) couldn't afford that". Since this study looks at the intergenerational transmission of food insecurity from parents to children (original FU and then split-off Heads/Wives), questions pertaining to children in split-off FU are not relevant. However, the presence of children in a split-off FU should not be ignored as based on the literature it is a risk factor for food insecurity. Therefore, the presence of children in FUs was included, as will be discussed later. Food insecurity in split-off FUs was measured by a continuous variable computed based on the number of affirmative answers and assuming the number of affirmative answers indeed reflect the level of food hardship of a household, the DV (food insecurity in split-off FU) reflects the raw score of affirmative answers (range 0-10) (Coleman- Gregory, Rabitt, 2015c).

Independent variables. To reflect whether original FUs were food insecure, data on food stamps use were used. The PSID included questions such as "Did you (FAMILY) get any help buying your food with government food stamps or commodity stamps?" to which respondents could answer yes (1) or no (2). A surveyor could decide not to ask this question if a family was ineligible for food stamps or when not applicable (Survey Research Center, 1999). This independent variable was computed based on answers from different years to reflect the number of years a FU received food stamps during the period the individual lived in original FU (possible range 0-17). For years that individuals did not reside in original FU, a missing value was assigned.

For the 1999 wave, in which food insecurity was measured extensively among split-off FUs, variables such as whether the FU's Head was married, divorced, or single, education completed (by Head and Wife), average self-reported health (of Head and Wife), employment status (Head), chronic/serious illness, mental health problems (of Head and Wife), and presence of children were measured to account for any variance that might stem from their living situation. See Table 1 for details on all variables.

The gender of the FU Head was carried forward through waves, unless a Head changed or a new FU was formed. This variable was recoded to reflect 0=male and 1=female. This is similar to the variable race that was carried forward to other waves unless original FU acquired another Head or Wife. Split-off FU's carried forward the race of their original family. A Head's race was recoded into White (0), Black (1), Hispanic (2), Other (3), or Unknown (4). A Wife's Race was recoded into White (0), Black (1), Other (2), Unknown (3). Missing values were coded

as ‘Unknown’. Dummy variables were created for the variables with ‘White’ as the reference category, as the majority of both Heads and Wives were White.

A Head’s marital status was recoded as Married or permanently cohabiting (1), Single, never legally married (2), Widowed (3), Divorced (4), Separated (5), NA; DK (9). For the purpose of this study, one variable was computed to reflect the number of years the original FU’s Head was married during the time the individual lived at home. Similarly, a variable was computed to reflect the number of years the original FU Head/Wife was unemployed involuntary and was looking for work. For years in which employment information was not gathered, the mean of all cases was assigned.

To measure the education level for both the original FU Head and Wife, the highest number of grades completed was used, during the time that the individual resided in original FU (based on the American Grade school system: 0 completed no grades of school; 1-16 actual number of grades including college; 17 at least some post-graduate work). For missing information, the mean of all cases was assigned. Physical health of original FU Head and Wife was measured based on the average of at least two available values of self-reported health during the time an individual resided in original FU: “Would you say your health in general is excellent (1), very good (2), good (3), fair (4), or poor (5)?” The variable was recoded so that higher scores reflected better self-reported health. For the years that health status information (for both Head and Wife) was not gathered, the mean of all cases was assigned.

All respondents were asked if their parents were poor when the individual was growing up (0=no, not poor; 1=yes, poor). Their answer was carried forward unless split-off FU acquired a new Head.

Methods

Due to the continuous nature of the DV, a hierarchical linear multiple regression was conducted, consisting of four models looking at the outcome variable food insecurity in adulthood. Multiple Pearson correlation analyses were conducted using the number of years the original FU used food stamps, split-off factors, and childhood factors. The results of Pearson’s correlation coefficients can be found in Table 2 and 3.

The first regression model consisted of the number of years the original FU used food stamps. Because the level of food insecurity in adulthood was measured in 1999, the second model of the regression analysis consisted of split-off factors (known associations as measured in

1999) for split-off FUs. The third model added childhood factors based on the period an individual lived in their original FU. Lastly, Model 4 included the interactions between number of years the FU used food stamps and childhood factors to test whether these factors moderate the intergenerational transmission of food insecurity. See Table 4 for details regarding each regression model. To address multicollinearity issues, the continuous variables, including the number of years that original FU used food stamps, were centred around the mean.

Results

After conducting the initial multiple regression analysis, the assumption of normality was violated due to positively skewed data. A bootstrap analysis was conducted (Field, 2014) and results were very similar. The regression without bootstrap will be discussed below and the bootstrap regression results are available in Appendix B. As shown in Table 1, the variable ‘parents poor’ was near constant and had many missing values. It was omitted from the correlation and regression analysis and therefore H_6 and H_8 could not be tested.

In this sample, very few original FUs used food stamps and very few split-off Heads/Wives reported experiences of food insecurity. The average number of years that food stamps were used was 1.4391 which reflects that the average number of years that food stamps were used was under one and a half years. This means that either FUs no longer needed them, became ineligible, or decided not to use them. The mean for raw food insecurity score was .5619 which means that the average raw score of food insecurity in adulthood is lower than one affirmative answer to food insecurity items. There were more FU Heads of White than Black, Hispanic, and ‘other’ racial descent. In addition, there were more male Heads than female Heads for both original FUs and split-off FUs. Among original FU Wives there were more of White than Black and ‘other’ racial descent. There was a substantial group with unknown race and thus this group may include Whites. Both original and split-off Heads completed more years of education than original and split-off Wives and the average self-reported health was higher for original and split-off Heads than for Wives.

Correlations

There was a significant correlation between food insecurity in adulthood and the number of years the original FU used food stamps of $r=.161$. In addition, the number of years an original FU used food stamps was positively correlated with female gender split-off Head ($r=.242$), split-off Head’s single status ($r=.214$), split-off Head’s unemployment ($r=.134$), and presence of

children in split-off FU ($r=.130$). It was negatively correlated with split-off Head married status ($r=-.209$), completed education for both split-off Head ($r=-.173$) and split-off Wife ($r=-.219$), chronic/serious health condition for split-off Wife ($r=-.061$), and self-reported health for split-off Head ($r=-.080$) and Wife ($r=-.212$). All split-off correlation coefficients were significant on a 0.01 level based on two-tailed significance and can be found in Table 2.

For childhood factors, there were positive correlations for female gender Head ($r=.203$, $p<0.01$), number of years Head was unemployed ($r=.515$, $p<0.01$), number of years Wife was unemployed ($r=.059$, $p=0.011$), Black Head ($r=.439$, $p<0.01$), unknown Race ($r=.047$, $p<0.01$) and Black Wife ($r=.111$, $p<0.05$), and Wife's unknown Race ($r=.260$, $p<0.01$). The number of years the original FU Head was married was negatively correlated ($r=-.189$, $p<0.01$) as well as Head's maximum years of education ($r=-.208$, $p<0.01$), Wife's maximum years of education ($r=-.312$, $p<0.01$), Head's average self-reported health status ($r=-.306$, $p<0.01$), and Wife's average self-reported health ($r=-.384$, $p<0.01$). All childhood factor correlation coefficients can be found in Table 3.

In the regression analysis, the full model of split-off and childhood factors and interactions to predict food insecurity in adulthood (Model 4), was statistically significant, $R^2=.132$, $F(15, 3879)=13.139$, $p<.05$; adjusted $R^2=.122$. The initial model with just the predictor food insecurity in childhood (number of years food stamps were used) was significant ($R^2=.026$, $F(1,3923)=106.324$, $p<.05$). The addition of split-off factors (Model 2) led to a significant increase in R^2 of .086, $F(21,3902)=18.062$, $p<.05$. Adding childhood factors (Model 3) did not lead to a significant increase of explained variance ($R^2=.003$, $F(8,3894)=1.602$, $p>.05$). However, the addition of interactions of number of years that food stamps were used and childhood factors (Model 4), did lead to a significant increase in $R^2=.017$, $F(15, 3879)=4.979$, $p<.05$. Results of Model 4 will be discussed in detail below.

Table 1. Range, mean/proportion valid cases (M/P), standard deviation (SD), valid cases (N), and missing values (MV) of variables.

Variable	Range	M/P	SD	N	MV
Raw Score Food Insecurity in adulthood (DV)	0-10	.5619	1.5001	4079	0
Childhood factors					
Number of years food stamps were used (IV)	0-20	1.4391	3.0170	3940	139
Highest number of grades completed HD	0-17	12.5910	1.8110	4072	7
Highest number of grades completed WF	0-17	10.9490	2.7039	4072	7
Average self-reported health HD	1-5	3.4897	.2679	3961	118
Average self-reported health WF	1-5	2.3679	.5461	3961	118
Gender HD: Female	0/1	16.9		4067	12
Number of years married	0-29	9.3948	7.0859	4078	1
Number of years unemployed HD	0-13	.4814	1.2949	4067	12
Number of years unemployed WF	0-5.53	1.0820	.65885	4067	12
Parents poor?	0/1	98.2		2201	1878
Race	0/5			4079	0
White (reference)		60.1			
Black		32.5			
Hispanic		1.1			
Other		.6			
Unknown		5.7			
Race WF	0/1			4079	0
White (reference)		46.3			
Black		15.7			
Other		.4			
Unknown		37.7			
Split-off HD/Split-off WF factors					
Gender HD 1999: Female	0/1	25.0		4079	0
Married 1999	0/1	60.8		4079	0
Divorced 1999	0/1	10.9		4079	0
Single 1999	0/1	22.5		4079	0
Unemployed 1999	0/1	4.7		4079	0
Chronic illness HD 99	0/1	32.2		4079	0
Chronic illness WF 1999	0/1	16.9		4079	0
Mental health problem HD 1999	0/1	4.6		4079	0
Mental health problem WF 1999	0/1	2.7		4079	0
Children 1999	0/1	58.5		4079	0
Highest number of grades completed HD 1999	0-17	12.5796	3.4795	4079	0
Highest number of grades completed WF 1999	0-17	7.6205	6.8798	4079	0
Average self-reported health HD 1999	0-5	3.7526	1.0473	4078	1
Average self-reported health WF 1999	0-5	2.2935	2.0035	4079	0

Note. Panel Social Income Dynamics, descriptives based on filtered data

Table 2. Pearson's *r* correlations split-off factors

Correlations

	Food insec.	# yrs fdst.	Gender HD 1999	Married 1999	Single 1999	Divorce d 1999	Compl. Educ. HD 1999	Compl. educ. WF 1999	Health cond. HD 1999	Health cond. WF 1999	Health stat. HD 1999	Health stat. WF 1999	MH issue HD 1999	MH issue WF 1999	Unempl. in 1999	Child in FU 1999
Food insecurity	1															
# years food stamps	.161**	1														
Gender HD 1999: female	.171**	.242**	1													
Married 1999	-.177**	-.209**	-.712**	1												
Single 1999	.129**	.214**	.449**	-.671**	1											
Divorced 1999	.060**	-.009	.324**	-.435**	-.188**	1										
Completed education HD 1999	-.164**	-.173**	-.116**	.091**	-.026	-.037*	1									
Completed education WF 1999	-.200**	-.219**	-.639**	.889**	-.596**	-.387**	.241**	1								
Health condition HD 1999	.098**	-.025	.088**	-.053**	-.026	.049**	-.066**	-.066**	1							
Health condition WF 1999	-.003	-.061**	-.260**	.361**	-.243**	-.158**	-.016	.308**	.082**	1						
Health status HD 1999	-.197**	-.080**	-.145**	.122**	-.022	-.072**	.231**	.179**	-.339**	-.036*	1					
Health status WF 1999	-.210**	-.212**	-.660**	.918**	-.616**	-.400**	.136**	.863**	-.091**	.217**	.243**	1				
Mental health issue HD 1999	.161**	-.012	.083**	-.099**	.037*	.075**	-.056**	-.092**	.131**	.008	-.185**	-.114**	1			
Mental health issue WF 1999	.067**	-.015	-.096**	.134**	-.090**	-.058**	.009	.108**	.030	.182**	-.024	.054**	.043**	1		
Unemployed. in 1999	.103**	.134**	.127**	-.145**	.131**	.038*	-.071**	-.131**	.014	-.038*	-.048**	-.145**	.041**	-.009	1	
Child in FU 1999	.020	.130**	.000	.280**	-.238**	-.090**	-.036*	.256**	-.040*	.072**	-.002	.265**	-.071**	.046**	-.009	1

***. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3. Pearson's *r* correlations childhood factors

	Food insecurity	# yrs food stamps	Gender HD: female	# yrs married	# yrs unempl. HD	# yrs unempl. WF	Race HD: Black	Race HD: Hispanic	Race HD: other	Race HD: unkn.	Race WF: Black	Race WF: other	Race WF unkn.	Max. educ. HD	Max. educ.W F	Avg. health stat. HD	Avg. health stat. W
Food insecurity	1																
# yrs food stamps	.161**	1															
Gender HD: female	.057**	.203**	1														
# yrs married	-.060**	-.189**	-.373**	1													
# yrs unempl. HD	.098**	.515**	.140**	-.066**	1												
# yrs unempl. WF	-.028	.059**	-.075**	.433**	.040**	1											
Race HD: Black	.130**	.439**	.299**	-.220**	.238**	.099**	1										
Race HD: Hispanic	-.012	-.018	-.029	.050**	.010	-.006	-.085**	1									
Race HD: other	-.014	.005	.011	.002	.023	-.007	-.045**	.368**	1								
Race HD: unknown	.051**	-.047**	.016	-.166**	-.036*	-.125**	-.170**	-.004	-.016	1							
Race WF: Black	.040*	.111**	.098**	.045**	.029	.118**	.585**	-.052**	-.017	-.095**	1						
Race WF: other	-.012	-.006	-.019	-.001	.021	.007	-.029	.337**	.549**	-.010	-.018	1					
Race WF unknown	.107**	.260**	.160**	-.391**	.144**	-.052**	.222**	-.042**	-.003	.308**	-.328**	-.032*	1				
Max. educ. HD	-.077**	-.208**	-.084**	.309**	-.092**	.158**	-.256**	.014	-.033*	-.074**	-.162**	-.016	-.092**	1			
Max. educ.WF	-.115**	-.312**	-.178**	.501**	-.150**	.285**	-.289**	.032*	-.021	-.096**	-.069**	-.025	-.237**	.555**	1		
Avg. healthstat HD	-.074**	-.306**	-.048**	.188**	-.150**	-.057**	-.203**	.011	.008	-.028	-.097**	.009	-.142**	.274**	.277**	1	
Avg. healthstat WF	-.095**	-.384**	-.115**	.536**	-.223**	.135**	-.270**	.029	.011	-.064**	.019	.016	-.419**	.212**	.503**	.432**	1

Regression food insecurity in adulthood

As shown in Table 4, the number of years the original FU used food stamps was a significant predictor of food insecurity in adulthood ($B=.136, SE=.037$), confirming H_1 . Whether the original FU Head was married did not significantly influence the intergenerational transmission of food insecurity ($B=.004, SE=.005$), rejecting H_2 . Intergenerational transmission was stronger among Hispanic households ($B=.258, SE=.098$), which only partially confirms H_3 as there was no significant stronger or weaker transmission for Black households. Unknown race ($B=.242, SE=.074$) also strengthened the relationship between food insecurity in childhood and adulthood, however this may include those of White descent and thus fails to provide evidence to reject or support H_3 .

A split-off Head's marital status did not significantly predict food insecurity scores. Scores were .313 higher when Head's race was unknown. This means respondents could be of White descent and thus H_4 is partly rejected. FUs with children were more likely to be food insecure than their childless counterparts ($B=.120, SE=.053$), which confirms part of H_4 . Intergenerational transmission of food insecurity was weaker when the Wife completed more years of education ($B=-.009, SE=.003$), confirming H_5 .

When a split-off Head completed more education, the household was less likely to be food insecure ($B=-.027, SE=.007$), confirming H_7 . Average self-reported health of both Wife and Head did not influence the intergenerational link, rejecting H_9 .

When a split-off Head reported better general health ($B=-.124, SE=.025$), food insecurity scores were lower, confirming H_{10a} . When a split-off Head reported a serious/chronic illness, the household was more likely to be food insecure ($B=.116, SE=.052$) partly confirming H_{10b} . When either a split-off Head ($B=.861, SE=.113$) or Wife ($B=.690, SE=.144$) experienced mental health issues, households were more likely to experience food insecurity, confirming H_{11} . Lastly, when a split-off Head was involuntarily unemployed, food insecurity scores in adulthood were .333 higher than when a split-off Head was employed or voluntarily unemployed ($B=.333, SE=.108$). Lastly, original FU Head's unemployment ($B=-.010, SE=.004$) weakens the relationship between food insecurity in childhood and adulthood.

Table 2 Hierarchical Multiple Regression predicting Food Insecurity as Adult

Variable	Food Insecurity in Adulthood							
	Model 1		Model 2		Model 3		Model 4	
	B	SE	B	SE	B	SE	B	SE
Constant	.554*	.023	1.357*	.169	1.281*	.179	1.349*	.180
Number of years food stamp use (IV)	.080*	.008	.044*	.009	.039*	.010	.136*	.037
Gender HD 1999: female			.089	.079	.078	.079	.099	.079
Married in 1999			.141	.181	.105	.181	.124	.180
Single in 1999			.126	.107	.103	.109	.087	.108
Divorced in 1999			-3.396E-5	.118	.000	.118	-.021	.118
Children in FU 1999			.128*	.052	.140*	.053	.120*	.053
Completed educ. HD 1999			-.032*	.007	-.029*	.007	-.027*	.007
Completed educ. WF 1999			-.014	.008	-.014	.008	-.013	.008
Health status HD 1999			-.130*	.025	-.129*	.025	-.124*	.025
Health status WF 1999			-.069*	.033	-.066*	.033	-.064	.033
Serious/chronic illness HD 1999			.112*	.052	.113*	.052	.116*	.052
Serious/chronic illness WF 1999			.078	.069	.085	.069	.067	.069
Mental health problem HD 1999			.859*	.113	.870*	.113	.861*	.113
Mental health problem WF 1999			.694*	.145	.704*	.145	.690*	.144
Unemployment 1999			.336*	.109	.337*	.109	.333*	.108
Race (Black)			.091	.083	.079	.086	.162	.089
Race (Hispanic)			-.026	.202	.022	.202	.135	.207
Race (other)			-.238	.424	-.265	.424	-.308	.426
Race (unknown)			.158	.115	.141	.117	.313*	.124
Race WF (Black)			-.071	.099	-.055	.100	-.199	.109
Race WF (other)			-.033	.649	-.041	.650	-.305	.669
Race WF (unknown)			-.018	.066	.014	.071	-.076	.077
Gender: female					.008	.069	.007	.071
Number of years married					.010*	.005	.004	.005
Maximum educ. HD					.004	.016	.011	.017
Maximum educ. WF					-.031*	.012	-.017	.013
Health HD					.025	.099	.078	.103
Health WF					-.006	.062	.014	.063
Number of years unemployed HD					.010	.020	.069*	.029
Number of years unemployed WF					-.055	.041	-.038	.043
Fdst*Gender HD							-.033	.020
Fdst*Married							.000	.002
Fdst *Maximum educ. HD							.013	.007
Fdst *Maximum educ. WF							-.009*	.003
Fdst *Health HD							-.040	.025
Fdst *Health WF							.021	.021
Fdst*Unemployed HD							-.010*	.004
Fdst*Unemployed WF							-.017	.012
Fdst *Race (Black)							-.038	.028
Fdst*Race (Hispanic)							.258*	.098
Fdst*Race (other)							.011	.146
Fdst*Race (unknown)							.242*	.074
Fdst*Race WF (Black)							-.062	.039
Fdst*Race WF (other)							-.439	.361
Fdst*Race WF (unknown)							-.068	.037
R^2	.026		.113		.116		.132	
F	106.324		22.516		16.959		13.139	
ΔR^2	.026		.086		.003		.017	
ΔF	106.324		18.062		1.602		4.979	

N=3924, * $p < .05$

Conclusion

This study aimed to test whether intergenerational transmission of food insecurity exists, and whether marital status, education, poverty, employment status, and physical health moderate the relationship between food insecurity as a child and as an adult. In order to answer this question, food insecurity in adulthood was measured based on food insecurity items included in the 1999 PSID wave. Due to unavailability of similar food insecurity items before this wave, food insecurity in childhood was measured using the original FU's use of food stamps, as research suggests that the use of food stamps indicates some level of food insecurity at the household level, often after receiving food stamps as well (Wilde and Nord, 2005; Nguyen, Shuval, Bertmann, & Yaroch, 2015).

To test the hypotheses, a hierarchical multiple regression analysis was conducted in which the use of food stamps was added in the first model, variables reflecting living conditions of split-off FU's in 1999 in the second model, childhood factors in the third model and lastly moderating effects in the fourth model. Adding the split-off factors lead to a significantly better prediction of food insecurity in adulthood. Adding childhood factors did not lead to a significantly better prediction but adding moderating effects led to a significantly better prediction of food insecurity in adulthood.

The key finding of this study is that food insecurity in childhood was found to be a significant predictor of food insecurity in adulthood, Intergenerational transmission of food insecurity was stronger for Hispanic families, confirming findings by Hernandez (2016a,b) as well as for those that did not disclose their racial background. The results reflect a weaker intergenerational transmission of food insecurity for families in which the Wife completed more years of education and for households with an unemployed Head. These findings are in line with what previous research has found, except for that one would expect that unemployment would strengthen the intergenerational transmission of food insecurity. The effect size is so small however, that this effect may be negligible. Other expected moderators, such as Head's education, health status, and Black descent and Wife's descent, were all not significant.

The presence of a mental health issue (in both split-off Head and Wife) was a relatively strong predictor. Based on the literature this is not surprising. However, marital status did not significantly predict food insecurity, which is surprising as the literature reflects that food insecurity is lower among married individuals and higher among those who are single. In

addition, an original FU Head's married status did not influence the intergenerational transmission of food insecurity, which is again surprising as one would expect it to act as a protective factor.

Split-off households were less likely to be food insecure if the Head completed more education. However, the split-off Wife's completed education did not significantly predict food insecurity. Head and Wife's education thus plays a protective role for food insecurity. In practice these results would encourage close screening of at-risk Hispanic families for food insecurity, as well as encouraging pursuit of higher education for both Heads and Wives. A higher educated original FU Wife protects against intergenerational transmission of food insecurity, whereas a higher educated split-off Head protects against current experiences of food insecurity. Encouraging education of adults in the household is thus an important component of treating food insecurity and breaking the cycle of intergenerational transmission. The presence of a serious/chronic illness, and self-reported health status show a similar pattern. Based on these outcomes, one could conclude that the current Head of a FU, and their characteristics, influence current experiences of food insecurity of their FU more than the current Wife in FU. This is an unforeseen result and would be highly interesting to explore in further research. One could only speculate about the reason why this would be the case, one possible explanation being that original FU Wives spent more time with children and that therefore their characteristics would impact children more. This line of argument would be in line with the findings of maternal mental health (hence why split-off Wife's mental health issue is a significant predictor as well), its link to food insecurity and poverty (Casey et al 2004; Garg et al., 2014, Heflin, Siefert, & Williams, 2005, Melchior et al., 2009) and trade-offs as food insecurity would cause parental mental health to negatively affect children (Knowles et al., 2016). Future research could look into time a primary caregiver spends with children, since alternative childcare arrangements are increasingly popular (Laughlin, 2013)

One of the main limitations of this study is that the full potential of moderators as explored in the literature could not be tested in this study. There was no reliable data to test original FU Head and Wife's mental health issues, which were identified as potentially important moderators. In addition, the variable 'parents poor' was near constant and thus was excluded from the analysis, which left this study with no insight into the financial situation of the original FU.

All data was based on self-reporting, which means that the data was subject to respondents' honesty as well as one's history. In addition, due to the scope of this study, there may be variables that had an influence, however were not detected. The external generalizability of this study is limited, as the sample eligible for analysis was not representative of the general population in the United States. Beyond this, the study and measures of food insecurity are specific to the United States and generalizability to other countries is limited. However, although effect sizes found were small, this study is first of its kind and can hopefully provide a starting point for future research.

To conclude, this study found that food insecurity in childhood is a predictor for food insecurity in adulthood. In addition, a split-off Head's education, presence of serious or chronic illness, health status, mental health issue, unemployed Head, and the presence of children in split-off FU were significant predictors for food insecurity in adulthood. Lastly, if an original FU Wife completed more education the intergenerational transmission of food insecurity was weaker. Intergenerational transmission was stronger among Hispanic families and those with unknown descent. In practice, this would mean screening for food insecurity among Hispanic families, families with children, families with low-educated parents, families with parents experiencing mental health issues, poor health status, and/or chronic/serious condition(s) and/or families in which Head is unemployed involuntarily. In addition, this study will hopefully inform future research to look further into moderation effects that influence the intergenerational transmission of food insecurity as well as inform policymakers when looking at programs such as SNAP and WIC and ways to improve them. One suggestion, based on the current study would be to look at ways to work with both adults in the household (if more than one) in order to treat both current food insecurity and to lower the chance of intergenerational transmission as results suggest that factors involving the Head influence current food insecurity whereas factors involving the Wife seem to influence the intergenerational transmission.

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Appendix A
Panel Study of Income Dynamics (relevant section)

F8. Did you (or anyone else in your family) use government food stamps, at any time in 1997, two years ago?

1. YES 5. NO → GO TO F11

F9. How many dollars worth of stamps did you receive in 1997?
(TWO VARIABLES: F9 IS 6 DIGITS, F9PER USES TPERWK)

F10. During which months was that?
(MULTIMENTION F10x USING TMOSTRING)

F11. Did you (or anyone else in your family) use government food stamps at any time last year, in 1998?

1. YES 5. NO → GO TO F14

F12. How many dollars worth of stamps did you receive in 1998?
(TWO VARIABLES: F12 IS 6 DIGITS, F12PER USES TPERWK)

F13. During which months was that?
(MULTIMENTION F13x USING TMOSTRING)

F14. Did you (or anyone else now living in your family) use government food stamps this year?

1. YES 5. NO → GO TO F18F22

F14a. During which months of 1999 was that?
(MULTIPLE MENTION F14Ax, CODES ARE TMOSTRING)

F14b. Thinking of the last month you received food stamps, did you receive them as paper food stamps
Or as a plastic EBT benefit card?

1. Paper Food
Stamps

2. Plastic EBT Card

F15. For how many members of your family were the food stamp issued?
(ONE-DIGIT: 1-6=ACTUAL NUMBER; 7=7 OR MORE)

F16. How many dollars worth of stamps did you receive?
(TWO VARIABLES: F16=6-DIGIT, F16PER USES TPERWK)

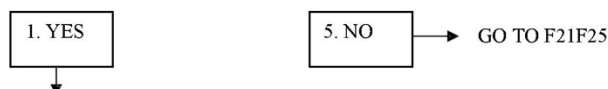
F17. In addition to what you buy with food stamp benefits, do you (or anyone else in your family) spend any money on food
that you use at home?

1. YES

5. NO → GO TO F19F23

F18F22. [IF HAS FOOD STAMPS, ASK:] How much do you spend on that food in an average week? [IF NO FOOD STAMPS,
ASK:] How much do you (and everyone else in your family) spend on food that you use at home in an average week?
[IF R LIVES WITH NON-FU MEMBERS, PROBE: Is that only your (FU's) share of the food?]
(TWO VARIABLES: F18F22=8 DIGITS, XXXXX.YY; F18F22PER=TPERMO) _____

F19F23. Do you have any food delivered to the door which isn't included in that?



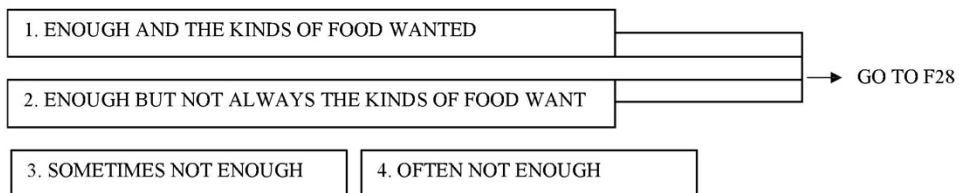
F20F24. How much do you spend on that food?

(TWO VARIABLES: F20F24=8 DIGITS, XXXXX.YY; F20F24PER=TPERMO)

F21F25. About how much do you (and everyone else in your family) spend eating out? (TWO VARIABLES: F21F25=8 DIGITS, XXXXX.YY; F21F25PER=TPERMO)

F26. The next questions are about the availability of food in your household last year, 1998, and whether you were able to afford the food you needed.

Which of these statements best describes the food eaten in your household in 1998: (I/We) had enough to eat and the kinds of food(I/we) wanted; (I/we) had enough to eat but not always the kinds of food (I/we) wanted; sometimes (I/we) didn't have enough to eat; or often (I/we) didn't have enough to eat?



F27. Here are some reasons why people don't always have enough to eat. For each one, please tell me if that is a reason why you didn't always have enough to eat.

a. Not enough money for food.	1. YES	5. NO
b. Too hard to get to the store.	1. YES	5. NO
c. On a diet.	1. YES	5. NO
d. Not able to cook or eat due to health problems.	1. YES	5. NO
e. No working stove or refrigerator.	1. YES	5. NO

F28. Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often, sometimes, or never true for (you/your household) in 1998.

a. (I/We) worried whether (my/our) food would run out before (I/we) got money to buy more. Was that often, sometimes, or never true in 1998?



b. The food that (I/we) bought just didn't last, and (I/we) didn't have the money to get more. Was that often, sometimes, or never true?



c. (I/We) couldn't afford to eat balanced meals. Was that often, sometimes, or never true?



F29. CHECKPOINT (VARNAME=F29CKPT)

SEE F27A AND F28A-C--WHETHER MONEY RELATED FOOD SECURITY PROBLEMS		
1. F27a=1 AND (F28a=1,2 OR F28b=1,2 OR F28c=1,2)	2. F28a=1,2 AND F28b=1,2 OR F28a=1,2 AND F28c=1,2 OR F28b=1,2 AND F28c=1,2	5. ALLOTHERS

F30. During 1998, did 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?

1. YES 5. NO → GO TO F31

F30a. How often did this happen -- almost every month, some months but not every month, or in only 1 or 2 months?

1. ALMOST EVERY MONTH 2. SOME MONTHS 3. ONLY 1 OR 2 MONTHS

F31. (During 1998,) did you (or other adults in your household) ever eat less than you felt you should because there wasn't enough money to buy food?

1. YES 5. NO

F32. (During 1998,) were you (or other adults in your household) ever hungry but didn't eat because you couldn't afford enough food?

1. YES 5. NO

F33. (During 1998,) did you (or other adults in your household) lose weight because you didn't have enough money for food?

1. YES 5. NO

F34. (During 1998,) did you (or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?

1. YES 5. NO → GO TO F35

F34a. How often did this happen -- almost every month, some months but not every month, or in only 1 or 2 months?

1. ALMOST EVERY MONTH 2. SOME MONTHS 3. ONLY 1 OR 2 MONTHS

F35. (During 1998,) did you (or other adults in your household) ever get emergency food from a church, a food pantry or food bank?

1. YES 5. NO → GO TO F37

F36. How often did this happen -- almost every month, some months but not every month, or in only 1 or 2 months?

1. ALMOST EVERY MONTH 2. SOME MONTHS 3. ONLY 1 OR 2 MONTHS

F37. (During 1998,) did you (or other adults in your household) ever eat any meals at a soup kitchen?

1. YES 5. NO

F40. CHECKPOINT (VARNAME=F40CKPT)

SEE F39a-c--WHETHER MONEY-RELATED FOOD SECURITY PROBLEMS FOR CHILDREN	
1. F39a=1,2 OR F39b=1,2 OR F39c=1,2	5. ALL OTHERS → GO TO F45

F41. During 1998, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?

1. YES	5. NO
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F42. (During 1998,) did (your child/any of the children) ever skip a meal because there wasn't enough money for food?

1. YES	5. NO → GO TO F43
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F42a. How often did this happen -- almost every month, some months but not every month, or in only 1 or 2 months?

1. ALMOST EVERY MONTH	2. SOME MONTHS	3. ONLY 1 OR 2 MONTHS
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F43. (During 1998,) (was your child/were any of the children) ever hungry but you just couldn't afford more food?

1. YES	5. NO
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F44. (During 1998,) did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?

1. YES	5. NO
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F45. CHECKPOINT (VARNAME=F45CKPT)

SEE F27a, F28a-c, F30-34, F39a-c, AND F41-44	
1. THREE OR MORE "YES" RESPONSES AT F27a, F28a-c, F30, F31-34, F39a-c, F41, F42, F43, F44	5. ALL OTHERS → GO TO F47

F46. You answered "yes" to several questions that indicate difficulty in getting enough food to eat in your household during 1998. During which months was that?
(MULTIPLE MENTION F46x, CODES ARE TMOSTRING)

Appendix B
Bootstrapped Hierarchical Multiple Linear Regression

Variable	Food Insecurity in Adulthood							
	Model 1		Model 2		Model 3		Model 4	
	B	SE	B	SE	B	SE	B	SE
Constant	.554*	.024	1.357*	.195	1.281*	.200	1.349*	.208
Number of years food stamp use (IV)	.080*	.010	.044*	.012	.039*	.013	.136*	.052
Gender HD 1999: female			.089	.093	.078	.092	.099	.093
Married in 1999			.141	.203	.105	.204	.124	.201
Single in 1999			.126	.138	.103	.141	.087	.139
Divorced in 1999			-3.396E-5	.146	.000	.147	-.021	.144
Children in FU 1999			.128*	.051	.140*	.052	.120*	.052
Completed educ. HD 1999			-.032*	.008	-.029*	.008	-.027*	.008
Completed educ.WF 1999			-.014	.008	-.014	.008	-.013	.008
Health status HD 1999			-.130*	.028	-.129*	.028	-.124*	.029
Health status WF 1999			-.069*	.032	-.066*	.032	-.064	.031
Serious/chronic illness HD 1999			.112*	.058	.113*	.059	.116*	.059
Serious/chronic illness WF 1999			.078	.060	.085	.060	.067	.059
Mental health problem HD 1999			.859*	.194	.870*	.195	.861*	.190
Mental health problem WF 1999			.694*	.204	.704*	.204	.690*	.202
Unemployment 1999			.336*	.151	.337*	.151	.333*	.150
Race (Black)			.091	.100	.079	.103	.162	.108
Race (Hispanic)			-.026	.147	.022	.148	.135	.182
Race (other)			-.238	.224	-.265	.227	-.308	.205
Race (unknown)			.158	.131	.141	.133	.313*	.170
Race WF (Black)			-.071	.113	-.055	.114	-.199	.133
Race WF (other)			-.033	.279	-.041	.280	-.305	.278
Race WF (unknown)			-.018	.061	.014	.062	-.076	.088
Gender: female					.008	.073	.007	.075
Number of years married					.010	.005	.004	.005
Maximum educ. HD					.004	.018	.011	.018
Maximum educ. WF					-.031*	.015	-.017	.014
Health HD					.025	.126	.078	.121
Health WF					-.006	.070	.014	.070
Number of years unemployed HD					.010	.026	.069	.036
Number of years unemployed WF					-.055	.046	-.038	.046
Fdst*Gender HD							-.033	.022
Fdst*Married							.000	.002
Fdst *Maximum educ.							.013	.008
Fdst *Maximum educ. WF							-.009*	.004
Fdst *Health							-.040	.033
Fdst *Health WF							.021	.030
Fdst*Unemployed HD							-.010*	.005
Fdst*Unemployed WF							-.017	.017
Fdst *Race (Black)							-.038	.039
Fdst*Race (Hispanic)							.258*	.135
Fdst*Race (other)							.011	.156
Fdst*Race (unknown)							.242*	.127
Fdst*Race WF (Black)							-.062	.057
Fdst*Race WF (other)							-.439	.183
Fdst*Race WF (unknown)							-.068	.053
R^2	.026		.113		.116		.132	
F	106.324		22.516		16.959		13.139	
ΔR^2	.026		.086		.003		.017	
ΔF	106.324		18.062		1.602		4.979	

$N=3924$, * $p < .05$