

Social capital is associated with decreased risk of hunger[☆]

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Abstract

This article explores whether social capital—a measure of trust, reciprocity and social networks—is positively associated with household food security, independent of household-level socioeconomic factors. Interviews were conducted in 330 low-income households from Hartford, Connecticut. Social capital was measured using a 7-item Likert scale and was analyzed using household- and community-level scores. Household food security and hunger were measured using the US Household Food Security Module. χ^2 tests were used to examine associations between social capital, food security and household demographic characteristics. Logistic regression was used to examine whether household- and community-level social capital decreases the odds of household hunger, and to estimate which household characteristics increase the likelihood of having social capital. Consistent with our hypotheses, social capital, at both the household and community levels, is significantly associated with household food security in these data. Community-level social capital is significantly associated with decreased odds of experiencing hunger (adjusted odds ratio (AOR) = 0.47 [95% CI 0.28, 0.81], $P < 0.01$), while controlling for household socioeconomic status. Results show that households with an elderly member are over two and a half times as likely to have high social capital (AOR = 2.68 [1.22, 5.87], $P < 0.01$) than are non-elderly households, after controlling for socioeconomic status. Having a household member who participates in a social or civic organization is also significantly associated with having higher levels of social capital. Social capital, particularly in terms of reciprocity among neighbors, contributes to household food security. Households may have similarly limited financial or food resources, but households with higher levels of social capital are less likely to experience hunger.

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Introduction

Numerous studies have shown associations between social capital and positive health outcomes (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Rose, 2000; Runyan et al., 1998) and decreased crime rates (Sampson, Raudenbush, & Earls, 1997; Kawachi, Kennedy, & Wilkinson, 1999; Kennedy, Kawachi, Prothrow-Stith, Lochner, & Gupta, 1998), but none to our knowledge has examined potential relationships between social capital and food security. This study examined whether food security is associated with social capital, both at the household and at the community level.

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The goals of this study were to (1) measure and analyze social capital at the household and community levels; (2) examine possible associations between social capital and food security; and (3) explore the dynamics by which households with high social capital may be more food secure.

Background

Social capital

Woolcock (2001) suggests that there is an emerging consensus across the social sciences concerning the definition of social capital, which is summarized as “the norms and networks that facilitate collective action”. Kawachi (1999, p. 121) defines social capital as “the resources available to individuals through their social behaviors and membership in community networks”.

Woolcock (2001) suggests that the most compelling evidence in support of social capital theories comes from household- and community-level studies, using measures of community networks, the nature and extent of civic participation and exchanges among neighbors. Some have defined social capital as a community characteristic and measured social capital at the community or state level (Kawachi et al., 1997; Lochner, Kawachi, & Kennedy, 1999). Others have measured and analyzed social capital at the individual and household levels (Rose, 2000; Runyan et al., 1998; Hyyppa & Maki, 2001). We first defined social capital at the household level as the households’ perceived sense of social trust and community reciprocity, and then aggregated these measures to the neighborhood level to examine the combined effect of trust and reciprocity available for a given neighborhood. While survey data typically includes measures of individual- or household-level factors, Sampson et al. (1997) discuss how “surveys that merge a cluster sample design with questions tapping collective properties lend themselves to the additional consideration of neighborhood phenomena”.

Hawe and Shiell (2000) suggest that social capital has relational, material and political aspects and therefore cannot be measured by a single indicator. We describe households or neighborhoods as having “higher stocks or levels” of social capital, meaning they scored higher on a scale of several social capital indicators measured in this study (described below).

While using different measures of social capital, several studies have found positive associations between social capital and health status. By analyzing two large data sets—the Roper Reports and the DDB Needham Life Style survey Putnam (2001) developed 13 different indicators of social capital and combined these into a single measure to compare the 50 United States. He

found that in states where social capital is higher, measures of child welfare are also higher (including lower levels of teen pregnancy and infant mortality). In a study of social capital and health, Veenstra (2000) found the factors with the strongest positive relationship with self-rated health status were frequency of socialization with work-mates and attendance at religious services, after controlling for income and education. However, the combined effects of social capital were not significant. In a study of Russians, Rose (2000) found that social capital increases self-assessed physical and emotional health more than human capital indicators, including age, gender and income. The significant social capital influences included involvement in formal and informal networks, friends to rely on when ill, and trust. Comparing state-level indicators of social capital and individual self-rated health, Kawachi, Kennedy, and Glass (1999) found a contextual effect of low social capital on increased risk of poor health, after controlling for low income, low education and smoking.

Social capital has also been examined at the community-level with regard to crime rates. Sampson et al. (1997) studied 343 Chicago neighborhoods and found that informal social control, social cohesion and trust (“collective efficacy” as the researchers describe it) have a strong negative association with violence, and that these make up an important construct that can be measured reliably at the community level.

Food insecurity and hunger

Food insecurity as measured in this study refers to “whether a household has *enough* food or money to meet its basic food needs” and hunger as the “uneasy or painful sensation caused by a lack of food” (Bickel, Nord, Price, Hamilton, & Cook, 2000). The most recent estimates from the US Department of Agriculture (USDA) reveal that 89.3% of US households were food secure in 2001, while the rest (10.7%) were food insecure, including 3.3% of all households where one or more members experienced hunger. The following groups had rates of food insecurity much higher than the national average: households with incomes below the federal poverty line (36.5%), Hispanic households (21.8%), Black households (21.3%), households with children headed by a single mother (31.9%), and households located in central cities (13.9%).

Food insecurity and hunger negatively impact one’s physical, mental and emotional health. Recent research shows that hungry children are more likely to be chronically sick and to have behavioral problems compared to children who are not hungry (Weinreb et al., 2002). Recent research has also found that food insecurity is positively associated with overweight in women (Townsend, Peerson, Love, Achterberg, & Murphy, 2001).

The hypothesis of this study is that social capital is positively associated with food security. For example, Kawachi (1999) argues that social capital can increase the likelihood of access to various forms of social support during times of need. At the household level, households that know and trust their neighbors may be more likely to borrow food, borrow a car to get to the supermarket, or reciprocate with child-care responsibilities. These seemingly trivial favors could conceivably make a large difference in terms of access to food, especially for low-income households. At the community level, neighborhoods with higher social capital may be more likely to have grocery stores that allow customers to use credit and pay for food later. Conversely, communities with lower social capital may be more likely to contain households struggling to meet their food needs without receiving much support from neighbors. An examination of social capital may offer insights into ways to decrease the prevalence of food insecurity and hunger in the US.

Methods

Sample

The study population was all households in the city of Hartford, CT with incomes below 185% of the federal poverty level; this was designed to target households at risk of food insecurity. USDA estimates show that food insecurity is six times as prevalent in households with annual incomes below 185% of the poverty line as in households with incomes at or above this level (Andrews, Nord, Bickel, & Carlson, 2000). This income threshold was also chosen to maintain consistency with several food assistance program guidelines and other research on food security (Daponte, 2000). While Connecticut ranks as one of the wealthiest states in the US, 2000 Census figures show that Hartford is the second poorest medium size city in the US.

The sampling frame consisted of a list of all residential addresses in Hartford obtained from the City of Hartford Assessor's Office. A systematic sample with a random start was selected from this list. Out of a total of 45,521 households, the target sample size was 296. An initial list of 1050 households was selected to accommodate non-response, income ineligibility and refusals. Of those who initially agreed to participate, 73 households had incomes above the 185% poverty screen and were not included. An additional 377 households could not be contacted due to vacancy or no response after three separate attempts, and 270 households refused to participate in the study. A total of 330 surveys were completed door-to-door by trained interviewers, and the respondents were paid \$5 for their participation. After removing addresses of households that were above the

income cutoff (73) or could not be contacted (377), the overall response rate among eligible households was $1050 - 73 - 377 = 600 / 330 = 55\%$.

At the time of this research, approval from an institutional committee for the protection of human subjects was not needed to conduct survey research. Precautions were taken to ensure that participants were not exposed to risk, including informing participants of the purpose and goals of the research, assurance that they could withdraw from the study at will, and assurance of confidentiality.

Survey instrument

The survey instrument measured food security, social capital and household demographics. Interviews were conducted in both English and Spanish. To measure food insecurity and hunger, the US Household Food Security Module was used.² The module consists of 18 questions that ask with increasing severity about a household's experiences with food insufficiency during the previous 12-month period (Bickel, Andrews, & Klein, 1996). These questions are based on research over two decades that identified a particular set of conditions, experiences and behavior patterns that consistently characterize the phenomenon of food insecurity and hunger. Households' scale value and food security status were determined by whether the household had children and by the number of affirmative answers given. This number ranges from 0 to 18 for households with children and 0 to 10 for households with no children.

To score the responses for each household, the revised "Guide to Measuring Household Food Security" was used (Bickel et al., 2000). A household's scale value depends on the number of increasingly severe indications of food insecurity that the household has experienced, as indicated by affirmative responses to the increasingly severe *sequence* of survey questions. Therefore, a household must affirm multiple indicators of actual reduced food intake to be classified "food insecure with hunger", and at least three indicators of reduced food intake among children to be classified "food insecure with severe hunger".

Table 1 lists the number of affirmative responses required and item descriptions for households to be classified into each of the following four food security status categories for households with and without children: (1) food secure, (2) food insecure with risk of hunger, (3) food insecure with moderate hunger (at least one adult experiences hunger) and (4) food insecure with severe hunger (at least one child experiences hunger).

²For a detailed description of the history and methodology of measuring household food security in the US, see <http://www.ers.usda.gov/briefing/foodsecurity>.

Table 1
Affirmative responses needed for classification into food security status categories

Household with child	Household with no child	Item description	Food security status category
0–2	0–2	Worried food would run out Food bought did not last	Food secure
3–7	3–5	Could not afford to eat balanced meals Relied on few kinds of low-cost food for children Could not feed the children a balanced meal Children were not eating enough Adult cut size of meals or skipped meals Adult cut or skipped meals, 3 or more months	Food insecure without hunger
8–12	6–8	Respondent ate less than felt they should Adult did not eat for whole day Adult did not eat for day, 3 or more months Adult hungry but did not eat	Food insecure with moderate hunger
13–18	9–10	Respondent lost weight Cut size of child's meals Child skipped meal Child skipped meals, 3 or more months Child hungry but could not afford more food Child did not eat for whole day	Food insecure with severe hunger

For logistic regression models, the food security categories were collapsed into a dichotomous variable for 'not hungry' (categories 1 and 2 above), and 'hungry' (categories 3 and 4 above). This dichotomization was used by Nord and Bickel (2002) to measure child food security and by Daponte (2000), and the methodology for this type of categorization is discussed by Bickel et al. (2000).

To measure social capital, a seven-item Likert scale with four response categories was used. This scale is based on an instrument developed and validated by Sampson et al. (1997), and is designed to measure social cohesion and trust. At the time of this research, there were few tools available to measure social capital, and this instrument was used as a proxy for social capital. Sampson et al. conducted several tests of reliability within their sample, including hierarchical statistical models to test for item variation within person, person variation within neighborhoods, and variation between neighborhoods. They also tested for discriminant validity. They found that their measure could be used reliably at the neighborhood level.

Responses were divided into "agree or strongly agree" (scored as 1) versus "disagree or strongly disagree" (scored as 0) and affirmative responses were summed to yield overall household scores. Two questions that were worded negatively were reverse coded. The social capital

scores for each household ranged from zero to seven for seven questions. The following questions comprised the social capital scale:

1. People around here are willing to help their neighbors.
2. This is a close-knit, or "tight" neighborhood where people generally know one another.
3. If I had to borrow \$30 in an emergency, I could borrow it from a neighbor.
4. People in this neighborhood generally don't get along with each other.
5. People in this neighborhood can be trusted.
6. If I were sick I could count on my neighbors to shop for groceries for me.
7. People in this neighborhood do not share the same values.

To create aggregated community-level social capital scores, the mean household-level social capital score for each neighborhood was used. Hartford has 17 recognized and well-established neighborhoods with geographic boundaries defined by the City Council with the help of citizen participation in the 1970s. Two of these neighborhoods are non-residential industrial, and one is the downtown section that is mainly non-residential. Therefore, for this research households were

spatially aggregated into one of the 14 residential neighborhoods of Hartford.

The following additional questions were asked in this study regarding neighborhood tenure:

1. How long have you lived in your house/apartment?
2. How long have you lived in Hartford?

Group membership and civic involvement are considered important aspects of social capital. Since the above instrument does not measure group membership, we included the following question:

3. Is anyone in your household a member of any social or civic organizations, such as the PTA, a community organization, or a religious organization?

The following demographic information was also collected for all households: highest level of education completed by any adult in the household, household income (categorized into above or below 100% of poverty), race and ethnicity of respondent, family structure (child under age 18, elderly member over age 65, female-headed household with children), whether household owns a car and can borrow a car, and employment status of adult members (categorized as any adult working full-time versus no adult working full-time).

Logistic regression models

Two regression models were used to determine if social capital, at the household and community levels, significantly decreases the odds of being hungry (food insecure with hunger). The dependent variable in Models 1 and 2 is a dichotomous measure of hungry versus not hungry. Initially, the regression model was run using food secure versus food insecure as the dependent variable. When none of the independent variables significantly predicted the odds of being food secure, we analyzed “no hunger” as a dependent variable. The logic of food insecurity as a unified phenomenon, varying orderly in severity from least to most severe states (with hunger at the more severe end of the continuum), suggests examination of this more severe part of the scale as an outcome. Doing so, we found significant associations.

A third regression model was estimated to determine which household characteristics significantly increase the odds of having high social capital. The dependent variable in Model 3 is a dichotomous measure of low versus high social capital. The social capital scores ranged from 0 to 7, and the median value in these data was 3. Therefore, we considered scores ranging from 0 to 3 as low, and scores ranging higher than 3 as high.

Based on previous research on food security and social capital, and significant bivariate results from these data, we chose the following independent variables for

all three models: membership in organizations, length of time in apartment, whether the household has children or elderly members, female-headed household with children, and ethnicity (dummy variables were created for Black, White, and Hispanic, and Hispanic was used as the reference variable for ethnicity). Control variables include income above 100% of poverty, and education and employment status of adult members.

Model 1: Does higher household-level social capital decrease odds of hunger?: Log likelihood (household hunger) = F (household-level social capital + member of organization + length of time in apartment + child under age 18 + elderly member + single mom + ethnicity + income above poverty + adult with high school degree + adult with full-time employment) + error term.

Model 2: Does higher community-level social capital decrease odds of hunger?: Log likelihood (Household Hunger) = F (community-level social capital + member of organization + length of time in apartment + child under age 18 + elderly member + single mom + ethnicity + income above poverty + adult with high school degree + adult with full-time employment) + error term.

Model 3: Which characteristics increase odds of a household having high social capital?: Log likelihood (social capital) = F (member of organization + length of time in apartment + child under age 18 + elderly member + single mom + ethnicity + income above poverty + adult with high school degree + adult with full-time employment) + error term.

Results

Table 2 lists household characteristics by food security status, and Table 3 lists household characteristics by social capital status. χ^2 tests were run to test for significant associations between each characteristic, and significant associations are indicated. Almost one out of four households (24%) was classified by the US Food Security Module as having at least one member who experienced hunger during the previous 12 months. Twenty-eight percent of households were food insecure without hunger, and almost half (48%) were food secure. Based on the social capital scale, over half of respondents (58%) were classified as having low social capital (scoring 0–3 on the scale from 0–7), and over two-thirds of respondents (69%) reported that no one in their household was a member of any social or civic organizations. Most households have lived in Hartford for a long time (median time 20 years, results not shown), yet almost half of all households (47%) have lived in their apartment for 1 year or less (median time living in an apartment was 2 years).

High household social capital is *not* associated with owning a car, but it is positively associated with the ability to borrow a car ($P = 0.02$). Among households

Table 2
Key household characteristics by food security status

Variable	N	Percentage of			χ^2 -test $P < 0.05$
		Food secure	Food insecure/ no hunger	Hunger	
All households	330	48	28	24	
Social capital status					
High social capital	139	55	28	17	*
Low social capital	191	43	28	29	
Member of organization					
Member	104	58	17	25	*
No member	226	44	33	23	
Children in household					
Child < 18 years	215	47	29	24	NS
No child < 18 years	115	51	25	24	
Senior in household					
Senior in household	53	62	25	13	NS
No senior in household	277	46	29	26	
Female headed hh with children					
Single mother	132	42	31	27	NS
No single mother	198	52	26	22	
Race/ethnicity of respondent					
Hispanic	155	48	28	24	NS
Black	145	46	31	23	
White	20	65	15	20	
Income of household					
Above 100% of poverty line	162	59	22	19	*
Below 100% of poverty line	168	35	35	30	
Car ownership					
Own car	148	58	22	20	*
Do not own car	182	40	33	27	
Employment status of adults					
Full-time employment	138	59	24	17	*
No full-time employment	192	41	31	28	
Education of adult members					
High school degree	190	55	25	20	*
No high school degree	140	40	31	29	

P -values: * < 0.05 .

with high social capital, the majority (57%) was involved in a social or civic organization. Among households with an elderly member, 69% had high social capital.

Being Hispanic is significantly associated with having low social capital ($P = 0.04$). In addition, Hispanic

households tended to have lived in their apartments for a significantly shorter amount of time (mean time 3 years, $P < 0.01$, results not shown) than did non-Hispanic households (mean time 6 years). Black and White households were more likely to have a member involved in a social or civic organization than Hispanic

Table 3
Key household characteristics by social capital status

Variable	N	Percentage of		χ^2 -test $P < 0.05$
		High social capital	Low social capital	
All households	330	42	58	
Member of organization				
Member	104	57	43	*
No member	226	36	64	
Children in household				
Child < 18 years	215	40	60	NS
No child < 18 years	115	47	53	
Senior in household				
Senior in household	53	69	31	*
No senior in household	277	37	63	
Female headed hh with children				
Single mother	132	39	61	NS
No single mother	198	45	55	
Race/ethnicity of respondent				
Hispanic	155	36	64	*
Black	145	48	52	
White	20	45	55	
Income of household				
Above 100% of poverty line	162	48	52	*
Below 100% of poverty line	168	37	63	
Car ownership				
Own car	148	44	56	NS
Do not own car	182	41	59	
Can borrow car				
Can borrow car	159	49	51	*
Cannot borrow car	167	36	64	
Employment status of adults				
Full-time employment	168	42	58	NS
No full-time employment	162	43	57	
Education of adult members				
High school degree	190	43	57	NS
No high school degree	140	42	58	

P-values: * < 0.05.

households (38% and 50%, respectively, versus 23% for Hispanic households, results not shown).

Multivariate regression models

The first regression model tests whether higher levels of household-level social capital decrease the odds of experiencing hunger while controlling for socio-econom-

ic characteristics of the household. Household-level social capital reflects a household's perceived sense of social trust and community reciprocity, and community-level social capital reflects the aggregated level of trust and reciprocity available in a given neighborhood. Results for all three regression models are shown in Table 4. Consistent with our hypotheses, in the first model, household social capital is associated with

Table 4
Logistic regression models predicting odds of hunger and social capital

Independent variable	B	AOR	95% CI	P
<i>1. Experiencing hunger</i>				
HH-level social capital	-0.14	0.87	0.76–0.99	*
Member of organization	0.51	1.67	0.91–3.04	NS
Length of time in apartment	0.03	1.03	0.98–1.07	NS
Child under age 18	-0.20	0.82	0.36–1.83	NS
Elderly member	-1.00	0.37	0.13–1.06	NS
Single mother	0.02	1.02	0.49–2.12	NS
Black	-0.02	0.98	0.55–1.74	NS
White	-0.15	0.86	0.23–3.14	NS
Income above poverty	-0.41	0.66	0.36–1.22	NS
High school degree	-0.38	0.68	0.38–1.23	NS
Full-time employment	-0.36	0.69	0.36–1.33	NS
<i>2. Experiencing hunger</i>				
Cmty-level social capital	-0.75	0.47	0.28–0.81	*
Member of organization	0.46	1.58	0.86–2.91	NS
Length of time in apartment	0.04	1.04	0.99–1.09	NS
Child under age 18	-0.16	0.85	0.38–1.91	NS
Elderly member	-1.14	0.32	0.11–0.92	*
Single mother	0.14	1.15	0.55–2.39	NS
Black	0.08	1.08	0.61–1.93	NS
White	-0.12	0.88	0.24–3.24	NS
Income above poverty	-0.52	0.59	0.32–1.09	NS
High School degree	-0.33	0.72	0.40–1.29	NS
Full-time employment	-0.32	0.74	0.38–1.42	NS
<i>3. High social capital scores</i>				
Member of organization	0.68	1.97	1.17–3.33	*
Length of time in apartment	0.02	1.02	0.98–1.06	NS
Child under age 18	0.14	1.15	0.57–2.32	NS
Elderly member	0.98	2.68	1.22–5.87	*
Single mother	-0.08	0.92	0.49–1.72	NS
Black	0.18	1.19	0.72–1.98	NS
White	-0.49	0.61	0.19–1.91	NS
Income above poverty	0.40	1.49	0.88–2.53	NS
High School degree	-0.18	0.83	0.49–1.40	NS
Full-time employment	-0.09	0.92	0.52–1.60	NS

P-values: * < 0.05, NS = not significant.

significantly decreased odds of being hungry (adjusted odds ratio (AOR) = 0.87 [95% Confidence Interval 0.76, 0.99] $P = 0.03$), after controlling for membership in organizations, length of time in apartment, household income, education and employment status of adult members, whether the household has children, elderly members, ethnicity, and whether the household is headed by a female with children. None of the household demographic variables is significant as a predictor of hunger when social capital is included in the model.

The second regression model tests whether higher community-level social capital is associated with significantly decreased odds of household hunger after controlling for the same independent variables and

control variables as Model 1. Households that live in a neighborhood with high social capital are less than half as likely to experience hunger as households living in a neighborhood with low social capital (AOR = 0.48 [0.28, 0.81], $P < 0.01$), independent of household-level socioeconomic status. Households with an elderly member are also significantly less likely to experience hunger as households without an elderly member ($p < 0.01$). This model was also estimated including household social capital as a control variable (results not shown). Again, higher community-level social capital significantly decreases the odds of hunger (AOR = 0.50 [0.29, 0.87], $P < 0.01$).

The third regression model estimates which factors are associated with significantly increased odds of having high social capital. Results show that households with an elderly member are over two and a half times more likely to have high social capital (AOR = 2.68 [1.22, 5.87], $P < 0.01$) than are non-elderly households, after controlling for the same independent variables and control variables as Model 1. In addition, households in which someone is a member of a social or civic organization are almost twice as likely to have high social capital as households that are not involved with local organizations (AOR = 1.97 [1.17, 3.33], $P < 0.01$). In this model, none of the other demographic characteristics, including income and education of adult members, are associated with significantly higher odds of having high social capital.

Discussion

Since the data from this study are cross-sectional, causality cannot be inferred. As a result, we cannot discern whether households are food secure because they have social capital, or whether they have social capital because they are food secure or because of other factors that contribute to food security. We controlled for a number of potentially confounding variables, but there may be other confounders for which we did not control, and the results should be interpreted accordingly. In addition, the data were limited to one medium-size city. For this reason, our findings may not be representative of conditions in other cities or in rural areas. It is possible that the \$5 incentive for participation may have introduced some selection bias towards those who are most needy, yet it also may have helped to weed out those with incomes above 185% of poverty.

Households that could not be reached due to vacancy or no response may have different levels of social capital than the sample. Addresses from vacant apartments may indicate households that move frequently and therefore may be less likely to have social capital. Addresses that had no response after three attempts may indicate households that are visiting with friends or participating

in a club, and therefore may be more likely to have social capital. In addition, while we do not have information on the 270 households that refused to participate, they may be less trusting than the sample and therefore may have lower social capital.

Social capital indicators were not observed directly but rather are based on self-reported perception of community. As yet there is no “gold standard” measurement tool or index for measuring social capital. Additional research is needed to determine which combined factors reflect the latent variable of social capital most effectively, and if, in fact, social capital can be measured as a single dimension, and whether social capital as defined and measured in the US is relevant for other countries.

Results show that in these data social capital is associated with decreased risk of hunger, even after controlling for household-level socioeconomic factors. Whereas previous research has linked social capital with improved health indicators and decreased crime rates, the association between social capital and hunger has not previously been shown. These findings suggest that households may derive protective benefits both from their own social networks and from the greater extent of shared networks throughout the community. In this sense, social capital can be viewed as a generally beneficial “public good.”

Social capital is not just a function of access to money. In the regression models estimating the odds of experiencing hunger, social capital at both the household and community level is associated with lower odds of hunger, regardless of household income, education or employment status of adult members. The findings suggest that social capital is associated with whether a household has enough food to avoid hunger. This research suggests that it is important to consider aspects of social capital when working to build food security and prevent hunger. In addition to focusing on the amount of food available to a household, it is also important to consider creative ways of supporting interpersonal relationships and strengthening the communities in which people live (Runyan et al., 1998).

These data suggest that households may have similarly limited financial or food resources, but households with higher levels of social capital are less likely to experience hunger. Aspects of social capital, particularly reciprocity, can translate into greater access to tangible resources. For example, households with social capital may be able to borrow food from neighbors, or borrow a car to get to the supermarket. In addition, households that are members of a church may be more likely to receive food from a food pantry run by the church.

Having established the relationship between social capital and food security, we wanted to identify those characteristics that are most strongly associated with social capital and the mechanisms by which social

capital may influence whether households have enough to eat. The results and implications of this analysis are presented below. Results show that elderly households are more likely than non-elderly households to have higher levels of social capital, to be involved in social or civic organizations, and to have lived in their home for a longer length of time, after controlling for income. This may be due to the fact that income alone does not adequately measure the economic resources of the elderly, who may not be earning income, but may have savings. It may also suggest that there are generational differences with regard to civic involvement and trust. This finding is consistent with Putnam's (2000) findings that none of the traditional channels for community connectedness fit the ways younger Americans have come to live their lives.

Hartford households, particularly Hispanic households, tend to be extremely transient. Sampson et al. (1997) suggest that the formation of social ties takes time, yet because they tend to move frequently, these households tend not to be involved with organizations, which in turn makes them less socially connected. It is possible that immigration status may influence Hispanic households and their desire or ability to join social organizations. More attention could be given to encouraging young people and Hispanic households to join organizations or start new ones that reflect their needs and lifestyles.

Not all forms of social capital are inherently positive. For example, exclusive groups such as gangs or organized crime may have high levels of social support, but they do not increase the public's well-being. In addition, the promotion of social capital may be seen as a substitute for economic investment in poor communities, particularly by governments wishing to reduce spending (Baum, 1999). While the link between social capital and hunger is important, it should be seen as a complement to, not a substitute for, organized anti-hunger and anti-poverty programs. Rather than providing an excuse to disengage from impoverished communities, attention on social capital provides a much-needed redirection of focus toward strengthening the assets and resources that exist within disadvantaged communities (Kawachi, 1999). For example, the use of social capital could be a powerful tool for informing policy-makers, practitioners and community leaders about community-level approaches that could strengthen the food security of families in these communities.

While numerous studies have examined the relationship between social capital, social isolation and social support on health, research on food security has not adequately addressed the contribution that social capital may play in the ability of households to access adequate food. Results from this study can provide a useful framework for additional research in this area. For example, research is needed to develop a common

definition of social capital, and to more fully examine which aspects of social capital have the greatest impact on household food security. Research and interventions are also needed to determine how to develop and build social capital in communities, and these interventions may need to differ based on ethnicity, age and geographic location. Those who promote increased access to and use of food assistance programs could incorporate social capital by linking their services to neighborhood or community-based activities.

The root of poverty often is not just lack of money, but also lack of social networks and support included in social capital. As we grapple with the problem of hunger, social capital is an important concept that deserves attention. Rather than focusing simply on food assistance, these results indicate that we also need to provide conditions where neighbors can build social capital. Mentoring programs, community policing, safe parks and community centers can help build an environment where social capital, and ultimately food security, can grow.

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