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The Role of the Supplemental Nutrition Assistance Program in the Relationship between Food Insecurity and Probability of Maternal Depression

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Abstract

Food insecurity is a substantial stressor for many households. Though an association between food insecurity and depression has been well established, most studies have been cross-sectional. Although many receive benefits from the Supplemental Nutrition Assistance Program (SNAP), its role in reducing distress associated with food insecurity is unclear. Using data from 1,225 women who participated in the Fragile Families and Child Wellbeing Study, this study investigated 1) whether change in food security status predicts change in depression severity over a two-year period, 2) whether participating in SNAP predicts depression, and 3) whether the relationship between food insecurity and depression varies based on receipt of SNAP. Food insecurity was linked to probability of depression over time. Additionally, for those who became food insecure over the two-year period, losing SNAP benefits was associated with increased probability of depression, while gaining benefits was associated with reduced probability of depression. This suggests that the SNAP program offsets emotional hardship for those who have recently become food insecure. Further research is needed to evaluate the most efficient and efficacious means to reduce food insecurity and improve emotional wellbeing among vulnerable families.

Keywords

food insecurity; food security; depression; Supplemental Nutrition Assistance Program; SNAP

INTRODUCTION

Food insecurity – “the limited or uncertain availability of nutritionally adequate and safe foods or the limited or uncertain ability to acquire acceptable foods in socially acceptable ways”¹ – has been increasingly recognized as a threat to the health and well-being of many people in the United States. During 2013, 14.3% of households experienced food insecurity at some time.² Because of a lack of sufficient financial resources to consistently access food, disadvantaged groups are disproportionately likely to be food insecure. Particularly high

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levels of food insecurity are found among households with incomes below the official poverty line (42.1%) – \$23,550 for a family of four in 2013 – as well as among female-headed households with children (34.4%), Hispanic households (23.7%), Black households (26.1 %), and households in large cities (16.7%).²

Food insecurity has been associated with numerous negative physical health outcomes in both adults and children.^{3–5} Poor parental mental health can also result in long-term problems for children even if their parents manage to protect them from hunger. A large body of research has demonstrated a relationship between food insecurity and depression, particularly among women.^{6–11} However, the vast majority of these studies have been cross-sectional. More longitudinal research is needed to clarify the nature of the relationship between food insecurity and depression. The present study seeks to address this gap using data from two waves of the Fragile Families and Child Wellbeing Study, testing whether change in food security status predicts change in depression severity over a two-year period.

The Supplemental Nutrition Assistance program, formerly Food Stamp Program, is a Federal aid program that provides nutrition assistance to low-income individuals and families.¹² In accordance with the Family Stress Model of Economic Hardship, economic hardship can negatively impact family and individual functioning; however, resources can reduce the impact of economic stressors on functioning.¹³ SNAP benefits could, therefore, contribute to a reduction in stress and improve family functioning. We expect that any effect of food insecurity on depression should be smaller when families receive food assistance than when they do not, what we refer to as “moderation.” Unfortunately, it has been somewhat difficult to demonstrate the value of food assistance in practice because the families who receive benefits and receive larger amounts are substantially more disadvantaged than those who do not. Those who receive benefits are more likely to be food insecure because of economic disadvantage. Disentangling the joint impact of food insecurity and receipt of SNAP is difficult without the use of longitudinal data. This study examines what happens to maternal distress when food stamp receipt changes among food insecure families who begin receiving SNAP or who lose their SNAP benefits.

Food Insecurity and Psychological Distress

Conger and Conger (2002) developed the Family Stress Model of Economic Hardship. According to this theory, families with limited means experience substantial stress as they work to make ends meet.¹³ This economic pressure is compounded by other stressful life events prevalent for poor families, which create feelings of psychological distress, including depression.¹⁴ Studies have confirmed the link between economic stress and emotional distress for caregivers.¹³ A relationship between lower socioeconomic status (SES) and higher levels of depression has been established, especially for women.¹⁵ One review of the findings found that low SES individuals experience depression at twice the rate of high SES individuals.¹⁶

Food insecurity is a substantial stressor for many families. Consistent with the family stress model of economic hardship, a relationship between food insecurity and depression has been established in the scientific literature. The relationship has been demonstrated among those who are Black, non-Hispanic White, and Hispanic; in both rural and urban settings; and

among children, adults, and the elderly. Studies have demonstrated this relationship between food insecurity and depression even after controlling for a wide variety of relevant covariates, such as income, inter-partner violence, and employment status.^{6–11}

Whitaker and colleagues (2006) analyzed survey data from the longitudinal Fragile Families and Child Wellbeing Study to determine the associations between maternal anxiety and depression, food insecurity, and child behavior problems.¹¹ The results indicated that the percentage with a diagnosis of major depressive disorder or generalized anxiety disorder was greater among mothers with higher levels of food insecurity: 16.9 percent of those who were food secure, 21.0 percent of those who were marginally food secure, and 36.7 percent of those who were food insecure were diagnosed with one of the disorders. Laraia and colleagues (2006) examined correlates of food insecurity among pregnant women with incomes less than or equal to 400% of the poverty line.¹⁷ After controlling for demographic and socioeconomic variables, household food insecurity was associated with depressive symptoms, along with perceived stress, trait anxiety, and an external locus of control. In addition, Laraia and colleagues (2008) found that among 206 African-American mothers with infants,⁹ women who reported food insecurity scored significantly higher on the depression scale than women who reported food security. Limitations of these studies include small sample sizes and limited generalizability, as some studies addressed nonrepresentative subsamples of women.

Although the relationship between food insecurity and depression is well-established, most studies have been cross-sectional and thus unable to support causality. Evidence from longitudinal studies about the topic indicates that food insecurity is linked to depression over time, and therefore is potentially causal. For instance, Siefert, Heflin, Corcoran, and Williams (2004) examined the longitudinal relationship between food insufficiency, a more severe form of food insecurity, and depression among single mothers receiving welfare in an urban Michigan county.¹⁸ The authors found that those who became food insufficient between the first and second wave of data collection were more likely to meet the diagnostic criteria for depression in the second wave than those who remained food sufficient. The results were confirmed using a subsequent wave of data. Even when controlling for risk factors for depression, changes in food sufficiency status were significantly and positively correlated with changes in depression status, suggesting an enduring relationship.¹⁹ These studies were well-conceptualized and account for change over time; however, they do not measure food insecurity per se. Food insufficiency was measured with a single item, “Which of the following describes the amount of food your household has to eat – enough to eat, sometimes not enough to eat, or often not enough to eat?” This item alone does not capture other dimensions of food insecurity, such as worry about food adequacy.

Huddleston-Casas, Charnigo, and Simmons (2008) examined the relationship between food insecurity and depression in a sample of low-income mothers in the Rural Families Speak study.²⁰ Results indicated a bidirectional causal relationship between food insecurity and depression over a three-year period. In this study, the estimated influence of food insecurity on depression was larger than that of depression on food insecurity. To the authors’ knowledge, the work of Huddleston-Casas and colleagues (2008) is the only study that explicitly examines food insecurity and depression longitudinally among residents of the

U.S. However, the study examined this relationship among rural women, whose circumstances may differ in significant ways from those of urban women.

More research is needed to confirm the nature of the relationship. The present study will add to the current literature by including a more robust measure of food insecurity than that found in Heflin and colleagues (2005)¹⁹ using a more rigorous method by assessing whether change in food security status is associated with change in depression using a representative sample of urban mothers. In addition, it will examine whether this relationship varies by receipt of SNAP.

Food Stamp Program (FSP) Participation

The Food Stamp Program (FSP), now known as SNAP, is a Federal aid program that provides nutrition assistance to low-income individuals and families. Participation in the program has previously been examined as a moderator between food insecurity and depression. Kim and Frongillo (2007) found some evidence that participation in the FSP moderates the relationship between food insecurity and depression among elderly persons.²¹ Data came from two longitudinal datasets. Results indicated that food insecure participants who received food stamps were less likely to be depressed. However, this effect was found only with one dataset and only when using a weighted multilevel linear regression analysis of current food insecurity, food stamp use, and depression. Time-lagged and difference models did not demonstrate this effect.

Likewise, Heflin and Ziliak (2008) examined whether food stamp participation and amount of food stamp benefit moderated the relationship between food insufficiency and depression using longitudinal data from the 2001 and 2003 waves of the Panel Study of Income Dynamics (PSID).²² Results indicated that, among food stamp recipients, the relationship between food insufficiency and depression depended on the amount of food stamp benefit. Those who received larger benefit amounts experienced more severe depression than those receiving smaller amounts. However, the authors attributed this finding of increased depression to the increased economic hardship that may accompany enrollment into the food stamp program and concluded that program reform is needed to increase the well-being of participants. Given the disparate findings of these studies, further research is needed to determine whether SNAP participation can lessen the distress related to food insecurity.

Purpose

The purpose of the present study is three-fold. First, we will test the hypothesis that change in food security status predicts change in depression severity over a two-year period in a sample of urban mothers. Specifically, those who remain food insecure at both points in time or who become food insecure will have the highest probability of depression. Studying this phenomenon using a sample of urban mothers with children is important because food insecurity rates are higher for households in urban areas and households with children. Second, we will test whether receipt of SNAP predicts lower levels of maternal depression probability. Third, we will test whether receipt of SNAP moderates the relationship between food security status and depression. Specifically, becoming food insecure and remaining food insecure will be less likely to be linked to depression probability among those who

receive SNAP compared with those with do not. Analyses will control for other relevant stressors and resources that may influence depression probability.

METHODS

The present study is a secondary analysis of data from the Fragile Families and Child Wellbeing Study. A three-stage sampling process was used to obtain a nationally representative longitudinal study of nonmarital births in 20 large US cities. Cities were sampled that, collectively, were nationally representative and had maximum variation in policy regimes. Hospitals were sampled to be representative of non-marital births in each city, and sampled births were representative of those at each hospital. Baseline data were collected from parents shortly after children's births. Approximately 4,700 sets of parents were included in the study; 3,600 unmarried and 1,000 married parents. Additional waves of data were collected at one, three, five, and nine years after baseline assessment. Details of the original research methodology and sampling procedures are provided by Reichman, Teitler, Garfinkel, and McLanahan (2001).²³ In addition to the core scales administered at each wave, in-home interviews were conducted at three and five years. The response rates for the Three-Year Core survey and the Five-Year Core Survey among the unmarried mothers in the national sample were 88% and 87%, respectively.

Data for the present study were drawn from core and in-home interviews from the surveys collected three- and five years after initial data collection. Therefore, only those who participated in the core and in-home interviews at both waves and completed the relevant measures for this study were included in the analysis. In addition, only those who were not married at baseline – the birth of a child – were included; the sample unmarried at baseline represents a more disadvantaged population, which is appropriate for the hypotheses of the study. Lastly, because almost all of the in-home surveys were completed by children's biological mothers, only mothers' reports were included. National weights were used for analyses; the national weights make the data representative of births in the 77 U.S. cities with populations over 200,000.

The major reasons for non-inclusion were that the participant was no longer in the study by year five, was not included in the In-Home Survey, or lacked key measures; 2,375 were excluded from the original sample of mothers unmarried at the time of the birth. The analytic sample (N = 1,225) was more likely to use SNAP, experience depression, have some college or technical training, and be non-Hispanic White or non-Hispanic Black compared to those who were not in the study.

Measures

Depression in the sample was assessed using the Major Depression Episode (MDE) subscale of the Composite International Diagnostic Interview – Short Form (CIDI-SF).²⁴ The measure was constructed based on criteria for Major Depression found in the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV; APA, 1994). Reliability and validity of the instrument have been previously established.²⁵

The CIDI-SF uses a subset of questions to determine the probability that the respondent would be diagnosed with depression if given the full interview. Respondents are asked whether they experienced two weeks of either depression or the inability to enjoy pleasurable things during the past year. If the respondents responded affirmatively and indicated that symptoms occurred almost every day and lasted for at least half of the day, they were asked additional questions concerning loss of interest, tiredness, change in weight, trouble sleeping, trouble concentrating, feeling worthless, and thoughts about death.²⁴ For the purposes of this study, continuous scores were constructed, ranging from 0 to 8, with 8 indicating the highest probability of a depression diagnosis. In addition, if respondents indicated that they were taking medicine prescribed by a doctor to treat depression, a depression diagnosis was assumed, and they were automatically given a score of 8. Each score corresponds to a probability of being diagnosed with depression, ranging from .0001 to .9083.²⁴ The result is a normally distributed variable. Scores for each respondent were constructed for years three and five. The probability of a depression diagnosis given their score on the CIDI-SF was used in the analyses as the dependent variable because capturing the severity of symptoms is more consistent with the Family Stress Model of Economic Hardship than a dichotomous clinical diagnosis.¹³

Food security status was assessed using items from the U.S. Household Food Security Survey Module (HFSSM).²⁶ Respondents were classified as food insecure if they responded affirmatively to three indicators assessing whether respondents sometimes or often worried that food would run out, did not have enough money for food, and could not afford to eat balanced meals. Cronbach's alpha reliability coefficients for the items at years three and five were .78 and .81, respectively, indicating adequate reliability. Respondents were classified as food secure or food insecure at years three and five; they were then categorized based on whether they remained food secure at both years (remained food secure), remained food insecure at both years (remained food insecure), became food secure between year three and year five (became food secure), or became food insecure between year three and year five (became food insecure). The omitted category was food secure at both years (remained food secure). These food security categories follow the example of Hofferth (2004).²⁷

Receipt of SNAP was measured by asking respondents if they had participated in SNAP at year three and year five. Categories were constructed for SNAP receipt based on whether respondents were receiving benefits at both years, not receiving benefits at either year, receiving benefits at year three only, or receiving benefits at year five only. The omitted category was not receiving SNAP at either year.

Analyses controlled for the stressors and resources in the lives of the respondents that may influence depressive symptoms. Stressors included change in relationship status and exposure to violence. Change in relationship with partner was indicated if the respondent reported being in a romantic relationship at year five with someone other than the person indicated at year three. If the respondent reported being in a romantic relationship with the same person both years, or if the respondent reported no romantic relationship at both years, then she was categorized as not having a change in relationship status. Exposure to violence was measured using a subset of questions from the My Exposure To Violence (My ETV) instrument.²⁸ The respondent was asked about incidences of violence she had seen or

personally experienced during the past year. Types of violence included physical violence without a weapon (“hit, slapped, punched, or beaten up”), violence with a weapon, gun violence, and murder. Respondents indicated incidence of violence; response options included 0 = never, 1 = once, 2 = two to three, 3 = four to ten, 4 = more than ten. To adjust for item nonresponse, an average score was constructed by summing the items and dividing by the number of valid responses. Higher scores indicated greater exposure to violence. Scores were constructed using data from year three. The alpha coefficient for the items is .80, indicating adequate reliability.

Resources included financial resources, health quality and having health insurance. Financial resources were assessed using the ratio of income to needs, an indicator of family income relative to family size, which was constructed by dividing the mother’s household income by the official poverty threshold. Health quality was measured by a single item, “In general, how is your health?” Possible responses included excellent, very good, good, fair and poor. The variable was dichotomized, with responses of excellent or very good health indicating good health, and responses of good, fair, or poor indicating poorer health. Health insurance was dichotomized into having insurance through a government program or private company, or lacking insurance. Scores were constructed using data from year five.

All analyses controlled for education and race/ethnicity. Education was categorized into less than a high school degree, a high school degree or equivalent, some college or technical school, and college degree or graduate degree. The omitted category was less than a high school degree. Racial/ethnic categories included Hispanic, non-Hispanic Black, non-Hispanic White, and other. The omitted category was non-Hispanic White.

Analyses

Hypotheses were tested using OLS multiple regression. The dependent variable was the probability of depression at year five, adjusting for the probability of depression at year three. The model, therefore, can be interpreted as predicting the change in probability of depression over the period. Multiple regression analyses were weighted using the five-year national level sample weight to compensate for unequal selection probabilities. Two models were tested: one with all main effects and one including a set of interactions between each social support variables and food insecurity. Controls were included for race/ethnicity, education, income to poverty, change in relationship status, exposure to violence, health quality, and health insurance.

RESULTS

Table 1 presents the descriptive statistics for variables used in the analysis. Between 16% and 18% of the sample experienced food insecurity at one or both years and 68% received SNAP in at least one of the two survey years. Seventy-three percent of the sample had no more than a high school education; the rest had at least some college or technical training. The sample consisted primarily of non-Hispanic Black (42%), Hispanic (30%), and non-Hispanic White (24%) mothers. Sixty-nine percent received SNAP at one or both years. Among participants, 83% reported having good health, and 76% reported having health

insurance. More than half of the sample (63%) had a change in relationship status, and 42% of the sample reported being exposed to at least some violence.

Table 2 summarizes the two multiple regression models used to predict mothers' depression probability at year five. The models explained between 17% and 19% of the variance in maternal depression probability at year five. The first model tested whether change in food security status and SNAP receipt predict change in depression probability over a two-year period. In this model, mothers' depression probability at year five was regressed on year three depression probability, food security status (remained food insecure, became food insecure, and became food secure), receipt of SNAP, control variables (race, education), stressors (exposure to violence and relationship change), resources (income-to-needs ratio, good health and health insurance), and receipt of SNAP.

In this model, remaining food insecure or becoming food insecure were significant predictors of the probability that the mother was depressed at year five, $p < .01$ and $p < .05$, respectively. Being food insecure over the two-year period and becoming food insecure were associated with an increased maternal depression probability over time. No category of SNAP receipt was a significant predictor of mothers' depression probability.

The second model tested the hypothesis that instrumental support from SNAP moderates the relationship between food security status and the probability of becoming depressed. This model included the interactions between remaining food insecure, becoming food insecure, and becoming food secure and gaining, losing, or retaining SNAP benefits between years three and five. The comparison group did not receive SNAP at either time and was food secure at both points.

For those who gained SNAP over the period, the probability of becoming depressed associated with becoming food insecure over the period declined from .22 to -.12 (.24-.03 -.33). For those who gained SNAP over the period, the probability of becoming depressed associated with food insecurity at both years rose from .13 to .59 (.13-.03+.49). For those who lost SNAP benefits, the probability of becoming depressed associated with becoming food insecure between the two years rose from .24 to .63 (.24-.04+.43). Having SNAP at both years did not interact with food security status.

Control Variables

Mothers who were non-Hispanic Black, Hispanic, or who had completed college or graduate school had a lower probability of depression at year five. Mothers exposed to violence had a higher probability of a depression diagnosis at year five. None of the other variables were linked to probability of depression.

DISCUSSION

The present study examined whether change in food security status predicted change in probability of mothers' depression over a two-year period, whether receipt of SNAP predicted the probability of depression, and whether the relationship between food security status and the probability of depression varied based on receipt of SNAP. The findings of

this study provide evidence that food insecurity may contribute to depression, as change in food security status was associated with change in mothers' probability of depression over time. Study findings also indicated that receipt of SNAP may impact the relationship between food insecurity and depression.

Our first hypothesis, that food insecurity would be linked with probability of depression over time, was supported. Specifically, those who remained food insecure or became food insecure between the years experienced an increased probability of depression. Becoming food secure was not associated with probability of depression. Our findings concerning food insecurity and depression are consistent with other studies of this relationship, which found that food insecurity may be an important factor contributing to depression for low-income women.^{18–20}

Our second hypothesis was that receipt of SNAP would be associated with lower probability of depression. Contrary to this hypothesis, receipt of SNAP did not predict probability of depression. This suggests that SNAP benefits are not sufficient to directly reduce the probability of depression, which is dependent upon a variety of personal and situational factors.

Our third hypothesis was that the relationship between food insecurity status and probability of depression would vary depending on receipt of SNAP. Specifically, becoming food insecure and remaining food insecure would be less likely to be linked to probability of depression among those who receive SNAP compared with those who do not. We found that receipt of SNAP did impact the association between food insecurity and probability of depression.

For those who became food insecure, losing SNAP was associated with increased probability of depression, while gaining SNAP was associated with reduced probability of depression. This finding clearly suggests that the SNAP program may help to relieve distress experienced by families who have recently become food insecure. Interpreting findings using The Family Stress Model of Economic Hardship,¹³ the resources provided by SNAP may keep economic pressure from precipitating further problems. Specifically, safety net programs such as SNAP may be important for keeping economic hardship from being compounded with mothers' emotional distress. As the relationship between maternal depression and negative outcomes for children is well-established,²⁹ intervention between food insecurity and depression is potentially very important for family well-being.

For those who remained food insecure during both years, gaining SNAP was associated with the increased probability of depression. Given that these respondents were already food insecure, the receipt of SNAP may indicate increased economic hardship, as participants either begin to qualify for the receipt of SNAP or, if they had qualified previously, make the decision to apply. For those who are already experiencing food insecurity, persistent or worsening economic hardship may be too overwhelming for SNAP to have an emotional benefit. When interpreting the findings using Family Stress Model of Economic Hardship,¹³ the ability of SNAP to offset distress produced by economic hardship may vary based upon the adequacy of the benefit to address the hardship as well as the extent of the hardship.

Assistance from SNAP is supplemental – it is not meant to supply a household's total food needs – and may not be enough to offset the emotional impact of more extreme or ongoing hardship.

Limitations

Our study has limitations that need to be kept in mind when interpreting the results. First, because of attrition from the study over time and data missing for key variables, our analytic sample was smaller than the original sample, representing a more disadvantaged population than the full sample. Additionally, those in the sample who were prescribed depression medication were assumed to have a diagnosis of depression, without reporting symptoms, which may be a potential cofounder. Furthermore, not all potential resources or stressors could be accounted for in the model. Finally, the actual timing of onset and decline in food insecurity and the receipt of SNAP benefits were not precisely assessed over the two years between waves. Consequently, the sequence of economic circumstances, receipt of benefits, and depression cannot be precisely determined.

Conclusion

The incidence of food insecurity has increased since the Great Recession and has not yet returned to previous levels, despite identification of the reduction of food insecurity as a national health priority.³⁰ Worsening food insecurity may impact the well-being of Americans affected by this economic hardship. This study expanded previous literature by including a more robust measure of food insecurity, using a more rigorous method by assessing whether change in food security status is associated with change in probability of depression, and by using a representative sample of urban mothers who had a birth outside of marriage. Findings from this study suggest that food insecurity can contribute to depression among low-income mothers, exacerbating existing hardships. Additionally, safety net programs such as SNAP may be important in keeping acute economic hardship from being compounded with distress, potentially reducing the deleterious impacts of such hardship. As the nation's budget tightens, programs that provide food resources for those who are low-income are threatened.³¹ Previous research has shown evidence that the programs work; however, the present study suggests that such programs need to be of sufficient scope and size to reduce food insecurity and positively affect associated health outcomes, including rates of depression. Further research is needed to evaluate the most efficient and efficacious means to reduce food insecurity and improve wellbeing among the most vulnerable families.

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Table 1

Demographic Characteristics of the Sample Households, Weighted (N = 1,224)

	% or <i>M (SD)</i> , Range
Probability of Depression at Year 3	0.19 (4.91), .0001 – .9083
Probability of Depression at Year 5	0.17 (4.75), .0001 – .9083
Food Security Status	
Remained Food Secure	84
Became Food Secure	7
Became Food Insecure	6
Remained Food Insecure	3
SNAP Receipt	
Neither Year	31
Both Years	44
Year Three Only	10
Year Five Only	15
Education	
Less than High School	35
High School or Equivalent	36
Some College or Technical	25
College or Graduate School	4
Race/Ethnicity	
Non-Hispanic Black	42
Hispanic	30
Non-Hispanic White	24
Other	4
Income-to-Needs Ratio	1.32 (17.10), 0 – 12.4
Relationship Change	63
Good Health Quality	83
Health Insurance	76
Exposure to Violence	0.19 (4.71), 0 – 4

Table 2

Regression of Probability of Depression on Food Insecurity, SNAP, and Control Variables (N = 1,225)

Variable	Model 1		Model 2	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Intercept	.21 *	.08	.22 *	.10
Depression Probability Year 3	.18 **	.06	.18 **	.06
Became Food Secure	.04	.09	.10	.21
Became Food Insecure	.22 *	.10	.24 *	.12
Remained Food Insecure	.32 **	.13	.13	.14
Income-to-Needs Ratio	-.00	.02	-.00	.02
Non-Hispanic Black	-.16 **	.06	-.16 **	.06
Hispanic	-.15 **	.06	-.15 **	.06
Other	.09	.15	.09	.15
High School	-.03	.05	-.03	.05
Some College or Technical School	-.01	.05	-.00	.05
College or Graduate School	-.15 *	.07	-.14 *	.07
Exposure to Violence	.19 *	.08	.19 **	.08
Relationship Change	-.01	.43	.00	.04
Health Quality	.02	.05	.02	.05
Health Insurance	-.01	.04	-.02	.04
SNAP Both Waves	-.01	.05	-.02	.06
SNAP Loss	-.05	.06	-.04	.06
SNAP Gain	-.04	.08	-.03	.08
SNAP Gain * Became Food Secure			.11	.23
SNAP Gain * Became Food Insecure			-.33 *	.15
SNAP Gain * Remained Food Insecure			.49 *	.21
SNAP Loss * Became Food Secure			.29	.27
SNAP Loss * Became Food Insecure			.43 **	.15
SNAP Loss * Remained Food Insecure			-.12	.19
Retained SNAP * Became Food Secure			-.10	.24
Retained SNAP * Became Food Insecure			.03	.18
Retained SNAP * Remained Food Insecure			.30	.20
<i>R</i> ²	.17		.19	

Note:

* $p < .05$.** $p < .01$.