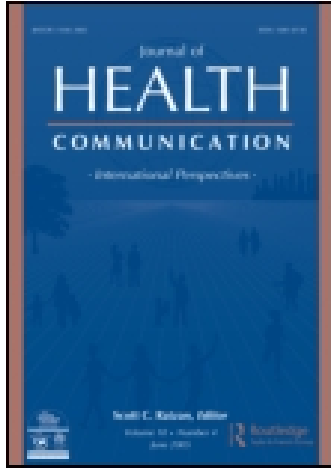


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Journal of Health Communication: International Perspectives

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/uhcm20>

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Published online: 30 Apr 2015.



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To cite this article: Holley A. Wilkin, Vikki S. Katz, Sandra J. Ball-Rokeach & Heather J. Hether (2015) Communication Resources for Obesity Prevention Among African American and Latino Residents in an Urban Neighborhood, *Journal of Health Communication: International Perspectives*, 20:6, 710-719, DOI: [10.1080/10810730.2015.1018559](https://doi.org/10.1080/10810730.2015.1018559)

To link to this article: <http://dx.doi.org/10.1080/10810730.2015.1018559>

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Communication Resources for Obesity Prevention Among African American and Latino Residents in an Urban Neighborhood

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African Americans and Latinos are at disproportionately high risk for obesity and for the chronic conditions and diseases associated with it. This study uses communication infrastructure theory to explore how connections to neighborhood communication resources and communication with family members can affect residents' regular exercise and healthy eating behaviors—two of the most direct strategies for achieving or maintaining a healthy weight. Regression analyses revealed that connections to the neighborhood storytelling network and family interaction predicted residents' regular exercise and that family interaction had the strongest effect on the likelihood of exercising regularly. Family interaction was the only independent variable that predicted residents' daily intake of fruits and vegetables. Implications of these findings for community health programs and theory development are discussed.

U.S. Latinos and African Americans are at disproportionately high risk for chronic conditions such as diabetes, hypertension, and heart disease (U.S. Department of Health and Human Services, 2009). Obesity is a contributing factor for all these conditions, and Hispanic Americans and African Americans are 1.2 and 1.5 times more likely, respectively, to be obese than non-Hispanic Whites. Women are at particularly high risk, with 73% of Mexican American¹ women and approximately 80% of African American women being classified as overweight or obese (Office of Minority Health, 2009).

Regular exercise and a diet rich in fruits and vegetables are two of the most direct ways to maintain or achieve a healthy weight. However, prior research indicates that U.S. urban neighborhoods have characteristics which constrain residents' capabilities to engage in these health-enhancing behaviors (Kegler et al., 2005; Papas et al., 2007; Sampson, 2003; Wilkin, Stringer, O'Quinn, Hunt, & Montgomery, 2011). Urban neighborhoods have been described as “food deserts,”

because of the dearth of fresh produce, lean meats, and other low-calorie, high-nutrition offerings available to residents. These communities are often also considered “food swamps” due to high concentrations of fast food and high-calorie, low-nutrition food options (Ver Ploeg et al., 2009). Moreover, these neighborhoods often have limited green space and safe outdoor areas to exercise. As a result, U.S. urban neighborhoods are often characterized as “obesogenic environments,” in that they offer limited opportunities for residents, who are disproportionately likely to be African American and/or Latino, to exercise or access healthy foods (Giskes, Van Lenthe, Avendano-Pabon, & Brug, 2011; Telles, Sawyer, & Rivera-Salgado, 2011).

Social ecological approaches to public health recognize that well-being is a product of not only physical environments, but social environments as well (Stokols, 1992). Unfortunately, research in this area has generally overlooked the full range of communication resources that might influence health behaviors; typically, researchers have only focused on media exposure (Ball-Rokeach, Gonzalez, Son, & Kligler-Vilenchik, 2012). We therefore explore whether connections to a broader set of communication resources can explain variations in residents' healthy eating and exercise frequency in an urban neighborhood.

Specifically, we examined how residents' family interactions influenced their healthy behaviors, because prior research suggests family members are particularly influential in each other's health-related decisions (Christensen, 2004; Holland, Mauthner, & Sharpe, 1996; Kaplan, Kiernan, &

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¹The U.S. Census uses “Hispanic” to indicate ethnicity, regardless of race. “Latino” and Hispanic are often used interchangeably; Latino tends to be favored as a self-referent, so we use this term unless citing research where the authors did not. For example, this Office of Minority Health study specifically discusses Mexican-origin women.

James, 2006). We also examined the influence of connecting to community-level communication resources—namely, residents' social networks, connections to community organizations, and to locally available media—on residents' healthy lifestyle choices. We consider the influences of communication within the family and community independently and simultaneously, to assess if and how residents' private and public communication is related to their health behaviors.

While several theoretical frameworks have been used to study the effect of either community-level or interpersonal communication resources on health behaviors, communication infrastructure theory (CIT) allows researchers to consider communication resources in context of each other. We use CIT to explore how African American and Latino residents' family and community communication relate to their exercise and healthy eating practices. In the following sections, we review CIT-guided research on community- and family-level influences on health-related outcomes. We then provide our rationale for how these influences may differentially affect healthy outcomes by residents' gender and race/ethnicity, within a shared urban neighborhood.

Communication Infrastructure Theory and Health

Developed and refined by Ball-Rokeach and her Metamorphosis Project associates, CIT is a framework in which the communication infrastructure of a local community is considered capable of enabling or constraining residents' access to resources they need to achieve everyday goals, including those related to their health and well-being. The communication infrastructure consists of two elements: the storytelling system and the communication action context (Ball-Rokeach et al., 2001). The storytelling system consists of macro- (e.g., national and international media and organizations), meso- (e.g., community-based media and organizations), and micro-level (i.e., individuals) storytelling actors. Individuals' connections to storytelling actors are enabled or constrained by the communication action context. For example, unsafe streets and parks constrain residents' opportunities to converse with neighbors, share information and collectively problem solve community issues.

Previous CIT research has concentrated primarily on the neighborhood storytelling network (STN), which is a triangulated network of residents in their social networks, community organizations, and local/ethnic media. In a community with a well-integrated STN, these nodes dynamically stimulate storytelling about the neighborhood. Recent findings suggest that individuals level of integration within the STN is positively related to their health outcomes, including performing emergency preparedness behaviors (Kim & Kang, 2010), seeking health information (Kim & Kang, 2006), knowing more about preventing and detecting breast cancer and diabetes (Kim, Moran, Wilkin, & Ball-Rokeach, 2011), and perceived ease of receiving medical care (Wilkin & Ball-Rokeach, 2011). We expect the strength of residents' STN connections to influence their exercise and healthy eating habits as well, because robust STN connections increase residents' chances of knowing about and

accessing resources that support these activities. For example, residents with strong STN connections may know more about safe places to exercise or be better connected to community organizations that encourage exercise and/or community gardening. Conversely, the communication action context factors that inhibit integration into the STN (e.g., unsafe streets) may also reduce opportunities for exercise (Burke et al., 2009; Cheadle et al., 2010; McCreedy & Leslie, 2009).

In addition, previous research indicates that residents with relatively strong STN connections are more likely to be civically engaged (Kim, 2003; Kim & Ball-Rokeach, 2006). In our study area, civic engagement has included community groups actively petitioning for healthier local food options. After a 2005 report revealed that the area had the highest proportion of fast food restaurants in Los Angeles (Lewis et al., 2005), community mobilization resulted in a 10-year moratorium on new fast food establishments (McDonnell, 2010). These successful efforts lend strength to our assertion that strong STN connections contribute to greater knowledge of healthy eating options in and around the community.

Hypothesis 1: The strength of residents' STN connections will be positively associated with their regular exercise and healthy eating.

While much of the CIT research has concentrated on the STN, other "storytellers" can influence obesity-prevention behaviors (Wilkin, 2013). Researchers have begun engaging CIT to examine family communication as a unique storyteller within the larger storytelling system, which may also provide opportunities to engage with the STN. Family interaction can provide opportunities for community resource sharing and, more specifically, for individuals to become connected to neighbors, local/ethnic media, and community organizations that they would otherwise not have connected with or encountered. Wilkin, Katz, and Ball-Rokeach (2009) found that increased family interaction was related to greater integration into the STN and higher levels of civic engagement. They also reported an additive effect of family interaction and STN on amount of civic engagement reported by Latino immigrants. Katz (2014) examined these same dynamics from a qualitative perspective and found that interactions between immigrant Latinos and their children at home and in community settings had an additive effect on their sense of local belonging and abilities to build meaningful connections to local health care facilities, social services, and schools.

We extend these prior studies here by examining how family communication relates to residents' STN connections and healthy lifestyle choices. Family communication is considered central to the development of health-related beliefs and behaviors (e.g., Christensen, 2004; Holland et al., 1996), including healthy eating and exercise (Mamun et al., 2009). Prior research suggests that all family members can influence each other's health behaviors. For example, Laroche and colleagues (2009) found that children help parents manage their diabetes by reminding them to eat

healthfully and encouraging them to exercise. While parents usually make final decisions about food purchases (Forthun & Kaplan, 2008), children are central to family decision-making about purchases, edible and otherwise (Chavda, Haley, & Dunn, 2005; Kaplan et al., 2006; Palan & Wilkes, 1997). Kaplan and colleagues' (2006) study of intergenerational communication revealed that even casual conversations between children, parents, and grandparents encouraged healthy eating. Fisher, Mitchell, Smicklas-Wright, and Lipps Birch (2002) found parents' daily fruit and vegetable intake was positively related to that of their daughters', which highlights the influence of family communication and parental modeling on children's diets.

Hypothesis 2: Higher levels of family interaction will be positively related to residents' exercise frequency and healthy eating.

Our interest in understanding variation among residents' experiences leads us to further explore how gender and race/ethnicity may influence residents' family and community connections—and further, how these influences may differentially affect their health outcomes. Prior research suggests that gender and race/ethnicity are particularly important for explaining variations in STN connections and family interaction.

Variations, by Gender

Gender may help explain variations in the relationships between residents' STN connections and their health behaviors. Jones-Correa (1998) observed that mothers are more likely to connect with local organizations on behalf of their children than are fathers. Furthermore, women are more likely to develop relationships with neighbors (Campbell & Lee, 1990) and friends are more important sources of support for women attempting to achieve or maintain a healthy weight than for men (Barnes et al., 2007; Thomas et al., 2009). Collectively, these findings suggest gendered differences in interactions with neighbors and community institutions.

Hypothesis 3a: The relationship between integrated connections to the STN and levels of exercise and healthy eating will be greater for women than men.

There may also be gendered differences in how family interaction influences health outcomes. Gender is also often referenced as a primary factor in decisions related to healthy eating, since women are the primary food purchasers in most families (Dubowitz et al., 2007; McIntyre et al., 2003). These patterns are obviously gendered in female-headed households, which are disproportionately African American (U.S. Census Bureau, 2010). Women are also most likely to be responsible for food purchases and preparation in families that maintain traditionally gendered roles, as is the case among immigrant Latino families (e.g., Gálvez, 2011; Hondagneu-Sotelo, 1994). However, it is unclear whether this dynamic would have more of a positive effect on women, who control food purchases and preparation,

or men, who may be encouraged to eat more healthfully by interactions with their families.

Hypothesis 3b: Associations between family interaction and levels of exercise and healthy eating will vary by gender.

Variations, by Race/Ethnicity

While African Americans and Latinos increasingly share space in urban neighborhoods (Lin & Harris, 2008; Orfield & Yun, 1999; Telles et al., 2011), their experiences of, and in, their communities may be quite different. The STNs residents integrate into can often be differentiated along racial/ethnic lines; for example, the type and scope of African American and Latino residents' organizational affiliations are often distinctive (Katz, 2007; Matsaganis, 2008). Differences in residents' media connections are often also visible, in part due to first generation immigrants' preferences for Spanish language media (Matsaganis, Katz, & Ball-Rokeach, 2011). There is limited research on the relationships between residents' social networks and health behaviors specific to these two racial/ethnic groups. Lee, Campbell, and Miller's (1991) study of urban neighborhoods found that "neighboring behaviors" were particularly strong among African Americans, who interacted more often and more broadly with their neighbors than did Caucasians. Kim and colleagues (2008) found that increased interaction with neighbors encouraged African Americans' participation in local exercise programs; in a separate study, Harralson and colleagues (2007) found that the same was true for foreign-born Latinas. We therefore explore whether connections to different communication resources within African American and Latino residents' STNs may result in variation in health-related behaviors.

Research Question 1a: Do associations between STN connections and levels of exercise and healthy eating vary by race/ethnicity?

While family interaction has been shown to influence African Americans' food and nutrition choices (Ahye, Devine, & Odoms-Young, 2006), less is known about the relationship between family interaction and Latinos' health behaviors. We therefore explore these relationships without presuming these influences to be positive or negative.

Research Question 1b: Do associations between family interaction and levels of exercise and healthy eating vary by race/ethnicity?

Method

A 53–57-minute telephone survey of 332 women and 266 men, representing a total of 598 households, was conducted in 2005. The sample consisted of 304 Latino and 294 African American respondents living in the Greater Crenshaw area

in South Los Angeles. Bilingual interviewers conducted the survey in either English or Spanish using a Computer-Aided Telephone Interviewing system, random digit dialing and up to eight callbacks. Respondents were mailed a \$10 grocery gift card for participating.

Sample

Historically an African American community, Greater Crenshaw had undergone significant changes over the past 15 years as increasing numbers of Latinos moved into the area. Our sample's characteristics were similar to 2000 Census data for Greater Crenshaw in terms of percentage of foreign-born residents (32% of survey respondents vs. 30% for the Census) and percentage of female residents (55% vs. 53%, respectively). Our respondents were slightly older (40 years vs. 32 years), more likely to have at least a high school diploma (71% vs. 63%) and more likely to be living on less than \$15,000 per year (30% vs. 23%). The mean household size for our sample was 3.5, versus 2.9 for the Census. These differences may be explained by our survey taking place five years after the Census and therefore reflecting continuing demographic shifts in the area; the 2010 Census shows increased Latino presence, residents' age, and household size, for example. Differences may also be due to Census data including all Greater Crenshaw residents, whereas our sample was limited to African Americans and Latinos; 51% of our sample identified as Latino (as opposed to 38% on the 2000 Census), while African Americans comprised 49% of both our sample and Census respondents.

Measures

Integrated connection to the storytelling network (ICSN) includes interaction terms between the *scope of connections to local media* (an additive measure of respondents' reported time spent reading local newspapers, listening to local radio stations, and watching local television stations in which 0 = no time spent with local media and 3 = some use of all three local media forms), $M = 1.93$; $SD = 0.99$; *scope of connections to community organizations* (an additive measure of respondents reporting membership in five types of organizations), $M = 1.0$, $SD = 1.36$; and the *intensity of interpersonal neighborhood storytelling* (measured on a scale from 1 to 10, where 1 represents "never" and 10 "all the time," how often they have discussions with other people about things happening in their neighborhood), $M = 5.86$, $SD = 3.12$. Each variable was converted to z-scores and a linear transformation performed to make them all positive. The formula for the final measure, which ranged in value from 4.46 to 18, is:

$$ICSN = \sqrt{(LC \times INS)} + \sqrt{(INS \times OC)} + \sqrt{(OC \times LC)}$$

Where LC = local media connectedness, INS = intensity of interpersonal neighborhood storytelling, and OC = scope of connection to community organizations (Kim, 2003; Kim & Ball-Rokeach, 2006).

Family interaction index (FII) uses a scale from 1 (*often*) to 5 (*never*) and asks, "How often does your family (1) sit down and eat together² (2) sit down and talk together (3) discuss work-related issues (4) discuss things that are happening in the neighborhood (5) participate in activities outdoors together like sports, hiking, going to parks, etc.³ and (6) participate in neighborhood and community activities as a family" (Wilkin et al., 2009). The scale was reliable for this sample ($\alpha = .78$).

Exercise was computed by adding together the responses to two survey questions measuring frequency of vigorous and nonvigorous exercise, as defined by the Behavior Risk Factor Surveillance System (Macera et al., 2005): (a) In the past 7 days, how many days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar activities? and (b) In the past 7 days, how many days did you participate in physical activity for at least 30 minutes that did not make you sweat or breathe hard, such as fast walking, slow bicycling, skating, pushing a lawn mower, or mopping floors? ($r = .18$, $p = .00$).

Fruit and vegetable consumption was computed by averaging responses to two survey questions: (a) On a typical day, about how many servings of fruit do you eat or drink? and (b) On a typical day, about how many servings of vegetables do you eat or drink? Examples of serving sizes were provided as needed ($r = .24$, $p = .00$). The National Cancer Institutes' 5-a-day campaign recommended consuming five to nine fruits and vegetables per day (DiSogra & Taccone, 2003). Thus, any average reported consumption of more than five servings was recoded into a "5 or more" category. Table 1 presents descriptive statistics for the independent and dependent variables.

Covariates

Sex was coded as 0 for male and 1 for female. African Americans were coded as 0 and Latinos as 1 as measures of race/ethnicity.⁴ Age was recoded into five categories: 18–25 years; 26–35 years; 36–45 years; 46–59 years; and 60+ years. Household income last year was divided into eight categories: less than \$15,000; \$15,000 to <\$20,000; \$20,000 to <\$35,000; \$35,000 to <\$45,000; \$45,000 to <\$60,000; \$60,000 to <\$75,000; \$75,000 to <\$100,000; \$100,000 or more; median income was \$20,000 to <\$35,000. Eight categories (ranging from "eighth grade or less" to "a graduate degree") were provided to measure highest education level completed. Marital status responses

²While eating together does not necessitate eating healthfully (e.g., families may be eating fast food or frozen pizza together), we created a version of the family interaction index that did not include this item. This alternative version of FII was still significantly related to consuming more fruits and vegetables. Therefore, we kept the item and used the original FII measure for consistency with previous research.

³We also created a version of FII that did not include this item due to its conceptual overlap with the dependent variables. The results for all analyses were similar with both versions of FII. We therefore opted to use the measure as computed in prior research.

⁴Respondents who indicated both ethnicities ($n = 9$) were excluded from analyses to avoid their inclusion in both groups.

Table 1. Descriptive and comparative statistics for independent and dependent variables

	Entire sample (<i>n</i> = 598) <i>M</i> (<i>SD</i>)	Men (<i>n</i> = 266) <i>M</i> (<i>SD</i>)	Women (<i>n</i> = 332) <i>M</i> (<i>SD</i>)	Latinos (<i>n</i> = 304) <i>M</i> (<i>SD</i>)	African Americans (<i>n</i> = 294) <i>M</i> (<i>SD</i>)
Family interaction	2.81 (0.80)	2.78 (0.82)	2.83 (0.78)	2.85 (0.71)	2.77 (0.87)
Storytelling network	11.58 (3.47)	11.79 (3.49)	11.40 (3.46)	10.89*** (3.47)	12.29*** (3.33)
Exercise	6.01 (3.81)	6.42* (3.97)	5.68* (3.66)	6.29 (3.74)	5.72 (3.87)
Fruit and vegetables	2.64 (1.30)	2.57 (1.29)	2.71 (1.30)	2.59 (1.28)	2.70 (1.31)

Note. Independent samples *t* tests were used to determine whether the difference between groups (male/female and Latino/African American) were significant.

p* < .05. **p* < .001.

were recoded as single/widowed/separated/divorced (*n* = 338) and married/living together (*n* = 259). Household size started at 1 if the person lived alone (*M* = 3.45, *SD* = 1.94). Residential tenure was the number of years respondents had lived in the neighborhood (less than a year = 0; median = 7) and home ownership by respondents' indication that they owned (*n* = 172) or rented (*n* = 422) their residence. Health status was measured with an item that asked: In general, would you say that your health is . . . excellent, very good, good, fair, poor, or very poor? and then reverse coded so higher numbers equaled better health status (*M* = 4.12; *SD* = 1.25). Obesity history was measured with the question: Have you or any of the adults in your family been told by a medical professional (e.g., a doctor or nurse) that you are overweight or obese? Responses were coded as 0 for no (*n* = 378) and 1 for yes (*n* = 216). Table 2 includes the descriptive data for the covariates.

Data Analysis

We used PASW Statistics 18 for the analysis. Pearson's correlations were used to explore relationships between covariates, dependent variables, and independent variables.

Hierarchical linear regression analyses—entering the covariates, then family interaction, and then the neighborhood storytelling network measure—were used to test the hypotheses and research questions. Interaction terms (sex by race, sex by each independent variable, and race by each independent variable) were created and entered into the regression equations to test whether the contributions of independent variables on dependent variables varied by gender and/or race/ethnicity (Research Questions 2 and 3).

Results

Table 3 shows how our main independent variables were related to one another, the dependent variables, and the covariates.

Exercise

As illustrated by the correlation analysis, FII and ICSN were each related to residents' reported exercise frequency. The independent variables remained significant when entered into a regression equation with the covariates (see results for the entire sample and each subsample in Table 4). For men, FII ($\beta = .23, p = .00$) and ICSN ($\beta = .16, p = .01$)

Table 2. Covariate descriptives for the entire sample and each subsample

	Entire sample (<i>n</i> = 598)	Men (<i>n</i> = 266)	Women (<i>n</i> = 305)	Latinos (<i>n</i> = 304)	African Americans (<i>n</i> = 294)
African American	49%	40%	57%	N/A	N/A
Hispanic/Latino	51%	60%	43%	N/A	N/A
Foreign-born residents	32%	37%	27%	47%	6%
Female	55%	N/A	N/A	47%	64%
Age ^a	40	38	42	35	45
High school diploma or higher	71%	65%	75%	53%	90%
Household income less than \$20,000	46%	46%	47%	56%	37%
Household size ^a	3.5	3.6	3.3	4.11	2.78
Married/living together	43%	53%	36%	58%	28%
Residential tenure ^b	12.7	11.4	13.7	10.6	14.7
Home ownership	29%	27%	31%	23%	35%
Health status ^c	10%	9%	11%	14%	7%
Obesity history	36%	29%	42%	35%	38%

^aMean value.

^bMean years.

^cPercent reporting poor or very poor health.

Table 3. Pearson correlations between covariates, independent variables, and dependent variables

	FII	ICSN	Exercise	Fruits/ vegetables
Female	.03	-.06	-.10*	.05
Latino	.05	-.20***	.08	-.04
Age	-.02	.05	-.15**	-.06
Education	.07	.20***	.02	.11**
Income	.16***	.11**	.08	.12**
Household size	.17***	.00	.08	-.03
Married/living together	.28***	.04	.04	.04
Residential tenure	.01	.05	-.05	-.01
Own home	.11**	.07	.08	.14**
Health status	.14**	.03	.12**	.13**
Obesity history	.05	.11*	-.09*	-.03
Family interaction	—	.31***	.20***	.15**
Storytelling network	—	—	.14**	.07

Note. Additional analyses confirmed that no significant correlations existed between fruit and vegetable consumption and connections to the storytelling network for any subgroup (men, women, African Americans, and Latinos). FII = family interaction index; ICSN = Integrated connection to the storytelling network.

* $p < .05$. ** $p < .01$. *** $p < .001$.

independently predicted amount of exercise. When the independent variables were considered together and with the covariates, only FII remained a significant predictor. For women, FII ($\beta = .25, p = .00$) and ICSN ($\beta = .23, p = .00$) each independently predicted exercise. When considered together, both FII and ICSN predicted amount of exercise. For Latinos, FII ($\beta = .26, p = .00$) and ICSN ($\beta = .18, p = .00$) each independently predicted exercise. When entered together and with the covariates, only FII remained a significant predictor of exercise. For African Americans, FII ($\beta = .23, p = .00$) and ICSN ($\beta = .19, p = .00$) each independently predicted amount of exercise. When entered together, both FII and ICSN were significant (Table 4).

To test the hypotheses and research questions about whether the relationships between each independent variable and exercise varied by sex and race, five interaction terms (sex by race, sex by each independent variable, and race by each independent variable) were created. The interaction terms were then entered in the regression equation for the entire sample with all covariates and independent variables.⁵ There were no significant interactions between gender and FII ($t = .49, p = .62$) or ICSN ($t = .40, p = .69$) predicting amount of exercise. There were also no significant interactions

⁵Analyses were initially conducted for each independent variable, gender/race, and interaction term separately. It was determined there were no significant interactions. Then the analyses were repeated including all variables (including covariates, other independent variables and other interaction terms) in the equation. We report the results from the analysis including all variables. We also explored the potential for an interaction between the independent variables (ICSN*FII) and each dependent variable. The interaction was not a significant predictor in either case.

Table 4. Hierarchical linear regression analyses predicting exercise for the entire sample and each subgroup

	Entire sample <i>B</i>	Men <i>B</i>	Women <i>B</i>	Latinos <i>B</i>	African Americans <i>B</i>
Female	-.06			-.07	-.05
Latino	.12*	.12	.10		
Age	-.14**	-.20**	-.06	-.21**	-.04
Education	.05	.06	.03	.10	-.04
Income	.01	.04	-.04	-.01	.05
Household size	-.02	-.09	.04	-.01	-.06
Married/living together	-.06	-.13	.01	-.08	-.02
Residential status	-.02	-.06	.01	.00	-.03
Own home	.10	.11	.09	.19**	-.02
Health status	.03	-.02	.05	-.05	.09
Obesity history	-.10*	-.07	-.13*	-.09	-.11
Family interaction	.19***	.19*	.20**	.22**	.18**
Storytelling network	.12**	.11	.16*	.12	.14*
Adjusted R^2	.10***	.09**	.09***	.13***	.06**
<i>n</i>	-.06	240	286	265	261

Note. *B* = standardized beta.

* $p < .05$. ** $p < .01$. *** $p < .001$.

between race and FII ($t = 1.02, p = .31$) or ICSN ($t = .08, p = .93$) predicting amount of exercise.

Fruit/Vegetable Consumption

As shown in Table 3, only FII was significantly related to fruit and vegetable consumption. When covariates and ICSN were entered, FII remained a significant predictor of amount of fruit and vegetable consumption (see results for entire sample and each subsample in Table 5). FII predicted men's ($\beta = .15, p = .04$) and women's ($\beta = .18, p = .00$) amount of fruit and vegetable consumption independently. When ICSN and the covariates were entered into the equation, FII remained significant for women, but was only marginally significant for men ($\beta = .15, p = .06$). For Latinos, FII predicted amount of fruit and vegetable consumption independently ($\beta = .25, p = .00$) and when entered in the regression equation along with ICSN and the covariates. Neither of the independent variables predicted African Americans' fruit and vegetable consumption.

FII was a significant predictor of amount of fruit and vegetable consumption for women and Latinos, marginally significant for men, and not significant for African Americans. To determine whether these results were due to significant

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Table 5. Hierarchical linear regression analyses predicting fruit and vegetable consumption for the entire sample and each subgroup

	Entire sample <i>B</i>	Men <i>B</i>	Women <i>B</i>	Latinos <i>B</i>	African Americans <i>B</i>
Female	.06			.00	.13*
Latino	.03	.12	-.05		
Age	-.09	-.14	-.01	-.03	-.14*
Education	.04	.05	.05	.04	.07
Income	-.01	-.09	.08	.04	-.06
Household size	-.10*	-.19**	-.02	-.07	-.08
Married/living together	.00	-.09	.08	-.12	.10
Residential tenure	-.03	-.01	-.04	-.04	.01
Own home	.13*	.21**	.08	.06	.19*
Health status	.06	.07	.03	.02	.11
Obesity history	-.06	-.06	-.07	-.11	.00
Family interaction	.15**	.15 ^a	.17**	.23**	.08
Storytelling network	.02	.01	.03	.06	-.03
Adjusted <i>R</i> ²	.05***	.06*	.05**	.04*	.08**
<i>n</i>	523	238	285	262	261

Note. *B* = standardized beta.

^a*p* = .06. **p* < .05. ***p* < .01. ****p* < .001.

differences between the subgroups, the interaction terms were entered into the regression equation that included the covariates and all independent variables. The analysis showed no significant interactions between FII and sex ($t = 0.26$, $p = .12$) or FII and race ($t = 0.30$, $p = .08$).

Discussion

This study explored the extent to which Greater Crenshaw Latino and African American residents' communication within their families and in the community were related to their obesity prevention behaviors. The first hypothesis predicted that connections to the neighborhood storytelling network would be positively related to levels of exercise and healthy eating. This hypothesis was partially supported, as connections to the storytelling network were positively related to exercise, but not significantly related to fruit and vegetable consumption. The second hypothesis predicted that family interaction would be positively related to the obesity-prevention behaviors. This hypothesis was supported; family interaction was positively related to residents' exercise frequency and fruit and vegetable intake.

Understanding these results requires considering the constraints influencing regular exercise and healthy eating

for Greater Crenshaw residents. Structural barriers to exercise may be easier to overcome than those related to food choices. Researchers have documented how neighborhood level resources like church and community organization-based exercise programs (e.g., Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001) and local walking groups (Schwartz et al., 2010) can help residents overcome constraints to exercise, like busy streets or unsafe parks, in neighborhoods like Greater Crenshaw.

Eating healthfully is a considerably more complex matter. Like many urban neighborhoods, affordable, quality fruits and vegetables are hard to come by in Greater Crenshaw (Lewis et al., 2005; Sloane et al., 2003). Our findings suggest that connections to the storytelling network do not encourage the consumption of fruits and vegetables. Only family interaction was related to fruit and vegetable consumption, reinforcing conclusions from prior research that family holds a special position with regard to influencing health attitudes and behaviors (Christensen, 2004; Fisher et al., 2002; Holland et al., 1996; Kaplan et al., 2006).

We also explored whether associations between obesity-prevention behaviors and residents' connections to the storytelling network and family interaction varied by gender—predicting stronger effects for women, who have higher levels of integration into the storytelling network than men—or by race/ethnicity. There were no significant gender or race/ethnicity differences for either independent variable with regard to either obesity-prevention behavior. This suggests that both family interaction and connections to community communication resources are related to healthy behaviors for men and women and both African Americans and Latinos. It also suggests that Latinos and African Americans connecting to different community storytellers (Katz, 2007; Matsaganis, 2008; Matsaganis et al., 2011) may not alter the positive benefits community communication can have on healthy behaviors.

When the independent variables were considered simultaneously, family interaction accounted for the most variance in exercise and was the only significant predictor of fruit and vegetable consumption. These findings suggest that obesity-prevention begins at home. Therefore, campaigns to encourage exercise among Latinos and African Americans—for example, Michelle Obama's "Let's Move" initiative—should benefit from targeting community storytellers that individual family members connect with, in order to prompt subsequent family discussions about exercise. Our findings suggest that interventions aimed at nutrition should focus directly on increasing family interaction about healthy eating habits. In our analyses, connections to the storytelling network were not related to healthy eating. This suggests that interventions like a Women, Infants and Children⁶ program that provides low-income mothers with classes on healthy cooking techniques (Crawford et al., 2004) could

⁶Women, Infants and Children, or WIC, is a federally funded program providing pre- and postnatal nutritional and medical resources to women and infants. WIC's success in reaching low-income women is partly due to their practice of hiring women who are themselves residents of those communities (Katz, 2014).

be better assimilated into the storytelling network. The storytelling network also needs to incorporate more stories on the value of healthy eating. More research is needed to determine the root causes (e.g., missing links between health storytellers, lack of stories with tips to overcome barriers to healthy eating) of the storytelling network's failure to influence healthy eating in this community and others like it across the United States.

Contributions to Communication Infrastructure Theory

Our application of CIT in this study provided the opportunity to explore associations between residents' family- and community-level communication and their obesity-prevention behaviors. Prior CIT research related to health had concentrated primarily on the neighborhood storytelling network, measured as the extent to which residents have integrated connections to an interpersonal network of neighbors, community organizations, and local/ethnic media (Wilkin, 2013). However, the communication infrastructure includes more potential health storytellers than those incorporated within the storytelling network (Wilkin & Ball-Rokeach, 2006, 2011). Wilkin and colleagues (2009) placed the family unit within the communication infrastructure and explored the additive role of both family interaction and the neighborhood storytelling network on civic engagement outcomes. Because family communication has previously been considered as integral to obesity prevention behaviors (e.g., Mamun et al., 2009), the present study extended prior CIT research by exploring the roles of both family interaction and connections to the storytelling network on healthy eating and exercise.

We found that residents' connections to the neighborhood storytelling network were related to their exercise frequency but not their fruit and vegetable consumption. Ultimately, family interaction had the most influence on residents' health behaviors. These findings support the contention that researchers using the communication infrastructure theory should move beyond considering the influence of the neighborhood storytelling network alone, but to also consider other communication resources that may influence health (Ball-Rokeach et al., 2001; Wilkin, 2013). A communication ecology approach enables researchers to identify the communication resources that seem to have the greatest association to health outcomes from myriad potential health storytellers, and to consider their influences in context of each other (Katz, Ang, & Suro, 2012; Wilkin, 2013; Wilkin, Ball-Rokeach, Matsaganis, & Cheong, 2007).

Limitations and Future Directions

There are several limitations to this research related to data collection procedures and measurements. First, while CIT is a multilevel theory, our data were collected at the individual level. In the future, researchers should also aim to collect data on health storytelling at the community level, through content analyses of local/ethnic media, surveys with community organizations, and measuring community communication resources via community resource mapping (as described in Villanueva & Broad, 2012). Data on local availability of fruits and vegetables and exercise opportunities (i.e., parks,

bicycle lanes, safety of streets/sidewalks) would also be helpful. Second, residents without landlines are a potential source of bias in all telephone surveys, particularly among low-income populations (Galea & Tracy, 2007). Third, our independent variables indicate the extent to which individuals connect to the storytelling network and interact with family members. They do not indicate the extent to which any of those communication resources specifically encourage exercise and healthy eating or ease constraints to engaging in these health behaviors. Fourth, we did not measure direct effects on obesity. Our obesity history measure conflates individual obesity with obesity of immediate family members. While prior studies indicate that obesity runs in families (e.g., Christakis & Fowler, 2007) our measure did not allow us to distinguish whether our respondent was obese, or if their family members were.

There are potential connections between family interaction and community engagement around healthy eating we could not test directly with our measures. For example, participation in community gardening can improve access to quality produce. Adults with a household member who participated in a community garden were more than 3.5 times more likely to consume at least five fruits and vegetables per day than those who did not (Alaimo, Packnett, Miles, & Kruger, 2008). Working in local gardens also creates opportunities to form or strengthen relationships with neighbors and to more fully integrate into the neighborhood storytelling network.

Building on prior CIT research, we established a theoretical basis by which research on obesity-reducing efforts can be assessed and integrated into the growing literature on relationships between residents' communication resources and their well-being. By considering family and community communication in context of each other, we assessed their separate and simultaneous influence on residents' healthy choices and efforts to overcome structural constraints. This approach has practical implications for interventions to address the urgent needs of low-income urban neighborhoods where obesity poses serious risks to individual, family, and community well-being.

Acknowledgments

This article has been developed within the broader context of the Metamorphosis Project, part of the Communication Technology and Community Program at the USC Annenberg School for Communication. More information about the project is available at www.metamorph.org.

Funding

The project was supported and funded by the Annenberg School for Communication and Journalism and First 5 LA (www.first5la.org).

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