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Evaluating Food Policy Councils Using Structural Equation Modeling

Larissa Calancie, PhD^a, Nicole E. Allen, PhD^b, Shu Wen Ng, PhD^{c,d}, Bryan J. Weiner, PhD^e, Dianne S. Ward, EdD^c, William B. Ware, PhD^f, Alice S. Ammerman, DrPH^{c,g}

^aCenter for Health Equity Research, School of Medicine, University of North Carolina at Chapel Hill, NC 27516

^bDepartment of Psychology, 721 Psychology Bldg., 603 E. Daniel Street, M/C 716, Champaign, IL 61820

^cDepartment of Nutrition, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, 135 Dauer Dr, Chapel Hill, NC 27516

^dCarolina Population Center, University of North Carolina at Chapel Hill, CB# 8120, Chapel Hill, NC 27516

^eDepartment of Global Health, University of Washington, 1510 San Juan Road, Seattle, WA 98195

^fEducational Psychology, Measurement, and Evaluation & Learning Sciences and Psychological Studies, School of Education, University of North Carolina at Chapel Hill, CB #3500 - 118 Peabody Hall, Chapel Hill, NC 27599-3500

^gCenter for Health Promotion and Disease Prevention, University of North Carolina at Chapel Hill, 1700 Martin Luther King Jr. Blvd., CB# 7426, Chapel Hill, NC, 27599-7426

INTRODUCTION

Collaborative approaches to change are ubiquitous in the United States (US) and around the world. Councils, task forces, and coalitions have formed across the country to respond to complex social issues including substance use prevention (Florin, Mitchell, Stevenson, & Klein, 2000; Florin et al., 2006), health promotion (Butterfoss, Goodman, & Wandersman, 1993; Butterfoss & Kegler, 2009), and family violence (Allen, Javdani, Lehrner, & Walden, 2012; Allen et al., 2013). In recent years, collaborative models have been applied in response to growing concerns about obesity (Huang et al., 2015), access to affordable healthy food (Walsh, Taggart, Freedman, Trapl, & Borawski, 2015), and food system sustainability (Hassanein, 2003). The aim of the current study was to apply existing models regarding the effectiveness of collaborative settings to the specific context of Food Policy Councils (FPCs). This creates a two-fold purpose. The first is to examine the applicability of the extant literature on collaboration to the efforts of FPCs. The second is to extend the current knowledge on collaborative settings by testing and refining a parsimonious model of FPC

effectiveness adapted from an empirically supported model developed for Family Violence Councils (see Allen, Javdani, Lehrner, & Walden, 2012).

FPCs are organizations that bring together stakeholders from across the food system to identify food system issues and solutions, coordinate programs, and inform policy (Harper, Shattuck, Holt-Giménez, Alkon, & Lambrick, 2009). The number of FPCs in the US, Canada, and Tribal & First Nations increased from 43 in 2005 to 282 in 2015 (Food Policy Network, 2015a). Currently, 41% of FPCs consider themselves to be grassroots organizations, 16% are non-profits, and 18% are directly affiliated with government and may operate at local (county, municipal), state, province, tribe, and regional levels (Food Policy Network, 2015a). While the missions of FPCs vary, councils generally aim to increase access to healthy foods, promote sustainable, local agriculture and economic growth, and encourage equity within food systems (Scherb, Palmer, Frattaroli, & Pollack, 2012; Schiff, 2008). In doing so, FPCs have the potential to improve the context in which individuals make decisions related to their health and socioeconomic factors described in the Public Health Impact Pyramid (Frieden, 2010). The Centers for Disease Control and Prevention recommend establishing FPCs to improve the local and state food environments, specifically through increasing access to fruits and vegetables (Centers for Disease Control and Prevention, 2011).

Despite increased interest in FPCs as a strategy for improving food environments in communities, there is little evidence about what factors make FPCs effective. Numerous reports and case studies that describe FPCs provide valuable information about FPCs, but they do not offer a framework for FPC function that is testable and generalizable across councils (Borron, 2003; Dahlberg, 1994; Schiff, 2008). Without such a framework, it is challenging to evaluate what internal council processes are working and what could be improved across councils (Harper et al., 2009; Zakocs & Edwards, 2006). FPC members could waste time, energy, and limited resources if they do not have guidance about best practices within FPCs. Moreover, a common vocabulary that is used to describe abstract concepts related to FPC function could help FPC members efficiently communicate with fellow council members, as well as with funders and decision-makers. The growth of FPCs shows that councils are an appealing strategy for coordinating responses to complex food system issues, yet empirical evaluation of FPCs is limited.

Evaluating community councils (such as FPCs), coalitions, collaboratives, and partnerships is challenging (Berkowitz, 2001; Webb, Pelletier, Marezki, & Wilkins, 1998). These initiatives are complicated because they require groups of individuals who may have divergent goals and levels of commitment to work together towards a common vision (Himmelman, 2001). The processes governing FPC function can strengthen council members' satisfaction in the council, or lead to dissatisfaction and erode members' investment in the council (Weiner, Alexander, & Shortell, 2002). Therefore evaluating the internal processes by which councils operate is important in order to explain why some councils are effective in achieving community-level outcomes while others are not (Allen, Watt, & Hess, 2008; Zakocs & Edwards, 2006). In addition to councils being internally complicated, they are working to affect change in complex systems (Roussos & Fawcett, 2000; Snowden & Boone, 2007). Specifically, it is difficult to link FPC activities to change

within the food system because change in a complex system takes time, often requires acting on windows of opportunity, involves many actors, and may be counteracted by action in another part of the system (Hammond & Dubé, 2012; Lich, Ginexi, Osgood, & Mabry, 2013). As the Toronto FPC coordinator explained, “Because much of our work is indirect, facilitative, and collaborative, it’s difficult to isolate the impacts of our specific efforts” (MacRae, 1994, p.17). Without evidence about what internal council factors are associated with council effectiveness, however, FPCs may fail to reach their potential to influence the food systems in their communities.

In this study, we empirically tested the FPC Framework, which is a model of the key concepts and relationships between them that we hypothesize explain the internal functioning of a FPC. The framework was adapted from a parsimonious community collaborative model that was developed and empirically tested by Allen and colleagues in the context of the system and community response to family violence (Allen, Javdani, Lehrner, & Walden, 2012).

Conceptual framework

Numerous articles seek to explain the mechanisms by which public health-oriented community collaboratives affect change (Allen et al., 2012; Butterfoss, Goodman, & Wandersman, 1993; Butterfoss & Kegler, 2009; Florin, Mitchell, Stevenson, & Klein, 2000; Granner & Sharpe, 2004; Lasker, Weiss, & Miller, 2001; Rogers et al., 1993; Roussos & Fawcett, 2000; Zakocs & Edwards, 2006). From these articles, we selected the following 10 modifiable concepts that were applicable to FPCs: leadership, breadth of active membership, inclusivity of council climate, formality of council structure, knowledge, relationships, member empowerment, credibility, synergy, and impact (Table 1). The concepts were grouped into the following factors: Organizational Capacity, Social Capital, and Council Effectiveness. The concepts and factors were integrated into the FPC Framework (Figure 1, adapted from Allen et al., 2012).

Organizational Capacity.—Organizational Capacity includes the concepts of leadership, council climate, formality of council structure, and breadth of active membership, which are frequently described as important concepts in community-based collaboratives that may help explain collaboratives’ effectiveness (Allen et al., 2012; Florin, Mitchell, & Stevenson, 1993; Granner & Sharpe, 2004; Rogers et al., 1993; Roussos & Fawcett, 2000; Zakocs & Edwards, 2006). Leadership describes the characteristics of those who steer the direction of the council. Leadership skills that are relevant for community coalitions include promoting an egalitarian or democratic environment, engaging participation from all members, valuing diversity, fair conflict management, articulating vision, and commitment to the group (Allen et al., 2012; Goodman et al., 1998; Granner & Sharpe, 2004). Inclusivity of council climate refers to group cohesiveness, focus on a mission, shared power and decision-making, and fair disagreement resolution (Florin et al., 2000; Kegler, Steckler, Mcleroy, & Malek, 1998). Formality of council structure refers to whether there are formal rules and processes guiding how the council operates (Rogers et al., 1993). Breadth of active membership is perhaps the defining feature of community coalitions that sets them apart from other types of organizations. Aligning diverse perspectives and priorities toward a unified vision develops

capacity and collective will within community coalitions to solve complex problems (Butterfoss et al., 1993; Lasker et al., 2001). Members participate in council discussion and activities in order to gain personal and group benefits, such as social capital and creating change in policies, systems, and environments. Together these concepts encompass Organizational Capacity in this study.

Social Capital.—As the council members meet and work together, they can generate perceptions of Social Capital. Social Capital refers to “features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions” (Putnam, Leonardi, & Nanetti, 1993, p.167). Here, it is conceived of as i) perceived relationships between group members that facilitate trust and group norms; ii) members feeling empowered to advocate for and work towards the mission of their group (Javdani & Allen, 2011a); iii) perceived knowledge sharing between members (Javdani & Allen, 2011b); and iv) developing perceived credibility as a group.

Council Effectiveness.—This construct is measured by two indicators in this study. One indicator is a measure of council members’ perceptions about their councils’ internal effectiveness, or whether the council generates synergy. The other is a measure of council members’ perceptions of their councils’ external effectiveness in impacting a list of policy, systems, and environmental-level (PSE) change in their food system. The list of PSE topics include whether the council has promoted its mission, promoted justice in the food system, increased opportunities to purchase locally produced agricultural products, increased the use of environmentally sustainable farming practices, stimulated economic development in their communities, and other topics. As Social Capital grows within the group, perceived synergy or “the power to combine the perspectives, resources, and skills of a group of people and organizations” (Lasker, Weiss, & Miller, 2001, p.183) develops. Synergy allows the council to efficiently pursue PSE initiatives that impact the complex food system in their community. An example PSE initiative is drafting a model zoning policy that allows for farmers’ markets or community gardens, which can be important sources of fresh produce for low-income residents (Walsh et al., 2015). PSE initiatives, or changing the context in which people make health-related choices, can impact distal outcomes in the community (Brennan, Castro, Brownson, Claus, & Orleans, 2011; Bunnell et al., 2012). Distal outcomes include health outcomes associated with increased access to healthy foods, such as reduced food insecurity and obesity rates, or economic outcomes associated with increased sales of local agricultural products.

Community Context.—Community Context describes the extent to which a community is supportive of the councils’ mission and is able to provide resources to facilitate the councils’ work. Community Context can help or hinder the councils’ ability to achieve Council Effectiveness, and ultimately effect distal change (Allen et al., 2012). Champions for change and windows of opportunity are also important external elements that influence collaboratives’ ability to achieve change (McClintock, Wooten, & Brown, 2012). Within our model, we hypothesized a feedback loop between Council Effectiveness and Social Capital such that Social Capital would increase as the council achieves synergy and impacts their food systems over time (Figure 1).

While the components within the FPC Framework appear linear, FPCs may take a circuitous path through these concepts, if they can achieve them at all. The FPC Framework depicts modifiable concepts that are likely to be important factors influencing whether food councils can achieve Council Effectiveness and ultimately distal change. The FPC Framework is not an exhaustive account of every factor that is related to FPC success. We did not include certain contextual concepts, such as stage of council development (Butterfoss & Kegler, 2009), in this model because they are not modifiable.

METHODS

Building on the measures Allen and colleagues employed in the study of Family Violence Councils (Allen, Javdani, Lehrner, & Walden, 2012), a Food Policy Council Self-Assessment Tool (FPC-SAT) that asks FPC members' about their perceptions of their council was created and validated (Calancie et. al, 2017). The FPC-SAT was used to collect data in this study.

Data collection

Up to two contact persons from each of the 282 councils listed on the 2015 Food Policy Network's (FPN) Online Directory (Food Policy Network, 2015b) were emailed invitations to participate in the study. The FPN is a project at the Center for a Livable Future at John's Hopkins University. We sent recruitment information in conjunction with the FPN's annual FPC Online Directory update, which was distributed to the FPN's list serve of over 1,000 users. Two reminder emails were sent to FPC contacts. The recruitment information and reminders included information about the study, a link to the online FPC-SAT, and information about the incentive. Individuals could choose to receive \$5 if they completed the assessment tool. Councils where eight or more members completed the assessment tool were also given a feedback report that anonymously summarized their council members' responses. This provided an incentive for high participation rates within councils and offered the research team an opportunity to share results directly with councils, which is an element of empowerment evaluation (Fetterman, Kaftarian, & Wandersman, 1996). An excerpt from an example feedback report was included in the survey's consent information so that potential participants could see how their responses would be aggregated and presented anonymously on the feedback reports.

Data

Concepts that we hypothesize explain FPC function are shown in the FPC Framework (Figure 1). Concepts are measured by scales. The scales are the average of each item in that section of the FPC-SAT. Item responses were on rating scales that ranged from 1 (low) – 4 (high). This study focused on evaluating FPC members' perceptions of the internal processes of FPCs (Zakocs & Edwards, 2006) and their perceptions of the impact their council has on a list of food-related issues.

Statistical analysis

We calculated descriptive statistics for participants and their councils, conducted a factor analysis, and used structural equation modeling (SEM) to test the relationships between

the next 3 concepts together, and the last 2 concepts together and specified the same pattern of relationships as the final SEM we tested. Model fit was estimated as described above. This process was repeated 3 times. This approach tested whether the model fit for our Framework is better than a randomly specified model with the same data, and thus provides insight into the robustness of our findings.

RESULTS

Participants and measurements

Three hundred and fifty-four FPC members from 95 councils across the US, Canada, and Tribal & First Nations reported their perceptions of their councils on the FPC-SAT. Table 2 shows the characteristics of the members and the councils. FPC members and leaders responded similarly to the FPC-SAT questions (Calancie et al., 2017). Three-quarters of the sample was female and most participants were white. The most frequently reported sector was non-profit (36%) followed by agriculture (20%). The least frequently cited was faith (2%), conservation (4%), and healthcare (5%). Other categories that participants entered included cooperative extension, retired, food processing, nutrition education, landscaping, food retail, and transportation. Eighty-three percent of the sample reported being a member of their council for more than one year. Most FPCs were located in the US (88%). Eight or more council members from 20 FPCs completed the assessment. Those 20 councils received a tailored feedback report that summarized their council members' anonymous responses on the FPC-SAT scales.

Descriptive statistics for the FPC-SAT scales are shown in Supplemental table 1. Cronbach alphas ranged from 0.79 – 0.93, indicating high covariance among scale items (Nunnally, 1978). The interclass correlations (ICCs) ranged from 0.04 – 0.31, and were highest for inclusiveness of council climate (0.31) and breadth of active membership (0.28). This indicates that council membership explains some of the variability in these scales (Bliese, 1998). Council membership is less influential on members' perceptions of the other scales. The moderate ICCs for most variables justify the use of bootstrapping to accommodate clustered data. Supplemental table 2 shows the correlations between FPC-SAT scales. Most scales are significantly correlated ($p=0.001$) with a Bonferroni correction, which is to be expected since the scales measure distinct yet highly related aspects of FPC function. A factor analysis with 310 participants who were not missing scale averages indicated that the scales grouped together as hypothesized in the FPC Framework (Supplemental table 3).

Model results

We used structural equation modeling (SEM) to test whether the hypothesized conceptual model shown in Figure 1 is a good fit with the data. Figure 2 shows the SEM notation used to test the hypothesized conceptual model (Model 1). The rectangles are measured (or observed) variables, which are the FPC-SAT item averages for each concept. The numeric labels inside the rectangles are the scale mean and standard error. The small circles in the model show standardized error variances. The ovals are latent variables, which are similar to factors in a factor analysis. Latent variables are not measured. The arrows between measured variables and the latent variables are analogous to a confirmatory factor analysis. The

numeric labels on these arrows indicate standardized factor loadings, or the correlation between the measured variable and its latent variable, and the arrows show relationships between latent variables. The numeric labels are analogous to standardized regression coefficients. In this study, using latent variables allows us to condense the information we gathered from the scales and accurately test specific relationships between three latent variables, rather than testing relationships between all ten measured scales using path analysis.

The path coefficients between latent variables in Model 1 were all significant with p -values 0.001 (Figure 2). According to Model 1, a one standard deviation (SD) change in Organizational Capacity would produce a 0.66 SD change in Social Capital, accounting for all the relationships in the model. A one SD change in Social Capital would produce a 0.74 SD change in Council Effectiveness. Thus, Social Capital mediates the relationship between Organizational Capacity and Council Effectiveness because Organizational Capacity significantly influences Social Capital, which in turn significantly influences Effectiveness. The standardized factor loadings that comprise the measurement part of the SEM indicate that the correlation between scales and their underlying factors ranges from 0.62–0.89. Therefore, between 38–79% (i.e., the standardized factor loadings squared) of the variation in the FPC-SAT scales is associated with their corresponding latent variable (Figure 2). The scales with the weakest association with its latent factor were credibility (0.62) and structure (0.62). Unlike the structure items, the credibility items were conceptually difficult to answer since they asked participants about their perceptions of their communities' perceptions of their council. About 50% of respondents selected “unsure” or did not complete the credibility items. These observations indicate that the credibility items may not be accurate measures. The model fit indices show that the covariance structures implied by Model 1 are significantly different from the covariance structures in the data ($\chi^2=115.648$, $df=33$, p -value <0.001 , CFI=0.944, TLI=0.924, RMSEA=0.084, p -close <0.001). Table 3 shows all model fit statistics and commonly used cut-off values to assess model fit (Hu & Bentler, 1999). We made minor modifications to Model 1 and tested those models with our data.

We developed a second and third model to explain FPC function post hoc using modification indices and our knowledge of FPCs. Modification indices and Supplemental table 2 show high correlations between scales that compose Organizational Capacity and Council Effectiveness. Therefore, we added a direct path between those latent variables (Model 2). In Model 2, Social Capital partially mediates the relationship between Organizational Capacity and Council Effectiveness; the direct relationship between those variables is also significant (Figure 3). All relationships in this model are significant with p -values <0.001 . Model 2 suggests that a one SD increase in Organizational Capacity would produce a 0.60 SD increase in Social Capital and a 0.47 SD increase in Council Effectiveness, while a one SD increase in Social Capital would produce a 0.40 SD increase in Council Effectiveness. Model fit indices show that Model 2 is a better fit with the data ($\chi^2=76.018$, $df=32$, p -value $=<0.001$, CFI=0.970, TLI=0.958, RMSEA=0.062, p -close=0.123).

The third and final model includes the direct path between Organizational Capacity and Council Effectiveness as in Model 2, but with the credibility scale removed from Social Capital. As noted above, the credibility items may be poor measures of the concept. Also,

credibility is rarely cited as an important concept for coalition success, unlike the other concepts measured in the FPC-SAT (Granner & Sharpe, 2004; Zakocs & Edwards, 2006). All relationships in this model are significant with p-values <0.001. Model 3 suggests that a one SD increase in Organizational Capacity would produce a 0.56 SD increase in Social Capital and a 0.50 SD increase in Council Effectiveness, while a one SD increase in Social Capital would produce a 0.37 SD increase in Council Effectiveness. The model fit indices for Model 3 show a very good fit between the data and the model ($\chi^2=40.085$, $df=24$, p -value=0.021, CFI=0.988, TLI=0.982, RMSEA=0.044, p -close=0.650).

The moderation analysis was conducted with model 3. One hundred and sixty-three (46%) participants reported that their council regularly experiences barriers when trying to influence food policy and 57 (16%) reported that their council does *not* regularly experience barriers. Thirty-eight percent of participants did not respond to that question, or said “unsure.” Among those participants who reported that their council regularly experiences barriers, the model suggests that a one SD increase in Organizational Capacity would produce a 0.49 SD increase in Social Capital and a 0.37 SD increase in Council Effectiveness, while a one SD increase in Social Capital would produce a 0.43 SD increase in Council Effectiveness. Among those who reported that their council did *not* regularly experience barriers, the model suggests that a one SD increase in Organizational Capacity would produce a 0.55 SD increase in Social Capital and a 0.71 SD increase in Council Effectiveness, while a one SD increase in Social Capital would produce a 0.17 SD increase in Council Effectiveness. The relationship between Social Capital and Council Effectiveness was not statistically significant among this group ($p=0.297$). Moderation analysis results should be interpreted with caution however, since the sample size for each group was relatively small ($n<200$) (Kline, 2011).

The alternative models that we tested using randomly selected concept groupings did not converge (i.e., none of the three models could be estimated). This finding indicates that our good model fit is probably not attributable to chance. Additionally, this finding reinforces the factor analysis results: while the concepts measured in this study are correlated, certain concepts are more strongly correlated than others and these concepts form distinct groups.

We developed a revised conceptual model that corresponds to Model 3 and incorporated the moderation analysis findings (Figure 5). The model depicts relationships between council members’ perceptions of Organizational Capacity concepts (leadership, inclusive council climate, formality of council structure, and breadth of active membership), Social Capital concepts (knowledge, relationships, and members empowerment), and Council Effectiveness concepts (synergy, and impact). Line thickness corresponds with empirical findings about relationship strength. A change in Organizational Capacity is associated with larger changes in Council Effectiveness and Social Capital than a change in Social Capital and corresponding changes in Council Effectiveness. We could not test whether synergy and perceived impact were associated with distal outcomes in the community. That relationship has a dashed arrow indicating that the relationship is hypothesized, but not tested in this study. We show a more specific moderation effect of community context in this figure compared to the original FPC framework. Our results indicated that the relationship between

Social Capital and Council Effectiveness is the only relationship in this framework that is significantly moderated by community context.

DISCUSSION

To our knowledge, this is the first study to test a framework depicting members' perceptions of how FPCs function. The FPC framework can help guide capacity building for FPCs, and the researchers and practitioners who work with them. It also provides insight into the mechanism by which FPCs may achieve distal, community-level outcomes. Our results show that interventions aiming to strengthen FPCs should be directed toward increasing Organizational Capacity components (leadership, breadth of active membership, inclusivity of council climate, and formality of council structure) since they may increase Council Effectiveness more than efforts directed at increasing Social Capital. Moreover, efforts to increase Organizational Capacity are likely to increase Social Capital. This study provides support for the generalizability of Allen and colleagues' parsimonious model explaining how community collaborations can achieve institutionalized change (Allen et al., 2012).

The concepts that were measured in this study are modifiable and thus could be targeted through capacity building interventions. For example, Florin and colleagues conducted a capacity building intervention that improved the confidence of community groups, including coalitions, to address tobacco control efforts across Rhode Island (Florin et al., 2006). In another study, coalitions randomly assigned to receive an internal capacity building intervention demonstrated more effective prevention plans, plan implementation, and meetings than those that did not receive the intervention (Riggs, Nakawatase, & Pentz, 2008). A recent case study found that a technical assistance and training intervention with community coalitions improved internal coalition processes and strategic planning, and was associated with increased community-level changes at the end of the intervention (Keene Woods, Watson-Thompson, Schober, Markt, & Fawcett, 2014). The Interactive Systems Framework is an approach to identify and implement innovations that could improve organizational capacity within FPCs and other collaboratives (Wandersman et al., 2008). The revised FPC framework and FPC-SAT can help FPCs identify what internal components are important targets for capacity building in their specific council.

We conducted a multisite, theory-driven evaluation of FPC members' perceptions of their councils with a large sample of FPC members from across the US, Canada, and Tribal & First Nations. This study addresses the numerous reports calling for more evaluation of FPCs (Harper et al., 2009; Scherb et al., 2012; Schiff, 2008). Evaluation informs best practices and can also make FPCs more attractive to funders. A study examining challenges related to FPC evaluation found the following barriers: a negative perception of evaluation held by council members; a lack of consensus about how to evaluate FPCs; insufficient evaluation capacity within FPCs; and an "inadequate appreciation of increasing accountability pressures" (Webb et al., 1998, p.65). We addressed several of those barriers in this study. Those who hold a negative perception of evaluation may not have participated in our study. However, hundreds of FPC members completed the FPC-SAT, and eight or more members from 20 councils valued the evaluation process enough to complete the FPC-SAT in order to receive a tailored feedback summary for their council. To help build consensus

about how to evaluate FPCs, we developed the evaluation questions on the FPC-SAT with significant input from FPC members, leaders, researchers, and practitioners who work with councils (Calancie et al., 2017). Moreover, the evaluation questions were adapted from empirically tested measures (Allen et al., 2012) and informed by a review of the community coalition literature. The evaluation was led by academics with evaluation expertise; internal FPC evaluation capacity was not required. The resulting framework can guide evaluation activities in FPCs that may have limited capacity to develop an evaluation process from scratch. Finally, although we did not address council members' appreciation for accountability from various stakeholders, our study did provide tools and guidance to help those who are striving to elucidate the connections between their councils' internal processes and potential impact on their communities.

Additional research is needed about the potential drawbacks of FPCs. Some studies suggest that while community coalitions typically aim to include a broad group of community organizations and representatives, they can may actually consolidate power within a small group of participants and reinforce existing power dynamics within communities (Chavis, 2001; Himmelman, 2001). In this study, we found that fewer participants completed questions about fair resolution of conflicts than other questions about leadership. This could be an indication that some council members do not feel comfortable voicing leadership style concerns, perhaps due to power relations within the group or within the community. Furthermore, a network analysis examining changes within a network of organizations that address food security in their community found significant centralization within the network over time as an FPC formed (Freedman & Bess, 2011). While the number of relationships between organizational partners within the networks increased, the relationships did not develop evenly across partners; they increased more among a few key partners (Freedman & Bess, 2011). Increased centralization within a network of organizations could lead to greater efficiency in completing tasks, but it could also "challenge shared decision-making and accountability, and put at risk the commitment and participation of peripheral members" (Freedman & Bess, 2011, p. 407). Researchers should examine the extent to which FPCs foster collaborative empowerment, which emphasizes "community organizing, grassroots leadership development, and increasing the ownership and power of those primarily affected by the coalition's activities" (Himmelman, 2001, p.282). Research is needed to understand whether FPCs are reinforcing existing conflicts within communities that stem from unequal distribution of power, or if councils are serving as arenas to transform those conflicts to enable community capacity buildings by empowering otherwise marginalized groups (Chavis, 2001). Indeed, studies have shown that community councils have the potential to influence the organizational contexts of participating organizations (Allen et al., 2013), which could in-turn influence community power dynamics (Himmelman, 2001). This research should be conducted to avoid unintended negative consequences of promoting FPCs in communities.

Our use of SEM is a strength of this study. SEM and path analysis are rarely used to test proposed mechanisms for coalition effectiveness; multivariate analysis and covariance descriptions are more common (Zakocs & Edwards, 2006). Studies that use these methods group the coalition factors in different arrangements, making it challenging to compare mechanisms across studies. However, some studies have tested similar mechanisms

explaining community coalition effectiveness (Alexander, Christianson, Hearld, Hurley, & Scanlon, 2010; Crowley, Yu, & Kaftarian, 2000). Crowley and colleagues used structural equation modeling to test relationships between collaboratives' organizational practices and impacts and found that their hypothesized models were a good fit for the data over three years (Crowley et al., 2000). They also found evidence that the relationships between coalition activities and impact may not be linear overtime, and factors such as organizational capacity and partnerships will not necessarily result in healthier communities. Contextual factors and a limited ability to quantify coalition impacts might explain this finding, as well as the potential delay between coalition activities and their impact. Our moderation analysis showed that community context influenced the relationship between Social Capital and Council Effectiveness such that the relationship between those variables was not significant among those who did not regularly experience barriers when trying to influence policy. Perhaps having a council in place is sufficient to influence policy in those communities, independent of the amount of Social Capital generated within those councils. Among members who reported that their councils regularly experience barriers, Social Capital is more strongly associated with Council Effectiveness. We also hope to examine the relationship between concepts displayed in the FPC framework, community context, and distal, community-level outcomes over time in future research.

As with all research, there were limitations to this study. First, there may have been selection bias because participants choose whether or not to complete the FPC-SAT. It is likely that council members who have a positive view of their council, or of evaluation and research in general, would be more motivated to complete the FPC-SAT than those who hold negative views of their council because they knew that council coordinators will receive de-identified feedback summaries. The feedback report incentive is likely to attract councils that are cohesive and are interested in receiving feedback about their council. Another limitation in this study is that we asked individual participants for their perceptions of their council. We did not collect objective measures of council characteristics or function at the council level, such as observations of FPC meetings or document review (Hawe & Stickney, 1997). Also, while we had sufficient power to test model fit with our full sample, our moderation analysis should be interpreted with caution due to the relatively small sample size in each of the two groups. Finally, though data-informed model respecification and post hoc analysis are common practices in SEM, ideally each respecified model should be tested with new data (Bollen, 1998; Kline, 2011). Future research should validate the revised FPC Framework with an independent sample of FPCs or other similar community coalitions.

Several important lessons emerged from this study. We found that members from 32% of FPCs listed in the 2015 Online Directory were willing to complete the FPC-SAT. Additional recruitment activities might have improved our response rate. A shorter survey may have increased the response rate as well. Our results indicate that FPCs can be evaluated similarly to other community coalitions; factors that are associated with community coalition effectiveness apply to FPCs. Future research should consider how to best measure and evaluate the impact that FPCs have on community-level outcomes, such as access to healthy foods, economic growth, and natural resource stewardship.

CONCLUSION

FPCs have enormous potential to bring together a variety of viewpoints and skillsets to influence food systems. From production to distribution, consumption, and disposal, food influences the health, economic viability, political stability, and ecological vitality of communities to nations. The framework tested in this study can help FPCs realize their potential in promoting food system change that equitably improves lives today and in the future. Our results indicate that increasing FPC members' perceptions of Organizational Capacity is associated with increasing Social Capital, synergy, and perceived impact on the food system. Councils may consider using the FPC-SAT and the revised FPC framework to identify specific areas that could be improved in their FPCs. Once specific areas for improvements are identified, councils can seek technical assistance, resources, or other approaches to increase their capacity to affect change in their food systems and improve community-level public health outcomes.

Elements of the food system and their effects on the public's health are often considered in isolation. The Institute of Medicine suggests examining the food system and its health implications using a systems approach (Nesheim, Oria, & Yih, 2015). Their approach encourages collaboration-building and integrating information from a variety of sectors. Effective FPCs offer a platform to engage and empower representatives from across the food system to better understand their food system, and take coordinated action to promote health, natural resource stewardship, economic vitality, and equity in communities.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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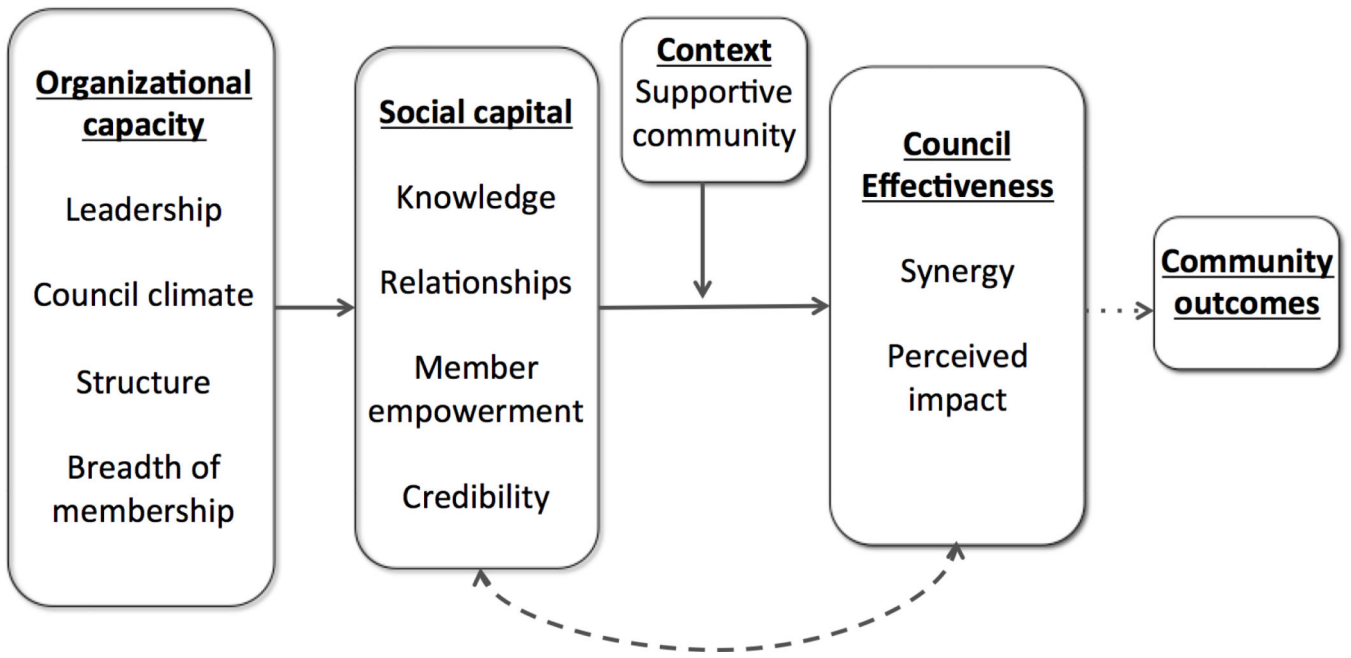


Figure 1. Food Policy Council Framework adapted from (Allen, Javdani, Lehrner, & Walden, 2012).

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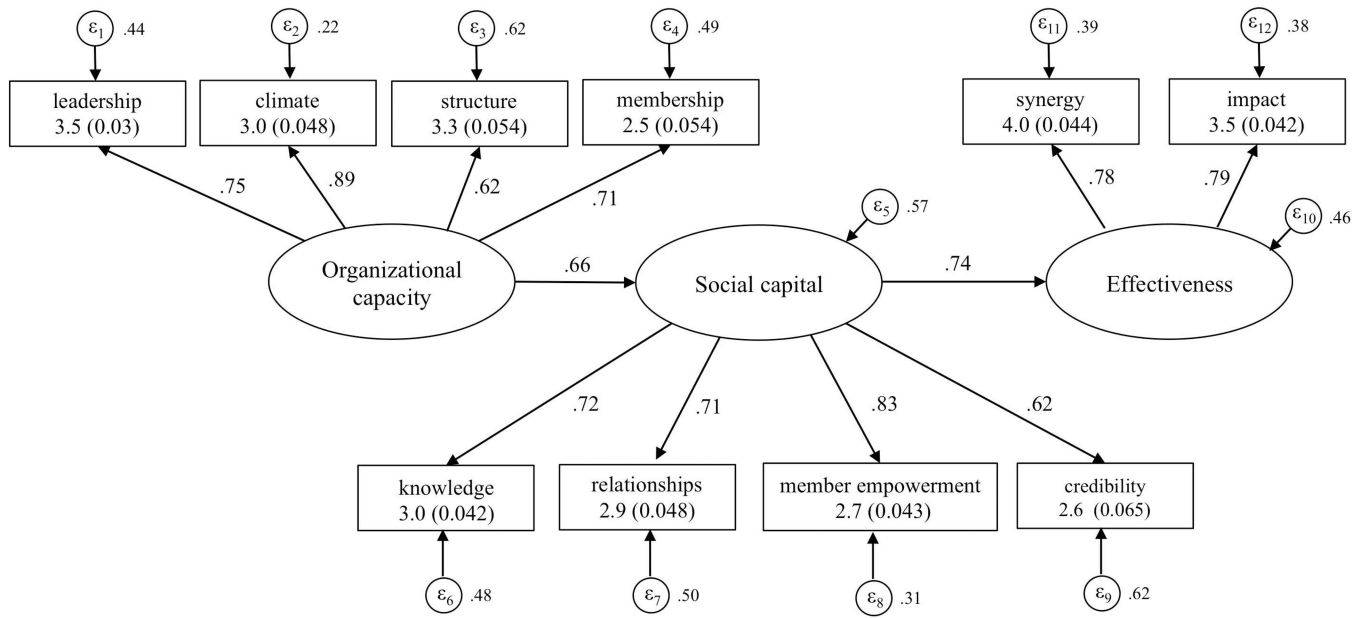


Figure 2. Structural Equation Model 1 testing a hypothesized framework explaining Food Policy Council function. Concepts are measured by the Food Policy Council Self-Assessment Tool (n=354).

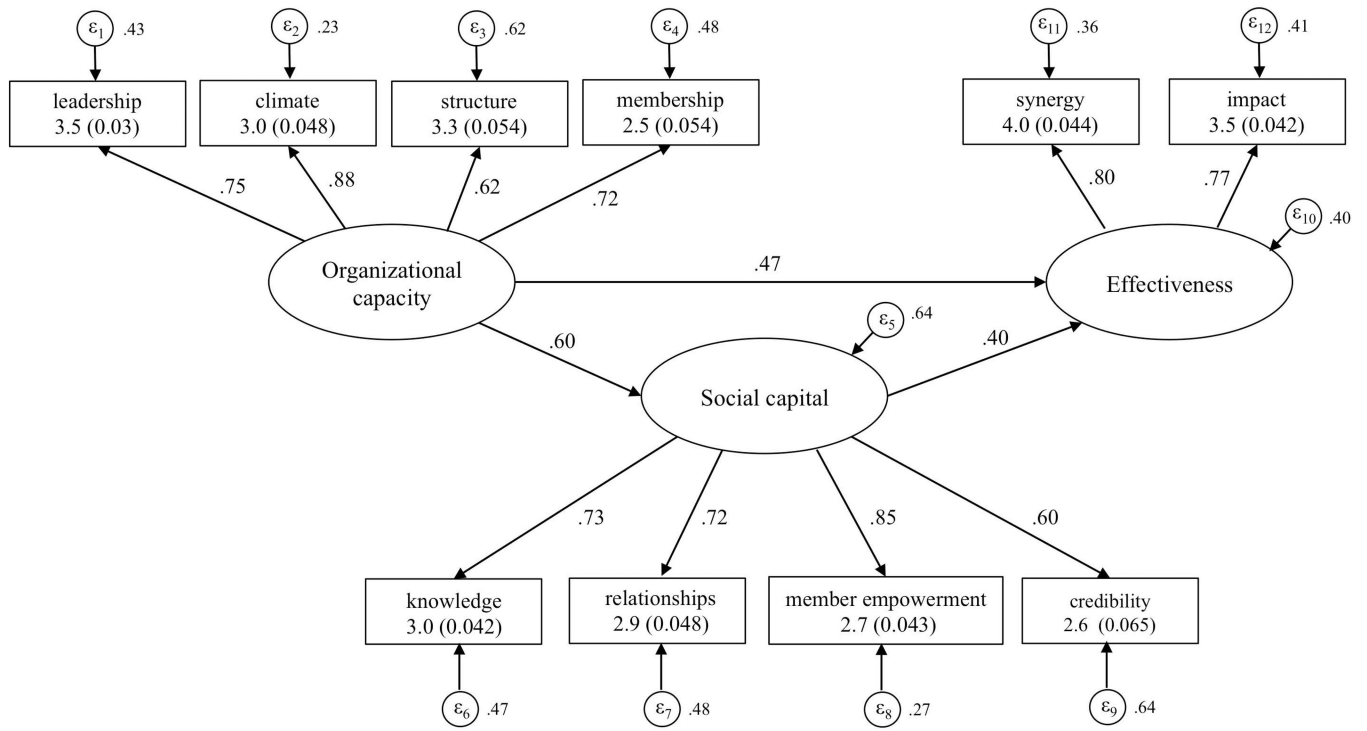


Figure 3. Structural Equation Model 2 testing a revised framework explaining Food Policy Council function. Concepts are measured by the Food Policy Council Self-Assessment Tool (n=354).

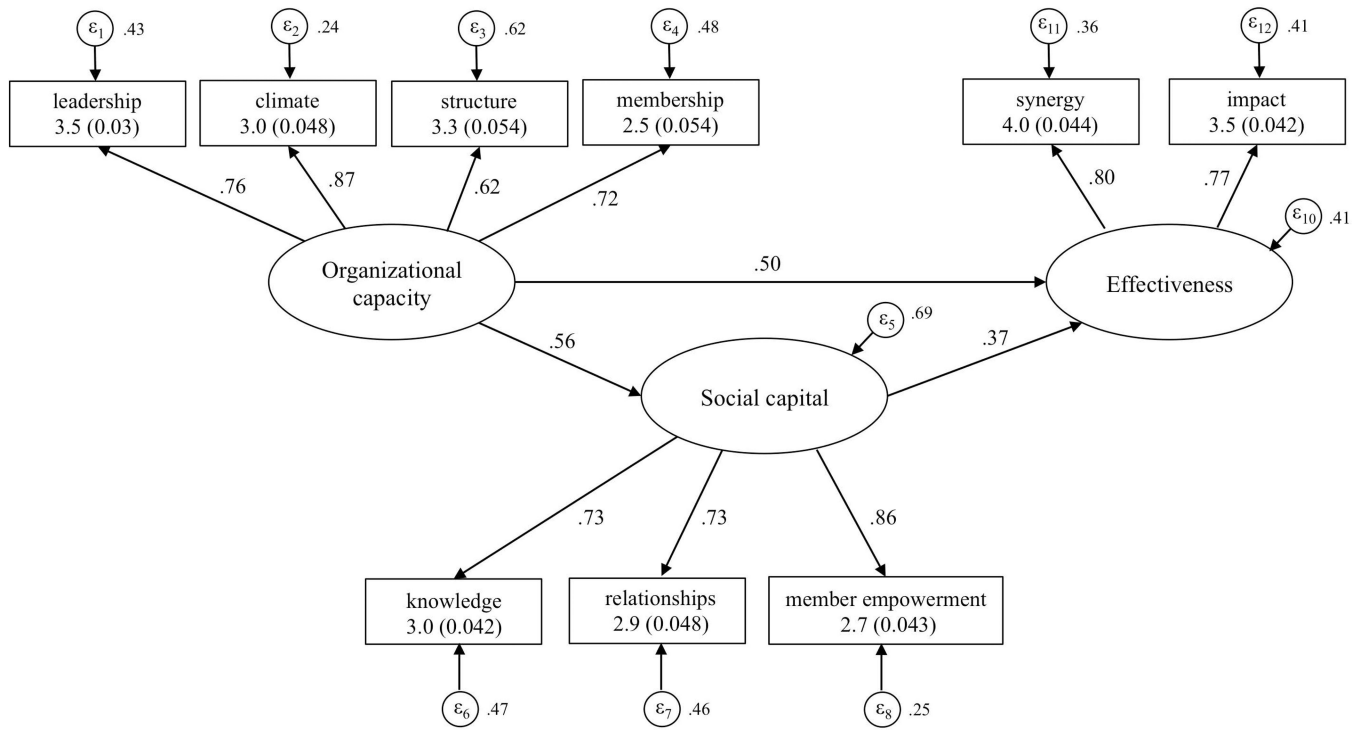


Figure 4. Structural Equation Model 3 testing a final framework explaining Food Policy Council function. Concepts are measured by the Food Policy Council Self-Assessment Tool (n=354).

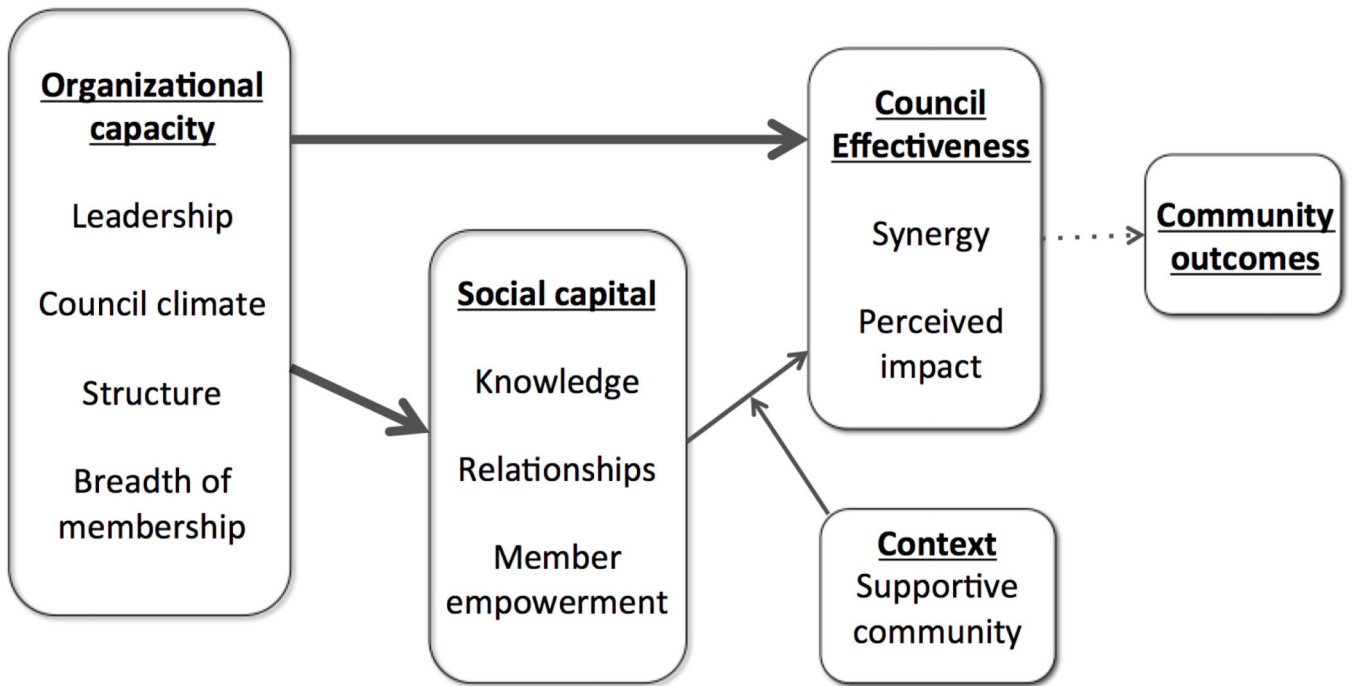


Figure 5. Revised Food Policy Council Framework developed through SEM testing, FPC literature, and adapted from Allen (2012).

Table 1.

Food Policy Council Self-Assessment Tool (FPC-SAT) concepts and definitions (Allen et al., 2012; F. Butterfoss & Kegler, 2009; Goodman et al., 1998; Granner & Sharpe, 2004; Kegler et al., 1998; Lasker et al., 2001; Roussos & Fawcett, 2000; Zakocs & Edwards, 2006).

Concepts	Definitions
<i>Organizational capacity</i>	
Leadership	Leaders promote an egalitarian or democratic environment, engaging participation from all members, valuing diversity, fair conflict management, articulating vision, and commitment to the group
Inclusive council climate	Shared power and decision making; shared mission; conflict resolution; sense of cohesion
Breadth of active membership	Range of stakeholders actively participating in council
Formality of council structure	Degree of structure guiding council practices and meetings
<i>Social capital and community context</i>	
Member empowerment	Degree to which members perceived being individually empowered to affect change (i.e., to influence policy and practice in their home agencies and in the community) as a result of their participation in the council
Knowledge	Members are exposed to information about the food system and each others' activities related to the food system
Relationships	Connections between group members
Credibility of the council	Members' perceptions about whether the community views the group as a trustworthy authority on food system related issues
Community context	Members' perceptions of community members' and decision-makers' level of support for groups' mission and activities
<i>Council Effectiveness</i>	
Synergy	The power to combine perspectives, resources, and skills of groups of people and organizations
Impact	Food council members' perceptions of council-level accomplishments, or steps toward achieving the council's goals

Table 2.

Participant and council characteristics for Food Policy Council Self-Assessment Tool (FPC-SAT) respondents.

Participant characteristics (n=354)	n (%)	Participant characteristics (n=354)	n (%)
Age		Position	
18–35	91 (28%)	Leader (formal or informal)	51 (15%)
35–54	141 (42%)	Administration or staff (Secretary, Treasurer, Coordinator)	49 (14%)
55+	97 (30%)	Chair of a working group or on a steering committee	77 (22%)
Gender		Member	172 (49%)
Male	86 (26%)	Years as a member	
Female	240 (73%)	<1 years	59 (17%)
Race/ethnicity		1 to <3 years	122 (34%)
White	271 (84%)	3 to <5 years	115 (32%)
Hispanic	18 (6%)	5 to <10 years	58 (16%)
Black	13 (4%)	10+ years	5 (1%)
American Indian or Aboriginal	4 (1%)	General council characteristics (n=94)	n (%)
Other	28 (8%)	Average council age in years (range 1–34)	6.27 (SD=5.10)
Sector (participants could select more than 1)		Country	
Nonprofit	129 (36%)	US	82 (88%)
Agriculture	71 (20%)	Canada	11 (12%)
Community member	64 (18%)	Tribe (US)	3 (3%)
Education	62 (18%)	Region	
Public health	60 (17%)	West	29 (32%)
Government	60 (17%)	Midwest	16 (17%)
Other	40 (12%)	South	23 (25%)
Economic development	38 (11%)	Northeast	12 (13%)
Academia	31 (9%)	West (Canada)	2 (2%)
Poverty alleviation	26 (7%)	Central (Canada)	8 (9%)
Food security	26 (7%)		
Health care	18 (5%)		
Conservation	13 (4%)		
Faith	7 (2%)		

Table 3.

Model fit indices for Models 1–3 testing relationships in the Food Policy Council Framework (n=354).

Model	χ^2	df	p-value	CFI	TLI	RMSEA	p-close
1	115.648	33	0.000	0.944	0.924	0.084	0.000
2	76.018	32	0.000	0.970*	0.958*	0.062	0.123*
3	40.085	24	0.021	0.988*	0.982*	0.044*	0.650*
Cut-off guidelines:			0.05	0.95	0.95	0.06	0.05

* Indicates good fit according to cut-off guidelines (Hu & Bentler, 1999).

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