ASSESSING COMMUNITY HEALTH PARTNERSHIPS IN KANSAS: USING THE PARTNER TOOL TO UNDERSTAND RELATIONSHIPS

A Dissertation by

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To those from the University of Nevada-Las Vegas, KU School of Medicine, and Wichita State University who believed in me, pushed me, encouraged me, challenged me and laughed with me along the way & for James, my biggest cheerleader who has my heart, shares my pain, and shares all my joy
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In 2012, while finishing the masters program at KU School of Medicine, I would visit my advisor, in thesis pain, wondering why I was working so hard – all I wanted to do was finish. She said “do you just want to finish or do you want a quality project”? So I plugged along. Now, eight years later, I know why she pushed so hard; why she set me up to “begin with the end in mind”. This is the “end” she believed I could achieve and for that, I thank her.

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ABSTRACT

Collaborative partnerships involving different sectors are a strategy used to address complex community health issues. Engaging diverse organizations as partners, identifying resources that can be exchanged for mutual benefit and sharing goals to reach optimal outcomes are essential elements to improving the health of the community. Through community psychology frameworks, true collaboration can be reached by exchanging information, harmonizing activities, sharing risk, responsibility, resources and rewards. In order to reach this level of collaboration, it is important that relationships between community partners within these networks are measured and resources, outcomes, value and trust are evaluated to understand contributions to successful outcomes.

The purpose of this study was to use social network analysis methods to describe characteristics of two community health partnerships in rural Kansas preparing for community health improvement plan development. Characteristics of network members were evaluated based on type of organization represented, perceptions of success and attributes contributing to levels of collaboration activity. The PARTNER Tool survey was used to describe these relationships.

Results indicated that the type of organizations represented were not strongly associated with success based on eight sectors that represent key community health players. Resource contributions and partnership outcomes were also evaluated with community connections and specific health expertise strongly associated with perceptions of success. Additionally, increased knowledge sharing, new sources of data and public awareness were outcomes most associated with perceived success. Elements of value and trust were measured relative to level of collaboration activity and level of involvement made the strongest contribution.
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CHAPTER 1
INTRODUCTION

A disease so dramatic as cholera, pervasive to the boundaries of overcrowded tenements and unbiased to poverty and wealth, unencumbered by lines of demarcation based on race, education, family or creed, was needed to lay the foundation of a “new era in the domain of science” to discover methods of reducing illness (Shryock, 1937). It would bring such horror to those above the slum areas among the cabins of the poor to the bourgeois and beyond that the connection between disease and living conditions would become integral to prevention and define the epoch of intractable community health problems across time (Shyrock, 1937; Sarason, 1978). The three to four decades preceding 1870 provides a strong background to the promotion of complacency that supported the indifference to diseases plaguing American cities’ poor and indigent, without concern for town or country, to strike in a sudden, fatal manner which would become the criminal to set precedent for community health policy (Shryock, 1937). As a result, cities began forming boards of health to oversee community improvements by planning responses to societal events that called for different modes of intervention (Shryock, 1937; Rittel & Weber, 1973).

Technical problems with definable, understandable and consensual solutions began to give rise to growing areas of pluralism and the differentiation of values that accompany differentiation of publics (Rittel & Weber, 1973; Sarason, 1978). Many barriers exist to perfecting planning and governing systems put in place to solve the very problems they claim to be in position to exact. Because of this, there seemed to be a need for other organizations to take up leadership in community health reform and social action to deal more effectively with limited

Community and social issues have long been considered intractable, with no final solutions to solving the problems that are not entirely technical, as these problems will change before and within them (Sarason, 1978). With that, engaging diverse community members, identifying resources that can be exchanged for mutual benefit, and sharing some sense of optimal outcomes or what is deemed a “success” are essential to decreasing prevalent community health issues (Butterfoss, Goodman, & Wandersman, 1996). Through community psychology frameworks, such as the ecological theory, complex community and social issues become the intractable problems of those living within these contexts. Moreover, establishing a strong relational basis within community networks and understanding these relationships lends to reaching optimal outcomes (Butterfoss, Goodman, & Wandersman, 1996; Varda & Retrum, 2012).

Intractable or “wicked” problems require many resources to tackle. Pervasive, prevalent, community health issues, particularly those with no clearly defined response (e.g. HIV/AIDS) will only be prevented or reduced if there is clear understanding of the community it is affecting. Similar to this, planning for community health and social improvements requires the ability to move within the intractable problems from the lens of the community it will serve. Collaborative partnerships or community coalitions involving schools, civic government, health systems, local business, law enforcement and lay community members as a strategy to address intractable
community health problems provides unique approaches through social action (Butterfoss, Goodman, & Wandersman, 1996; Varda & Retrum, 2012).

This research study informs on the relationships between organizations within two community coalition networks in Kansas preparing for community health improvement planning activities. The project takes an ecological approach by assessing individuals within the partner organizations and evaluating the organizations through their relationships. More specifically, factors that contribute to coalition effectiveness, such as trust between members, values associated with membership, and resource contribution to the network were evaluated. The desired deliverable that becomes a Community Health Improvement Plan (CHIP) supports community organizations at various levels (from local non-profit grant applications to health system accreditation requirements) by using data collected in a community health assessment to identify quantifiable health issues. While data drives the activities associated with health improvement planning, the coordinated efforts from diverse community members acts as an intervention aimed at strengthening the social fabric with which health and social issues live (Butterfoss, Goodman, & Wandersman, 1993). Within a community health improvement plan live intractable “wicked” problems that require multiple approaches from the community perspective to capitalize on strengths within the network as a system to nurture shared values and goals (Minkler, Wallerstein, & Wilson, 2008).
CHAPTER II
LITERATURE REVIEW

The Historical and Contemporary Community Health Approach

“Wicked” and Intractable Problems

Hitch wrote in “On the Choice of Objectives in Systems Studies” that “…important problems’ objectives cannot be taken as given; that ends and means interact in complex ways that the system [analyst] must master” (1964). This elicits that societal problems have unclear missions with unclear solutions with ends and means having differential “spillover” effects (Hitch, 1964; Rittel & Weber, 1973). The classical paradigm of science and engineering historically hold specific solutions to clearly defined problems however these do not hold for problems of open society systems (Rittel & Weber, 1973; Sarason, 1978). Professionals caught in this paradox of science and social professions, e.g. community health, were misled somewhere along the line into assuming scientific applications would suffice to solving ill-defined problems, with complex interactions and conflicts with other problems (indirectly or directly) resulting in competition for resources (Hitch, 1964; Rittel & Weber, 1973; Sarason, 1978). With these interactions, whether constructive or adverse, comes the effect it may have on other problems in that there are consequences, as strengthening one deterrence can lead to weakening another deterrence (Hitch, 1964). Taking one solution to a problem as a given reduces the opportunity for introduction of new conditions (Rittel & Weber, 1973; Sarason, 1978). Under these circumstances, problems within community health constructs to enact social action can be described as inherently intractable, albeit tame or wicked, with tame problems coming with clear, outlined defined parameters with quick, straight-line formulas for solutions and wicked
problems, in stark contrast (Rittel & Weber, 1973; Sarason, 1978). To paraphrase, planning long-term, sustainable interventions to immediate community health crises are inherently “wicked” and are inherently never solved, but rather re-solved, over and over again, with no final solution, but rather an upsetting imbalance between values and action (Rittel & Weber, 1973; Sarason, 1978).

The enduring exchange relations between organizations, individuals and groups are complex and form over differing timelines dependent on the need (Weber & Khademian, 2008; Rittel & Weber, 1973). Governing shared resources or evolving to deal with impending community problems lead to networks forming in order to accomplish complex tasks through flexibility, efficiency, and innovation to accumulate vital resources to carry out essential services (Weber & Khademian, 2008). The clash between “wicked” problems and traditional problem-solving systems is met with the formidable capacity of networks capable of working across many agencies, organizations and members of the public in order to face new challenges as new social issues emerge (Rittel & Weber, 1973; Weber & Khademian, 2008).

Historically, community health has been characterized by immediate crises that require collective social action to mediate and gain immediate attention from decision-makers (Institute of Medicine [IOM], 1988). Examples include acute, communicable diseases affecting the health of the public, such as cholera in the 19th century, influenza (historical example, the Spanish flu), viruses like HIV and other sexually transmitted infections, and, currently, pockets of measles outbreaks. Over time, community health problems with equally great significance for the well-being of society requiring continued attention were identified (IOM, 2003). At the time of the publication *The Future of Public Health* (1988), four examples of intractable, enduring, problems were outlined: injuries, teen pregnancy, control of high blood pressure and
smoking/substance abuse. Reported tobacco use at the time was thirty percent of American adults reporting addiction to cigarettes with 70% having a higher death rate (mortality) compared to those that do not smoke. According to the Minnesota Heart Study, prevalence of ever-smoked has reduced by 27.4 percent points in men and 15.1 percent points in women between 1980 and 2009 (Filion et al., 2011). The emergence of prevention and behavioral interventions has assisted in this reduction, of note is the first surgeon general’s warning from the Federal Cigarette Labeling and Advertising Act of 1965, progressing from “may be hazardous to your health” to listing specific known disease associations. Because of the disproportionate effect tobacco use has on morbidity and mortality, further reduction in use is needed (Centers for Disease Control and Prevention [CDC], 2015). Great strides have been made in reducing the burden of tobacco use (14% of U.S. adults report cigarette smoking), however the link to chronic disease and the economic impact is still significant (CDC, 2015; U.S. Department of Health and Human Services, 2019). Progress against intractable problems can lead to complacency and cause latency in action, undermining continued action to progress (IOM, 1988).

From Enduring Problems to Collaboration

The Committee on Assuring the Health of the Public in the 21st Century (the Committee) convened to build upon the Future of Public Health report (1988) and was charged with framing community health in the new century (2003). The *Future of the Public’s Health* outlines a vision of healthy people in healthy communities, which would become Healthy People 2010, now Healthy People 2020, and serve as the basis to developing a portal for baseline health-related data with objectives to monitor achievements. Within this report, the Committee acknowledged that government entities cannot assure the nation’s health alone and community health issues
must be tackled through various means. In addition, hidden vulnerabilities are outlined that are
deemed to undercut health potential which, if not addressed, could cause a decline in the future
of health status (IOM, 2003). First, public resources are finite and not defined by financial
support alone. Second, societies and communities define and limit the types of actions that can
be led by government programs and those that must be addressed by private institutions. Third,
determinants exist that define health outcomes based on differences that intersect each individual
and finally, the individual, communities and organizations can form powerful collaborations to
instill sustainable improvements, of which the government alone cannot replicate: an ecological
approach (IOM, 2003).

The recommendations of the 2003 report point specifically to collaboration and
partnerships that otherwise would not have emerged if it were not for the history of community
health and the complacency that came with it. From the earlier report (1988), community health
problems were siloed into two areas: immediate (acute disease) and enduring (chronic disease).
At this writing, and with each exchanging level of priority relative to morbidity and mortality
reports annually, these “enduring community health problems” have not given way to new
problems at baseline (US Department of Health and Human Services, 2019). In fact, according to
Healthy People 2010 and now Healthy People 2020, people living with HIV/AIDS, for example,
is well over one million and access to healthcare for the “indigent” is no longer an immediate
crisis, but rather a pervasive basis to poor health outcomes now defined as “underserved
populations” (2019). All health problems – both immediate and enduring – are considered factors
of the ongoing community health crisis in the United States and require collective, collaborative
action (IOM, 1988; US Department of Health and Human Services, 2019). Local community
health agencies should support community-led efforts to inventory resources, assess needs, and
form collaborative responses to community health improvement by providing community organizations and coalitions with support in identifying resources at all phases of the process (IOM, 2003). Identification of better ways to control and prevent communicable disease, along with social and community issues requires investigation into collaborative relationships aimed at affecting positive change and improved health outcomes.

Collaborating to Constructive Solutions

Rittel and Weber (1973) outline multiple properties to consider when tackling intractable or wicked problems. While it is best to consider the properties in their entirety to truly embrace the concepts of wicked problems, there are specificities that can be abstracted that apply here. Wicked or intractable problems have no definitive formulation, they are not true or false, but rather good or bad, they can be considered to be a symptom of another problem, and every problem is considered unique, with ways of studying them (or controlling them) requiring new methodologies (Rittel & Weber, 1973; Sarason, 1978). Additionally, wicked problems do not have an enumerable set of solutions and every solution is a “one-shot operation”, with every attempt counting significantly (Rittel & Weber, 1973). This points to strengthening one deterrence with the weakening of another: every implemented solution is consequential, leaving traces that cannot be undone (Hitch 1964; Rittel & Weber, 1973). Every solution will generate waves of consequences, good or bad, that extend over a period of time, with some repercussions being undesirable with new problems emerging – and in some cases, each solution generating competing answers (Rittel & Weber, 1973; Sarason, 1978). The final property points to the responsibility of the planner in that “[they have] no right to be wrong” and are caught in the open systems’ causal webs, with “no proofs to hypotheses” and only potential refutations, removing
the consensus of “correct” solutions and creating an open door for new questions (Rittel & Weber, 1973; Sarason, 1978).

Earlier dimensions of wicked problems were described and perspectives provided in how to address them. Weber and Khademian (2008) focus on collaborative capacity builders as a step to address these problems. More specifically, Wolff et al. (2016) outline collaboration principles through the lens of community psychology frameworks focusing on equity and justice, indicating that this foundation leads to transformative change through true community engagement with community members acting as collaborative capacity builders. Scholars have posed historically that effective management of wicked problems involves a combination of multiple specialized “functions” housed in traditional bureaucracies, of different policy sectors, of members of the community with expert officials, and diverse resources across the network (Weber & Khademian, 2008). However, the authors would argue that the success of these network structure lies with the effective transfer, receipt and integration of knowledge across those in the network, with others moving deeper, into the community with members joining the network as decision makers, program developers and evaluators (Butterfoss, Goodman, & Wandersman, 1993; Minkler, Wallerstein, & Wilson, 2008; Wolff et al., 2016). Addressing wicked problems requires efforts to draw on a broad range of knowledge, particularly as the problem takes on new dimensions. Networks focused on wicked problems in various settings (e.g. environmental policy development, urban development, disaster response) have added value by those who approach management of the network from the collaborative “capacity builder” lens (Weber & Khademian, 2008).

Network capacity provides a basis to challenge wicked problems by building a collaborative culture through a commitment to 1) governance with government, 2) govern within
the rules while remaining creative, 3) networks as mutual-aid partnerships, 4) accept that collaborative capacity builders [leaders] can be anyone, 5) understanding the intrinsic inseparability of performance and accountability in different settings and the 6) collaborative process (Weber & Khademian, 2008). Moreover, decades of community organizing, research in building collaborative structures, and experience across a wide range of fields has led to expansion of dedicated frameworks to include building upon community strengths to enact measurable change (Butterfoss, Goodman, & Wandersman, 1993; Minkler, Wallerstein, & Wilson, 2008; Wolff et al., 2016). Establishing these commitments within the network can establish effectiveness through a mindset in facilitating the sending, receiving, and integration of knowledge to address formidable wicked problems.

Collaborative, community-based coalitions are critical to achieving improved health outcomes (Butterfoss, Goodman, & Wandersman, 1993; Minkler, Wallerstien, & Wilson, 2008; U.S. Department of Health and Environment, 2012). Strategies that are collaboratively developed by community networks to include health departments and local government, schools, worksites, health care facilities, and other community partners are designed through existing social structures that are intended to maximize the program’s impact while reducing the time and resources consumed for program development and implementation (Butterfoss, Goodman, & Wandersman, 1993; Minkler, Wallerstien, & Wilson, 2008; U.S. Department of Health and Environment, 2012). In order to promote healthy outcomes in a community, the community network or organizations initiating health promotion activities have a responsibility to engage the community and implement changes within the social system through non-traditional settings (Butterfoss, Goodman, & Wandersman, 1993; Provan, Veazie, Staten, & Teufel-Shone, 2005; Minkler, Wallerstien, & Wilson, 2008; Wolff et al., 2016).
Community organizations can draw on the broad range of resources and expertise provided by other organizations in the network to improve effectiveness and efficiency in community-based services (Butterfoss, Goodman, & Wandersman, 1993; Provan, Veazie, Staten, & Teufel-Shone, 2005; Minkler, Wallerstien, & Wilson, 2008; Wolff et al., 2016).

One of the Ten Essential Public Health Services includes mobilizing community partnerships to identify and improve health problems and in order to achieve “community mobilization”, the networks leading the charge must have a foundation in collaborative capacity through equity and justice builders to be deemed successful (Weber & Khademian, 2008; Wolff et al., 2016; CDC, 2018). In order to achieve goals in community health while maximizing time, resources, and funding, strong multi-organizational partnerships that include both governmental and nongovernmental agencies is required with community members and community organizations leading the charge (Butterfoss, Goodman, & Wandersman, 1993; Provan, Veazie, Staten, & Teufel-Shone, 2005; Minkler, Wallerstien, & Wilson, 2008; Varda, Chandra, Stern, & Lurie, 2008; Wolff et al., 2016). With that, understanding how community networks function both between network members and as embedded members in the community is needed to ensure measurable outcomes are monitored based on the outputs of the community partnerships.

Valente and Pitts (2017) provide background in advanced research in network analysis within community health structures outlining that social network theory and analysis can provide opportunities for new research in this realm. Community health practitioners struggle to find ways to analyze and evaluate how successful collaboratives operate and have looked to other disciplines for ways of doing this (Varda, Chandra, Stern, & Lurie, 2008). Areas such as operations/management, public administration and management, and the social science disciplines have provided frameworks for analyzing relationships and these are now being
expanded within the community health system. Recently developed analysis techniques and tools, technological innovations in communication and changes in theoretical perspectives are being employed in various community health settings (Agranoff, 2006; Varda, Chandra, Stern, & Lurie, 2008; Borgatti et al., 2009; Valente & Pitts, 2017).

Networks as Solutions

Relationships influence a person’s behavior more so than individual attributes (Valente, 2010). Attributes such as gender, age, education level, and race and ethnicity can influence a person’s attitudes, beliefs, and behaviors that direct who people spend their time with, rather, who makes up their social network (Valente, 2010). The notion that individuals are embedded in thick webs of social relationships relies on social network analysis to identify the types of relationships people have and how they influence behavior (Borgatti et al., 2009; Valente, 2010). Behaviors and practices change according to the social networks in which one participates and professional disconnects may prohibit the development of sustainable partnerships (Pinto, 2009; Jung, 2012). Internal causes related to network members can create difficulties in building community health collaborations because people are used to working within hierarchies, not across them (Provan, Veazie, Staten, & Teufel-Shone, 2005; Varda, 2011). Tools to evaluate community health collaboratives have been used that focus on activities within the collaborative at the aggregate level, however not to the interactions and contributions of each organization at the individual level (Varda, Chandra, Stern, & Lurie, 2008). Understanding the relationships between organizations at the individual level will provide answers to why some community health collaboratives are more successful than others.
Social Network Analysis (SNA) involves a common set of techniques used to analyze the network ties among participants and is used to identify how these different kinds of “ties” affect each other (Borgatti et al., 2009). In theory, network analysis measures similarities, social relations, interactions, and flows within a network, which can play a crucial role in assessing the strength of collaborations within community health networks (Borgatti et al., 2009). Social networks represent a major area for organizational analysis in community health which aims to focus less on membership and more on transmission of specific elements, like resource availability and information sharing (Kwait, Valente, & Celentano, 2001; Luke & Harris, 2007; Varda, 2011).

Many social activities are inherently network activities (Valente, 2010). Network analysis is used to study inter-organizational collaborations, which provides an in-depth understanding of how behaviors are distributed throughout a network (Valente, 2010). Network analysis is a method of collecting and analyzing data at the individual level, based on perception of the group dynamics, to assess density, centrality, organizational value, power and influence, resources available, and trust at the aggregate level (Provan, Veazie, Staten, & Teufel-Shone, 2005; Varda, 2011). Current research has shown the importance of organizational value, perceived power and influence of each partner in the group, resources each participant can contribute to the collaborative, and the level of trust, both overall and individually, of each partner (Varda, 2011; Valente, Plinkas, Czaja, Chu, & Brown, 2015; Valente & Pitts, 2017). SNA, applied in a community-based coalition, focuses primarily on social structures of networks of organizations and the role each individual plays in the coalition to promote and influence health behavior (Provan, Veazie, Staten, & Teufel-Shone, 2005; Luke & Harris, 2007).
Faith-based, non-health community-based organizations, local businesses, and other non-health governmental organizations are becoming integral partners in community health (Varda, Chandra, Stern, & Lurie, 2008). Community health collaboratives are frequently established to leverage resources and maximize relationships within the community in a multisystem approach to address health needs in the community (Varda, Chandra, Stern, & Lurie, 2008; Wolff, 2010). The strength of collaborations in community health has typically been measured based on “more is better” and not the quality of the relationships (Varda, Chandra, Stern, & Lurie, 2008).

Previously, SNA has been used in community health to understand disease transmission, social support and social capital, and the structure of community health systems related to behavior interventions; its application to collaborations in community health assessments. At the same time, it’s use in CHIP development has not been widely explored (Luke & Harris, 2007; Varda, Chandra, Stern, & Lurie, 2008; McCullough, Eisen-Cohen, & Salas, 2016).

**Network Analysis Applications**

**History of Network Analysis in Other Fields**

Fields such as public administration and management, supply-chain management, and other fields in social sciences have used social network theory and analysis to identify strengths and weaknesses within collaborations between organizations for some time and provide a framework for its emergence into this research (Milward & Provan, 2006; Agranoff, 2006; McGuire, 2006; Varda, Chandra, Stern, & Lurie, 2008; Borgatti et al., 2009; Borgatti & Li, 2009). Milward and Provan (2006) describe networks in public administration and management and include service implementation, information diffusion, problem solving, and capacity building, whose purpose is to work together to build social capital in a community to promote
self-reliance when addressing a variety of ongoing and future problems. The networks described operate from a project management perspective with the central characteristic to connect people, programs, and organizations for the purpose of implementing public policy (Milward & Provan, 2006). Relationships within these public sectors are based on cooperation and collaboration in which public funding, policy and law hold them together (Milward & Provan, 2006).

Supply chain management (SCM) has long conceived of its subject in relational or dyadic terms, getting “the jump” on other fields that have multi-organizational relationships (Borgatti et al., 2009). SCM encompasses many intersections of disciplines; marketing, procurement, management, operations research, and logistics work together to deliver a product through network links: supplier to focal firm, and focal firm to customer (Borgatti et al., 2009). In SCM, social network analysis is used to understand patterns of relationships that affect diffusion of information, social control of opportunism, and coordination and aid (Borgatti et al., 2009). These characteristics are much like those identified as essential in sustainable and effective community health collaboratives (Varda, Chandra, Stern, & Lurie, 2008).

Pinto (2009) conducted a study to explore factors that influence collaboration in research between prevention scientists and community-based organizations (CBOs). Themes emerged that parallel SNA: availability [time], understanding [collaborative mission], and trust between each member (Pinto, 2009). Other factors and characteristics identified include demographics, such as age and gender, which are consistent with social capital measures, satisfaction with partners’ performances, and distribution of resources (Pinto, 2009). While the factors that emerged were identified as “barriers” that influence collaborations between researchers and local CBOs, newer studies would consider this important data to use to improve trust, feedback loops, methods, results, and dissemination of disease prevention interventions (Pinto, 2009; Jung 2012).
Assessing capacity building and collaborations among CBOs, Jung (2012) determined that constructing effective partnerships of community networks by reorganizing existing relations would improve health outcomes. The purpose of this study was to gain awareness at the partnership level of the characteristics of social capital, trust, and community capacity through network analysis (Jung, 2012). It was determined through the analysis that if a community has a high degree of trust with CBOs, residents will participate in health promotion programs with the as opposed to those communities that do not exhibit a high level of trust with the CBOs (Jung, 2012). Understanding how much trust, collaboration, and support exist between members in a community and applying that to study the possibility of its use, effects, and feedback process to the community will support strategic planning- namely community health improvement planning- on a new level (Jung, 2012; Wetta et al., 2015; McCullough, Eisen-Cohen, & Salas, 2016).

Community mobilization and collaboration among diverse partners in a coalition to address cancer disparities was studied to determine the development and impact of intersectoral connections (Ramanadhan et al., 2012). Relationships between the members of the Massachusetts Community Network for Cancer Education were assessed after intersectoral connections occurred\(^1\) and Community-based Participatory Research (CBPR) principles were put into place (Ramanadhan et al., 2012). This study was developed to determine the impact of connecting different sectors involved in addressing cancer disparities and used SNA to address the effects of CBPR on building coalitions (Ramanadhan et al., 2012). The CBPR approach

\(^1\) An infrastructure-building initiative that united community coalitions, researchers, policymakers, and other important stakeholders to address cancer disparities.
builds on strengths and resources held by the community, combines knowledge and action to benefit all partners, embeds an iterative process to promote co-learning and empowerment, and facilitates collaborative, equitable involvement of all partners (Ramanadhan et al., 2012). Social network analysis and evaluation was conducted after the CBPR principles were implemented and provided important information on the network structure, intersectoral connections, and key network outcomes (Ramanadhan et al., 2012). The major goals that emerged from this analysis includes partnership development and resource exchange, leveraging existing social structures, and reducing health disparities through long-term relationship development (Ramanadhan et al., 2012). Ultimately, this study supports the effects of Community-based Participatory Research principles in forming coalitions.

While different fields and disciplines have different outputs and outcomes, when working in partnerships, all function the same with similar inter-organizational structure. Whether a tangible commodity or a community-health program, the strength and weaknesses of the partnerships which are working to develop and implement the deliverable operate through social networks. The relationships developed within these collaborations share the characteristics associated with project sustainability: social interactions and connectivity, trust and perceived value, resource contribution, and shared vision.

**Theoretical Framework**

**The Ecological Approach: Working Across Systems**

Bronfenbrenner (1979) shared the perspective that the “ecological environment is conceived as a set of nested structures, each inside the next, like a set of Russian dolls” and applied this approach in early research to child development. As defined using human
development as the foci, “human development is the process through which the growing person acquires more…differentiated and valid conception of the ecological environment, and becomes…able to engage in activities that reveal the properties of that environment at levels similar or greater complexity” (Bronfenbrenner, 1979; Leonard, 2011). These complexities are revealed as the individual moves within the environment, from observing cultural existence and competition through the socio-interpersonal level to relationships with the community-at-large, leading to the development of layers of relationships across systems (Bronfenbrenner, 1979; Leonard 2011). Bronfenbrenner’s theory involves an inner circle that he refers to as the microsystem, in which direct, face-to-face contact occurs with significant people such as friends, family and acquaintances, essentially where daily relationships are spent. Second, the mesosystem, are the lateral connections between environmental settings in which the individual actively participates. These include community, work, and social life and other settings where different contexts are placed based on environment. Third is the exosystem, rather the larger community setting, are spaces the individual is not necessarily active but outputs of these settings affect the individual. The macrosystem, the fourth main level, relies on the consistencies from the lower-level systems that exist or could exist at the level of the ideologies as a whole, rather the cultural, economic, and political conditions of the society. Moreover, the chronosystem describes the pervasive shifts and transitions the entire system experiences over time. This approach has been used across disciplines within many different contexts and settings, serving as a basis for socioecological theory and practice in public health (Bronfenbrenner, 1979; Nurse & Edmondson-Jones, 2007).

Minkler (2015) writes that the ecological system perspective is useful in the study of communities, focusing on characteristics of the population, physical environment, social
organization of the community and the technical “forces” that affect it. In development of the approach, inter-related levels are described beginning with the child, or individual, and ending with the chronosystem, or in community health, policy development (Bronfenbrenner, 1979; Wolff, 2010; Schneider, 2014; Minkler, 2015). The purpose of these perspectives is to understand influence on development across systems: the detection of wide-ranging development influences becomes possible only if they are permitted to be observed (Bronfenbrenner, 1979). From early research on the need to observe individuals across settings, contemporary ecological frameworks were developed to provide support for community health practitioners in planning, implementing and evaluating services at the community level. Ideally, this approach results in policy development to enact population level change (Figure 1).

![Socioecological Model of Health Behavior](image)

*Figure 1: The Socioecological Model of Health Behavior (Highland, 2011)*

Challenges exist in confronting wicked problems in community health (Weber & Khademian, 2008; Valente & Pitts, 2017). These challenges include and are not limited to measuring network influences and the role of networks in evaluating community health interventions, not to mention planning, implementation and sustainability within these networks
While the ecological model provides a framework for identifying mechanisms of influence as sources to change behavior and moving from assets to action, it also provides information on how knowledge, attitudes, belief and behavior move through systems (Wolff, 2010; Schneider, 2014; Valente & Pitts, 2017). Application of the ecological model in the context of social network assessments leads to the development of different strategies collaborative networks can employ to address community health issues (Schneider, 2014; Trickett, 2019).

The concept of ecological thinking is cross-cutting commonality in many community health areas (Wolff, 2010; Trickett, 2019). The historical context of ecological theory is well defined in other disciplines and the movement towards ecological frameworks from a community psychology approach relative to community interventions is not new, however treating the community collaborative as an intervention is (Trickett, 2019). Understanding the role the community collaborative has as an intervention, as opposed to the development of as an outcome, involves the establishment of inclusive relational processes and structural development across the different levels of influence (Wolff, 2010; Trickett, 2019). Wicked problems as complex, intractable, unpredictable and open-ended social problems lends to the degree relationships should be valued within community health networks (Wolff, 2010; Trickett, 2019). The ecological perspective within community psychology, which overlaps community health frameworks, emerged congruently as “wicked problems” defined social issues of the time (Trickett, 2019).

Bess, Speer and Perkins (2012) applied the ecological perspective to youth violence prevention and coalition development. With this, a focus on successful coalition attributes in line with contextual influences, which in other research has included geographic characteristics of the
community, economic and political conditions, funding availability and community readiness, however did not include organizational “actors” relative to their embeddedness in the process (Bess, Speer, & Perkins, 2012). In this study, methodology examined the ecology of local organizations in which the coalitions were embedded and how the broader network, or levels, of relations influenced coalition formation and participation. Network analysis was used to measure interactions both between the individuals and organizations across the broader network: more clearly, to gain understanding of coalition formation and participation that takes into account the more comprehensive social ecology of community organizational actors and how they influence outcomes (Bess, Speer, & Perkins, 2012).

Wolff (2010) describes using the ecological approach in The Institute for Community Peace and The Santa Barbara Pro-Youth Coalition setting focusing on nationwide violence prevention. Within this case study, focus moved from addressing issues related to violent individuals to the more broadened approach to interventions based on the settings in which violence occurs (Wolff, 2010). From this, sophisticated solutions were formed from the community perspective and developed a new dialogue to address these social issues: moving from violence prevention to prioritizing the peaceful outcomes sought by members of the coalition (Wolff, 2010). This movement from violence prevention to a community peace-model resulted in a cohesive – collaborative – structure that includes creating safety, understanding sources of violence, building community, promoting peace and building democracy, thus addressing complex social issues through equity and justice across community systems (Wolff, 2010). Within each level, from the violent individual to community peace and democracy, attributes play role relative to relationships between members, trust within the coalition and community, and levels of collaboration and communication (Wolff, 2010).
Along with the role, relationship attributes play in predicting coalition or collaborative outcomes, so do principles and influences at play across all levels (Bess, Speer, & Perkins, 2012; Trickett, 2019). Kelly (1968) defines these principles in context of social environments and the role they play in adaptive (or maladaptive) behavior. These principles include 1) interdependence as a fundamental premise to the reciprocity between structures and functions of social systems and interconnectedness among their parts, 2) cycling of resources, which in this case involves the strengths and available resources in the community for mobilization when addressing specific health issues, 3) adaptation which allows for malleability as these “wicked problems” cause unpredictable shifts in needs and 4) succession as historical moments are taken into context relative to interventions’ roles in long-term community goals (Kelly, 1968; Trickett, 2019). Finally, the partnership or collaborative serves as a community resource and tool to advance community goals, and with that comes a need for understanding community needs, resource identification, building relationships and evaluating indicants of community resource development (Trickett, 2019). Ultimately, partnerships serving as informal resources outside of their more formal organizational role.

Social, Human and Resources Capital: Defining Collaborative Resources

The Committee on Assuring the Health of the Public in the 21st Century reviewed achievements in community health but also examined vulnerabilities that still exist (IOM, 2003). The report describes support for the need for multisectoral engagement in partnerships with government and roles other parties can play in supporting community health (IOM, 2003). The emphasis is placed on an intersectoral health systems that include governmental public health agencies, the health care delivery system, health sciences academia, and sectors that are heavily
engaged in health activities (schools, organizations, and religious congregations) (IOM, 2003). Areas of action and change were identified with an underlying thread connecting the five areas within the ecological context: collaboration (IOM, 2003).

“Building a new generation of intersectoral partnerships that also draw on perspectives and resources of diverse communities and actively engage them in health activities” provides a goal for community health systems (IOM, 2003). In order to build on existing resources and encourage resource sharing, an understanding of social capital is needed. Social capital has been conceptualized as social resources embedded in a social structure which are mobilized into positive actions and includes the concepts of cooperation and collective action (Luke and Harris, 2007). Beyond the broader concept at the social structure level, social capital includes not only social relationships, but norms and values associated with them (Tsai & Ghoshal, 1998). These resources are useful for the development of individuals in community social organizations (Tsai & Ghoshal, 1998). As recommended by the Institute of Medicine, local community health systems should provide support to community-led efforts and inventory resources, assess needs, and formulate collaborative partnerships to respond to the health needs of the community (2003). In order to understand the collective capacity of the partnership, a measurement of collective capacity and value creation is needed (Tsai & Ghoshal, 1998).

**Collaborative capacity** also known as true collaboration, refers to the conditions needed for coalitions to develop sustainable community initiatives and services through collaborations (Foster-Fishman et al., 2001). Collaborative partnerships are dynamic and change with shifts in membership and coalition development, are adjustable and transferable, and allow for dissemination of collaborative efforts across sectors, to other community-based entities (Foster-Fishman, 2001). In order to provide information that supports shifts, adjustability, and
transferability, data are needed to support the need for improvement within weak areas of the coalition (Varda, 2011).

Community networks often struggle to survive and successfully grow into an effective approach to addressing the broad needs of a community, of which are often offered by community-based services (Provan, Veazie, Staten, & Teufel-Shone, 2005). To increase and improve efficiency within community health networks, methods to evaluate collaborative process are needed to maximize the investment of time and resources by participating organizations (Varda, 2011). Currently, there is little information and resources available to health departments and their community partners to systematically inform management decisions and provide support for strategic planning, program implementation, and evaluation within the community (Varda, 2011).

*Value creation* emerges when new sources of value are generated through novel deployments of resources as new ways of exchanging and combining resources are discovered (Tsai & Ghoshal, 1998) (*Figure 2*). Three dimensions of social capital may facilitate value creation within community health networks through structural, relational, and cognitive theories which will support exchange of resources (Tsai & Ghoshal, 1998). Collectively held values in a social network can benefit the collaborative as a whole through social ties, trusting relations, and value systems that facilitate actions of individuals located within that context (Tsai & Ghoshal, 1998).
Professional networks within community health are becoming increasingly significant in the delivery of community health needs (Foster-Fisman et al., 2001). In order to maximize the efforts of a collaboration, a deeper look into how community networks are organized and how they are managed is needed to understand why developing strong coalitions is integral to health collaboratives and community health outcomes (Agranoff, 2006; Varda, 2011). Evaluating elements of value and trust will provide information on the potential outputs, value creation, and collaborative capacity of health coalitions.

**Building Healthy Communities**

Community Health Assessments and Improvement Planning

The Community Health Assessment (CHA) is a part of a cyclical and iterative process preceding the development of a Community Health Improvement Plan (CHIP) using data to drive the decision-making process (Harris, 2010; Wetta et al., 2015). For some organizations, it is a timely requirement (e.g. local health departments every 5 years) to remain accredited or to qualify for funding. Many communities create partnerships across different types of...
organizations and systems to plan, coordinate and implement data collection and analysis, using various established frameworks as the basis for the process (Figure 3).

![Figure 3: Community Health Assessment Framework (WCHD Report, 2017)](image)

The Public Health Accreditation Board (PHAB) lists Assess as the first domain which directs local health departments to “conduct and disseminate assessments focused on population health status and community health issues facing the community” (www.phabard.org, 2013). The standards listed within this domain include leading a collaborative process resulting in a community health assessment while using the data to develop recommendations for community health improvement planning. The purpose of the CHA is to provide usable data specific to communities to aid in developing programs, identify funding opportunities for support, and strive to achieve Healthy People 2020 standards.

All communities aim to develop a Community Health Improvement Plan (CHIP) following executing a Community Health Assessment. Some organizations are bound by accreditation requirements which dictate the data collection (CHA) and improvement plan
(CHIP) process. Many community organizations create partnerships to complete these activities as a larger collaborative to reduce repetitive, unnecessary procedures. For example, a local health department, as part of PHAB accreditation, is required to report a CHA/CHIP every five years, whereas a non-profit hospital or clinic accepting different federal funds are required to complete the process every three years (Public Health Accreditation Board, 2011; Association of State and Territorial Health Officials, 2017). Both are required to gain community input as an “appraisal” of community health to develop implementation strategies to address these needs.

The development of the CHIP provides a strategy across sectors to address community health by assessing resources and needs, focusing on “what’s important”, choosing effective policies and programs/interventions, acting on “what’s important” and evaluating actions (Figure 4).

As discussed, collaborations are an essential resource and serve as the baseline for the CHA/CHIP process. Over the past decade, investigation into how collaboration functions as a resource has been conducted to understand how attributes, relationships and connections among organization members influence transference of knowledge and behavior across many social systems (Roussos & Fawcett, 2000). Collaborative partnerships as an ecological approach serve to improve population-level health by creating effective, sustainable individual, systematic, environmental and policy level changes in the different community sectors (Roussos & Fawcett, 2000). The partnership as an intervention across systems takes on many forms and
include community coalitions, alliances among service agencies, consortia of health care providers, and grassroots, broader advocacy efforts and groups (Roussos and Fawcett, 2000). Relative to community health improvement planning, some collaborative partnerships are made up of members from all the aforementioned groups, particularly in smaller communities with limited access to resources.

Wetta, Dong, LaClair, Pezzino and Orr (2015) assessed communities in Kansas engaging in CHA/CHIP activities and factors affecting progress using a mixed methods design (focus groups and a survey). Results included specific themes that emerged including motivators to the process, overall barriers, potentiatators, barriers to a regional approach, and essential resources. Within these, variables identified align with collaborative structures to achieve outcomes to the
CHA/CHIP process (e.g. community data and an agreed upon strategic improvement plan). Moreover, these factors include readiness to complete activities, specific missing partners (elected officials, residents), shared mission/definition, coalitions, and competing priorities. Additionally, essential resource needs reported include additional funding, staff and time, and external technical assistance for training and guidance (Wetta et al., 2015). An important finding was the importance of partnership as an important factor to the process, however its “true contribution is poorly understood”.

Expanding on previous work to evaluate CHA/CHIP readiness involves use of social network analysis tools and methods specific to community health practice will glean insight to characteristics required for progress in the process (Wetta et al., 2015; McCullough, Eisen-Cohen, & Salas, 2016). Studying organization relationships that aim to 1) identify essential network partners, along with those that are missing, 2) gauging current levels of partner involvement, 3) understanding network resources available and those that are needed will provide information on characteristics of community health networks collaborating to develop a community health improvement plan through data-driven methods (McCullough, Eisen-Cohen, & Salas, 2016).

The PARTNER Platform

The PARTNER Platform (Program to Analyze, Record, and Track Networks to Enhance Relationships) survey is a social network analysis tool designed to measure activity among organizations within community health partnerships in order to determine how members are connected (Varda, 2011). Early in development, the PARTNER team gained funding support from the Robert Wood Johnson Foundation and tested the software across different coalitions to
validate measures of value and trust, determine best practices in delivery and gather evidence to support use of the tool in community health practice (Varda, 2011; Retrum, Chapman & Varda, 2013; Litt, et al., 2015). The core metrics employed by PARNTER were developed through an iterative research project using qualitative measures to determine connectivity dimensions that “matter most” to community health practitioners (Visual Network Labs, 2018). The software provides the tool as an online, web-based survey for any group of organizations acting in partnerships (defined as a “network”) to measure and monitor collaborative activity over time (Visual Network Labs, 2018). Using social network analysis techniques, the tool measures aspects of connectivity to assess interactions, identify areas resources can be used to strengthen activities and process outputs to improve collaborative outcomes and how value or trust levels among members activity level (Visual Network Labs, 2018). The tool is designed to answer questions about networks including areas trust is strong, such as support of the mission or goals, and areas it can be improved, what areas of value are relevant to activities across organizations, and what type of resources could potentially be contributed to the network (Visual Network Labs, 2018).

The PARTNER Platform tool provides three types of built-in reporting and analysis: (1) figures that “map” the connectedness between members through different attributes, such as trust, value and resource contribution, (2) network and individual scores that describe the quality of relationships, trust between partners in the organization, and the value that each partner brings and (3) outcome measures to indicate the processes achieved as a result of collaborating across sectors through visual aids (Example, Figure 5) (Varda, 2011). The outcomes results, including reported success, represent collaborative process and policy outcomes that are a product of the partnerships and not measures of health of population within the communities (Retrum,
Chapman & Varda, 2013). With this survey tool, membership type, network interaction and patterns identified by subgroups, and the roles various organizations/members are also provided (Varda, 2011). In addition, data can be exported for use in other analyses using dichotomous and Likert scale outputs, which were the focus of this study. The outputs provided important information on resource contributions, process outcomes, trust items, value items and level of activity relative to increasing collaboration (e.g. cooperation, coordination and integration) (Varda, 2011). Currently, “successful” community health partnerships are determined by the number of participants in a collaborative, and not through the types of relationships among members or the level of activity across organizations (Varda, Chandra, Stern, & Lurie., 2008).

PARTNER Tool Maps and Metrics: How it works

*Network Maps*

Each organization is represented by a “node” and the lines between each node indicate the presence of a “relationship”. Node sizes and line thickness can change based on how the corresponding survey questions are answered by each organization and represent the strength of the relationship or frequency of interactions (*Figure 5*).

*Figure 5*: Example Network Map (Visual Network Labs, 2018).
Network Trust and Value Metrics: Attributes

Network scores can be divided into two types: Whole Network Scores and Individual Scores. The questions tied to these scores measure two dimensions: trust and value. Respondents rate each dimension on a scale from 1 to 4 (1=not at all, 2=a small amount, 3=a fair amount and 4=a great deal). Whole Network scores represent the network at the aggregate level. All individual responses comprise these scores and are presented as a percentile to 100%. Individual scores provide analyses about the single organization or individual.

Organizations are also measured based on dyadic ties, which are the links between two organizations. Each organization is asked to answer questions about partner organizations and these data are represented as “relational” data based on elements contributing to value and trust.

Value Scores

Because each organization is represented both visually and as a score, it is important to understand the values that are provided as they lend to the capacity of the network. They are defined below:

- **Power/Influence**: This is a score that demonstrates the members’ combined view of this organization's value in terms of power and influence. It is defined as the organization/individual holds a prominent position in the community by being powerful, having influence, success as a change agent and showing leadership.

- **Level of Involvement**: This is a score that demonstrates the members’ combined view of this organization's value in terms of level of involvement in the collaborative. Level of involvement is defined as the organization/individual is strongly committed and active in the collaborative and gets things done.
• **Resources:** This is a score that demonstrates the members’ combined view of this organizations value in terms of the amount of resources it brings to the collaborative. Resources are defined as the organization/individual brings resources to the collaborative like funding, information, and other resources.

**Trust Scores**

• **Reliability:** This is a score that demonstrates the members’ combined view of this organizations value in terms of power and influence. It is defined as the organization/individual holds a prominent position in the community by being powerful, having influence, success as a change agent and showing leadership.

• **Support of Mission/Goals:** This is a score that demonstrates the members’ combined view of this organizations value in terms of level of involvement in the collaborative. Level of involvement is defined as the organization/individual is strongly committed and active in the collaborative and gets things done.

• **Openness to Discussion:** This is a score that demonstrates the members’ combined view of this organizations value in terms of the amount of resources it brings to the collaborative. Resources are defined as the organization/individual brings resources to the collaborative like funding, information, and other resources.

*Network Intensity Metrics: Activity Level*

Relationship Intensity measures the dominant way one organization interacts with another and can be used to determine the strength of a tie, or “line” between partners (Visual Network Labs, 2018). This measure is scale and response options are outlined below (*Figure 6*):
• **None:** This is available as an option for those that may have minimal involvement but awareness of other organizations.

• **Cooperative Activities:** involves exchanging information, attending meetings together, and offering resources to partners.

• **Coordinated Activities:** include cooperative activities in addition to intentional efforts to enhance each other’s capacity for the mutual benefit of programs.

• **Integrated Activities:** in addition to cooperative and coordinated activities, this is the act of using commonalities to create a unified center of knowledge and programming that supports work in related content areas.

![Levels of Activity in Networks](image)

*Figure 6: Levels of Activity in Networks (Wolff, 2010; National Business Community Coalition on Health, 2013)*

Understanding the dimensions that are incorporated in the PARTNER Tool is useful when developing the framework to assess community health partnerships. Having the foundation serves as the baseline when consulting with organizations that are using the tool to assess their partnerships. Terms used throughout the study can be found in Appendix 1.
**Conceptual Framework**

According to Varda and Retrum (2012), network effectiveness has not been formulated with concrete measures of success. However, variables that have been defined as strong measures include membership by organization type (diversity), resources contributions, partnership outcomes, perceived success, value, trust and level of collaboration activity which serves as the basis for this research (Varda & Retrum, 2012). Elements of value and trust among members and the relationship to levels of collaboration activity were investigated. Resource contributions and partnership outcomes were also evaluated relative to perceived success. From this, a conceptual model was developed to drive key research areas related to measuring activity levels and perceived success as indicators to improved processes within partnerships focusing on community health.

**Study Aims**

The purpose of this study was to use descriptive quantitative and social network analysis methods to describe characteristics of two community health partnerships in rural Kansas preparing for community health improvement plan development. Characteristics of network members were evaluated based on organizational perceptions of success and attributes contributing to levels of collaboration activity. Based on these variables, the following research questions were answered:

1. What is the relationship between the number of organizations representing specific community health sectors and perceptions of success?
2. How does perceived success vary among members reporting resources contributed to the partnerships and partnership outcomes?
(3) How do attributes of value and trust contribute to reaching collaborative goals through levels of collaboration activity?
CHAPTER III

METHODS

Social Network Analysis is a systems science approach that allows for investigation of interrelationships of organizations and between organizations across the broader network (Litt et al. 2015). It is used to examine to what degree network actors connect to each other at the organizational, dyadic, and whole network level (Litt et al., 2015). The organizational level examines characteristics of organizations within the network based on member characteristics (organization type, resource contribution) and attributes (e.g. power/influence, shared goals). The dyadic level looks at relationships between two organizations within the network and the whole network comprises all of the organizations and relationships among them (Litt et al., 2015). For this study, organizational and dyadic network levels were analyzed and results used to describe network effectiveness (e.g. success and level of collaboration activity) using explanatory factors (Figure 7) (Varda & Retrum, 2012).

The study sample included representatives from organizations within two community health partnerships in Kansas preparing for Community Health Improvement Plan (CHIP) activities. Primary data were collected using an established social network analysis tool through a web-based survey assessing the characteristics of the organizations through membership diversity, resource contribution, trust, value, outcomes, network effectiveness operationalized as success and level of collaboration activity (Varda & Retrum, 2012; Retrum, Chapman, & Varda, 2013; Varda & Retrum, 2015; Litt et al., 2015; Hogg & Varda, 2016).
Study Sample Overview

Network Description

*Thomas County Community Coalition*

The Thomas County Coalition (TCC) was established in 1996 by community members with an initial goal to reduce tobacco and alcohol use by youth in the county. Over the course of nine years, various task force teams were formed focusing on youth development and involvement with primary coalition efforts aimed at addressing substance abuse. In 2005, activities shifted to include environmental impacts using multi-component strategies which included actively recruiting specific sector representatives. Over time, they began to promote...
physical activity with an adapted mission to “build and strengthen partnerships to prevent and reduce youth substance abuse and to promote healthy lifestyles”. In 2010, areas of improvement within the community were identified using the Center for Disease Control and Prevention’s (CDC) C.H.A.N.G.E Tool. Lack of policies pertaining to development of safe, accessible areas for physical activity and the need for funding sources for improvement were noted. Since the coalition’s inception in 1996, the TCC has moved towards improving the infrastructure of the coalition to include “dynamic operating procedures, strong leaders, committed members, communication channels, and financial resources”. Members of the coalition were evaluated in a previous study and coalition leaders aimed to use these data to determine their readiness to begin the CHIP process following completion of the county CHA.

**Reno County: Health Assessment Team**

The Healthy Eating Active Living Coalition (HEAL) was established in 2012 from two existing local health coalitions: one managed by the Hutchinson Community Foundation supported by a Kansas Health Foundation grant and the other supported by the Kansas Department of Health and Environment Chronic Disease Risk Reduction Grant. By forming the umbrella coalition, HEAL was able to expand membership and manage the expansion of five sectors centered on policy, system and environmental change strategies. This initial coalition informed on the development of the 2013 CHIP and continued to focus on strategies related to healthy lifestyles. They have gained funding support from various sources over time including Blue Cross Blue Shield, Pathways to Healthy, and grants from KDHE. The Health Assessment Team, as part of the Healthcare Sector under HEAL, was formed to coordinate work related to the CHA and are now working to develop the CHIP. As part of this study, they aimed to evaluate
the coalition structure and their readiness to begin the CHIP process following completion of the county CHA.

**Organizational Levels**

Explanatory variables used to describe membership (e.g. local health departments, community-based organizations, health systems, non-profits) were collected and evaluated across both community health partnership networks. Organization type was operationalized using the following eight descriptors and were coded as Organizational Type (CDC, 2018):

1. Public health agencies at state and local level
2. Healthcare provider/Healthcare support
3. Public safety agency
4. Human service and charity organization
5. Education and youth development organization
6. Recreation and arts-related organization
7. Economic and philanthropic organization
8. Environmental agencies and organization

Additional explanatory variables include resource contributions, partnership outcomes, perceived success, elements of value and trust, and level of collaboration activities of each network at the organizational level (Varda & Retrum, 2012; Litt, et al., 2015).

**Dyadic Level Description**

Participants answered questions about relationships they have with other participants from each organization represented in the surveys. Prior to answering the relational questions, each participant chooses from a populated list of network members also responding to the survey and selects those they have experience with relative to community health partnerships. Each
subsequent question (questions 13 -18) is answered based on experiences and perceptions regarding power/influence, level of involvement, resources contribution, reliability, support of the goal/mission, and openness to discussion. For this analysis, maintaining all respondents is essential to the results in that removing cases that did not respond to the survey could remove data that was otherwise answered by others. For example, Organization A may have answered questions about Organization B, even though Organization B did not complete the survey.

Research Design

A cross-sectional design was used to describe community health partnerships in Kansas using an online survey. The survey questions were from the Program to Analyze, Record and Track Networks to Enhance Relationships (PARTNER) Tool developed by Varda et al. (2010) at the University of Colorado-Denver School of Public Affairs (Appendix 2).

Participants

The sample consists of community partners from two networks (N=84) whose membership included organizations participating in community health partnerships and were typed based on the previous descriptors. All members in both networks [Thomas County Coalition (n=26) and the Health Assessment Team (n=58)] received personalized links to the survey through the PARTNER management portal.

Instrument

The PARNTER Tool is a 19-item survey developed by Varda et al. (2010) at the University of Colorado-Denver School of Public Affairs. Using a social network analysis framework, the tool describes relationships based on perceptions, interrelationships and attribute dimensions that include (Varda & Retrum, 2012; McCullough, Eisen-Cohen, & Salas, 2016):
1) Level of collaboration activity
2) level of involvement
3) power and influence
4) resource contribution
5) reliability
6) shared mission or vision
7) openness to discussion
8) perceived success

The web-based survey is housed at the University of Colorado-Denver through the password protected PARTNER Platform website.

Data Collection

The Partner Tool online survey is part of the PARTNER Platform management database housed at the University of Colorado-Denver under the management of Dr. Danielle Varda (PARTNER: http://www.partnertool.net/), therefore, the protocol established by the University of Colorado-Denver, PARTNER Platform team, were followed. To identify potential respondents, a network point-of-contact to facilitate the collection of contact information from all respondents was identified and assisted in recording name, organization affiliation, email address and organization type. After collecting all contact information from the members of each group, data were entered into an Excel spreadsheet and uploaded into the PARTNER Platform management portal, as directed by the Technical Manual provided by the PARTNER developers (2018). From the portal, survey emails with username and password were generated and automatically sent to each respondent (Appendix 3). Responses were monitored and
reminder emails were sent to those not responding (Appendix 3). The Principle Investigator managed all data and access is password protected under the privacy and terms of use policy of the PARTNER Platform.

Respondents were given approximately 2 weeks to complete the survey. Reminder emails were sent one week after the initial email until respondents either withdrew from the study or completed the survey. Respondents with questions were contacted via phone with one respondent preferring a PDF/paper method, which was emailed to the principle investigator and manually entered into the PARTNER Platform.

Measures

Each network was assessed at the organizational level including analysis using dyadic ties. Data were evaluated based on variables identified as measuring effectiveness or success as outlined by the conceptual model and analytical framework. Survey questions are presented in Table 1.

Table 1. PARTNER Survey Questions Used to Measure Variables

| Diversity of Organizations: Closed list based on respondents |
| Perceptions of Success: How successful have your partnerships been at coordinating efforts? (not sure, not successful, somewhat successful, successful, very successful, completely successful) |
| Outcomes: Closed list of partnership outcomes |
| Resource Contribution: Closed list of resources that can be contributed to the partnerships |
| Relational Questions: Select partners with whom you have a relationship and answer the following questions: |
| 1. Level of quality of activity (none, cooperative, coordinated, integrated) |
| 2. Extent of value through power/influence, level of involvement, (none, a small amount, a fair amount, or a great deal) |
| 3. Extent of trust through openness to discuss (none, a small amount, a fair amount, or a great deal) |

Retrum, Chapman & Varda (2013)
Variables used in this study were pulled from two data types: non-relational and relational. Non-relational questions include resource contribution, partner outcomes and perceptions of success. Each respondent answers questions regarding their contributions, outcomes they believe have emerged from the partnerships and level of success. Relational data involve the dyadic ties between two respondents, which is based on one respondent answering questions about another respondent. These data involve the questions lending to trust and value and the questions asking about level of collaboration activity.

Independent variables outlined for this study include organizational level characteristics such as organization type, resource contribution, reported outcomes and relational variables involving trust and value (Varda & Retrum, 2012). Membership was operationalized as organization type. The categories describing diversity were defined by information provided by the network point-of-contact, web search or organizational description and include healthcare provider, public safety agency, local government (Varda & Retrum, 2012). Resource contributions were generated from a predefined list with the option to select all that apply. Options include funding, data resources, specific health expertise, and community connections. Reported outcomes are also closed-formed responses with the option to choose all that apply to outcomes related to community health partnerships. These include coordinated communication, improved health outcomes, and new sources of data. Trust and value are measured using elements that factor into the variables. Value is measured through 1) power and influence, 2) level of involvement and 3) resource contribution and trust is measured using 4) reliability (e.g. follow through on commitments), 5) support of mission/goal, and 6) openness to discussion. Each of these are Likert-scale at 0=Not at all to 4=A great deal (Varda & Retrum, 2012).
Dependent variables used in this study include perceptions of success and level of collaboration activity. Perceptions of success is based on levels of accomplished work with Likert-scale options of not successful, somewhat successful, successful, very successful and not sure. Level of collaboration activity was assessed on four levels: none, cooperative, coordinated and integrated, with responses increasing in level of collaboration activity.

Analysis

Data were collected and exported through the PARTNER Platform management portal into an Excel file. Raw data were exported and used for this analysis and the built-in reporting features through the PARTNER Platform were not used (e.g. network maps and prepopulated graphs). Data were loaded into SPSS software based on relational (trust, value and collaboration activity level) and non-relational (resource contribution, outcomes and success) variables. Minimal recoding was needed. Organization type was assigned to each respondent. For the dependent variable success, “not sure” responses were combined with “not successful” responses.

Cases with missing data were not removed as doing so would impact the dyadic tie responses. Because all organizations at some level were involved in survey responses, e.g. relational data involves respondents answering questions about each other regardless of all organizations responding, all respondents were included in the distribution of organization type.

Descriptive statistics exploring characteristics, independent variables, perceptions of success and level of collaboration activity were performed. Research questions 1 and 2 were addressed through bivariate correlation to examine the association between (1) a membership organization type and perceptions of success and (2) resource contribution and partnership outcomes relative
to perceptions of success. In order to understand specific resource contributions and partnership outcomes that are associated with perceptions of success, items were analyzed individually.

The relationship between elements of value, trust and level of collaboration activity (research question 3) were investigated using linear regression. All element items that contribute to trust and value were analyzed with level of collaboration activity.
CHAPTER IV
RESULTS

Sample Demographics

Data were collected from two community health networks comprised of organizations representing eight community health sectors: 1) public health agencies at state and local levels, 2) healthcare providers and health services, 3) public safety agencies, 4) human service and charity organizations, 5) education and youth development organizations, 6) recreation and arts-related organizations, 7) economic and philanthropic organizations and 8) environmental agencies and organizations (CDC, 2015). A total of eighty-four organizations were included in the data set with 58 organizations representing the Reno County network and 26 organizations representing the Thomas County network. The data were collected between October 2012 and February 2020. The average response rate was 66%, with Reno County responding at 61% and Thomas County at 71%. For data presented for the dependent variables, analyses were run using statistics to account for missing data based on 1) those that answered for perceptions of success (n=58) and 2) the number of dyadic ties relative to those who answered for activity level (n=532).

Descriptive Results

Data were analyzed at the non-relational level described as organizations answering questions about the resources they can contribute to the partnerships, outcomes that have been results of the partnerships and perceptions of success. They were also analyzed at the relational level, defined as dyadic ties, in which organizations answered questions about each other regarding attributes of value and trust and level of collaboration operationalized as activities.
Non-relational Results: Organizational Types

Organizations were categorized and coded based on eight sectors in community health in line with the 10 Essential Public Health Services. These sectors are described as important players in addressing community health issues and improving overall community health. Table 2 presents the distribution of each sector across the organizations. Human service and charity organizations (26%) has the highest number of organizations representing that sector and include partners like pregnancy support services, meal and food services, and drug rehabilitation services. Second involves Education and youth development organizations (21%) which includes early head start/head start, universities, technical vocational programs and community-based youth services. Environmental agencies and organizations is represented only by 2%.

Table 2.
Community Health Sector Categories

<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Public health agencies at state and local level</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>2) Healthcare providers and health services</td>
<td>15</td>
<td>17.9</td>
</tr>
<tr>
<td>3) Public safety agencies</td>
<td>11</td>
<td>13.1</td>
</tr>
<tr>
<td>4) Human service and charity organizations</td>
<td>22</td>
<td>26.2</td>
</tr>
<tr>
<td>5) Education and youth development organizations</td>
<td>19</td>
<td>21.1</td>
</tr>
<tr>
<td>6) Recreation and arts-related organizations</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>7) Economic and philanthropic organizations</td>
<td>7</td>
<td>8.3</td>
</tr>
<tr>
<td>8) Environmental agencies and organizations</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>84</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Non-relational Results: Partnership Outcomes and Resource Contributions

Respondent organizations were asked to identify the number of outcomes achieved by the community health partnerships such as health education services, reduction of health disparities and public awareness. Respondents could choose all possible outcomes that have been achieved
by the partnerships and Table 3 presents the percent of organizations that chose all possible outcomes relative to processes and outputs from the collaborative efforts.

Table 3. Partnership Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community support</td>
<td>51</td>
<td>60.7</td>
</tr>
<tr>
<td>Public awareness</td>
<td>48</td>
<td>57.1</td>
</tr>
<tr>
<td>Health education services</td>
<td>44</td>
<td>52.4</td>
</tr>
<tr>
<td>Improved health outcomes</td>
<td>43</td>
<td>51.2</td>
</tr>
<tr>
<td>Improved communication</td>
<td>40</td>
<td>47.6</td>
</tr>
<tr>
<td>Improved resource sharing</td>
<td>38</td>
<td>45.2</td>
</tr>
<tr>
<td>Improved services</td>
<td>38</td>
<td>45.2</td>
</tr>
<tr>
<td>Reduced health disparities</td>
<td>37</td>
<td>44</td>
</tr>
<tr>
<td>Increased knowledge sharing</td>
<td>36</td>
<td>42.9</td>
</tr>
<tr>
<td>New sources of data</td>
<td>26</td>
<td>31</td>
</tr>
<tr>
<td>Policy development</td>
<td>25</td>
<td>29.8</td>
</tr>
</tbody>
</table>

Respondents were also asked to indicate all resources they contribute to the partnerships. Table 4 presents the percentages for all resources contributed by organizations by resource type with respondents choosing all that could apply.
Table 4.
Resource Contributions to Community Partnerships

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and feedback</td>
<td>49</td>
<td>58.3</td>
</tr>
<tr>
<td>Advocacy</td>
<td>40</td>
<td>47.6</td>
</tr>
<tr>
<td>Community connections</td>
<td>39</td>
<td>46.4</td>
</tr>
<tr>
<td>Facilitation/leadership</td>
<td>32</td>
<td>38.1</td>
</tr>
<tr>
<td>Expertise other than health</td>
<td>28</td>
<td>33.3</td>
</tr>
<tr>
<td>In kind resources</td>
<td>27</td>
<td>32.1</td>
</tr>
<tr>
<td>Volunteers</td>
<td>24</td>
<td>28.6</td>
</tr>
<tr>
<td>Data resources</td>
<td>24</td>
<td>28.6</td>
</tr>
<tr>
<td>Specific health expertise</td>
<td>22</td>
<td>26.2</td>
</tr>
<tr>
<td>Paid staff</td>
<td>17</td>
<td>20.2</td>
</tr>
<tr>
<td>Funding</td>
<td>11</td>
<td>13.1</td>
</tr>
<tr>
<td>IT/Web resources</td>
<td>10</td>
<td>11.9</td>
</tr>
<tr>
<td>Fiscal management</td>
<td>7</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Relational Results: Contributions to Level of Activity

Attributes were evaluated on a 4 point scale ranging from 1=none, 2=small amount, 3=a fair amount and 4=a great deal. The attributes 1) power/influence, 2) level of involvement, 3) resource contributions, were the elements of value. The attributes of 4) reliability, 5) shared goals, and 6) openness to discussion, were the elements of trust. Descriptive statistics are included in Table 5.

Table 5.
Contributions to Value and Trust

<table>
<thead>
<tr>
<th>Attribute</th>
<th>number of dyadic ties</th>
<th>M(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power/Influence</td>
<td>689</td>
<td>3.1(.88)</td>
</tr>
<tr>
<td>Level of involvement</td>
<td>657</td>
<td>3.0(.92)</td>
</tr>
<tr>
<td>Resource contribution</td>
<td>639</td>
<td>2.83(.95)</td>
</tr>
<tr>
<td>Trust:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td>608</td>
<td>3.4(.72)</td>
</tr>
<tr>
<td>Shared goals</td>
<td>614</td>
<td>3.1(.92)</td>
</tr>
<tr>
<td>Openness to discussion</td>
<td>607</td>
<td>3.3(.82)</td>
</tr>
</tbody>
</table>
Research Questions: Success and Level of Collaborative Activities

Research Question 1: What is the relationship between diversity of members and perceptions of success?

The results indicate that there is no significant relationship between the organization types (as measured by eight sector definitions) and perceptions of success using Pearson product-moment correlation coefficient. The association between the two variables is not strong nor significant, \( r = 0.042, r^2 = 0.002, n=58, p=0.76 \) indicating that community partnerships comprised of members across all sectors does not predict perceptions of success for this group.

Research Question 2: How does perceived success vary among members reporting community partnership outcomes and resource contributions?

Resource Contributions

Those resource contributions relative to perceptions of success indicate a strong, positive association between community connections (\( r=0.31, r^2 = 0.10, p < .05 \)) and success. Additional analyses were conducted to investigate the most important resource contribution and specific health expertise was strongly associated with perceptions of success (\( r=-0.29, r^2 = 0.08, p < .05 \)). There were also moderate, positive associations between data resources (\( r=0.24, r^2 = 0.06, p=.07 \)) and IT/web resources (\( r=0.22, r^2 = 0.05, p=.09 \)) with success. Table 6 presents all resource contributions.
Table 6.
Associations between Resource Contributions and Perceptions of Success

<table>
<thead>
<tr>
<th>Resource</th>
<th>Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td>.002</td>
</tr>
<tr>
<td>In-kind resources</td>
<td>.086</td>
</tr>
<tr>
<td>Paid staff</td>
<td>-.128</td>
</tr>
<tr>
<td>Volunteers/Volunteer staff</td>
<td>.165</td>
</tr>
<tr>
<td>Data resources</td>
<td>.237**</td>
</tr>
<tr>
<td>Information/feedback</td>
<td>.058</td>
</tr>
<tr>
<td>Specific health expertise</td>
<td>-.034</td>
</tr>
<tr>
<td>Expertise other than health</td>
<td>-.019</td>
</tr>
<tr>
<td>Community connections</td>
<td>.314*</td>
</tr>
<tr>
<td>Fiscal management</td>
<td>.213</td>
</tr>
<tr>
<td>Facilitation/leadership</td>
<td>.065</td>
</tr>
<tr>
<td>Advocacy</td>
<td>-.075</td>
</tr>
<tr>
<td>IT/web resources</td>
<td>.222†</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level
** Correlation is moderately significant at p=.07
† Correlation is moderately significant at p=.09

n=58 Listwise

Partnership Outcomes

Partnership outcomes and perceptions of success indicate a significant, positive association between success and increased knowledge sharing \((r=0.28, r^2=0.08, p < .05)\), new sources of data \((r=0.33, r^2=0.11, p < .05)\) and public awareness \((r=0.31, r^2=0.10, p < .05)\).

There were also moderate, positive association between health education services \((r=0.24, r^2=0.06, p=.08)\) and success. Table 7 presents all partnership outcomes.
Table 7.
Associations between Partnership Outcomes and Perceptions of Success

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health education services</td>
<td>.236**</td>
</tr>
<tr>
<td>Improved services</td>
<td>.008</td>
</tr>
<tr>
<td>Reduction of health disparities</td>
<td>.106</td>
</tr>
<tr>
<td>Improved resource sharing</td>
<td>.203</td>
</tr>
<tr>
<td>Increased knowledge sharing</td>
<td>.276*</td>
</tr>
<tr>
<td>New sources of data</td>
<td>.325*</td>
</tr>
<tr>
<td>Community support</td>
<td>.143</td>
</tr>
<tr>
<td>Public awareness</td>
<td>.313*</td>
</tr>
<tr>
<td>Policy development and regulations</td>
<td>.103</td>
</tr>
<tr>
<td>Improve health outcomes</td>
<td>.181</td>
</tr>
<tr>
<td>Improved communication</td>
<td>.216</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level
** Correlation is moderately significant at p=.08
n=58 Listwise

Research Question Three: How do attributes of value and trust contribute to the reaching collaborative goals through levels of activity?

A linear regression was performed to predict level of collaboration activity based on 1) power/influence, 2) level of involvement, 3) resource contributions, which are elements of value and 4) reliability, 5) shared goals, and 6) openness to discussion, which are elements of trust. Reaching collaborative capacity through level of activity was computed for this analysis, 14.4%, F(6,525)=15.87, p<.001. In comparing the predictive variables, level of involvement makes the strongest, unique contribution and power/influence and shared goals had moderate contributions to level of activity. All variables tested are presented in Table 8.
Table 8.
Regression Analysis Summary for Trust and Value Attributes Predicting Collaboration Activities

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>95% CI</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.35</td>
<td>[0.93 – 1.77]</td>
<td></td>
<td>6.30</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Power/influence</td>
<td>1.11</td>
<td>[0.08 - -0.02]</td>
<td>0.10</td>
<td>1.74</td>
<td>0.08</td>
</tr>
<tr>
<td>Level of involvement</td>
<td>0.30</td>
<td>[0.14 - 0.47]</td>
<td>0.26</td>
<td>3.64</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Resource contribution</td>
<td>0.06</td>
<td>[-0.10 – 0.21]</td>
<td>0.05</td>
<td>0.70</td>
<td>0.48</td>
</tr>
<tr>
<td>Reliability</td>
<td>-0.73</td>
<td>[-0.22 – 0.08]</td>
<td>-0.05</td>
<td>-0.96</td>
<td>0.34</td>
</tr>
<tr>
<td>Shared goals</td>
<td>0.12</td>
<td>[-0.02 – 0.25]</td>
<td>0.11</td>
<td>1.74</td>
<td>0.08</td>
</tr>
<tr>
<td>Openness to Discussion</td>
<td>-0.08</td>
<td>[-0.22 – 0.53]</td>
<td>-0.07</td>
<td>-1.20</td>
<td>0.23</td>
</tr>
</tbody>
</table>

Note: R² adjusted = 0.14 CI=confidence interval for B.
CHAPTER V
DISCUSSION

Assessing characteristics of networks, particularly the relationships between members, aids in understanding expertise brought by organizations, resource gaps, and levels of collaboration that leads to successful outcomes (Varda & Retrum, 2015). The results of this study describe 1) relationships between specific resources, process outcomes and success produced by community partnerships and 2) attributes of value and trust that contribute to levels of collaboration activity. These results provide insight to community collaborative partnerships focused on developing strategies to implement community health improvement plans.

Membership

Developing community health partnerships is complex and involves strategies to engage diverse members representing different sectors to ensure investment in the collaborative process produces intended outcomes (Mays & Scutchfield, 2010; Varda & Retrum, 2015). Linking network members and the sectors they represent to effectiveness and successful process outcomes informs the development, management and sustainability of partnerships, allowing for identification of needs and resources (Varda, 2008). Creating cross-sector relationships to implement change continues to be a best practice to leverage resources and address complex, albeit “wicked”, community health issues (Hogg & Varda, 2016). In many cases, the number of members in a coalition alone is considered adequate to achieve successful community outcomes, as opposed to creating diverse, multi-sector memberships intentionally (Varda, 2008). With some partnerships, too many members representing specific sectors can have an adverse effect in that loss occurs with broad ideas for goals and unequal distribution of resources.
In smaller, more rural areas, as is represented in this study, developing recruitment strategies that align with intended outcomes is not the norm. These communities may not have as many diverse partners as a larger city or county and in some cases do not have hospital systems, multi-sector community health organizations, non-profit organization or specialized health clinics. In addition, there may be concerns if certain organizations or sectors are not included, regardless of benefit to partnership goals, simply because they hold levels of power. Moreover, recruiting members for the sake of reaching larger membership as opposed to strategies that are tied to community health improvement needs or resource contributions could create a partnership lacking focus, shared goals and level of involvement (Mays & Scutchfield, 2010). For example, in an evaluation of a coalition in Kansas, members identified increasing communication to community members about programs through social media and a website, however they did not have a member that could build capacity and bridge resources in this area (Brown, 2013). They also scored policy and regulation development as another very important outcome, however the local city council member was not actively involved or strongly connected to other members. For this coalition, member recruitment was not intentional relative to desired outcomes and achievements (Brown, 2013).

For this study, the majority of members belong in the human service and charity organization sector, education and youth development sector and healthcare provider sector and this distribution was not associated with success. This could be attributed to no intentional, strategic membership recruitment model and a lack of goal alignment. With this group, an assumption would be that having a large number of members from the sectors listed above would contribute to successfully reaching community health priority area goals however may not be strongly aligned with the resources needed to achieve those outcomes. Understanding patterns
among members and resources that are currently contributed to the community partnerships based on needs and intended outcomes would provide valuable information to the recruitment process for future members (Wolff, 2010; Varda & Retrum, 2015).

**Aspects of Success: Resource Contribution and Partnership Outcomes**

Resource contributions in the form of social, human, and financial capital and partner outcomes were reviewed to determine associations with success (Emery and Flora, 2006; Varda & Retrum, 2015; Litt, et al., 2015). The survey question asked respondents to select all resources that are contributed by the organization to community health partnerships. Community connections was related strongly to the success of partnerships and is an initial step to full collaboration, in many cases operationalized as “networking” (Butterfoss, Goodman & Wandersman, 1996; Butterfoss, 2007; Foster-Fishman, et al., 2001; Wolff, 2010; McCullough, Eisen-Cohen, & Salas, 2016). For this group, making these connections is an important resource when considering the success of the partnerships. Referring to levels of collaboration activity, as partnerships move along the collaboration continuum, beginning with networking and moving to integration, iterative activities increase (Butterfoss, 2007; Wolff, 2010; Butterfoss & Kegler, 2012). In this context, community connections through networking, or sharing information, across sectors for mutual benefit are important. This level of information sharing involves informal communication, loose relationship, minimal decision-making and no risk (Frey, et al., 2006; Wolff, 2010). To reach full integrated levels of collaboration activity, Wolff (2010) and others posit that roles must be formalized, agreements are reached, communication becomes more frequent, decisions are mutually determined, risk and trust are high and resources are pooled (Frey, et al., 2006; Butterfoss & Kegler, 2012). Strategically aligning types of
organizations involved and resources they are able to contribute with intended partnership outcomes leads to full collaboration and improved community health.

Interestingly, IT/web resources and data resources were moderately associated with success with this group. The organizations involved in the study had completed data collection for community health assessments and were eager to share insights and move into community health improvement planning. With both networks, organizations had contributed data resources to the process and were seeking creative methods to share the information with the community. However, these resources were not included in their original strategic plan nor had they been specifically outlined as necessary for success. Data and sharing IT or web-based resources was valued by this group and for community health improvement planning, would support advocacy work, policy change and improving communication channels, which are important to gaining community-level support (Varda & Retrum, 2015; McCullough, Eisen-Cohen, & Salas, 2016). If they determine the mode to share information with the community – whether through organization websites or by building a website of their own – ownership of community health improvement strategies could shift to community-level action.

Fiscal resources and those associated with financial support, such as paid staff and funding, were not significantly associated with success. Many community-based partnerships often struggle with sustainability because successful outcomes are tied to funding needs. While some of the members identified funding and fiscal management as resources they could provide, they did not emerge as the most important resource contribution. In this case, if results indicate that other resources are more closely associated with success, sharing these along with responsibilities that support action will be important. For example, because community
connections is significantly associated with success, identifying those in the community that can provide financial capacity will fill these resource gaps and further progress.

Outcomes are at the heart of community health improvement planning and focuses the development, implementation and sustainability of community-based initiatives. The results indicate outcomes that have successfully emerged from the partnerships include increased knowledge sharing, new sources of data and public awareness. These are strongly associated with perceptions of success and are realistic in the context of the types of sectors represented. State and local level public health agencies, public safety agencies and those included in the eight sectors represented use data to develop information and education for prevention and other efforts aimed at improving community outcomes. Additionally, public awareness is one of the most important aspects of overall community health that involves safety, youth development, economic prosperity, and healthcare.

New sources of data as an outcome is in line with resources that have been invested in the partnerships, namely, data resources. Data resources are needed to successfully complete a community health assessment and the sources include qualitative methods, from door-to-door community scans to focus groups, and quantitative methods from morbidity and mortality statistics to health behaviors. For rural areas, access to local data can be limited in that primary data collection costs money and support for these types of funds, whether through community tax dollars or bonds, may not be strong. Finding new sources of data through new partnerships can provide valuable insight into resources available and current health indicators. In addition, these outcomes are described in the literature as components of social and community capitals including “knowledge of the world”, sharing resources and engaging in actions that contribute to
awareness, which only increases community-level support (Emery & Flora, 2006; Frey, et al., 2006; Wolff, 2010; Butterfoss & Kegler, 2012).

**Building Collaborative Capacity through Levels of Activity**

Collaborative capacity, or full collaboration, is an important theme within partnerships that relies heavily on the type of activities occurring between member organizations such as creating formalized links between programs and organizations, equally shared roles and responsibilities, sharing risk and pooling resources (Frey, et al., 2006; Wolff, 2010). The levels of collaboration activity measured with this group increase in capacity and is dependent on attributes that feed value and trust. Trust and value are important components to strong collaborative partnerships and are “resources” that can be gained or lost depending on how they are used and managed (Varda, 2008; Casey, 2008; Wolff, 2010; Himmelman, 2016). Members that are influential change agents within the community, especially those with a commitment to “get things done”, are considered an essential component of integrated collaboration as they continuously contribute to tasks and their level of involvement aims to achieve outcomes and have some level of influence in the community. Resource contributions, insofar as the degree an organization invests in the partnership, reliability as a partner, sharing goals, and the willingness to have open, frank and civil discourse while sharing rewards, responsibilities, risk and resources, are also critical to the success of community partnerships and coalitions (Wolff, 2010; Himmelman, 2016).

Building action items and tasks that foster sharing resources and the responsibilities involved with developing, implementing, managing and sustaining community action will increase capacity in these areas. Along with these comes aspects of risk that members working
together at this level will experience. Ultimately, as these practices increase within the network, rewards will emerge and can be celebrated as a network. For example, creating a community program with organizations across the network as contributors involves a level of trust among members valuing the relationships to share in these aspects. Resources, such as funding or staff, responsibilities that involve managing funds and people, barriers that arise as activities ebb and flow, creating risk of loss of resources, and the rewards that come with effectively improving community health through action describes the concepts involved with building network collaborative capacity.

The constructs reflected in this study that supports building network capacity includes power/influence, level of involvement, level or resource contribution, reliability, shared goals and openness to discussion. Based on the results for this group, level of involvement was the strongest predictor of level of collaboration activity, indicating that “getting things done” was perceived as having the largest impact on the perception of activity between organizations. The more members are involved in decision-making, activities and tasks associated with outputs, and discussion the more trust increases, creating levels of equality across partners (Casey, 2008). Trust as a value mechanism then becomes a resource within the partnership. More moderate contributors include power/influence and shared goals, which are in-line with collaborative capacity research as these produce value among members, which in turn also increases trust. Through involvement, discussion, and shared goals, resources and input, ownership and a “sense of belonging” increases, becoming critical aspects to the overall well-being of the partnership (Casey, 2008; Wolff, 2010). If trust is low, all attributes contributing to trust are low, and the partnership fails at achieving outcomes due to inability to reach full collaboration. Ideally, integrating collaboration activities at a level that includes exchanging information, enhancing
capacity for mutual benefit, and creating a unified center of knowledge and programming that supports community health work is most influenced by strong commitment and action from change agents.

While level of involvement was most significant, it is important to recognize the value all elements bring to building network capacity. Those indicators that were considered moderate contributors to level of collaboration activity and those not significantly contributing should also be addressed when developing strategies for improving community health. Resource contributions relative to what each member can contribute, such as funding or IT/web support, are equally important and building strategies that include resources available from members will support progress. In addition, defining success and tying these to level of activity within the network will build reliable relationships will enhance member capacity.

Implications

The results of this study point to key components of building strong, effective partnerships. First, alignment of strategies and an evaluation of resource contributions relative to expected outcomes can leverage capacity across many sectors. Both networks are outlining community health priority areas based on the results of community health assessments. To ensure resources available are leveraged and efficient mechanisms are in place to achieve goals related to the priority areas, assets and deficits should be defined. The results of this study can aid in finding the resource gaps and needs that could be filled by organizations that may otherwise not be engaged and provide insight to attributes that contribute to full collaboration.

Second, intentional recruitment of organizations with the capacity to provide resources that are needed to reach goals will save time, energy and provide focus to the causes, particularly
with developing a community healthy improvement plan. For example, with the networks described in this study, IT/web resources were not included in current community health strategies however emerged as an important resource contribution. In order to gain public awareness and support of the community health improvement plan, recruiting a partner that can fill the IT/web resource gap will be crucial to achieving various priority area goals. In addition, using partnership development tools, such as stakeholder maps, can aid in identifying partners relative to influence and interests in community health (Chrislip, 2002).

Building evaluation activities using the PARTNER survey tool into new and established partnerships provides important data to inform on the ebb and flow that occurs with community mobilization and health improvement efforts. Typically in community health partnerships and coalitions, the focus is on evaluating programs and initiatives, and not the coalition itself (Varda, 2008). The community health coalition can act as an intervention to address various issues and evaluation of inputs, outputs and outcomes can increase effectiveness of the activates undertaken by the partners. In addition, the use of the PARTNER tool can contribute to streamlining processes by identifying partners that are not otherwise contributing to the collaboration and potentially slowing progress. Imbedding use of the tool will also support recruitment of members, allocation of resources as needs change and sustainability as community ecology shifts.

Engaging in partnerships to leverage resources has long been part of addressing community health issues. However, expectations relative to successful outcomes and collaborating to share risk, reward, roles and responsibilities are reaching new levels (Retrum, Chapman, & Varda, 2013). Funders are looking to communities to have established partnerships with proven success to move from “leveraging resources” into action, using resources to carry out activities that lead to improved health outcomes (Retrum, Chapman, & Varda, 2013). The
evidence in this study indicate “getting work done” and commitment to action by investing resources are important indicators of integrated collaborative activity. Measuring practice, policy, and progress within partnerships adds value to community health systems and provides background for funders requiring evidence of collaboration (Retrum, Chapman & Varda, 2013).

**Limitations**

There are several limitations worth noting with this study. The sample was recruited from rural areas in Kansas focusing on community health improvement planning and strategic recruitment efforts not necessarily embedded in their partnership framework. In essence, they fall into antiquated community health collaborative patterns that “more is better” without considering the type of organizations involved relative to resource needs. Since both networks are involved in improvement planning, benchmarks for success have not been established and are therefore more subjective.

Response bias is also a factor in that members who have been part of the partnerships for longer terms consider outcomes successful regardless of strategies or have disproportionate views of collaborative levels of activity. Those that responded may have been eager to participate, which could influence how they answered questions specific to success and level of collaboration. Finally, relationships across organization could also factor into how respondents answered the questions in that key participants were contacted by core coalition leaders and those relationships could factor into their response.

Because there are aspects of this study that focuses on relational data between organizations, missing responses may cause low statistical significance relative to aspects of collaboration. Those that did not respond to the survey may have been included in the selection.
process within the relational survey questions. Simply, non-responders may have had questions answered about them without providing responses about others. Finally, in smaller communities members of community health partnerships may also have long-term, strong personal relationships that can cause bias relative to the attributes related to trust and value. With the subjective nature of this study, results are not generalizable.

**Future Research**

This study supports further investigation into the benefit of using system science approaches to evaluate community health partnerships. Additional research is needed into outcomes related to imbedding evaluation methods into development and sustainability of community health partnerships as part of the community health improvement planning process. While there are tools and resources available to develop coalitions and engage in partnerships, little is available to aid in sustainability, which includes guidance to imbedding evaluation activities into coalition infrastructures. Using the PARTNER tool provides insight into collaborative activities needed to outline strategies specific to community health initiatives based on results of community health assessments. Determining how strategic member recruitment influences resource contributions, process outcomes and levels of collaboration activity would contribute to research supporting collaborative capacity.
CHAPTER VII
CONCLUSION

This study provides evidence that addressing systems-level issues in community settings involves strategic, cross-sector partnerships that are able to adapt to changes as goals are met and new problems emerge. These findings contribute to research into the dynamics of collaborative partnerships that ebb and flow as members move in and out of networks. Level of involvement, or “getting things done”, influences the level of collaborative activities needed to elicit community health improvement change and address “wicked problems” particularly those with no clearly defined solutions. Community health improvement requires the ability to pivot as the needs of the community change, and forming strategic partnerships employs collaborative action. Ill-defined community issues require multiple approaches with many resources formed through partnerships to capitalize on strengths within the community network to reach goals.

The study results supports that certain resource contributions and partnership outcomes are associated with success, and in some cases do align with one another. More specifically, it is expected that perceptions of success vary across members along with the understanding of true collaborative activities. Understanding these nuances supports the need for strategies to develop clear objectives and define what success means to their partnerships. The evolution of coalitions as interventions, or facilitators of reaching common community health goals, is a result of evaluation methods pulling community health into the realm of social network analysis and to understand how relationships contribute to full, integrated collaboration.


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APPENDICES
Central members: Network members who hold key positions in the network because of the number and placement of their connections within the whole network.

Centralization: A measure of the extent to which a network is dominated by one or a few very central hubs (i.e., nodes with high degree and betweenness centrality). In a highly centralized network, these central hubs represent single points of failure, which, if removed or damaged, quickly fragments the network into unconnected sub-networks. A less centralized network has fewer points of failure and exhibits greater resilience, since many nodes or links can fail while allowing the remaining nodes to still reach each other over other network paths.

Collaborative: A formal or semi-permanent partnership created between three or more people or organizations in order to better achieve mutually desired objectives.

Connectivity: The state of being connected between two or more points in a network.

Density: The concentration of individuals who are connected to each other in a network. An increase in connections means an increase in density.

Embedded: The nature by which a network member is contained within the relationships of others.

Frequency of contact: The number of occurrences of being in touch with another person, group, or organization during a certain time period.

Network: Any interconnected group or system.

Network Map: A visualization to display the members of a group and the relationships among them. Nodes (usually represented as circles) represent the members of the network and the
presence of a line connecting any two nodes represents the presence of a relationship.

**Reciprocity:** The mutual exchange between people, organizations, or groups.

**Redundancy:** Repetitive or a duplication.

**Relationship budgeting:** Making discriminate choices between collaboration alternatives, considering the cost, quality, and possible outcomes of a strategic approach to collaborative management. The primary question driving a relationship budget is: How many relationships can effectively be managed with the resources available and still achieve the outcomes we desire?

**Resource Exchange:** A mutual sharing and receiving of goods, knowledge, experience, etc.

**Score:** A number indicating quality or performance.

**Social Network Analysis:** The study of the structural relationships among interacting network members – individuals, organization, etc. – and of how those relationships produce varying effects. The fundamental property of network analysis is the ability to determine, through mathematical algorithms, whether network members are connected – and to what degree – to one another in terms of a variety of relationships like communication, resource sharing, or knowledge exchanges. Network analysis provides a mathematical approach to measure the number, the paths, and the strength of those connections. In addition, visual representations of the network can be created as graphs.

**Trust:** Measured here as the amount of reliability, support for the mission, and willingness to engage in frank, open, and civil discussion, considering a variety of viewpoints that an organization is described as having.
APPENDIX 1 (continued)

**Value:** The weight placed on an organization in terms of its ability to provide resources, the level of power/influence it has in the community, and the level of involvement it contributes to the group. Each of the three characteristics are considered equally important, however the more any single organization/person has of each improves the way the organization/person is valued overall.

**Visualization:** A graphic or pictorial representation to communicate a message.

**Workbook:** A collection of two or more worksheets which will make up a book of worksheets.

**Worksheet:** An extension of many columns and rows creating a grid of cells which can hold data.
APPENDIX 2
PARTNER Tool Survey Questions (2013, 2019)

Questions

1. Please select your organization from the list:

2. What type of organization is this (e.g. non-profit, education, funder)?

3. How long has someone from your organization been involved with the community collaboration or coalition (in months)?

4. Please indicate what your organization contributes, or can potentially contribute, to this community coalition (choose as many as apply).
   - [ ] Funding
   - [ ] In-kind resources (e.g., meeting space, services)
   - [ ] Data resources including data sets, collection and analysis
   - [ ] Providing expertise to the community health improvement plan
   - [ ] Specific health expertise
   - [ ] Expertise other than in health
   - [ ] Community connections
   - [ ] Website or social media support/technology resources
   - [ ] Facilitation/leadership
   - [ ] Fiscal management (e.g. acting as fiscal agent)
   - [ ] Broad advocacy for community health priorities
   - [ ] Access to policy makers and/or lobbyists
APPENDIX 2 (continued)

5. What is your organization's most important contribution to this community coalition?
   - □ Funding
   - □ In-kind resources (e.g., meeting space, services)
   - □ Data resources including data sets, collection and analysis
   - □ Providing expertise to the community health improvement plan
   - □ Specific health expertise
   - □ Expertise other than in health
   - □ Community connections
   - □ Website or social media support/technology resources
   - □ Facilitation/leadership
   - □ Fiscal management (e.g. acting as fiscal agent)
   - □ Broad advocacy for community health priorities
   - □ Access to policy makers and/or lobbyists
6. Outcomes of this community coalition's work include (or could potentially include): (choose all that apply).

- Improved resource sharing
- Increased knowledge sharing
- Coordinated communication
- Networking with organizations that do similar things
- Networking with organizations that do different things
- Data and information available through local and/or state sources (e.g. Kansas Health Matters)
- Coordinated community health assessment
- Increased access to services
- Improved health outcomes
- Reduction of health disparities
- Public awareness
- Creating healthier environments (e.g., schools, worksites, community)
- Policy, law and/or regulation
- Coordinated community health improvement planning
7. Which is this community coalition's most important outcome?

- Improved resource sharing
- Increased knowledge sharing
- Coordinated communication
- Networking with organizations that do similar things
- Networking with organizations that do different things
- Data and information available through local and/or state sources (e.g. Kansas Health Matters)
- Coordinated community health assessment
- Increased access to services
- Improved health outcomes
- Reduction of health disparities
- Public awareness
- Creating healthier environments (e.g., schools, worksites, community)
- Policy, law and/or regulation
- Coordinated community health improvement planning
APPENDIX 2 (continued)

8. How successful has this community coalition been at reaching its goals?
   - Not successful
   - Somewhat successful
   - Successful
   - Very successful
   - Not sure

9. What aspects of collaboration contribute to this success? (Choose all that apply)
   - Bringing together diverse partners including community members
   - Meeting regularly
   - Exchanging information/knowledge
   - Sharing resources
   - Informal relationships created
   - Collective decision-making
   - Having a shared vision and goals

10. From the list, select organizations with which you have an established a relationship (either formal or informal). In subsequent questions you will be asked about your relationships with these organizations in the context of this community coalition.
   - List of Partners provided in the survey
11. How frequently does your organization work with this organization on issues related to this community coalition's goals?

☐ Never
☐ Once a year or less
☐ About once a quarter
☐ Every week
☐ Every day

12. What kinds of activities does your relationship with this organization entail [note: the responses increase in level of collaboration]?

☐ None
☐ Cooperative activities: involves exchanging information and harmonizing activities (e.g. attending meetings together)
☐ Coordinated activities: includes exchanging information and harmonizing activities, but moves further to sharing resources that improve outcomes for both organizations
☐ Integrated activities: includes both cooperative and coordinated aspects however includes formal relationships to share funding sources, clients, and resources for interconnected strategic planning, and program implementation.

Questions 13 – 18 have the same answer options.
13. How valuable is this organization’s power and influence to achieving the overall mission of this community collaborative?
*Power/Influence:  The organization/program/department holds a prominent position in the community be being powerful, having influence, success as a change agent, and showing leadership.
  □  Not at all
  □  A small amount
  □  A fair amount
  □  A great deal

14. How valuable is this organization’s level of involvement to achieving the overall mission of this community collaborative?  *Level of Involvement:  The organization/program/department is strongly committed and active in the partnership and gets things done.
  □  Not at all
  □  A small amount
  □  A fair amount
  □  A great deal
APPENDIX 2 (continued)

15. How valuable is this organization’s resource contribution to achieving the overall mission of this community collaborative?
*Contributing Resources: The organization/program/department brings resources to the partnership like funding, information, or other resources.

☐ Not at all
☐ A small amount
☐ A fair amount
☐ A great deal

16. How reliable is the organization? *Reliable: this organization/program/department is reliable in terms of following through on commitments.

☐ Not at all
☐ A small amount
☐ A fair amount
☐ A great deal
17. To what extent does the organization share a mission with this community collaborative's mission and goals? *Mission Congruence: this organization/program/department shares a common vision of the end goal of what working together should accomplish.

☐ Not at all
☐ A small amount
☐ A fair amount
☐ A great deal

18. How open to discussion is the organization? *Open to Discussion: this organization/program/department is willing to engage in frank, open and civil discussion (especially when disagreement exists). The organization/program/department is willing to consider a variety of viewpoints and talk together (rather than at each other). You are able to communicate with this organization/program/department in an open, trusting manner.

☐ Not at all
☐ A small amount
☐ A fair amount
☐ A great deal

19. Please provide any additional comments? (Open text)
APPENDIX 3

Email Scripts

Welcome email (First Email):

Thank you for providing your email to participate in a survey to assess collaboratives in public health. The survey will be used to measure frequency of interaction, group characteristics, which includes trust and network interaction, and organizational value, in terms of overall goals of the coalition and resource contribution of each member. Each member of your group will receive a link to the online survey developed by the University of Colorado-Denver and used by the Wichita State University, Department of Community Psychology. Your responses will be confidential and available to the study investigators only. Should you have any questions please contact Molly Brown at molly.brown@wichita.edu. Below is important information you will need to participate:

%user - (the respondent's username will be placed here)
%org - (the respondent's organization will be placed here)
%pw_reset_url - a link to the password reset site for the respondent.

The link to the survey will be provided in an email that will be sent to you shortly.

Thank you for participating,

Molly Brown, MPH
Wichita State University Doctoral Candidate
Survey email (Second Email):

Thank you for participating. The link below will take you to the survey where you will use the login information provided:

%user - (the respondent's username will be placed here)
%org - (the respondent's organization will be placed here)
%pw_reset_url - a link to the password reset site for the respondent.

Should you have any questions, please contact Molly Brown via email at molly.brown@wichita.edu.

Thank you for participating,

Molly Brown, MPH
Wichita State University Doctoral Candidate
Reminder email (Third Email):

Recently, you were sent an invitation to respond to a network survey as a representative of %org. We noticed that you have not yet completed the survey. This email is a reminder to complete this survey, at your earliest convenience, to help us evaluate our efforts at collaboration. Without your response, we will be missing important information.

To complete the survey, please go to www.partnertool.net/survey and log in with your

%user - (the respondent's username will be placed here)

%org - (the respondent's organization will be placed here)

%pw_reset_url - a link to the password reset site for the respondent.

Should you have any questions, please contact Molly Brown via email at molly.brown@wichita.edu.

Thank you for participating,

Molly Brown, MPH
Wichita State University Doctoral Candidate