5-2013

Resources and Relationships: Food Insecurity and Social Capital Among Middle School Students

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Masters of Arts in Sociology

By

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University of Central Arkansas
Bachelors of Arts in Sociology, 2010

May 2013
University of Arkansas

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ABSTRACT

This study examines the relationship between food insecurity and social capital among 5^{th}-7^{th} graders attending an intermediate school in Northwest Arkansas where nearly 70 percent of students participate in the free or reduced lunch program. The central research questions are: Does social capital have a direct impact on children's food insecurity? And, does social capital mediate the influence of negative circumstances on children's food insecurity? This study finds that social capital does have a significant association with food insecurity, even when controlling for multiple demographic and circumstantial factors. However, there appears to be no mediation of circumstance by social capital. Additionally, we find that the quality of relationships among peers, rather than the quantity of close friends, plays a primary role in children's food insecurity. Together, these findings tell a story about the importance of relationships among middle-school children and how these connections may function to provide a shield from insecurity. More broadly, however, this study informs the larger question of how hunger exists in a nation as rich as the United States by addressing food insecurity as a social phenomenon rather than simply an economic, technological, or biological one.

This thesis is approved for recommendation
to the Graduate Council.
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ACKNOWLEDGMENTS

I would like to acknowledge the chair of my committee, Dr. Kevin M. Fitzpatrick for his invaluable mentoring and support throughout the entire research and writing process. When I took one step, he pushed me to take three more—which I took, stumbling forward, but moving forward nonetheless. Additionally, I would like to thank my committee, Dr. Anna Zajicek and Dr. William Schwab, for their critical eyes and thoughtful feedback. And finally, I must thank my friends and family for their immeasurable love and support. Altogether, this thesis is a product of my own efforts in combination with the privilege of being surrounded by brilliant and compassionate people.

DEDICATION

This thesis is dedicated to all families and communities doing there best to eliminate hunger and food insecurity.

CHAPTER ONE

INTRODUCTION

Juxtaposed with the prosperity, agricultural ingenuity, and professed values of the United States, is the reality that putting healthy food on the table remains a challenge for a vast number of Americans. In an attempt to further understand this contradiction, this study examines the relationship between social capital, or "networks, norms, and trust," and children's food insecurity (Farr 2004:8). Our focus on social capital highlights a vital health concern, food security, as necessarily embedded within social relationships. Specifically, we ask: does social capital have a direct impact on children's food insecurity? And, does social capital mediate negative environmental circumstances that influence children's food insecurity?

This approach allows us to address food insecurity as a social problem rather than just a technological, biological, or economic problem, as it has been more commonly framed. While advances in technology, biology, and economics have surely played roles in reducing (and perhaps increasing) food insecurity, we believe there is a more important component to the story—a social one.

A. Statement of the Problem / Background

The U.S. Department of Agriculture reported in 2011 that approximately 48.8 million Americans were food insecure; among them were 16.2 million children (Coleman-Jensen et al. 2011). Food insecure individuals lack consistent access to the nutrition needed for living a healthy, active lifestyle. Food insecurity among children has been linked to poor health status, difficulties in cognitive and academic performance, and even suicidal thinking among adolescents (Alaimo et al. 2001; Ashiabi and O'Neal 2008; Bernal et al. 2012; Casey et al. 2005; Lohman et al. 2012; Weinstein, Martin, and Ferris 2009). Furthermore, Haas (2007) has shown that poor health at a young age is associated with poor adult health, suggesting that early health

interventions could be crucial in preventing or at least mitigating potentially life-long poor health. Food insecurity is clearly a pressing health concern that has long-term and widespread consequences (Cook and Frank 2008).

Increasingly, along with globalization, an individual's food security is deeply embedded in a larger social context. Therefore, a definition of macro-level food security will be the starting point for discussion because it provides a backdrop for the definition of individual level food security addressed later. In 1994, the United Nations Development Programme (UNDP) Human Development Report offered one of the most comprehensive definitions to date. The UNDP (1994) suggests that food security requires:

> All people at all times have both physical and economic access to basic food. This requires not just enough food to go around. It requires that people have ready access to food—that they have an "entitlement" to food, by growing it for themselves, by buying it or by taking advantage of a public food distribution system. (P. 27)

All the food in the world could be produced in your hometown; however, this does not grant you "ready access" or "entitlement" to that food.

The economic strength, technological advancement, and general abundance of food in the U.S. do not fulfill the criterion of a food secure nation; yet, these are the areas we continue to invest and search for solutions. One is compelled to ask: what is missing from our current socio-economic system that would ensure consistent access and entitlement to food for *all* Americans? To address this question we need to consider the language used in the UNDP's definition of food security, and how this definition relates to sociological definitions and forms of capital; in particular social capital.

The UNDP definition of food security indicates the role of each of the four forms of capital: social, human, cultural, and economic. It is important to acknowledge each of these as factors influencing food security because they all interact with one another. In other words, each form of capital affects the utility and quality of the other. As Bourdieu (2008) claims, "It is in fact impossible to account for the structure and functioning of the social world unless one reintroduces capital in all its forms…" (p.42). The importance of work experience, personal skills, educational achievements, knowledge, and money in each person's struggle to feed themselves and/or their families is well understood, and therefore our discussions of food insecurity tends to be limited to these areas. While these examples of human, cultural, and economic capital are certainly important, it is the explicit purpose of this study to examine food security by exploring the overlooked influence of social capital.

Bourdieu (2008) defines social capital as "membership in a group—which provides each of its members with the back of the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word" (p. 249). By specifying food security as an "entitlement" to food, the UNDP has tapped into a crucial social component of the food security equation. The definition of an "entitlement" is "a right" or, "a government program providing benefits to members of a specified group" (Merriam-Webster). Rights and provisions of government benefits are created by organizations, institutions, and networks formed by people. This means that for those without the skills, knowledge (human and cultural capital), and materials necessary to grow their own food, or the money (economic capital) to buy it, food security can depend largely on how organizations, institutions, and social networks (i.e., nations, local communities, groups of friends or families, etc.) define their membership and whether or not membership is credited with an entitlement to food. Formal and informal memberships, and

the credits they entitle to some but not all, represent a collective decision regarding the distribution of resources. In this way, food insecurity is a uniquely social phenomenon that is determined in part by the definition and quality of network membership, or social capital, within which resources are embedded (Lin 2008). Thus, we have chosen to investigate the influences of the quantity and character of relationships on the food insecurity of middle school children.

B. Study Significance

In studying famine across the globe, Sen (1981) concluded: "The law stands between food availability and food entitlement, and famine deaths can reflect legality with a vengeance" (p.462). At the national level, food security is partly an issue of who the U.S. government defines as citizens and what is decided to be the legal rights entitled to such membership. The U.S. government's responsibility in nutritional support via programs like Supplemental Nutrition and Assistance Program (SNAP) has long been a heated political debate, obscuring the rights/entitlements of membership/citizenship and embedding national food security into an ideological impasse. Recently, these formalized sources of structural social capital have become targets of legislation like The Agriculture Reform, Food, and Jobs Act (S. 3240) passed by the U.S. Senate on June 21, 2012. The Congressional Budget Office estimated this bill would cut SNAP funding by 4.5 billion dollars (CBO 2012). Such a cut would reduce monthly benefits by $90 for nearly half a million households served by the program (CBO 2012). With the social capital attached to U.S. citizenry hanging in the balance of a volatile political climate, it is important for researchers to explore ways in which local, informal types of social capital can mitigate negative attributes of communities at-risk for food insecurity—the underlying purpose of this study.

In addition to providing a focus on informal social capital, this study contributes to the small body of literature on social capital among children, as well as a limited literature on the associations between social capital and food insecurity among children. Surprisingly, very few studies have examined the relationship between social capital and food security generally (Dean and Sharkey 2011; Garasky, Morton, and Greder 2006; Martin et al. 2004; Misselhorn 2009; Walker et al. 2007), and even fewer studies have examined this relationship among children (De Silva and Harpham 2007). In the context of America's economic, social, and political system, children fall within a uniquely vulnerable demographic. Since children do not usually participate within the American economic and political system, their social networks are perhaps their most important resource for food. Moreover, children are not independently mobile, linking their well-being even more intimately to the context of their environment. American children acquire food mainly through social relationships with family, friends, and institutions (i.e. government, church, school). In other words, children receiving food in America generally receive it through entitlement, making social capital a likely determinant of child food insecurity.

Generally, it is assumed that children are fed according to their parents' or guardians' position within America's economic hierarchy. For this reason, eligibility for federal programs like SNAP and free or reduced school lunches is based on household income. National estimates of child food insecurity like those produced from Current Population Survey (CPS) data are based solely on adult questionnaire responses or by comparing regional income averages to regional food prices. However, other studies suggest that there is value in assessing children's food insecurity through interviews and survey instruments administered directly to the children (Connell et al. 2004; Connell et al. 2005; Fram et al. 2011; Hadley et al. 2008). Connell et al. (2004; 2005) concluded that children as young as 11 years old are capable of describing their

experiences with food insecurity and that they can be surveyed directly in order to assess their food insecurity. Moreover, asking children directly about their experience can provide insight into how children often deal with food insecurity (Fram et al. 2011). For example, Connell et al. (2005) found through in-depth interviews with children that informal social networks provided "sharing, borrowing food or money to buy food, and eating with other families," and were of particular importance for children involved in after-school programs (p.1687). Findings like this support the continued examination of social capital among children, and its relationship to various health concerns such as food insecurity.

The current study is most directly linked to the research of Hadley et al. (2008), De Silva and Harpham (2007), and Connell et al. (2004; 2005). Between these three studies there is ample support for the direct survey of children with the explicit goal of examining associations between social capital and food insecurity. That said, on their own, none of these studies fully achieves this goal. Building off of their theoretical and methodological developments, the current study expands upon the existing knowledge of social capital as it relates to the distribution of a specific health-related resource (food) among a group at a specific stage in their life course (childhood). Theoretically, this focus adds some depth to our understanding of various dimensions of social capital across the life course and their potentially varying importance for access to specific resources. Currently, there is little acknowledgement of children as carriers of their own personal social capital amongst peers and within their family. Moreover, by focusing in on a specific health-related resource, rather than just general health itself, we add to the conversation started by Wellman (1998) regarding "specialized ties" (p.3).

Scholars have determined that food insecurity and hunger are not simply issues of scarcity; rather, these are problems of distribution, access, entitlement, and legal rights (Jenkins

and Scanlan 2001; Sen 1981). More plainly, hunger and food insecurity are problems related to the structure and quality of social relationships (Dean and Sharkey 2011; De Silva & Harpham 2007; Garasky, Morton, and Greder 2006; Martin et al. 2004; Misselhorn 2009; Walker et al. 2007), which leads this study to explore the role of social capital in children's food insecurity. The analysis utilizes survey data collected from a Northwest Arkansas middle school where nearly 70 percent of the students participate in the free or reduced lunch program (Fitzpatrick 2012).

CHAPTER TWO

THEORY AND EVIDENCE

Health as a Social Construction

We often think of the boundaries between our bodies and our environment as clear and distinct. However, when it comes to our health these boundaries become obscure and problematic. Ignoring the interplay between bodies and environment leaves us with a myopic view of health and an inadequate understanding for addressing health issues. Human health is a product of the "body's perpetual dialogue" with the various components of its environment (Bell 2011:108). In other words, health is a product of the body's interaction with the environment or "place" within which it exists (Fitzpatrick and LaGory 2011). Moreover, it is important to think of places as having not just a physical composition but also a multitude of social components. Just as the environment interacts with our bodies, so do the physical and social components of any environment; that is, the physical and social components are affected by one another. Fitzpatrick and LaGory (2011) articulate the depth and importance of place for human health, stating that places "are environments consisting of physical, cultural, political, economic, and social components, with each component contributing in complex ways to the differential risks experienced by a population" (p.11). Therefore, levels of risk and hazard, based on "a collection of situations and circumstances," vary by place as well as population (Fitzpatrick and LaGory 2011:10).

Within and across these physical and social landscapes are varying social locations that are often structured hierarchically; individuals located at or near the bottom experiencing more risk and less accessibility to healthy resources than those located above them. Thus, health tends to trace these physical and social landscapes. Moreover, social location within a particular structure is often impacted by the intersection of ascribed characteristics such as race, class, and

gender. The health effects of physical and social components of an environment often vary across these ascribed statuses. For example, Schulz et al. (2002) find that "racial segregation and the concurrent withdrawal of economic resources affect the physical environment… the community infrastructure, and the social environment," and that "these, in turn, influence more proximate factors (e.g., physical activity, dietary patterns, social integrations, social support) that affect health outcomes" (p.680). Findings like this exemplify the interconnectedness of physical and social environments, and the importance of their interplay for human health.

While the environment is certainly a big part of the human health puzzle, the positives and negatives of a place do not impact everyone equally. Some Americans occupy any space they please, the mobility of others within physical and social environments is restricted. Racial minorities, the poor, the young, and the elderly, are all disproportionately restricted in mobility across physical and social space, and in turn, more vulnerable to the health risks of their environment (Fitzpatrick & LaGory 2011). Gender, in many ways, also shapes individuals' mobility within and across social space (Hanson 2010). Thus, place matters in the health equation generally, but its specific influence varies across socially constructed groups (nationality, race, class, gender, ethnicity, etc.). This is a particularly important point for our current study because varying life circumstances are in many ways defined by inclusion or exclusion into dominant social groups (Wacquant and Wilson 1989). Wacquant and Wilson (1989) describe the concept of an "underclass" which they refer to as "a new sociospatial patterning of class and racial domination, recognizable by the unprecedented concentration of the most socially excluded and economically marginal members of the dominated racial and economic group" (p.25). Inclusion and exclusion are conceptually linked to social capital in many ways. Each of these concepts emphasizes the importance of social location, membership

status, and the unequal distribution of resources as linked to these socially constructed phenomena. Each can help explain the concentrated flow of vital resources into more exclusive groups; in other words, inequality.

The intersecting forces of individual behavior (practices) and social structure manifest nothing more intimate than personal health and well-being. It is at this intersection of action and social structure where healthy living is either constrained or enabled, cultivated or inhibited. The reciprocal relationship between social structure and behavior is complex, however, Fitzpatrick and LaGory (2011) offer this succinct explanation: "Humans, like other animals, exist in bounded spatial arenas that affect and are affected by the behavior that takes place within them" (p. 23). Individual behaviors are constrained and enabled by social structural characteristics, which are simultaneously constructed by those very behaviors. Because social capital exemplifies the ties that bind individuals to their social networks, the concept allows for recognition of both individual behaviors and social structural location.

Accordingly, variations in population and individual health often follow patterns of interaction between social structure and individual behavior. For example, the distribution of healthy food to your neighborhood is contingent upon a variety of environmental, economic, and political forces outside the control of any one individual. Of course choices among individual actors still play a role in health, however, these choices are either constrained or enabled by pre-existing social structural landscapes. Dean & Sharkey (2011) offer some empirical support for this idea in their study of Central Texas, in which they find that "rural residents must travel greater distances than urban residents to supermarkets and supercenters which reduces their access to fruit and vegetable retail outlets and is associated with lower consumption of those foods" (p.1454). In this case, a rural structure has constrained the choice to eat healthy food,

ultimately reducing individuals' likelihood to consume fruits and vegetables. This same study found that social support was a significant factor in improving resident's ability to access and consume healthy food (Dean and Sharkey 2011). Various interactive social processes function to unevenly distribute resources crucial to one's health, such as healthy food (Dean and Sharkey 2011), health services (Fitzpatrick and Lagory 2011), marriageable partners (Edin and Kefalas 2011; Wilson 1987; 1991), and more.

The differing impact of place for different groups of people is most evident in instances of stark wealth and resource inequality, which often translates into drastic health inequality. For instance, even in a nation as economically and technologically advanced as the United States, some people have consistent access to healthy food in abundance, wasting it at their discretion, while others must pinch their food budgets in order to meet other financial obligations. Even Arkansas, the home state of two of the largest worldwide corporations dealing in food production and distribution, is no stranger to health inequality as evidenced by unequal and inconsistent access to food. Nearly one in five people are food insecure in Arkansas. Approximately 28% of Arkansas children are food insecure—significantly higher than the national child food insecurity rate of 21.6% (feedingamerica.com). Places stricken with inequality enable food security for some but not all, even when security for all is possible. In a land of abundance, scarcity of resources, population pressure, and technological deficiency are insufficient explanations for health inequality and food insecurity in the United States, not to mention hunger, malnutrition, and food insecurity worldwide (Jenkins and Scanlan 2001; Lappe and Lappe 2002; Sen 1981). The result of disproportionate access to food is a population wherein the most basic opportunities for healthy living, and all opportunities contingent on personal health (i.e. ability to work and compete for work), are differentially distributed.

Food Insecurity: A Socially Constructed Health Inequality

Food has long been a resource embedded in social relationships. Often, food is distributed based on the very relationships it helped build. One could argue rather easily that a primary function of the social organization of family has been to build into our society some degree of automatic food security through relationships or membership to a group. No baby feeds itself, and as it turns out, most Americans are not feeding themselves independently either. The system that puts food on the plate of any individual is a complex web of social relationships, with varying norms and trust.

The definition of food security in the latest USDA report is, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2011:2). As our study is interested in how and why some people are food secure while others remain food insecure, we will focus on an individual level definition of food security. Using the USDA definition as a foundation, we modify it to exclude "by all people," which leaves us with a definition for individuals of "access at all times to enough food for an active, healthy life." Logically, it follows that food insecurity is the absence of food security as it was just defined.

Human health cannot be detached from food. As the saying goes, "you are what you eat." However, food security, though linked closely to nutritional health and hunger, is more of a question of how we do or do not secure access to food consistently. In light of the evidence suggesting social environment influences health, it follows that, as an issue of health and well-being, food security will also be impacted by attributes of social relationships. As mentioned earlier, part of the food insecurity equation includes individual choices and behaviors. Some, if able, might grow or hunt for their food. Most of us in the U.S. purchase it with money earned through employment. However, this is not the full story of how food reaches mouths. A large

part of the equation can be attributed to the social structure that encompasses those individual behaviors and decisions. Social structure determines not only what types of foods are produced, the methods by which that food is produced, etc., but also to whom food is or is not accessible through formal entitlement or informal social relations.

In this indirect way, social structure can either diversify or constrain our availability, access, and variety of food. In terms of enabling or constraining health and food security, all social structures are not created equally. The clean public park provides a safe area for free physical activity, while the industrial park pollutes the air breathed by the nearby neighborhoods. Fresh produce finds its way into wealthy cities as easily as liquor stores find themselves concentrated nearest poor and minority neighborhoods (LaVeist and Wallace 2000). If we consider such social determinants of health, and secure access to food in particular, it may be equally true that "you are where and with whom you eat." In other words, both your physical and social environment shapes your food security and the health outcomes that follow. Similar thinking has led a small number of studies to investigate the role of social capital in alleviating food insecurity (Dean & Sharkey 2011; Dhokarh et al. 2011; Diaz et al. 2002; Garasky, Wright Morton, & Greder 2006; Johnson, Sharkey, & Dean 2010; Locher et al. 2005; Martin et al. 2004; Misselhorn 2009; Walker et al. 2007).

A Social Capital Framework

In places where there is an abundance of natural, economic, and technological resources, what stands in the way of consistent access to food for *everyone*? We argue that this is essentially an issue of membership to, and/or inclusion within, various "social networks, norms, and trust," or social capital (Farr 2004:8). When a resource such as food is simultaneously abundant in a region yet out of reach for some residents of that region, we must focus on the

mechanisms that characterize the distribution of that resource. Regarding such social inequalities Schwalbe (2007) states, "the problem in the United States is not a lack of productive capacity… the problem is with how our capacity is used and with how resources are distributed" (pg. 239). What form of distribution exists outside of a social network, or functions absent of social norms or trust? While differential access to all forms of capital—human, economic, cultural, and social—play a part in who does or does not have access to basic resources vital to human health, minimal attention and investment has been granted to social capital as a determinant of child food insecurity.

Social capital is a concept rooted within two major sociological traditions; Marx's conflict theory (Lin 1999; Lin 2008) and Durkheim's functionalism (Berkman et al. 2000). Marx offers the earliest conceptualization of capital (Lin 1999). Although his writings limited capital to its economic form, Marx exposes the conflict, competition, and exploitation involved in the human struggle for capital; an attribute we hope to maintain as we shape our own framework. Durkheim, while never using the term "social capital," was interested in functions of social structure. Specifically, he shined light on consequences related to varying levels of social integration. Reasoning that "there is… in cohesive and animated society a constant interchange of ideas and feelings from all to each and each to all… which instead of throwing the individual on his own resources, leads him to share in the collective energy and supports his own when exhausted," Durkheim (2010:210) contended that social integration would be associated with individual health outcomes, most notably suicide. Therefore, while Durkheim informs us of the importance of social resources or "collective energy," Marx reminds us that the distribution of resources is embedded within a continuous material and physical struggle for survival. Together, these two approaches provide a foundation for the evolution of the concept of social capital and

its influence on the unequal distribution of vital resources (i.e. money, housing, health services, and food).

From these classical interpretations of capital and cohesion, come the concepts and theories of social capital trending in sociology today. Among the most notable are the conceptual definitions given by Bourdieu, Putnam, and Lin. While we mentioned Bourdieu earlier, the purpose was mainly to illustrate the conceptual links between forms of capital and the criteria outlined for food security. At this point, we focus on definitions of social capital that are more easily measured. Social capital, for Putnam, consists of "connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them" (Putnam 2000:19). This definition was the building block from which Putnam (2000) made major claims such as the following; America's social capital ebbs and flows, and is currently ebbing; the current decline is due to a variety of factors, but around fifty percent of it can be attributed to intergenerational changes linked to historical events such as World War II; this decline has implications ranging from the education and welfare of children all the way to the very foundations of democracy itself; and, solutions must come from social innovation at the individual as well as the institutional level. Lin (2002), who has disagreed with Putnam's assertion that social capital is in decline, defines the concept operationally as "the resources embedded in social networks accessed and used by actors for actions" (p.25). Together, these two definitions highlight social connections and the resources flowing through them. Using these as well as some other major definitions of social capital, sociologists have put the concept to frequent use, particularly in the areas of health.

Social Capital and Health

Similar to viewing poverty as an achievement, as Schwalbe (2008) suggests, healthy/unhealthy lives must also be viewed as a social construction; that is, a reality built by human action upon and within existing social environmental structure. Like poverty, unhealthy and/or food insecure children do not appear out of thin air. Rather, a large body of research suggests that unhealthy lives are *achieved* through processes of exclusion from the social networks, norms, and trust which are linked to the distribution of health resources (Kawachi et al. 1997; Kim et al. 2006; Morrow 2004; Rose 2000; Seeman 1996; Veenstra et al. 2005; Veenstra and Patterson 2012; Wang and Kawachi 2007). For example, Kawachi et al. (1997) found that indicators of social capital in communities, like trust, mediated effects of income inequality on mortality. This finding led others researchers, such as Veenstra (2005) to investigate the effects of social capital on health. In contrast, Veenstra (2005) concluded in a study of self-rated health status in Sasketchewan that "little evidence was found for compositional effects of social capital on health" (p.629). The general question was further investigated by Wang and Kawachi (2007) who found that cognitive dimensions of social capital, indicated by trust, exhibited stronger positive associations with self-rated health, psychological health, and subjective well-being rather than structural social capital indicated by organizational membership. Morrow (2004) approached the question somewhat differently, aiming her study at the influence of social location on health education. Her qualitative interviews with children ages twelve to fifteen yielded findings from which she concluded that "the context in which children are located (in terms of friendship network, school, and locality) is likely to affect the way they experience, receive, and interpret their health education messages" (p.223). Veenstra and Patterson (2012) found that social capital, or personal ties, did not mediate the effects of education or income on the risk of mortality. However, social capital

did have a significant negative association with the risk of mortality (Veenstra and Patterson 2012). Examining the statistical interactions of the various forms of capital, Veenstra and Patterson (2012) found that "protective effects of church attendance and participation in community betterment groups applied only to non-wealthy people" (p. 277). While the results are somewhat mixed, they appear to indicate that the concept of social capital has important, though complex, implications for understanding the relationship between health and environment.

Social Capital and Food Security

The fact that social capital is associated with a wide variety of health indicators has led many to suggest that it may also be linked to food security. Recently, the link between social relationships and food has gained burgeoning attention in the social science community (Dean & Sharkey 2011; 2011; De Silva & Harpham 2007; Garasky, Morton, & Greder 2006; Locher et al. 2005; Martin et al. 2004; Sen 1981; Walker et al. 2007). The approaches as well as conclusions of these studies vary widely. Some have focused on social capital, social relationships, or inclusion as potentially important factors for reducing food insecurity, hunger, and other nutritional health risks. Sen (1981) argues famine is necessarily an issue of "people's ability to command food through legal means available in the society" rather than a product of food availability or scarcity (p.433). In this case, the way we organize relationships legally can have profound effects for reducing famine and starvation. If we consider citizenship to be a form of membership and legal rights to be a form of member credit, then Sen's findings have theoretical as well as applied implications for the importance of Bourdieu's version of social capital as a factor for reducing social tragedies such as hunger and famine.

Dean & Sharkey (2011) found in their study of adult residents of rural Texas that "individual level measures of collective social functioning are important correlates of food insecurity" (p.1454). For example, being able to borrow a car, or to carpool with a neighbor, is an important resource for some rural residents who may live great distances from their nearest grocer. Studies like this one show the importance of social capital as defined by Lin (2008), highlighting relationships as providers of access to crucial resources, or channels through which resources are either ebbing or flowing. Other studies take a similar conceptual approach to emphasizing the role of social capital. Using the U.S. Household Food Security Module and a 7-item social capital measurement related to neighborhood security, interaction, and trust, Walker et al. (2007:1991) found in their study of women participating in WIC, that "household food insecurity was inversely associated with both perceived health status and social capital among women living in WIC households." From this Walker et al. (2007:1992) concluded that "individuals and families that know and trust their neighbors may be more inclined to share food or transportation to the supermarket, as well as share child-care responsibilities, enabling and empowering individuals to network and form their own support programs and projects with their community." Martin et al. (2004:2645), using the same measures of food security and a similar measure of social capital, found in their study of 330 low-income households in Hartford, Connecticut that "social capital, particularly in terms of reciprocity among neighbors, contributes to household food security." Their analysis led them to conclude that "The root of poverty is not just lack of money, but also lack of social networks and support included in social capital" (Martin et al. 2004:2654). Based on these findings, social connections and interactions may enable or potentially increase consistency of access to food and provide higher degrees of food security.

While studies examining food insecurity among children are few, these studies have begun to shape the conversation in ways that highlight the importance of relationships. As previously mentioned, Connell (2005) found from in-depth interviews with children that sharing amongst youth and their families was a significant factor in reducing the impact of food insecurity. De Silva and Harpham (2007) examined the associations of maternal social capital with the nutritional status of one-year old children across four distinct places: Peru, Ethiopia, Vietnam, and Andhra Pradesh in India. Their findings highlight the centrality of individual support and cognitive social capital for child nutrition over structural social capital (i.e. memberships). Hadley et al. (2008), while not explicitly looking for the influence of social capital, did find support for the buffering hypothesis; suggesting that parents absorb the brunt of risk/insecurity experienced by a household, shielding children from the full severity of food insecurity. If we think of the relationships within a family as an example of social capital, the buffering effect epitomizes the importance of family social capital in the alleviation of food insecurity among children.

While the research just described includes some rigorous analysis on the importance of social capital for adult food insecurity, these studies are limited. Moreover, the only research that has been done, to our knowledge, on the influence of social capital on youth food insecurity has either been through the survey of parents or qualitative interviewing of children. Even with what we know about the importance of social capital for health generally, no quantitative studies to date have set out to survey children directly with the intent to explore the influence of their personal social capital on varying levels of food insecurity, leaving little generalizability concerning the relationship. Hadley et al. (2008) provides, perhaps, the closest example of such a study. However, while there are implications for the importance of family social capital in this

study, it was not a concept that they discussed. Moreover, the data was collected within a developing nation, Ethiopia, as opposed to the globally dominant United States, and there was no recognition of peer related social capital amongst children. We believe the present study fills some of these gaps in the extant research.

The central research questions in this study have been developed with the intention of filling gaps in the literature on social capital and food security and to build upon various aspects of the extant knowledge of associations between social relationships and health/well-being. These research questions include: does personal social capital among middle-school children influence their level of food insecurity, and does social capital mediate the influence of negative environmental circumstances (single parent households, lower class status/perceived disadvantage, etc.) on children's food insecurity? Based on the literature discussed earlier, the following hypotheses are advanced:

Circumstance

H1: Poverty is positively related to child food insecurity.

H2: Accessibility is negatively related to child food insecurity.

Social Capital

H3: Intact household structure is negatively related to child food insecurity.

H4: Eating more meals with family is negatively related to child food insecurity.

H5: Peer social capital is negatively related to child food insecurity.

H6: Higher numbers of close friends is negatively related to child food insecurity.

H7: Social capital will mediate negative circumstances on food insecurity.

To test the hypotheses we analyze survey data collected in late September, 2012 on 334 5th-7th graders attending an intermediate school in Northwest Arkansas (Fitzpatrick 2012). This

analysis is unique in that the data is the first to provide primary measurement of food insecurity and social capital collected through direct survey of both students and their parents.

CHAPTER THREE

DATA AND METHODS

The present analysis is based on data collected in late September of 2012 (Fitzpatrick 2012). The intent was to name the influences of social capital and stressors on the various health issues faced by middle-school children and their parents in Northwest Arkansas. The following sections detail the procedures used in the collection of the data, some basic characteristics of the sample, and a description of how each of the key variables used in the analysis were measured along with explanations for including or excluding certain variables in the analysis.

Design

A team of 17 trained volunteers read the 70-item questionnaire aloud to the students in an effort to minimize any literacy differences across students. Students were asked if they would prefer a Spanish version of the survey. A Spanish translated survey was provided to all who requested it. The survey was administered to students in their early morning classrooms and took approximately 30 minutes to complete. Students were asked questions concerning their demographic, their household structure, their social class background, their friendships, eating behaviors, risk behaviors, food security, and mental and physical well-being. The goal of this survey was to assess health related variables among a sample representative of middle-school students in the local school district, as well as statewide.

Sample

The sampling frame for this study included all 5th through 7th graders attending a selected intermediate school in Northwest Arkansas. All students who met these basic criteria

were eligible for the survey. The final sample (n = 334) of students had a response rate of 92 percent. The informed consent and protocol for this study was approved by the IRB at the University of Arkansas. Three students chose not to complete the survey while the remaining incomplete surveys were due to excused absences. Based on some general demographics, and other variables such as overweight status, participation in free or reduced school lunches, etc., this cross-sectional sample of middle-school students matches closely this Northwest Arkansas school district. For example, approximately 56 percent of students in this school district are eligible for free or reduced lunch. Recent statistics for Arkansas also show about 56 percent of the state's student population is eligible for the free or reduced lunch. Among the students in our sample, 57 percent self-reported having their lunch as either free or reduced in price. This implies that the sample is similar in income level to the rest of the district. Overall, we believe this sample to be representative of the school district and the state of Arkansas.

Measurement

In this study we examine the influence of circumstantial variables such as structural poverty indicators and accessibility to food, as well as the resource linked variables of social capital, on the food insecurity of middle school students. Sex and ethnicity are controlled for in the analysis. The following is a detailed discussion of the measurement of variables used in the analysis.

Food Insecurity

Drawing from the USDA food security module, Connell et al. (2004) used cognitive interviewing methods to develop a module for assessing food insecurity through direct survey of children. Five items from the original USDA food security module were deemed appropriate for a modified child survey. Following the prompt, "Thinking about your experience with food over

the past year," children were asked the following questions; Did you worry that food at home would run out before your family got money to buy more; Did the food that your family bought run out and you didn't have money to get more; How often were you not able to eat a balanced meal because your family didn't have enough money to buy food; Did your meals include a few kinds of cheap foods because your family was running out of money to buy food; Have your meals been smaller because your family didn't have enough money to buy food? Possible responses included "never," "sometimes," and "a lot." These items were coded from 0 to 2 in the order listed, beginning with "never" coded as 0. From these 5 items, a composite food insecurity scale was computed ranging from 0 to 10; the scale was reliable with a Cronbach's alpha = .84 (Mean = 1.8; S.D. = 2.5).

Control Variables

Often, there are important differences in life experience across demographic variables such as age, sex, class, race, and ethnicity. Therefore, these factors are generally controlled for in analyses of inequality. Our data is somewhat unique in that we sampled for a specific age group, and thus, have limited age variation in our sample. Moreover, we found that race was not a significant factor in our preliminary analyses and early regression models. Thus, race and age have been excluded from the final analysis. The control variables we have included in our model are sex and ethnicity.

Sex

While sex is biological, it is also a social phenomenon wrapped up in norms and expectations that often distinguish the lives of boys and girls in important ways. Therefore, it is important to control for any possible differences in food insecurity across sex. Hadley et al. (2008) found that Ethiopian girls were more likely to report experiences of food insecurity than

boys even when living in the same household. This finding questions the assumption that household food insecurity can represent the food insecurity of all individuals within that household, suggesting that significant differences exist based on variables such as sex. Acknowledging sex as ubiquitous within social processes, we control for possible differences in our own analysis. Sex was measured as a dichotomous variable. Students were asked, "What is your sex?" Two possible responses were provided: male = 0, and female = 1.

Ethnicity

Dhokarh et al. (2011) found somewhat mixed results when looking at differences in food insecurity across indicators of ethnicity. For example, speaking only Spanish was positively associated with food insecurity; however, "attending Latino cultural events was strongly associated with food security" (Dhokarh et al. 2011:290). Students were asked, "Are you of Hispanic, Latino, or Spanish origin?" This dichotomous variable provided two possible responses: yes = 1, and no = 0. Because of a strong Hispanic/Latino presence in the Northwest Arkansas region it was important to control for any possible differences between those with Hispanic/Latino origin and those outside of this ethnic group. Similar to race, visible physical differences and cultural practices makes ethnicity an easy target for discrimination and exclusion.

Circumstantial Variables

While the control variables are meant to tap into any possible differences across groups, circumstantial variables provide some context of the physical and social environment that might be shaping children's food insecurity. These circumstantial variables include a structural indicator of poverty as well as an indicator of accessibility to places where food can be bought. Combined with the control variables, we chose these circumstantial variables based on the idea

that place and context matter, and that they often matter differently across different social groups.

Poverty

Multiple studies show that various indicators of poverty such as unemployment, low-income, and utilization of food assistance, are significantly associated with higher levels of food insecurity (Dean and Sharkey 2011; Dhokarh et al. 2011; Garasky, Morton, and Greder 2006; Locher et al. 2005). To assess class differences, we include a variable that provides a proxy for poverty in our analysis. Because eligibility for free and reduced lunch is based on household income status, the variable captures important class related differences. Eligibility for free lunches requires an income level at, or below, 130% poverty (adjusted for household size). Reduced price lunches are provided to children in households at, or below, 185% poverty (adjusted for household size). Students were asked, "How do you pay for your school lunch?" Possible responses included free = 1, reduced price = 2, parents pay = 3, parents pack my lunch = 4, and other = 5. This variable was recoded into a dichotomy combining all responses other than free or reduced price = 0, and both free and reduced price = 1. The percent that reported their lunch was paid for by the free and reduced lunch program matches closely the statistics reported for the school district, suggesting that poverty in our sample is similar to that of the larger school district.

Accessibility

Another factor commonly found to be significant in previous literature is related to the built environment surrounding families and individuals, and the accessibility to healthy food these environments either constrain or enable (Dean and Sharkey 2011; Garasky, Morton, and Greder 2006). Physical environment often shapes the ease with which we access resources such

as food. To capture how easily students could get to a place where food was available for purchase we asked, "Thinking about your nearest place to buy food, how easy or difficult would it be to get there from your home by walking, riding your bike, or taking the bus?" Available responses included; very easy = 4, fairly easy = 3, fairly difficult = 2, and very difficult = 1.

Family Social Capital

The presence of one or more parents may be a protective force for children who might otherwise experience more severe food insecurity (Hadley et al. 2008). Qualitative work in less developed regions also points to breakdowns in two-parent families as a factor increasing food insecurity (Misselhorn 2009). Two variables in our model provide a picture of students' social capital within their family. These include household structure and the frequency of meals with family. Household structure is a measure of how many parents are present in the household. Parents are important for children's indirect access to resources that are embedded primarily in adult relationships. The frequency with which students eat meals with family indicates a certain quality of connections within the family structure that is specifically related to food and eating behaviors. Together these variables address both the breadth and depth of social capital within a family.

Household Structure

A recent USDA report on food insecurity in the United States found that food insecurity was highest among households with children (Coleman-Jensen et al. 2011). However, among households with children, those headed by a married couple showed lower rates of food insecurity (Coleman-Jensen et al. 2011). While our survey did not ask the marital status of parents, we were curious about the composition of households and how this might be influencing food insecurity. Students were asked, "who do you live with most of the time?" Possible

responses included; both parents, one parent and step parent, mother, father, brother or sister, grandparents, aunt or uncle, and other. These responses were coded from 1 to 8 in the order I just listed, starting with both parents as 1. The variable was recoded with 0 = no parents; 1 = one parent; 2 = both parents present.

Meals with Family

Social capital theorists suggest that the distribution of resources through relationships depends not only on the structure of networks, but also on the character and quality of those networks, including their trustworthiness and fulfillment of expectations and obligations (Coleman 1988; Putnam 2000). Even for theorists like Bourdieu (2002; 2008) and Lin (2008), social capital is not just about connections, but primarily the resources/value embedded in those connections. For insight into the behavioral norms within family units, we asked children how often they ate meals with their family. Students were given the prompt, "thinking about the places you usually eat," for a set of questions regarding the frequency with which they ate at certain locations or in certain company. The item we are using to measure the frequency of meals with family asked; "How often do you eat meals with your family?" Available responses included "never," "few times," "some of the time," "most of the time," and "all of the time." These response were coded from 0 to 4 in the order listed above, starting with "never" = 0 and ending with "all of the time" = 4.

Peer Social Capital

While few studies have acknowledged the social capital held by children amongst their peers, the idea that relationships shape access to resources has gained wide support among social theorists and researchers (Coleman 1988; Granovetter 1973; Lin 2008; Putnam 2000). Two variables loosely based on questions found in the friends and social networks section of the

Young People's Social Attitudes (YPSA 2003) survey provide us insight into students' social capital with peers. These two variables include the quantity of close friends they reported having daily contact with, as well as an index made up of four variables related to the quality of relationships with their best friend and friends generally. Together these variables are meant to provide a picture of both the breadth and depth of students' personal social capital with their peer networks.

Close Friends

Part of what shapes the flow of resources through relationships is the wider network structure within which they exist (Coleman 1988; Granovetter 1973). Location of an individual within these network structures often influences their access to the resources embedded in relationships (Coleman 1988; Granovetter 1973). To get an idea of how broad each students' social network of close friends, we asked, "How many close friends (people you see or have daily contact with) do you have?" Students could respond with any number. No coding was necessary. The number students wrote down is the number we entered into our data set for this item.

Social Capital Index

As mentioned in the section on family meals, social capital is about more than just network structure, number of friends, parents, etc.; rather, social capital is also about the quality of relationships and the resources they hold (Bourdieu 2002; 2008; Coleman 1988; Lin 2008; Putnam 2000). Four variables assessing social relationships/friendships among students make up the index variable of social capital. While some of these variables were related specifically to food/eating behaviors, others assessed the degree to which students were connected to their friends or best friend. The four variables included in the social capital index asked; How often

did they see their best friend; How often did they have other types of contact with their best friend; How often did they eat meals with their best friend; and How often did they have meals at a friend's house? Possible responses for the first three questions included; never or hardly ever, several times a year, at least once a month, once a week, several times a week, and every day. These responses were coded from 1 to 6 in the order they have been presented beginning with never or hardly ever, coded as 1, and ending with every day, coded as 6. The last question had a different, though similar, set of responses including; never, few times, some of the time, most of the time, and all of the time. These were coded from 1 to 5 in the order they are listed, beginning with "never" coded as 1 and ending with "all of the time" coded as 5. This left us with a social capital scale ranging from 4 to 23 that showed moderate reliability with a Cronbach's alpha = .61 (Mean = 13.4; S.D. =3.8).

Analytic Framework

The analytic strategy begins with an exploration of basic descriptive statistics and bivariate correlations. These analyses provide some basic information concerning the variables examined in the model, as well as the bivariate associations between them. The regression analysis examines both individual and block significance. The first block in the model includes two control variables, the second block adds two circumstantial variables, and the third block adds four social capital items. This model shows us whether or not the control variables, circumstances, and capital variables have any independent influence on food insecurity while controlling for all other variables in the model. The final block and inspection of changes in earlier variables provides an assessment of mediation of the control and circumstantial variables by the four social capital variables.

CHAPTER FOUR

RESULTS

Descriptive Statistics

As shown in Table 1, the average level of food insecurity was 1.88 on a scale ranging from zero to ten. The average distance of any food insecurity score from the mean was 2.37. The average age in the sample was approximately 11 years old with a standard deviation of .917. Males were slightly outnumbered (46%). Non-whites students make up nearly a fourth of the sample, mirroring closely the percentage of non-white people in the U.S. (21.9%) and Arkansas (19.9%). People of Hispanic, Latino, or Spanish origin accounted for approximately 20 percent of the students in this sample. This is slightly above but not far from percentage of Hispanics within the surrounding county (15.8%) and the country (16.7%).

Circumstance variables provide some context for understanding children's general living situation as well as their location within existing physical and social structures (i.e. economic structures and/or physical infrastructure). Over half (57%) of the sample received free and reduced lunch at the time of the survey, indicating a structural level of poverty matching closely that of children in the school district (56%) and the state (56%). Additionally, we can see that the average student feels they can easily access a place that sells food from their home by walking, biking, or taking a bus.

Family social capital variables tell us something about the composition and activity within each child's household. Nearly one third of students were living in single-parent homes while 61 percent lived in two-parent households and just under 6 percent were living without either parent. The average student reported eating with their family "most of the time," which was closer to the response indicating the highest frequency, "all of the time," than it was to the response indicating the lowest frequency, "never."

Table 1. Descriptive Statistics for Demographics & Model Variables

	%	Mean	S.D.
Dependent Variable			
Food Insecurity Scale (0-10)	--	1.88	2.37
Demographics and Controls			
Age	--	11.42	.917
Sex (1=Female)	53.90%	--	--
Race (1=Non-white)	24.30%	--	--
Ethnicity (1=Hispanic)	20.70%	--	--
Poverty			
Free and Reduced Lunch (1=Receiving)	57.20%	--	--
Accessibility			
Access to Food Venders (1-4)	--	3.22	.867
Family Social Capital			
Household Structure			
- No Parents	5.70%	--	--
- One Parent	33.20%	--	--
- Two Parents	61.10%	--	--
Meals with Family (3 = most of the time)	--	3.00	1.08
Peer Social Capital			
Social Capital Scale (4-23)	--	14.33	3.85
Close Friends	--	5.92	3.60

Peer social capital variables provide some insight into the breadth and depth of children's relationships with each other. The social capital scale was meant to capture the depth, or quality, of students' relationships with peers. Within the computed scale ranging from four to twenty three, students averaged a social capital score of 14.33. The average distance of any score from the mean social capital score was approximately 3.85. The number of close friends students

report gives us an idea of the breadth, or quantity, of close relationships held by a student. Students in our sample averaged around six close friends with a standard deviation of 3.60.

Bivariate Relationships

The correlations between variables included in the final model as well as sample demographics can be seen in Table 2. Examining the magnitude, direction, and statistical significance of each association provides a more complete understanding of the relationships between each variable and the stories they tell. Table 2 includes the two control variables, sex and ethnicity, as well as the circumstantial and capital variables added in the second and third models of our regression. While we have included age and race in this table, they have been excluded from our regression model. Age varied only slightly since we intentionally sampled a limited age range. Moreover, neither age nor race has any significant relationship with food insecurity.

Table 2 shows a significant association between our dependent variable, food insecurity, and all independent variables excluding the demographic variables age, sex, ethnicity, and race. While an extensive body of literature on inequality would lead us to suspect age, gender, ethnicity and race to be important predictors of social phenomena such as food insecurity, our sample does not find any significant associations to suggest that these factors influence children's food insecurity. That said, we note that Hispanic
origin is very near to significance at the .05 level once it is entered into the second block of our regression.

Both circumstance variables are significantly associated with food insecurity. Participation in free and reduced lunch, an indicator of poverty, is the only variable in our model positively associated with food insecurity. This means that household income levels at or near

Table 2. Correlations of Demographics and Model Variables

	1	2	3	4	5	6	7	8	9	10
1. Food Insecurity										
2. Age	-.004									
3. Sex (Female)	-.059	.059								
4. Race (Non- White)	.086	.004	-.008							
5. Ethnicity (Hispanic)	-.036	.076	-.018	-.235**						
6. Free and Reduced Lunch	.254**	.061	-.048	.050	.247**					
7. Accessibility	-.163**	.003	.012	.018	.101	.072				
8. Household Structure	-.197**	-.099*	-.097*	-.102*	.022	.199**	-.082			
9. Meals with Family	-.261**	-.033	.018	-.065	-.061	-.102	.120*	.047		
10. Social Capital Scale	-.125*	.173**	.179**	.011	.022	-.043	.163*	-.084	-.028	
11. Close Friends	-.150**	.147**	.140*	.061	.076	-.123*	.103*	.004	.023	.007

P < .05*; p < .01** (One-tail t-test)

poverty are associated with higher levels of child food insecurity—not surprising, considering that money is the primary means by which people acquire food in the United States. Ease of access to food venders is mildly and negatively associated with food insecurity, suggesting that food insecurity was less severe among students who had easier access from their home to places where food was sold.

The remaining four variables, household structure, meals with family, the social capital scale, and number of close friends are the explanatory variables added into the final model of the regression. Together, these are indicators of both the quality and quantity of family and peer social capital. As seen in Table 2, all four of these social capital variables have significant mild negative relationships with food insecurity. This suggests that both, social capital derived from family structure and connectedness, as well as, social capital derived from the quantity and character of friendships, may be important to combatting food insecurity. We explore this possibility further in a multiple regression analysis.

Multivariate Relationships

Table 3 presents the results of our multiple regression analysis, the independent influences of each variable within the food insecurity model and their relative importance as related to food insecurity. Model one consists solely of control variables allowing us to assess any possible differences in food insecurity across sex and ethnicity. While the unstandardized coefficients of model one seem to suggest that females and Hispanics have higher levels of food insecurity than males or non-Hispanics, these associations are not statistically significant. Moreover, model one itself is altogether non-significant.

After adding the circumstance variables, the second model is significant at the $p < .001$ level. Sex and ethnicity both remain non-significant in this model. Both variables of

Table 3. Food Insecurity OLS Models

Variables	Model 1 b (β)	Model 2 b (β)	Model 3 b (β)
Sex (1=Female)	-.249 (-.035)	-.194 (-.041)	-.108 (-.023)
Ethnicity (1=Hispanic)	-.203 (-.052)	-.526 (-.090)	-.456 (-.078)
Poverty Free and Reduced Lunch (1=Receiving)		1.44 (.300)**	1.12 (.233)**
Accessibility Access to Food Venders		-.522 (-.191)**	-.381 (-.139)**
Family Social Capital Household Structure			-.516 (-.129)**
Meals with Family per Week			-.522 (-.238)**
Peer Social Capital Social Capital Scale			-.060 (-.097)*
Close Friends			-.053 (-.080)
Constant	2.06	2.94	6.15
Degrees of Freedom	2	2	4
R-Squared	.004	.118***	.201***

p < .05*; p < .01**; p < .001*** (Hierarchical F-test R^2 Change)

circumstance stand out as highly significant. Looking at the unstandardized coefficients of these circumstance variables in model two, we get an idea of the average change in food insecurity that can be expected. Thus, for a child experiencing poverty we predict an average increase in food insecurity of 1.44. For students with better access to food there is an average decrease of .522 in food insecurity. Examining R-squared, we see that the combined influence of these circumstances explains approximately 11.8% of the variation in child food insecurity—an increase of 11.4% from the earlier, first block of control variables.

In model three, family and peer social capital variables are added. The family social capital variables have negative slopes, suggesting that the presence of more adult guardians, and

eating with family more frequently, are both associated with lower levels of food insecurity. Both family capital variables are statistically significant. The results of our peer social capital variables, however, were mixed. We find the variable related to the quality and character of children's friendships, the social capital scale, to have a significant negative association with food insecurity at the .01 level. However, the sheer number of close friends children reported was not significantly associated with food insecurity in this model, though the association was in the expected direction.

The family capital variable most directly tied to eating behaviors, meals with family, shows the highest predictive value in model three. After eating with your family, poverty appears to be the next most important correlate, followed by accessibility and household structure. Peer related social capital, while significant, appears to be having the smallest influence on food insecurity. While we do see an important influence of social capital indicators on food insecurity, only minimal decrease/shift in coefficients for poverty and accessibility are observed and offer little support for the hypothesis that social capital mediates the influence of such circumstantial factors. However, the substantial increase of R-squared from approximately 12 percent in model two to 20 percent in model three, suggests that these social capital indicators are important factors in determining food insecurity, explaining an additional 8.3 percent of the variation in child food insecurity beyond the second model.

Altogether, we find support for hypotheses 1-5. Poverty is associated with increased food insecurity even when controlling for all other independent variables (sex, ethnicity, accessibility, and all social capital variables). Accessibility to food vendors is associated with decreased food insecurity even while controlling all other independent variables. The same can be said for all social capital variables in the model, excluding the number of close friends. Thus, hypothesis six

is not supported by the results. Additionally, after seeing only slight changes in the coefficients of poverty and accessibility in model three, we are unable to support the seventh hypothesis of a meditation effect by social capital.

CHAPTER FIVE

CONCLUSION AND DISCUSSION

Conclusions

Our findings are generally consistent with previous research suggesting that social location and environmental circumstances—in particular, poverty and accessibility to food—are important factors influencing food insecurity (Bartfield, Ryu, and Lingling 2010; Dean and Sharkey 2011). We conclude that variables of circumstance (i.e. poverty and accessibility) are key factors influencing the differential distribution of food insecurity among children. Thus, research should continue to focus on factors of built environments that are constraining and/or enabling healthy lives—particularly factors that constrain and/or enable health differently for different groups. Additionally, our findings related to the influence of social capital suggest that the connections within these built environments are also of importance to individual health and well-being.

Our findings complement research focused on family and peer social capital as important factors influencing children's health and well-being (Almquist 2011; De Silva and Harpham 2007). We add to this health conversation, a unique insight into the explanatory value of multiple dimensions of social capital on the food insecurity of children. We conclude that social capital does have a direct influence on children's food insecurity but does not appear to mediate the influence of socio-economic circumstances such as poverty and accessibility to resources as originally hypothesized. While children with more social capital are likely to experience less severe food insecurity than those with fewer and shallower connections, these relationships appear not to significantly mitigate the powerful negative influences of poverty and badly built infrastructure that limit access and availability to healthy food.

Moreover, we find that the norms of networks outweigh the size/quantity of peer networks on the food insecurity of children. Therefore, the social worlds of children may be one in which depth, rather than breadth of connections with peers and family, matters most. For children, this may have to do with their early position within the overall life course. As we focus on the unique social worlds of children and acknowledge their own ability to provide exceptional insight into their social experience, we may continue to find a distinctive role for the quality, or depth, of children's relationships as primary in the formation of their security.

Discussion

Our findings support the broad notion that social environment is linked in crucial ways to individual health. Children's location within built environments and social networks, and the varying behavioral norms within those environments/networks are integral to understanding their varying levels of food insecurity.

Perhaps, the most important contribution of this study to the growing body of literature is our finding that the strength and character of bonds among children and their families are more important than the breadth of their network, or quantity of close friends. This warrants revisiting and rethinking characterizations of social capital and social networks wherein weaker ties can be more important than strong ties (Granovetter 1973). Our finding does not provide a definitive answer to the question of whether strong or weak ties are more important; it does, however, add some complexity to the conversation. While weak ties may be more important in the social world of adults navigating the networks and norms of adult organizations and institutions, it is the quality of relationships that has a meaningful impact for children who are navigating a very different, and perhaps shrunken/restricted, social world. While a friend of a friend, with whom you have no direct connection with, might be an important resource for adults on the hunt for a

job, it appears that they are of less importance among children searching for consistent access to food. This supports the idea that ties are often specialized and only certain connections will provide access to a specific resource like food (Wellman 1998). For these children, what mattered most were patterns of sharing meals with friends and family, and consistent contact with these people. In many ways, these were children's "specialized ties" (Wellman 1998:3).

It is also possible that the varying importance of strong versus weak ties has more to do with the types of resources being distributed. For example, perhaps food travels through relationships with a higher viscosity, slowing it down and restricting the distance it may travel, while the formalization of job markets allow information and recommendations to flow more easily through weak relationships. If this is the case, there may be important implications for restructuring the distribution of, and access to, food in a way that disburses it more broadly. Future research should consider these distinctions when designing studies interested in the health and well-being of children and/or the general roles of social capital throughout varying points in the life course. Rather than just focusing on social integration, it is imperative to understand the norms of the networks that a person is integrated into and how these norms enable/constrain the flow of resources throughout the network. One of these elements without the other does not provide a full view of social capital and gives only a limited picture of its influence.

The present study adds complexity to the somewhat simplistic notion that hunger and food insecurity occur only in areas of food scarcity and can aid in explaining why some people remain food insecure in a nation as abundant in resources as the United States. Finding social capital, or networks and norms, to be significantly associated with food insecurity tells us that the problem of insecurity is not one that can be solved without a holistic look at the social connections and structures that shape and are shaped by the everyday lives of children and their

families. Moreover, we must come to understand children as active participants in their own social world, reasonably aware of their circumstances, and competently resourceful in their navigation of peer and family networks. By asking children directly about their experiences with insecurity, we may continue to discover new points for intervention and mitigation.

When we think of inequalities, we must remember this; "The social world is what it is because of how people do things together" (Schwalbe 2007: 241). This study has examined the varying social realities of children, and asked how the way children and families "do things together" might influence children's levels of food insecurity. The further we understand the social components of problems that, on the surface, appear to be purely biological, economical, or technological, the further we recognize our own agency in the production, perpetuation, or transformation of the phenomenon. On one hand, this is daunting because it puts some responsibility on communities to come together to find solutions. On the other hand, this is hopeful because it means that, being largely a social problem, food insecurity has a social solution. If our world is at least partly shaped by "how people do things together," then we can reshape our world by learning "to do things together differently" (Schwalbe 2007:241).

Limitations and Future Research

While this study has linked social capital to food insecurity, questions concerning causal order are still unanswered. Even though there is substantive reasoning behind the idea that quantity and quality of relationships are crucial to our health, there is equally strong reasoning to suggest that good health may be helpful in the building of relationships. As our data is cross-sectional rather than longitudinal, we are unable to determine causal order of this association. Regardless of temporal order, however, these findings still provide significant support for the

importance of social capital in determining food insecurity. Researchers and policymakers alike should keep these social factors in mind when designing future projects/policy.

Additionally, this study has successfully suspended parents and community indicators as spokesmen for the experiences of children. Our findings show that middle school children, ages 9-14, are capable of answering for themselves a survey that is read aloud to them to diminish any literacy differences. Future research should respect children's voices by asking them directly about their own experiences. Children are not passive objects in a larger social structure nor are they somehow unaware of their surroundings. Treating children as intelligent and observant participants in their own social world may yield more accurate accounts of their own experiences with food insecurity and/or health inequality generally (Fram et al. 2011).

Clearly, the way that resources flow through or are blocked by relationships is different based on location in both time and space. Taking this under consideration, future theoretical works must rethink the premises and assumptions of social capital. In tandem with theoretical development, improvements in measurement and general research design could be made that take into account the expanding and compressing nature of social networks throughout the life course. While there are numerous social capital measures for adults, though still very few intended to capture personal social capital, there are very few widely accepted measures of children's personal social capital. Thus, the social capital measures in this study were largely exploratory, though based loosely on questions from the Young People's Social Attitudes survey section on friends and social networks (YPSA 2003).

What is most crucial for future research and policy is to continue to explore ways in which communities and families may mitigate social forces such as poverty and inadequate infrastructure. While it is certainly necessary for social problems such as food insecurity to be

addressed at national and global levels, there is equally a need for those affected by these injustices to remain involved in the solution. Moreover, in times of political gridlock, national initiatives may not come quick enough for many children already experiencing food insecurity. Developing local programs to address hunger and food insecurity in ways that consider the social context of children may be able to provide more immediate support.

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