

THESIS

STRENGTHENING SUICIDE PREVENTION NETWORKS: EXAMINING THE  
RELATIONSHIP BETWEEN INTERORGANIZATIONAL COLLABORATION AND TIE  
STRENGTH

Submitted by

Lauren Menger

Department of Psychology

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Colorado State University

Fort Collins, Colorado

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Master's Committee:

Advisor: Lorann Stallones

Jennifer Cross  
Kimberly Henry

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## ABSTRACT

### STRENGTHENING SUICIDE PREVENTION NETWORKS: EXAMINING THE RELATIONSHIP BETWEEN INTERORGANIZATIONAL COLLABORATION AND TIE STRENGTH

Despite extensive prevention efforts, suicide continues to be the tenth leading cause of death in the United States (Centers for Disease Control (CDC), 2012). One possible explanation may be lack of coordination between the organizations that provide suicide prevention services. Because client well-being often relies on the integrated actions of multiple organizations, the factors that promote interorganizational collaboration should be identified and fostered. The present study involved structured interviews with agency representatives in the suicide prevention network in one Colorado community. The objective of this exploratory study was twofold: 1) to assess the cohesiveness and pattern of relationships between organizations across seven collaborative domains related to suicide prevention, and 2) to identify the indicators of relationship strength that are most relevant to different domains of interorganizational collaboration and collaborative intensity. Results were examined through a combination of social network analysis and statistical correlation and regression analyses. Overall, organizations reported collaborating more on sharing information and resources and sending and receiving referrals than they did on developing service infrastructure, and coordinating training and screening activities. Across all seven collaborative domains, there was a subset of organizations that was well connected and another group of organizations that consistently played a more peripheral role in the network. Model comparisons revealed that the influence of relationship strength indicators varied across the seven collaborative domains and that trust was the most

significant predictor of collaborative intensity. Strategies to improve collaboration among organizations are suggested.

## DEDICATION

Dedicated to my dear brother, Dane.

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## INTRODUCTION

With worldwide trends demonstrating an overall increase in suicidal behaviors, suicide is increasingly a global public health concern (Hoven, Mandell, & Bertolote, 2010). At present there are close to one million people who die by suicide throughout the world each year (World Health Organization (WHO), 2012), and it is predicted that by 2020 this figure will approach 1.5 million suicides per year, with nearly 10 times that number making a suicide attempt (Hoven, et al., 2010). According to 2012 data, over 38,000 people die by suicide and more than 487,000 are treated in emergency rooms due to self-inflicted injuries in the United States each year (Centers for Disease Control (CDC), 2012). Despite extensive prevention efforts by community and government-led initiatives, suicide continues to be the tenth leading cause of death in the United States for all ages.

Colorado has the 6<sup>th</sup> highest rate in the country, making suicide a particularly salient concern in this state (American Association of Suicidology (AAS), 2012). According to a 2010 report generated by the Colorado Department of Public Health and Environment (CDPHE) Office of Suicide Prevention (OSP), approximately 9,600 Coloradans seriously contemplate suicide each year. In 2009, the state experienced the highest suicide rate in over two decades; the number of people who died by suicide surpassed the total number who died by car crashes or diseases such as influenza, pneumonia and breast cancer. Of even greater concern is that an estimated one-half to two-thirds of at-risk individuals go without treatment for their suicidal ideation (The Colorado Trust, 2009). There are no definitive answers for why suicide is so prevalent in the state of Colorado. However, some have pointed to a combination of factors, such as geographic isolation due to low population density, high rates of migration into the state and the associated disconnection from established social circles and support systems, higher rates of



gun ownership compared with other states, stigma surrounding accessing mental health services, and limited availability of mental health services (The Colorado Trust, 2009).

In addition to the devastation experienced by those affected by suicide and suicide related behaviors, there is an enormous financial burden placed on the community. In Colorado, it is estimated that the combination of direct and indirect costs related to suicidal behavior cost more than \$1 billion annually (The Colorado Trust, 2009). Direct costs include criminal investigations, health care expenses, and autopsies. Between 2001-2011, suicidal acts resulted in nearly 2,619 hospitalizations in Larimer county, Colorado, which is greater than the number of hospitalizations in this county for motor vehicle crashes (n = 2,497) during this same time period (CDPHE, 2011). Indirect costs of suicide include the loss in workforce primarily due to the high rates of suicidal deaths among young people (The Colorado Trust, 2009). Such statistics call for further investigation into how suicide and suicide related behaviors could be better prevented.

### **Factors Contributing to Suicidality**

Suicidality is the likelihood that an individual will commit suicide, and suicidal ideation is the tendency to have suicidal thoughts. According to Callaly, Berk, & Dodd (2009), there are individual, social, and environmental factors that contribute to suicidality, including individual personality and genetics, unemployment rates, stress, substance abuse, and lack of social support. One way these factors are thought to contribute to suicidal ideation is by increasing individual susceptibility to mental illness. In fact, it is estimated that more than 90% of those who die by suicide suffer from some sort of mental illness, primarily in the form of depression (Mann et al., 2005). While depression is considered one of the most common forms of mental illness, it often goes unrecognized and untreated (Mann et al., 2005). Additional research to determine how to

more effectively recognize at risk individuals and ensure they receive proper treatment is essential to the success of efforts to decrease the number of deaths by suicide.

### **Implications for Prevention**

The multifactorial etiology of suicide suggests that a broad-based, community approach is necessary for successful prevention (Callaly, et al., 2009). A recent review of suicide prevention programs by Fountoulakis, Gonda, & Rihmer (2010) concluded that although community education-based prevention programs have proven successful in improving knowledge and changing the attitudes of the public concerning suicide, these programs have not been found to be effective in reducing suicide completions and attempts. This suggests that more long-term programs, with a primary focus on establishing community support networks, are needed in order to effectively reduce suicide rates.

A study by Cooper, Lezotte, Jacobellis, & DiGuseppi (2006) documented the impact of a community support network approach to secondary prevention of suicide, finding that the presence of an array of safety net services in a county significantly reduced the risk of suicide and suicide attempts for at least one year following an attempt. In the study, safety net services consisted of suicide prevention and mental health services, including education, gatekeeper training, case and crisis management, ongoing mental health treatment, and peer support groups. Although this finding demonstrated the viability of making a comprehensive set of services available in a community to address the multiple factors that influence suicidality, it is also important to consider how the accessibility and availability of services might be enhanced by cross-agency collaboration.

## **Importance of Inter-Organizational Collaboration**

Interorganizational collaboration can be defined as the process through which organizations share risks, responsibilities, and rewards in an attempt to enhance one another's capacity, achieve mutual benefit, and work toward common goals (Himmelman, 2004). Some of the key benefits of collaboration include integrated service provision, less duplication of effort across organizations, and enhanced communication between service providers. Collaborative systems of care that provide integrated services across community organizations have been found to be effective in reducing the recidivism of unhealthy and undesirable behaviors and enhancing the effectiveness of community services (Green, 2010).

Zhang and Zhang (2005) examined the effectiveness of a program developed to improve school performance and prevent future criminal offenses among youth in the Los Angeles County juvenile correctional program. The program provided those in the treatment group with a diverse set of needs-based services offered by 13 community organizations (e.g., mental health, substance abuse, housing and financial aid, career development planning); the control group received standard supervision. After six months, those in the treatment group were found to have significantly better school performance and significantly fewer new law violations than those in the control group. In another example, Saewyc, Solsvig, & Edinburgh (2008) evaluated the Hmong Youth Task Force, a coalition of community organizations formed to address the issue of young Hmong runaways and subsequent sexual exploitation. Task Force members represented diverse sectors of government, health services, and community organizations. A review of existing records and semi-structured interviews with Task Force members revealed increased community awareness, enhanced services for sexually abused runaways, and increases in resources (e.g., the dedication of additional law enforcement officers to missing persons cases).

These examples suggest that active collaborations and partnerships across diverse organizations can enhance community capacity to reduce unhealthy and undesirable behaviors. Due to the diverse needs of suicidal individuals and the disabling nature of severe mental illness that prohibits at risk individuals from ensuring they receive the appropriate treatment services, many have argued for integrated systems of care (e.g., Provan & Milward, 1995).

The detrimental impact that a lack of cross-organizational collaboration could have on a community's ability to serve individuals at risk for suicide can be best illustrated by a real-world example. On Mother's Day morning, a Colorado woman received word that her son had died by suicide; news no parent would ever want to receive (Montanez, 2010). He had visited a local hospital the night before, upon his own volition, because he was experiencing suicidal thoughts. After spending 6 hours at the hospital, the young man was released after being assessed as stable by a mental health evaluator. Just a few hours later, his body was found in a park across the street from the hospital. In a more unified and collaborative network, the staff at the hospital might have provided him with additional referrals and resources (e.g., a suicide help-line, an on-call psychologist at a local mental health center) to help him through the difficult time he was experiencing. Additionally, in a more integrated network, hospital staff might have been more effectively trained to recognize this individual's need for continued observation at the moment of risk, as well as more aware of the community resources available to provide additional support.

One possible explanation for why suicidal individuals continue to go without sufficient treatment may be a lack of coordination among the organizations that provide suicide prevention services. In order to ensure a comprehensive and accessible network of services to prevent suicide within a community, factors that promote interorganizational collaboration must be recognized and fostered. In order to identify possible determinants of collaboration, the present

study used a network approach to examine the relationships between organizations involved in suicide prevention in one Colorado community.

### **Assessing Interorganizational Collaboration: A Network Perspective**

Although community organization staff may recognize the need for an optimally efficient and effective system of care, it is difficult for individuals within an organization to objectively evaluate the functionality and strength of the collaborative relationships between key service providers across the community. Organization staff tend to have their own agendas, service orientations, and funding sources, which do not always align with the complex needs of the populations they serve (Provan, Veazie, Teufel-Shone, & Huddleston, 2004). Thus, organization staff have a propensity to view the system from the perspective of their own organization and how it affects or is affected by relationships with other organizations (Provan, Veazie, Staten, & Teufel-Shone, 2005). Individual perspectives are also influenced by personal relationships and agendas (Provan & Milward, 2001). Acquiring an objective view of the presence and nature of collaborative interorganizational relationships requires a systematic process that is inclusive of the perspectives of all organizations.

Network analysis is a technique for studying the relationships and interactions across and between multiple individuals or organizations. Early network research dates back to the sociometric tradition of social psychology (e.g., Moreno, 1934) and the Gestalt tradition of experimental studies of how individuals interact within social contexts (e.g., Heider, 1946; Lewin, 1936). The network approach utilizes both egocentric (i.e., a focus on individual or organizational level attributes and interactions) and sociocentric (i.e., a focus on interorganizational or structural attributes and interactions) methodologies in studying network characteristics. Aside from a focus on relationships, the network perspective maintains that: 1)

the individuals in a network are embedded in an exchange of relations; 2) the exchange of relations is governed by the structural patterns found within the network; and 3) the content and structure of the relationships in a network determine the opportunities and constraints of individuals and groups (Kilduff & Brass, 2010).

The developing field of network analysis has crossed various disciplines, contexts, and objectives, gaining increased prominence in the field of interorganizational research. In a recent review of interorganizational network studies conducted over the last twenty years, Provan, Fish, & Sydow (2007) found support for the notion that the structure of a network, the position of each organization within the network, and the nature of relationships across and between organizations each has significant influence on the functioning of a network. These findings provide empirical support for the three previously mentioned underpinnings of network theory. However, due to the lack of empirical studies to date, the ideal interorganizational network structure and the relationship characteristics that facilitate optimal collaboration and efficiency remain elusive.

Many have argued that there is no “one size fits all” network, but rather, that the ideal structure and characteristics will largely depend on the particular context and desired outcomes of the network (Cross, Dickmann, Newman-Gonchar, & Fagan, 2009; Feinberg, Riggs, & Greenberg, 2005; Kilduff & Brass, 2010). Within the network of organizations involved in suicide prevention, the goal of collaboration is to offer a flexible and accessible system of care through enhanced coordination of diverse services to meet client needs (Fleury & Mercier, 2002). Keeping this network objective in mind, the present study explored network dimensions that may influence interorganizational outcomes and effectiveness. Specifically, three

particularly prominent network dimensions were examined: network cohesiveness, the prominence of individual organizations, and the strength of existing relationships.

**Network Cohesiveness.** One of the most basic indicators of network cohesiveness is the extent to which organizations are connected to one another across different types of collaboration. In the present study, examples of different types of collaboration relevant to suicide prevention include sending referrals, sharing information, and coordinating services. This concept of connectedness across the network has commonly been defined as density (Kilduff & Brass, 2010). Density is measured by the number of connections between organizations in a network in proportion to the total number of possible connections across all organizations (Hanneman, 2005). Density scores range from zero to one, with zero indicating that no organization is connected to any other organization and one indicating that every organization is connected to every other organization. Examination of density across different types of collaboration can demonstrate the ways organizations are collaborating most and which they are collaborating least.

Evidence suggests that higher density results in more opportunities for collaboration, innovation implementation, and sharing of resources and complex knowledge (Kilduff & Brass, 2010). Balkundi and Harrison (2006) conducted a meta-analysis of studies examining teams and found more densely connected teams were more viable and capable of reaching performance goals compared with loosely connected teams. In another example, Feinberg et al. (2005) investigated community readiness to implement evidence-based programs among Communities That Care (CTC) participants from 23 different communities. CTC is a coalition targeting adolescent behavior problems through: (1) community risk factor assessments and prioritization; and (2) the selection and implementation of evidence-based school, family, and community

programs. They found network density to be positively correlated with community readiness to implement evidence-based programs. Higher network density has also been associated with clearer, more firmly held, and more easily monitored and sanctioned behavioral norms because the individuals in a dense network are closer to each other and share more common contacts (Berardo, 2009; Granovetter, 2005). These findings suggest that higher density may have a positive influence on the readiness, effectiveness, and sustainability of a collaborative interorganizational network.

**Organizational Prominence.** In addition to understanding the level of interconnectedness across organizations as reflected in density scores, it is also important to examine the unique role played by each organization within the network. Another way interorganizational network analysis can provide useful insights is through the examination of which organizations are most and least prominent in the network (Provan, Veazie et al., 2005). Organizations that have the greatest number of connections to other organizations are considered to be the most central or prominent in the network, whereas organizations with the fewest number of links within the network are the least prominent. Organizational connectedness has been commonly captured by a measure referred to as centrality, which reflects the number of direct links or connections each organization has with other organizations (Provan, Veazie et al., 2005). Organizations that are most central are thought to have greater access to power and control over the flow of information and resources, and thus are considered to be more influential within the network (Boje & Whetten, 1981). Additionally, having more connections with other organizations may indirectly improve service quality through increased opportunities to learn from those who provide similar services (Liu, 2009). Meier and O'Toole (2003) empirically tested this assertion and found that an increase in network connections had a positive effect on



school district performance after adjusting for resources and constraints from other contextual factors.

In a practical sense, organizational representatives can compare network analysis findings regarding organizational centrality with their own perceptions of which organizations should be the most/least prominent to determine strategies for enhancing collaboration (Provan, Veazie et al., 2005). For instance, if an organization that is perceived to be a critical player in receiving referrals is not found to be central in a network, strategies can be developed to build interorganizational connections and make this critical organization more prominent. In addition, knowledge regarding which organizations are most central in the network can be used in efforts to leverage the leadership positions of more prominent organizations in order to coordinate collaborative activities and disseminate information throughout the network.

**Relationship Strength.** Although the extent of interorganizational connectedness (i.e., density) and which organizations are most prominent (i.e., centrality) across various collaborative domains is valuable information, it is also important to examine relationship characteristics that may facilitate and strengthen collaboration. Tie strength refers to the strength of relationships between individuals or organizations in a network and is conceptualized and measured in multiple ways, including the number of different types of connections, communication frequency, trust, intimacy, and emotional intensity (Kilduff & Brass, 2010). Tie strength has proven to be an influential feature of network analysis in terms of predicting collaboration, information exchange, and overall network functioning (Cross, et al., 2009).

Granovetter's (1973) influential work on tie strength conveyed the notion that weak ties result in sharing novel, non-redundant information and bridging otherwise disconnected entities, whereas strong ties are associated with greater levels of information transfer, helping behaviors,

stabilized norms, and a shared collective identity (Pina-Stranger & Lazega, 2011). In line with Granovetter's assertions, Hansen (1999) found strong ties to be more valuable for information transfer, whereas weak ties were found to be more useful for searching out new information.

As implied, strong and weak ties both have significant implications for network functioning. However, a review of interorganizational network studies suggests that strong ties may be more beneficial in a network aspiring to strengthen collaboration and service coordination, such as a suicide prevention network. For instance, Uzzi (1997) conducted an ethnographic study with 23 entrepreneurial apparel firms to explore the influences of social structure and competition within an interorganizational network. He concluded that networks with strong ties demonstrated higher levels of trust, greater problem solving capabilities, and more tacit and detailed information transfers than networks with weak ties. Additionally, Kraatz (1998) studied relationships among 230 private colleges and found that colleges with strong ties were more able to adapt to environmental changes (e.g., shifting social values and demographics, new technologies and government regulations) through increased communication frequency and information sharing. In another example, Nowell (2009) conducted a survey of 48 Midwestern domestic violence collaborations and concluded that stakeholders with strong ties were more likely to be perceived as effective at promoting broader system changes and improving coordination.

The goal of the suicide prevention network in the present study is to improve collaboration and provide an integrated system of care in an environment of scarce resources and constantly changing organizational dynamics. Based on the above studies, tie strength is likely an influential characteristic of interorganizational relationships in attempting to reach this network goal. Tie strength, as assessed by communication frequency, trust, and informal

relationships, has been found to enhance interorganizational collaboration in diverse contexts. A review of key findings follows.

***Communication frequency.*** Communication frequency is thought to be an important indicator of tie strength and has been established as a critical prerequisite for effective interorganizational collaboration. Within an interorganizational collaborative context, communication can be defined as “the channels used by collaborative partners to send and receive information, keep one another informed, and convey opinions to influence the group’s actions” (Mattessich, Murray-Close, & Monsey, 2001, p. 23). Simply stated, organizations that communicate more frequently with one another are more likely to share information and collaborate than those that communicate less frequently (Reagans & McEvily, 2003). Communication frequency may also lead to more effective communication methods between organizations through the development of relationship-specific heuristics (Uzzi, 1997).

Numerous studies have suggested the importance of communication frequency in facilitating interorganizational collaboration. Corteville and Sun (2009) conducted a network analysis of Michigan’s Diabetes Outreach Networks (DONs), which consists of six regional, community-based organizations that share a common mission to “promote innovative partnerships to strengthen diabetes prevention, detection, and treatment” throughout the state (p.7). They found frequency of interorganizational contact to be a key predictor of collaborative strength; DONs with lower network scores tended to report less frequent contact with their network partners than DONs with higher network scores.

Okamoto (2001) investigated the structural and relational factors that promote or impede interorganizational collaboration in a system of organizations involved in care for high-risk gang youth. Using a grounded theory approach, Okamoto attempted to clarify the perceptions and

attitudes held by practitioners regarding the barriers and facilitators of interorganizational collaboration. Results indicated that practitioners perceived communication to be one of the most critical factors that contributed to successful collaboration. Specifically, respondents cited the importance of communication in preventing duplication of services and increasing understanding of the unique problems of high-risk gang youth.

Green, Rockhill, and Burrus (2008) interviewed 104 key informants involved in substance abuse treatment, child welfare, and family court systems in Oregon in order to develop a deeper understanding of how to strengthen the collaborative ties between the three systems. Results suggested an important role for communication. Improving communication between representatives of these systems, as well as communication with parents, surfaced as one of the most important factors necessary to enhance collaboration and improve case outcomes.

**Trust.** Trust is another key indicator of tie strength that is undoubtedly important for enhancing interorganizational collaboration. Mutual trust allows network members to share information, risks, and opportunities more freely and easily (Carley, 1999; Comfort, 1999, Hardin, 1982), and is thought to nurture confidence that shared knowledge will not be misused or appropriated (Krackhardt, 1990; McEvily, Perrone, & Zaheer, 2003). In numerous examples, trust has been associated with the emergence of cooperative behavior (Coleman, 1990; Lubell, 2007; Ostrom, 1990), and some have even asserted that trust is a ‘necessary condition’ that must be present in order to successfully reach agreement between opposing viewpoints (Berardo, 2009). Overall, relationships characterized by higher levels of trust are more likely to be supported and maintained, especially in more time and energy intensive contexts (Provan et al, 2004).

Social scientists have long studied the benefits of trust in an interorganizational context. Greenberg and Rosenheck (2009) examined system changes associated with the implementation of the Collaborative Initiative to Help End Chronic Homelessness, an 11-site multi-organization intervention for chronically homeless adults. Specifically, they were interested in the determinants of relationships across organizations that served chronically homeless individuals. Data obtained from key informants found highly significant and positive associations between measures of joint service planning and coordination, the use of integrative practices, and perceived levels of interorganizational trust. Interestingly, they also found that the existence of fiscal relationships was less strongly correlated with measures of joint service planning and coordination and the use of integrative practices than measures of interorganizational trust. This suggests that the mere availability of financial resources is not sufficient to facilitate interorganizational collaboration: trust is an essential component.

In another example, Van Eyk and Baum (2002) evaluated collaborative strategies adopted by four South Australian publicly-funded healthcare organizations. Respondents indicated that the development of trusting relationships formed the basis of successful collaborations. Respondents further asserted that trust not only operates as a prerequisite for collaborative strength, but it is also further established and reinforced as staff collaborate across organizations and disciplines.

***Informal Relationships.*** The importance of informal ties as a measure of relationship strength is increasingly recognized among network researchers. Informal relationships, such as friendships, are thought to be characterized by higher levels of emotional attachment and commitment than formal relationships (Reagans & McEvily, 2003). Thus, informal relationships have been found to be associated with higher levels of motivation to invest time and energy,

share information, provide assistance, and reciprocate services and favors. The development of strong interpersonal attachments through informal relationships may also lead to increased trust, which has been previously noted as an important indicator of relationship strength.

Pina-Strager, and Lazega (2011) examined the value of friendship ties in facilitating the exchange of tacit knowledge among biotech entrepreneurs and venture capital investors (VCIs) at the interorganizational level. They found that entrepreneurs who shared friendship ties with VCIs participated in knowledge exchange to a greater extent than those who did not share friendship ties. Krackhardt and Stern (1988) conducted a series of organizational simulations and found that organizations that maintained friendship ties across departmental boundaries adjusted to uncertainty and changes in the environment better than those without friendship ties. In sum, research has found informal relationships to be associated with reinforced collaboration, improved quality of exchanges, enhanced performance, and reduction of interorganizational competition (Ingram & Roberts, 2000; Lazega, Mounier, Jourda, & Rafael, 2008).

**Relationship Strength: Summary.** The importance of strong ties within networks as measured through communication frequency, trust, and informal relationships has been established within the context of enhancing interorganizational collaborative strength. However, there has been a lack of focus regarding how these various forms of tie strength may differentially impact collaboration across diverse relationships domains. A greater understanding of how collaboration between organizations is both empowered and constrained through the strength of interorganizational relationships can have significant bearing on attempts to improve collaborative outcomes, such as effective service coordination and referrals.

## **Research Questions**

Due to the nature of this study, the research questions of interest are descriptive and exploratory, rather than inferential, in nature. For all questions, interorganizational collaboration will be examined across seven collaborative domains relevant to suicide prevention: information sharing, resource sharing, developing service infrastructure, sending referrals, receiving referrals, coordinating training activities, and coordinating screening activities. The following questions will be addressed:

*Research Question 1:* What is the overall level of connection (i.e., density) across organizations for each of the collaborative domains? In which domains do organizations collaborate the most? In which do they collaborate the least?

*Research Question 2:* Which organizations are most/least prominent across each collaborative domain? In other words, which organizations have the highest number of collaborative links within the network?

*Research Question 3:* Are different indicators of tie strength (i.e., communication frequency, trust, informal relationships) more strongly associated with how much organizations collaborate in different collaborative domains?

*Research Question 4:* Are different indicators of tie strength (i.e., communication frequency, trust, informal relationship) associated with collaborating with other organizations across more demanding types of relationships?

## **Rationale and Purpose**

One possible contributor to the high suicide rate in Colorado may be lack of coordination across the organizations that provide suicide prevention services. Because client well-being often relies on the coordinated actions of multiple organizations, gaps in interorganizational

collaboration that may impede referral processes must be identified and remedied. The network perspective can unveil unique characteristics regarding the cohesiveness and pattern of ties across and between organizations, as well as provide information about the strength of interorganizational relationships. However, a thorough literature review suggests that these methods have yet to be applied in a suicide prevention context.

The primary objective of this exploratory study was to assess the collaborative relationships across and between organizations involved in suicide prevention in one Colorado community in order to provide suggestions for network improvement. Specifically, the analysis explored the cohesiveness of collaboration and the level of involvement of community organizations across seven collaborative domains relevant to suicide prevention. A secondary goal of this study was to investigate the strength of relationships within the suicide prevention network to establish if specific aspects of tie strength are associated with collaboration within different domains. Three indicators of tie strength that past research has found to be particularly relevant for enhancing collaboration include communication frequency, trust, and informal relationships. Understanding which indicators of tie strength are most strongly associated with different domains of collaboration will provide useful insights regarding the relationship characteristics that can be strategically strengthened to enhance collaboration within different domains. Viewing the suicide prevention network from this perspective can offer insight into the current state of interorganizational collaboration, identify organizations most prominent or influential in the network, and determine how relationships can be strengthened to achieve common goals and improve system effectiveness (White, 2008).



## METHOD

The study design consisted of a cross-sectional survey administered through structured interviews with organizations involved in suicide prevention in one Colorado community.

### **Sample**

**Community selection.** The researchers, in cooperation with the OSP, selected the community to participate in the study based on convenience, accessibility, and high suicide rates when compared with other communities in Colorado. The only organization in the community specifically dedicated to suicide prevention was selected to act as a liaison between the research team and participating organizations. This organization served as a “key partner” to the researchers by compiling the initial list of organizations to be included in the interview process and by inviting organizational representatives to participate in the study.

**Organization selection.** The members that comprise an interorganizational network can be defined by identifying those that work together to solve common problems and accomplish specific tasks within a certain boundary (Heflinger, 1996). Participating organizations were selected based on their involvement with suicide prevention according to a broad definition including services related to prevention, intervention, postvention, mental health, education, training, awareness, and support groups. The process for selecting organizations for participation in the interview process consisted of the following three steps:

1. Geographic boundaries were determined by generating a list of zip codes for the community.
2. An initial list was created by the key partner organization consisting of all organizations involved in suicide prevention activities who reside within 10-miles beyond the zip code boundary.

3. The key partner organization circulated the initial list to primary network contacts to solicit suggestions for additional organizations that should be added to the list. Organizations were added by what is referred to as a “snowball” process if at least two primary network contacts advocated their inclusion.

A total of 46 organizations were selected to participate in the interview process. The final sample consisted of organizations from mental health (e.g., counseling and substance abuse services), physical health (e.g. hospitals), child welfare, human services, education, law enforcement, religious/faith-based organizations, crisis intervention, and domestic violence.

**Recruitment.** Two representatives from each organization, an executive administrator and a direct service provider, were recruited to be interviewed simultaneously. The purpose of the simultaneous interviews was to allow for discussion of different of opinions and to reach consensus. The simultaneous interview also served to ensure a comprehensive view of the range of interorganizational relations (Provan & Milward, 1995). In some cases (i.e., when it was not possible to interview both an executive administrator and a direct serve provider), the two individuals were recruited based on availability. Due to the importance of a maintaining a high response rate when conducting a network analysis (Provan, Leischow, Keagy & Nodora, 2010), considerable effort was made to collect data from every organization on the list.

### **Instrumentation**

The research team, in collaboration with the OSP, generated a draft survey based on a thorough literature review of previous network analyses, particularly those related to community health promotion. A review of studies that have used network analysis to examine interorganizational relationships within the context of public health suggests that links across organizations often include sharing information and resources, sending and receiving client

referrals, coordinating joint programs, and providing joint services (Bolland & Wilson, 1994; Johanson, 2000; Krauss, Mueller & Luke, 2004; Kwait, Valente & Celentano, 2001; Woodard & Doreian, 1994). Eight organizational representatives of Colorado organizations that received Garrett Lee Smith Suicide Prevention grants reviewed the initial draft of the survey. Seven collaborative domains were identified as essential to an effective suicide prevention network: sharing information; sharing resources; developing service infrastructure; sending referrals; receiving referrals; coordinating training activities; and coordinating screening activities.

A sociologist was consulted to determine the best way to measure communication frequency, trust, and informal relationships as aspects of tie strength. After a series of revisions, a pilot interview was conducted with two representatives from one of the Colorado organizations that was a recipient of the Garrett Lee Smith Suicide Prevention grant. Final revisions to the survey were made based on their feedback.

The core component of the final survey was designed to assess interorganizational relations across the seven collaborative domains, as well as to collect communication frequency, trust, and informal relationship ratings for each organization. The format of this section of the survey was comprised of a matrix with the entire list of organizations within the network in the far left column and the collaborative domains and tie strength indicators across the top row (see Appendix A). The seven collaborative domains and tie strength indicators were described to organizational representatives as follows:

**Information sharing.** Does your agency/organization share information pertaining to suicide prevention services at least every twelve months with the agency/organization listed? This might include information such as suicide prevention training opportunities, survivor

meetings, referral and crisis protocols, attempter groups, access to funded health care and social service programs, suicide prevention related databases, etc.

**Resource sharing.** Does your agency/organization share resources pertaining to suicide prevention services at least every twelve months with the agency/organization listed? Resources might include sharing funding for providing services, equipment or personnel for community meetings, facilities, etc.

**Developing service infrastructure.**

Does your agency/organization work with the agency/organization listed to develop or enhance your community's suicide prevention service infrastructure? This might include creating a mental health provider resources list, identifying social supports, etc.

**Referrals sent.** Does your agency/organization refer suicidal individuals at least every twelve months to agency/organization listed?

**Referrals received.** Does your agency/organization receive suicidal referrals at least every twelve months from the agency/organization listed?

**Coordinating training activities.** Does your agency/organization have relationships with the agency/organization listed around providing or receiving training or education related to suicide prevention?

**Coordinating screening activities.** “Does your agency/organization collaborate with the agency/organization listed to provide screening for suicide risk factors and/or general mental health screening?”

**Communication frequency.** “Considering your relationship over the last *three* months, please rate the frequency of communication between your agency/organization and the

agency/organization listed.” This item was measured on a 6-point Likert scale, ranging from none to more than one time per week.

**Trust.** “Based on your level of trust and collaboration with this organization, how satisfied are you with the overall quality of your relationship?” This item was measured on a 6-point Likert scale (1=marginal, 2=average, 3=slightly better than average, 4=good, 5=very good, 6=excellent).

**Informal relationships.** “Do you have any informal ties with individuals at the agency/organization listed? Informal connections may include friends, former coworkers, or any relationships that are stronger or more personal than a typical interorganizational relationship. If so, please indicate which type(s) of informal ties you share by circling the corresponding letter.” Options included “Friends,” “Former Coworkers”, and “Other Informal Relationships.”

The survey also collected information regarding total number of staff and volunteers, number of staff and volunteers dedicated to suicide prevention, number of suicide prevention services offered, and number of funding sources received for suicide prevention. In addition, the end of the survey contained four open-ended items to allow participants the opportunity to weigh in on the barriers to and facilitators of interorganizational collaboration and provide recommendations for how to improve the suicide prevention network.

## **Procedure**

All procedures (including the survey instrument) were approved by the Colorado State University Institutional Review Board before the initiation of the study.

**Organization recruitment.** Each organization was contacted by the key partner organization by email (see Appendix B for sample recruitment email), and asked to recruit two individuals to be interviewed. In order to gain varying perspectives on the referral processes and

interorganizational relations surrounding suicide, an executive-level administrative professional and a direct service staff were requested to participate (Provan & Milward, 1995). It was specified that these two individuals should possess in-depth knowledge of the organization's services and operations, and, in particular, be familiar with the organization's suicide referral processes. The recruitment statement encouraged involvement by stating that participating organizations would be provided with a high-level report pertaining to the strengths and patterns identified within their community's suicide prevention network, as well as suggested next steps to augment interorganizational collaboration and enhance suicide prevention efforts in the community. Upon agreeing to participate, a 1.5-hour interview was scheduled for the two individuals to be interviewed simultaneously (i.e., they were asked to be interviewed in one session, together, at the same time).

**Interview process.** Structured interviews were conducted in person, on-site at each organization.

**Set-up / introduction.** The interviewer provided a brief overview of the purpose of the interview and the overall goals of the project. Participants were asked to fill out one survey together and were encouraged to talk through questions and come to consensus when necessary/appropriate. The interviewer emphasized that participants should consider a broad definition of suicide prevention (i.e., inclusive of prevention, intervention, postvention, mental health, education, training, awareness, and support groups) throughout the interview process. Confidentiality was assured by informing participants that: (a) information gathered would be combined with information from other interviews, and only the combined results would be included in the final report and future publications; and (b) individual names would not be associated with any information gathered throughout the interview process in the final report and

future publications. The interviewer then asked if either of the two interviewees had any questions and thanked them in advance for offering their time to participate in this important project. Verbal consent was acquired from both individuals prior to proceeding with the interview.

*Survey: part 1.* Participants were told that the purpose of this section of the survey was to gather general information about their organization.

*Survey: part 2.* The researchers explained to participants that the goal of the second part of the survey was to learn how their organization interacts with other organizations in the network based on the seven collaborative domains, and to collect tie strength ratings (i.e., communication frequency, trust, and informal relationships) for each organization they shared a relationship with in at least one of the seven domains. A set of ten laminated cards with definitions of the seven collaborative domains as well as the communication frequency, trust, and informal relationships scales was provided to each interviewee to use as a reference while completing this portion of the survey.

Participants were asked to focus on their relationships with other organizations over the last twelve months, and were encouraged to talk through whether or not they interacted with each organization on the list in each of the seven collaborative domains. If both interviewees agreed on a shared relationship, they were instructed to place an 'X' in the corresponding matrix cell. If a 'X' was placed in at least one of the seven cells, participants were further instructed to provide communication frequency, trust, and informal relationship ratings for that organization. A clarification was highlighted that the trust ratings should not be based on the number of collaborative domains selected, but rather on the quality of those relationships (e.g., participants

could still rate a relationship a 6 on the trust scale even if only one collaborative domain was selected).

The interviewer then asked participants if they had any questions and walked them through the process for the first organization on the list. The two organizational representatives completed the remainder of this section of the survey together, talking through discrepancies in network relationships as they arose. The interviewer remained available in the event that any questions surfaced throughout the process.

***Survey: part 3.*** Participants were told that this portion of the survey was to allow them the opportunity to provide any additional thoughts/comments regarding their organization's involvement in the suicide referral network and ways the network could be strengthened. With permission, this portion of the interview was recorded using a digital audio recording device in order to ensure responses were captured in their entirety.

Upon completion, organizational representatives were again thanked for their time, the interviewer retrieved the completed survey, and the interview concluded.

**Collaborative intensity survey.** A supplementary online survey was designed and administered to participating organizations in order to determine the varying degrees of "collaborative intensity" of the seven collaborative domains. Organizational representatives were emailed a request to visit a link to complete the online ranking assignment. The ranking assignment asked participants to rank order the collaborative domains from one to seven based on "level of time, energy, and resources" required to collaborate on each activity, with 1 representing the most intensive activity and seven representing the least intensive (see Appendix C). The initial survey email was followed by two reminder emails to ensure a high response rate.



## **Data Analysis**

Data analysis included two main components. First, social network analysis was used to assess the cohesiveness and pattern of relationships among organizations across the seven collaborative domains. Second, statistical correlation and regression analyses were conducted to examine the associations between the seven collaborative domains, collaborative intensity ratings, and the three indicators of tie strength: communication frequency, trust, and informal relationships.

**Social Network Analysis.** To answer the first two research questions (i.e., assessing network cohesiveness and agency prominence across the seven collaborative domains), data were analyzed utilizing social network analysis (SNA) methods in the software program, UCINET 6 (Borgatti, Everett & Freeman, 2002). SNA presents relational data through both statistical as well as graphical methods, and the graphical outputs are referred to as sociograms (Hanneman, 2005). For each collaborative domain, an organization had incoming links, reflecting the number of other organizations that indicated the presence of a relationship with that organization, and outgoing links, reflecting the relationships the target organization indicated having with other organizations. Therefore, the observed ties or links can be directional (i.e., only one organization indicated the presence of a relationship) or bi-directional (i.e., the relationship was reciprocated by both organizations). Ties can also have an associated value to provide information regarding the strength of the relationship (e.g., on a scale of 1-6), which can be defined by frequency, quality, duration, and so on.

**Density.** Network density scores were calculated to assess network cohesiveness for all seven collaborative domains (see Table 1). Density scores have a possible range from zero to one. Zero indicates no collaboration across organizations and one represents a network where all

organizations collaborate with each other. These scores reflect the domains in which organizations are collaborating the most and in which they are collaborating the least. Both confirmed and unconfirmed density scores are reported. Confirmed density scores are those in which the presence of a relationship was indicated by both organizations (e.g., Organization A indicated having a relationship with Organization B and Organization B indicated having a relationship with Organization A), while unconfirmed density scores are those in which only one organization indicated having a relationship with the other organization.

While higher density scores indicate a greater degree of connectedness among organizations, it should be noted that ideal density depends on the context of each collaborative domain. For instance, in the domain of information sharing, having 100% connectedness across organizations may be desirable, whereas in the domain of sending referrals, 100% connectedness may result in redundancies or errors in network functioning (e.g., certain organizations may not have the capacity to receive referrals and would need to re-refer individuals to other organizations).

**Centrality.** Degree centrality was calculated to assess organizational prominence by measuring the number of direct links for each organization for all seven collaborative domains (Hanneman, 2005). Before calculating centrality scores, data for each collaborative domain were symmetrized according to the maximum rule. Symmetrizing in this way asserts that all directed ties are reciprocated. Due to the fact that only two representatives from each organization were interviewed, this approach is justified as the limited data collected increases the likelihood of underestimating the reciprocity of interactions. In other words, if all individuals from each organization had been interviewed, all ties would likely have been reciprocated. The collaborative domains of sending referrals and receiving referrals conceptually represent an

inverse relationship of one another; therefore, the incoming links for these relationships were transposed during the symmetrizing process.

***Collaborative intensity.*** A subset of organizations completed the online collaborative intensity ranking survey. Participants rank ordered the “collaborative intensity” (CI) of each of the seven collaborative domains based on the time, energy, and resources required to collaborate within each domain. Based on these ratings, an average CI score was then calculated for each collaborative domain. Within the raw, symmetrized data matrices, the average CI rating for each collaborative domain was inserted into each cell for which a pair of agencies reported sharing a relationship. Thus, any pair of organizations that shared a relationship within a given domain had an average CI rating in the corresponding cell for that domain instead of a one. All newly coded relationship matrices were combined into one matrix by summing the ratings in each cell across all seven collaborative domains. Each pair of organizations therefore had a score reflecting level of CI with each other organization summed across all seven domains. In other words, these scores indicate the amount of time, energy, and resources each agency invests in collaborative activities with each other agency in the network pertaining to suicide prevention.

***Tie strength.*** The three tie strength measures were calculated as follows:

***Communication frequency.*** Communication frequency scores were calculated by symmetrizing the data according to the average rule. The average rule takes the communication frequency ratings provided by the target organization (i.e., the outgoing links) and the communication frequency ratings other organizations provided for the target organization (i.e., incoming links) and creates an average of the two ratings. In this way, both organizations’ subjective perspectives of communication frequency were equally accounted for.

*Trust.* Trust scores were also calculated by symmetrizing the data according to the average rule. So, for each pair both organizations' subjective perspectives of trust were equally accounted for.

*Informal relationships.* Informal relationships were examined by first symmetrizing the data according to the maximum rule. Again, symmetrizing in this way assumes that all directed ties were reciprocated. After symmetrizing, a sum score was calculated reflecting the total number of informal relationships for each agency, including friendships, former co-workers, and other informal relationships.

**Correlation and regression analyses.** A series of correlation and regression analyses were conducted in order to determine which tie strength indicators were most strongly associated with interorganizational collaboration across the seven collaborative domains, as well as which tie strength indicators were most strongly associated with collaborative intensity. Since the purpose of these analyses was to examine collaboration at the network level, degree centrality scores, which calculate the average level of connectedness for each agency, were used for all seven collaborative domains.

When using statistics to describe network data, the basic concepts of distributions and central tendency apply to relational ties in the same way they apply to the attribute variables that have traditionally been examined by social scientists (Hanneman, 2005). The only conceptual difference is that with network data, these statistical analyses describe relationships, rather than attributes. Due to the fact that network data is relational, it is not reasonable to assume that the observations made through SNA methods are independent of one another. To account for the dependent nature of the observations, non-parametric, boot-strapping methods, known as Quadratic Assignment Procedure (QAP), employing random sampling across thousands of trials

were used in UCINET 6 (Borgatti et al., 2002) to calculate sampling distributions directly from the observed network data (Hanneman, 2005). All correlation and regression analyses were run with 10,000 permutations.

Four control variables that may influence interorganizational collaboration were included in the analyses: 1) total number of staff and volunteers, 2) total number of staff and volunteers involved in suicide prevention, 3) total number of funding sources for suicide prevention, and 4) total number of services related to suicide prevention. Inclusion of a fifth variable—whether or not an organization’s *only* role in suicide prevention was to send referrals—was considered. However, this variable was excluded due to the fact that only two of the 37 organizations fit into this category.

Model comparisons were computed to determine the best fitting model for each outcome variable (Brewer, Kramer, & Sawtelle, 2012; Tabachnick & Fidell, 2007). In order to do so, z-tests were used to test the significance of the difference between each set of predictors by comparing their correlated correlations (i.e., both correlations share a variable and are based on the same sample) as described by Tabachnick and Fidell (2007). The difference between the correlation of the outcome variable and first set of predictors ( $r_{ya}$ ) and the correlation of the outcome variable and the second set of predictors ( $r_{yb}$ ) was compared using the formula  $Z^* = (z_{ya} - z_{yb}) \sqrt{(N-3) / 2 - 2s_{ya,yb}}$ . If  $Z^*$  exceeded the critical value of  $\pm 1.96$ , there was a statistically significant difference between the two sets of predictors. The final predictive models were selected in order to make the best prediction for each outcome variable while using the least number of predictor variables (Brewer et al., 2012). This approach allows an examination of the importance that each tie strength indicator plays in predicting the centrality of an agency within each collaborative domain and collaborative intensity.

## RESULTS

A total of 37 (of the 46 organizations invited) participated in an interview and completed a survey. Results are reported for 1) a social network analysis to assess density and centrality across the seven collaborative domains, and 2) correlation and regression analyses to examine the associations between the seven collaborative domains, collaborative intensity, and the three tie strength indicators.

### Density

Network density scores were calculated for all seven collaborative domains (see Table 1). Overall, there were higher unconfirmed density scores than confirmed density scores, with fewer than half of the ties in each domain being unconfirmed. The highest density scores were found in the domains of information sharing and sending and receiving referrals. There were fewer connections in resource sharing and even fewer in developing service infrastructure and coordinating training and screening activities.

Table 1

*Confirmed and Unconfirmed Number of Ties and Density Scores Across All Seven Collaborative Domains, Colorado Community Suicide Prevention Network*

	Confirmed		Unconfirmed	
	Number of Ties	Density	Number of Ties	Density
<i>Information Sharing</i>	312	.23	704	.53
<i>Resource Sharing</i>	144	.11	466	.35
<i>Referrals Sent</i>	324	.24	706	.53
<i>Referrals Received</i>	324	.24	718	.54
<i>Developing Service Infrastructure</i>	34	.03	234	.18
<i>Coordinating Training Activities</i>	56	.04	226	.17
<i>Coordinating Screening Activities</i>	38	.03	152	.11

## Centrality

Degree centrality ranges and averages across the seven collaborative domains are represented in Table 2. Overall, there was a subset of organizations that was well connected and another group of organizations that consistently played a more peripheral role in the network across the seven collaborative domains. See Figure 1 for a sociogram that reflects a graphical representation of the variation in centrality for the ‘information sharing’ network. Higher averages for degree centrality were found in information sharing, referrals sent and referrals received, with much lower averages in developing service infrastructure and coordinating training and screening activities. These findings mirror the density scores and suggest that, overall, organizations are more highly connected through information sharing and sending/receiving referrals compared to other collaborative domains.

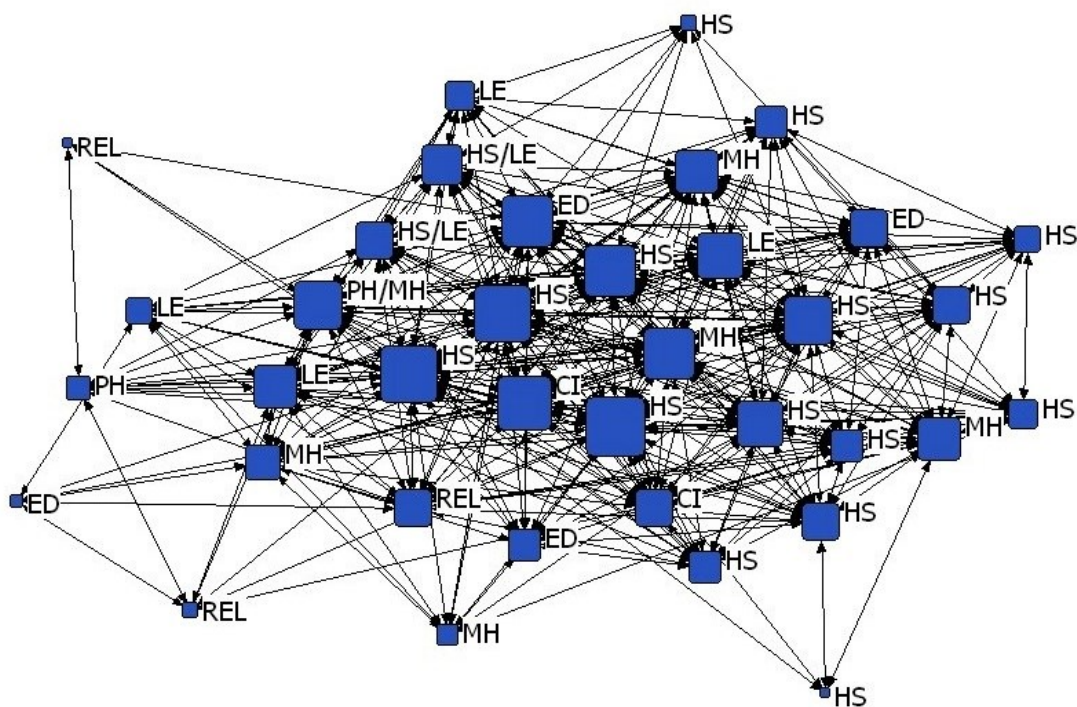
Table 2

*Degree Centrality: Ranges, Averages and Standard Deviations Across Seven Collaborative Domains, Colorado Community Suicide Prevention Network*

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	<b>Range</b>	<b>Average</b>	<b>SD</b>
<i>Information Sharing</i>	4-32	19.03	7.60
<i>Resource Sharing</i>	3-31	12.60	7.41
<i>Developing Service Infrastructure</i>	0-22	6.32	5.34
<i>Referrals Sent</i>	2-34	19.08	7.56
<i>Referrals Received</i>	2-34	19.41	7.51
<i>Coordinating Training Activities</i>	0-18	6.11	4.52
<i>Coordinating Screening Activities</i>	0-15	4.11	3.73

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*Figure 1.* Sociogram of information sharing network, Colorado Community Suicide Prevention Network. Node size reflects degree centrality. HS = Human services. MH = Mental health. PH = Physical health/hospital. LE = Law enforcement. ED = Education. REL = Religious organization. CI = Crisis intervention/domestic violence.

### **Collaborative intensity**

Twelve organizational representatives completed the online collaborative intensity (CI) rating task. Table 3 includes the means and standard deviations of the CI ratings for each collaborative domain. Developing service infrastructure was rated as having the highest intensity, and referrals sent was rated as having the lowest intensity. To create the sum scores used in the correlation and regression analyses, the mean CI score for each collaborative domain (as reflected in Table 3) was inserted to the symmetrized matrix for each pair of agencies that reported sharing a relationship. The seven matrices were then combined into one matrix by summing the CI scores for each pair of agencies across all seven domains.



Table 3

*Intensity Means and Standard Deviations for Collaborative Domains, Colorado Community Suicide Prevention Network*

	<b><i>M</i></b>	<b><i>SD</i></b>
<i>Information Sharing</i>	4.25	2.05
<i>Resource Sharing</i>	4.00	1.60
<i>Referrals Sent</i>	2.25	1.42
<i>Referrals Received</i>	3.75	2.53
<i>Developing Service Infrastructure</i>	5.50	1.93
<i>Coordinating Training Activities</i>	3.75	1.91
<i>Coordinating Screening Activities</i>	4.50	1.31

Note. Higher scores reflect higher collaborative intensity.

**Tie strength**

Average communication frequency scores ranged from .86 to 3.54 ( $M = 2.17, SD = .68$ ).

Average trust ratings range from 1.30 to 4.00 ( $M = 2.73, SD = .61$ ). The total number of informal relationships for each organization, including friendships, former co-workers, and other informal relationships ranged from 2-47 ( $M = 18.49, SD = 11.39$ ).

**Correlation and regression analyses**

Correlation and regression analyses were conducted to determine which tie strength indicators were most strongly associated with 1) centrality across the seven collaborative domains and 2) collaborative intensity. Degree centrality was used for all collaborative domains, average scores were used for trust and communication, and sum scores were used for informal relationships and collaborative intensity in all models. Four control variables were included in the analyses: 1) total number of staff and volunteers ( $Range = 5 - 4,650, M = 368.65, SD = 825.52$ ), 2) total number of staff and volunteers involved in suicide prevention ( $Range = 0 - 200, M = 39.73, SD = 55.61$ ), 3) total number of funding sources for suicide prevention ( $Range = 0$  to

8,  $M = 3.68$ ,  $SD = 2.60$ ), and 4) total number of services related to suicide prevention ( $Range = 1$  to 9,  $M = 4.81$ ,  $SD = 2.32$ ).

**Correlational analysis.** Exploratory correlation analyses were run using QAP to assess the strength of the association between the tie strength indicators (predictor variables) and the collaborative domains and collaborative intensity scores (outcome variables), and to determine which control variables to include in the regression models. QAP requires that all data be in matrix form; therefore, all centrality scores and all control variables were converted into difference matrices prior to analysis. Difference matrices are created by calculating the difference in centrality between each organization and every other organization in the network. Correlational data was calculated for all combinations of collaborative domains, tie strength indicators, collaborative intensity ratings, and control variables (see Table 4).

Table 4

*Correlations for All Collaborative Domains and Collaborative Intensity, Tie Strength Indicators, and Control Variables, Colorado Community Suicide Prevention Network*

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
01 Info Sharing	-----														
02 Res Sharing	0.59 ***	-----													
03 DSI	0.46 ***	0.59 ***	-----												
04 Refs Sent	0.55 ***	0.32 **	0.31 **	-----											
05 Refs Rec'd	0.55 ***	0.31 **	0.29 **	0.97 ***	-----										
06 Coord Train	0.36 ***	0.41 ***	0.55 ***	0.19 *	0.20 *	-----									
07 Coord Screen	0.27 **	0.21 *	0.45 ***	0.40 ***	0.40 ***	0.51 ***	-----								
08 CI	-0.10	0.12	0.18 *	-0.01	-0.02	0.15 *	0.18 *	-----							
09 Comm Freq	-0.16 *	0.05	0.17 *	-0.04	-0.04	0.08	0.20 **	0.84 ***	-----						
10 Trust	-0.11	0.07	0.17 *	-0.01	-0.01	0.11	0.21 **	0.85 ***	0.92 ***	-----					
11 IT Sum	0.02	0.13 **	0.12 *	0.02	0.00	0.01	0.09	0.42 ***	0.46 ***	0.46 ***	-----				
12 S&V	-0.04	-0.07	-0.02	0.20	0.19	0.12	0.30 *	0.16	0.18	0.17 *	0.05	-----			
13 SP S&V	-0.03	0.08	0.28 *	-0.02	-0.03	0.22 *	0.12	0.18 *	0.14	0.12	0.06	0.11	-----		
14 Funding	0.00	0.06	0.03	-0.03	-0.03	0.09	0.06	0.08	0.05	0.02	0.05	-0.10	0.10	-----	
15 Services	0.14 *	0.07	0.10	0.04	0.02	0.05	0.03	-0.06	-0.08	-0.05	0.06	0.00	0.23 **	0.10 *	-----

*Note.* Rows 1-8 are outcome variables, rows 9-11 are predictor variables, and rows 12-15 are control variables. Info Sharing = information sharing. Res sharing = resource sharing. DSI = developing service infrastructure. Refs Sent = referrals sent. Refs Rec'd = referrals received. Coord Train = coordinate training. Coord Screen = coordinate screening. CI = collaborative intensity. Comm Freq = communication frequency. IT Sum = sum of informal ties. S&V = staff and volunteers. SP S&V = staff and volunteers involved in suicide prevention. \*p < .05. \*\*p < .01. \*\*\*p < .001.

**Regression analysis.** Regression models were specified, using Multiple Regression Quadratic Assignment Procedure (MRQAP), to determine which indicators of tie strength were most strongly associated with interorganizational collaboration across the seven collaborative domains and collaborative intensity. In order to gauge the best set of predictors, all possible models (i.e., with all possible combinations of predictor variables) were constructed for each of the eight outcome variables (i.e., the centrality scores for the seven collaborative domains and the summed collaborative intensity scores). For each set of models, Model 1 consisted of the control variables (if any) that were significantly correlated to the centrality scores for the outcome variable. Predictor variables were then entered in order of decreasing correlation with the centrality of the outcome variable, as has been done in previous studies (e.g., Brewé, et al., 2012). Because correlational analyses revealed that the control variable ‘total number of funding sources for suicide prevention’ was not significantly correlated to any of the outcome variables, it was not included in the regression analyses. See Table 5 for the list of all models across all outcome variables.

Table 5

*Regression Models by Collaborative Domain Controlling for Significantly Correlated Variables, Colorado Community Suicide Prevention Network*

	# of Variables	R2	Adj. R2	p	Variables in Model
<b>Information Sharing</b>	1	0.018	0.017	0.026	total services
	2	0.039	0.038	0.003	total services, communication
	2	0.028	0.026	0.009	total services, trust
	2	0.018	0.017	0.023	total services, informal relationships
	3	0.047	0.045	0.001	total services, communication, trust
	3	0.049	0.046	0.001	total services, communication, informal relationships
	3	0.033	0.030	0.005	total services, trust, informal relationships
	4	0.055	0.052	0.000	total services, communication, trust, informal relationships
<b>Resource Sharing</b>	1	0.017	0.016	0.009	informal relationships
	1	0.005	0.004	0.164	trust
	1	0.002	0.002	0.263	communication
	2	0.017	0.015	0.011	informal relationships, trust
	2	0.017	0.016	0.006	informal relationships, communication
	2	0.006	0.004	0.094	trust, communication
	3	0.019	0.017	0.004	informal relationships, trust, communication
<b>Developing Service Infrastructure</b>	1	0.076	0.075	0.014	suicide prevention staff & volunteers
	2	0.095	0.093	0.006	suicide prevention staff & volunteers, trust
	2	0.093	0.091	0.008	suicide prevention staff & volunteers, communication
	2	0.087	0.086	0.008	suicide prevention staff & volunteers, IT sum
	3	0.095	0.093	0.005	suicide prevention staff & volunteers, trust, communication
	3	0.097	0.095	0.006	suicide prevention staff & volunteers, trust, IT sum
	3	0.095	0.093	0.007	suicide prevention staff & volunteers, communication, IT sum
	4	0.097	0.094	0.007	suicide prevention staff & volunteers, trust, communication, IT sum
<b>Referrals Sent</b>	1	0.001	0.001	0.313	communication
	1	0.000	0.000	0.398	informal relationships
	1	0.000	0.000	0.480	trust
	2	0.003	0.001	0.214	communication, informal relationships
	2	0.007	0.005	0.076	communication, trust
	2	0.000	0.000	0.339	informal relationships, trust
	3	0.008	0.005	0.062	communication, informal relationships, trust
<b>Referrals Received</b>	1	0.001	0.000	0.340	communication
	1	0.000	0.000	0.472	trust
	1	0.000	0.000	0.475	informal relationships
	2	0.005	0.003	0.122	communication, trust
	2	0.002	0.000	0.318	communication, informal relationships
	2	0.000	0.000	0.469	trust, informal relationships
	3	0.005	0.003	0.113	communication, trust, informal relationships

Table 5 (Cont.)

	# of Variables	R2	Adj. R2	p	Variables in Model
<b>Coordinate Training</b>	1	0.049	0.048	0.033	suicide prevention staff & volunteers
	2	0.056	0.055	0.019	suicide prevention staff & volunteers, trust
	2	0.051	0.049	0.026	suicide prevention staff & volunteers, communication
	2	0.049	0.047	0.027	suicide prevention staff & volunteers, informal relationships
	3	0.063	0.061	0.008	suicide prevention staff & volunteers, trust, communication
	3	0.058	0.056	0.019	suicide prevention staff & volunteers, trust, informal relationships
	3	0.051	0.049	0.025	suicide prevention staff & volunteers, communication, informal relationships
	4	0.065	0.062	0.008	suicide prevention staff & volunteers, trust, communication, informal relationships
<b>Coordinate Screening</b>	1	0.042	0.041	0.002	trust
	1	0.038	0.037	0.006	communication
	1	0.009	0.008	0.053	informal relationships
	2	0.043	0.041	0.003	trust, communication
	2	0.042	0.041	0.003	trust, informal relationships
	2	0.038	0.037	0.005	communication, informal relationships
	3	0.043	0.040	0.003	trust, communication, informal relationships
	<b>Collaborative Intensity</b>	1	0.032	0.031	0.020
2		0.727	0.727	0.000	suicide prevention staff & volunteers, trust
2		0.703	0.703	0.000	suicide prevention staff & volunteers, communication
2		0.201	0.200	0.000	suicide prevention staff & volunteers, informal relationships
3		0.747	0.746	0.000	suicide prevention staff & volunteers, trust, communication
3		0.728	0.728	0.000	suicide prevention staff & volunteers, trust, informal relationships
3		0.704	0.704	0.000	suicide prevention staff & volunteers, communication, informal relationships
4		0.747	0.746	0.000	Suicide prevention staff & volunteers, trust, communication, informal relationships

*Note.* \*For the collaborative domain ‘Coordinating Screening,’ the control variable ‘Staff & Volunteers’ was removed from the models due to the fact that the unstandardized coefficient for this variable never exceeded .001.

Next, z-test model comparisons were conducted to determine the best fitting model for each outcome variable. The results of the best-fitting regression models are summarized in Table 6.

Table 6

*Best-Fitting Regression Models for Each Collaborative Domain and Collaborative Intensity, Colorado Community Suicide Prevention Network*

<b>Information Sharing</b> ( $R^2 = .018^*$ )	<i>b</i>	<i>se</i>	<i>p</i>
Intercept	7.67		0.000
Total Services	0.45	0.21	0.027
<b>Resource Sharing</b> ( $R^2 = .017^{**}$ )	<i>b</i>	<i>se</i>	<i>p</i>
Intercept	8.09		0.000
Informal Relationships	0.77	0.31	0.010
<b>Developing Service Infrastructure</b> ( $R^2 = .076^*$ )	<i>b</i>	<i>se</i>	<i>p</i>
Intercept	4.71		0.000
Suicide Prevention Staff & Volunteers	0.02	0.01	0.014
<b>Coordinate Training</b> ( $R^2 = .049^*$ )	<i>b</i>	<i>se</i>	<i>p</i>
Intercept	4.29		0.000
Suicide Prevention Staff & Volunteers	0.02	0.01	0.027
<b>Coordinate Screening</b> ( $R^2 = .042^{**}$ )	<i>b</i>	<i>se</i>	<i>p</i>
Intercept	3.50		0.000
Trust	0.38	0.14	0.002
<b>Collaborative Intensity</b> ( $R^2 = .727^{***}$ )	<i>b</i>	<i>se</i>	<i>p</i>
Intercept	0.79		0.000
Suicide Prevention Staff & Volunteers	0.01	0.00	0.014
Trust	3.05	0.24	0.000

*Note.* None of the models for Referrals Sent or Referrals Received achieved statistical significance, so best-fitting models are not reported for these outcome variables. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Z-test model comparisons revealed that adding a second predictor variable to the models did not significantly increase the variance explained in any of the models, with the exception of the model for collaborative intensity, which included a control variable (total number of staff and volunteers involved in suicide prevention) and a tie strength indicator (trust). The best fitting models for information sharing, developing service infrastructure, and coordinating training activities consisted of control variables; thus adding a tie strength indicator to these models did not significantly increase the variance explained. No control variables were significantly correlated to resource sharing and coordinating screening activities, so the best fitting models consisted of tie strength indicators (informal relationships and trust, respectively) for these collaborative domains. Finally, none of the models for referrals sent or referrals received achieved statistical significance, indicating that neither the control nor the predictor variables had

a significant influence on the extent to which organizations collaborate to send or receive referrals.



## DISCUSSION

The present study offers the first (to our knowledge) examination of interorganizational collaboration within the context of suicide prevention, serving as an initial step toward acquiring a more objective and inclusive view of the nature of interorganizational relationships in a community suicide prevention network. Overall, density scores revealed that organizations were more highly connected in the domains of sharing information and resources and sending and receiving referrals, and less connected in the domains of developing service infrastructure and coordinating training and screening activities, which is consistent with the results of previous studies (Fried, Johnsen, Starrett, Calloway, & Morrissey, 1998; Luque et al., 2010; Provan, Harvey, & de Zapien, 2005). These findings are not surprising, given that information sharing and sending and receiving client referrals require significantly less time, energy, coordination, and resources when compared with the domains that exhibited lower density scores. However, high levels of information sharing may be a sign of network potential, since building community capacity generally starts with talking and sharing information, and is then solidified through the development of close working relationships (Provan et al., 2004).

Overall, there were higher unconfirmed density scores than confirmed density scores. In other words, there were more cases in which one organization indicated having a collaborative relationship with another organization that did not confirm sharing the same relationship (unconfirmed ties) than there were cases in which the presence of a relationship was confirmed by both organizations (confirmed ties). This discrepancy could suggest that that respondents either didn't have a clear understanding of what other network members their organization was connected to (e.g., perhaps the individuals interviewed were new employees of their respective organization), or that the connections between organizations were too weak to be recognized by

both parties (Provan, Harvey et al., 2005). The discrepancy between unconfirmed and confirmed ties should also be interpreted considering that not all staff from any of the organizations were interviewed; thus, data collected from only two representatives from each organization increased the likelihood of underestimating the reciprocity of interactions. In other words, if more or all individuals from the organizations had been interviewed, a greater percentage of ties might have been reciprocated, and the discrepancy between confirmed and unconfirmed density scores might have been substantially smaller, if not absent.

Degree centrality analyses identified the extent to which organizations varied in their level of connectedness to other organizations in the network. Across all seven collaborative domains, there was a subset of organizations that was well connected and another group of organizations that consistently played a more peripheral role in the network. These patterns in centrality scores indicated that there were differing levels of connectivity and influence among the organizations in the network. The sample network graph (sociogram) supplements these network measures by providing a visual depiction of the findings. An analysis of which organizations were most/least connected across various domains may provide useful insights into how to strengthen collaboration. For instance, organizations found to play a peripheral role in the network may be identified as underutilized resources in the community. Strategies can be developed to increase the participation of these organizations in the overall network. On the other hand, organizations that are more highly connected can be supported and encouraged to continue establishing and sustaining collaborative bonds with other organizations.

These findings also serve as an initial step toward gaining a better understanding of how tie strength indicators operate as determinants of interorganizational collaboration. Previous research has demonstrated that strong ties—in the form of frequent communication, high trust,

and the presence of informal relationships—have been associated with enhanced interorganizational collaboration (e.g., communication frequency, Green, Rockhill, & Burrus, 2008; trust, Provan et al., 2004; informal relationships, Pina-Strager & Lazega, 2011). However, the extent to which these indicators of tie strength influence diverse types of collaborative relationships has been minimally explored. The correlation and regression analyses revealed the extent to which these three indicators of tie strength are related to each domain of collaboration and collaborative intensity.

The results suggest that the three indicators of tie strength are differentially associated with collaboration in the seven domains. For some collaborative domains, trust or informal relationships accounted for the greatest amount of variance. These findings suggest that the best way an organization can work to strengthen collaboration with other organizations will depend on the collaborative domain of interest. For instance, organizations interested in sharing more resources with other organizations may best succeed by developing more informal relationships, whereas organizations interested in enhancing collaboration related to screening activities might benefit most by developing trusting relationships with other organizations. For other collaborative domains (e.g., developing service infrastructure), other variables (e.g., number of staff dedicated to suicide prevention), accounted for a majority of the variance. In these cases, the inclusion of tie strength indicators contributed an insignificant amount of additional variance explained.

When looking at an organization's overall collaborative intensity across the collaborative domains, trust accounted for the most variance. This suggests that organizations with more trusting relationships may invest more time, energy and resources into collaborative relationships and collaborate on more demanding activities than those with less trusting relationships. The

importance of trust was also a prominent theme found in the open-ended questions in the third and final part of the interview. When asked about previously or currently used strategies to foster collaborative relationships with other organizations, many organizational representatives spoke to the value of building and maintaining trusting relationships with other organizations.

Organizational representatives further explained that trusting relationships with other organizations were fostered by nurturing reciprocal levels of accountability, flexibility, honesty, mutual understanding, respect, and a shared understanding of organizational strengths and weaknesses. For instance, when asked for recommendations to improve or enhance collaboration across organizations, one participant commented:

“To me one of the things that I’ve recognized as a road block is trust...I know this person; I understand where they are coming from, even if I don’t agree [*sic*] where they are coming from. They know me; I know them and there is a trust that builds. A respect for what they can provide.”

It is important to note that although the best fitting models included the predictor variable(s) that accounted for the *most* variance in the outcome variables, there were often cases in which other predictor variables still proved to have significant associations with the outcome variables. For instance, trust was the only variable in the best fitting model for coordinating screening activities, but the models including communication and informal relationships were also significant. This suggests that all three tie strength indicators may play an important role in interorganizational collaboration in the domain of coordinating screening activities, with trust being the most influential. Across all seven domains of collaboration, communication frequency was not included in any of the best fitting models. This finding implies that communication

frequency might play a less influential role on interorganizational collaboration than trust or informal relationships.

Another notable finding of the present study is that the levels of declared friendship were relatively high in this network; on average, each organization reported having informal relationships with individuals from approximately 27% of the other organizations in the network. These high levels of informal relationships may not be characteristic of all suicide prevention networks. Examination of networks with differing levels of friendship across organizations may lead to different results concerning the differential effects of trust, communication, and informal relationships (Harrison, Sciberras, & James, 2011). Additionally, because Colorado currently has the 6<sup>th</sup> highest suicide rate in the country, conducting a similar study within a state with a lower suicide rate might result in different findings.

### **Limitations and future research**

One of the primary limitations of this study, common to the methods of social network analysis, is the likelihood that not all of the community organizations that were part of the suicide prevention network participated in an interview. In fact, only 37 of the 46 organizations invited to participate completed an interview. About half of the organizations that did not participate were religious organizations. A majority of which described their reasoning for declining participation as largely because they did not perceive their organization as playing an active role in suicide prevention. The remaining organizations that were invited but did not participate comprised a variety of small non-profit organizations (e.g., human services, crisis intervention). These organizations declined participation due to limited time and staff to participate in the interview process. However, even if all 46 organizations had participated, there was still a chance that additional relevant organizations may have been overlooked when the key

partner organization was generating the final participant list. Reasonable measures were taken to ensure that all appropriate organizations were included, but the possibility remains that some relevant organizations were missed. If any influential organizations were excluded, the results may have differed significantly from the reported findings. Another limitation of the current study is the inclusion of only two individuals from each organization. If a larger number of representatives from each organization were interviewed, a more comprehensive and accurate picture of the collaborative relationships in the network may have been attained.

Another challenge inherent to social network analysis methods is the need to have every participant report on all relations with every other organization in the network. This requires researchers to limit the scope of social network analysis surveys in order to reduce respondent burden. For instance, in the present study the survey took approximately one hour to complete; had the survey included additional organizations, collaborative domains or tie strength ratings, the response time would've been even longer. Due to these scope limitations, there may be additional domains of collaboration and types of tie strength that are influential within a suicide prevention network that were not included in the present study. One tie strength indicator that was not included is an organization's track record or past successes in working with other organizations (Harrison et al., 2011). Another factor associated with interorganizational coordination that was not included in the present study is whether or not the organizations share common goals (Rivard & Morrissey, 2003). Future research should investigate if other influential variables influence collaboration within a suicide prevention network.

Of course, the directionality of the relationship between the tie strength indicators and the collaboration within the seven domains cannot be specified due to the cross-sectional nature of the present study. Future research should explore the directionality of these relationships by

using longitudinal data collection methods. Another important consideration is that although all participants were encouraged to consider the same, broad definition of suicide prevention while completing the survey, there is also a possibility that individuals had different subjective perceptions of what should or should not be considered suicide prevention. Finally, another important direction for future research is to examine the link between interorganizational collaboration and client outcomes (Fried et al., 1998). Only when client outcomes are considered, can the true impact of interorganizational collaboration be evaluated.

## **Conclusions**

This research establishes the utility of an interorganizational network approach to the study of community organizations involved in suicide prevention. The findings can help those in the field of suicide prevention better understand how to assess the strengths and weaknesses within their community suicide prevention network. In an environment of scarce resources for community mental health services, it will be increasingly important for community organizations to develop strong collaborative relationships to build capacity and provide an integrated system of care to serve at-risk individuals. In addition to providing new insights regarding the structural and relational aspects of a suicide prevention network of organizations, this study may serve as a model for research to better understand networks within other community health settings. Future research efforts are required regarding the barriers to and facilitators of interorganizational collaboration with the goal of strengthening community safety nets that aim to prevent suicide.

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## APPENDIX A

### Referral Network Analysis Survey

In an effort to identify more efficient and effective means of preventing suicide in Fort Collins/Loveland, we would like to gain a better understanding of the relationships and referral processes between the various suicide prevention agencies and organizations. Community agencies and organizations like yours can play a key role in helping us achieve this important goal. Thank you for offering your assistance with this task.

**NOTE: For the purposes of this survey, suicide prevention is broadly defined to include suicide prevention, intervention, postvention, education, awareness, support groups, etc.**

#### SECTION I: ORGANIZATION INFORMATION

1. Name of agency/organization: \_\_\_\_\_

2. Type of agency/organization? (select the one that best describes your agency/organization)

- Health
  - Hospital/medical center
  - State/local health department
  - Mental health center
  - EMS/first response
  - Primary health physicians
  - Private mental health provider
- Education
  - Preschool/early childhood education
  - K-8
  - High school
  - Junior college
  - College
  - Professional/trade school
  - Adult higher learning
  - Non-traditional/alternative school
  - Home/Internet-based schooling (please also specify grade-level)
- Child welfare
- Human services
- Developmentally disabled services
- Police/law enforcement
- VA/military
- Religious/faith-based organization
- Crisis intervention/victim assistance or advocacy
- Domestic violence

Other (please describe): \_\_\_\_\_

3a. Number of staff in your organization: \_\_\_\_\_

3b. Number of volunteers in your organization: \_\_\_\_\_

3c. Number of staff/volunteers involved in suicide prevention services: \_\_\_\_\_

4a. Suicide prevention services provided by your agency/organization (select all that apply):

- \_\_\_\_\_ 1) Send referrals
- \_\_\_\_\_ 2) Receive referrals
- \_\_\_\_\_ 3) Life line/call center
- \_\_\_\_\_ 4) Crisis intervention
- \_\_\_\_\_ 5) Training/education
- \_\_\_\_\_ 6) Suicide survivor/attempter support groups
- \_\_\_\_\_ 7) Community outreach/awareness
- \_\_\_\_\_ 8) Maintain/develop community suicide prevention service infrastructure
- \_\_\_\_\_ 9) Screen for suicide risk factors and/or general mental health
- \_\_\_\_\_ 10) Other(s) (please specify: \_\_\_\_\_)

4b. Based on the categories in 4a, please list the top three suicide prevention services that are requested by your clients that you are unable to provide:

Top 1: \_\_\_\_\_

Top 2: \_\_\_\_\_

Top 3: \_\_\_\_\_

4c. Estimated number of people in each year utilizing the suicide prevention service(s) provided by your organization: \_\_\_\_\_

5a. Funding sources for suicide prevention service(s) for your agency/organization (select all that apply):

- \_\_\_\_\_ 1) City
- \_\_\_\_\_ 2) County
- \_\_\_\_\_ 3) State
- \_\_\_\_\_ 4) Federal
- \_\_\_\_\_ 5) Fundraising
- \_\_\_\_\_ 6) Individual and/or community donations
- \_\_\_\_\_ 7) Private foundations or organizations such as United Way
- \_\_\_\_\_ 8) Grants/subcontracts via partnership with other organizations or institutions
- \_\_\_\_\_ 9) Others (please specify: \_\_\_\_\_)

5b. Of these, which are your top three largest sources of funding for suicide prevention service(s)?

Top 1: \_\_\_\_\_

Top 2: \_\_\_\_\_

Top 3: \_\_\_\_\_

6a. How does your agency/organization communicate with the public pertaining to suicide prevention services (select all that apply)?

- \_\_\_\_\_ 1) Website
- \_\_\_\_\_ 2) Yellow Pages
- \_\_\_\_\_ 3) Local newspaper (print or on-line version)
- \_\_\_\_\_ 4) Newsletter via mail
- \_\_\_\_\_ 5) Newsletter via agency/organization's website or e-mail
- \_\_\_\_\_ 6) List serve
- \_\_\_\_\_ 7) Facebook
- \_\_\_\_\_ 8) Twitter
- \_\_\_\_\_ 9) Blog
- \_\_\_\_\_ 10) YouTube
- \_\_\_\_\_ 11) MySpace
- \_\_\_\_\_ 12) Podcast
- \_\_\_\_\_ 13) General e-mails
- \_\_\_\_\_ 14) Community in-person meetings/outreach
- \_\_\_\_\_ 15) Flyers
- \_\_\_\_\_ 16) Posters
- \_\_\_\_\_ 17) Brochures
- \_\_\_\_\_ 18) Word of mouth
- \_\_\_\_\_ 19) Questionnaires
- \_\_\_\_\_ 20) Other(s) (please specify: \_\_\_\_\_)

6b. Of these, which are the three most often used methods that direct clients to your suicide prevention service(s)?

Top 1: \_\_\_\_\_

Top 2: \_\_\_\_\_

Top 3: \_\_\_\_\_

## SECTION II: INTERACTIONS WITH OTHER AGENCIES OR ORGANIZATIONS

Below is a list of agencies and organizations in Fort Collins/Loveland that provide suicide prevention services. We would like to know the extent to which your agency or organization has been involved with, or linked to, the others listed concerning suicide prevention services. We have identified seven types of involvement your agency or organization might have with others on the list.

Please indicate with a “x” or a check mark (✓) whether or not your agency/organization is involved with or linked to each of the other agencies on the list below **during the past 12 months**. Also, please note that most, but not all, agencies/organizations in Fort Collins/Loveland are listed.

Organizational	Mark “x” or (✓) if you have this link									Rating Overall quality of the relationship
	Info. sharing	Resource sharing	Developing service infrastructure	Referrals sent	Referrals received	Coordinate training activities	Coordinate screening activities	Informal ties	Comm. Frequency	
								F C O		
								F C O		
								F C O		
								F C O		
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### SECTION III: INTERACTIONS WITH OTHER AGENCIES OR ORGANIZATIONS

Please take a moment to share any additional thoughts about your organization's involvement in your local suicide prevention network.

1. When your organization makes a referral, what are some of the barriers that prevent you from following up to make sure proper treatment is received?
  
1. In general, what strategies have facilitated collaboration between your organization and other suicide prevention organizations in your community?
  
1. What recommendations do you have to improve/enhance collaboration among organizations?
  
1. Please list any other ideas you may have regarding how to improve suicide prevention efforts in Fort Collins/Loveland.

## APPENDIX B

### Agency Recruitment Email

Dear \_\_\_\_\_,

In an effort to identify more efficient and effective means of preventing suicide in Fort Collins and Loveland, AGENCY NAME is partnering with Colorado State University on a project to gain a better understanding of the referral processes among suicide prevention agencies and organizations. Community agencies and organizations like yours can play a key role in helping us achieve this important goal. The first step in this process is to have face-to-face interviews with two representatives from your agency to learn about the referral process.

Specifically, we'd like to ask for your help by recruiting two members from your organization to participate in a one-hour interview. These two individuals should have in-depth knowledge of the agency and be familiar with the referral process. Ideally, we would like to interview a higher-level administrator and a direct service staff member. We will interview both individuals together during the same hour.

At the end of this project, we will provide you with a report pertaining to the strengths and patterns we identified in the referral network, and suggestions to strengthen suicide prevention efforts in the community.

Without your participation, we will not be able to achieve the above goals with a full picture of Fort Collins/Loveland. Your willingness to help the community is invaluable. One of my colleagues from CSU will be contacting you shortly to arrange a convenient time for the interview.

If you have any questions or would like to learn more about this project, please feel free to contact the project manager, Lauren Menger ([lauren.menger@colostate.edu](mailto:lauren.menger@colostate.edu)).

Thank you so much for your help.

## APPENDIX C

### Collaborative Relationships Ranking Survey

Please rank the below activities from 1 to 7 in terms of collaborative intensity based on the level of time, energy, and resources required to collaborate on these activities.

1 = Most intensive, requires the greatest level of time, energy, and resources

7 = Least intensive, requires the lowest level of time, energy, and resources

NOTE: Enter a different rank number for each activity (i.e., 1, 2, 3, 4, 5, 6, 7). In other words, do not enter "1" for more than one activity.

	Rank
<p><b>INFORMATION SHARING</b> Share information pertaining to suicide prevention services. This could include information regarding suicide prevention training opportunities, survivor meetings, referral and crisis protocols, attempter groups, access to funded health care and social service programs, suicide prevention related databases, etc.</p>	
<p><b>DEVELOPING SERVICE INFRASTRUCTURE</b> Work together to develop or enhance your community's suicide prevention service infrastructure. This might include creating a mental health provider resources list, identifying social supports, etc.</p>	
<p><b>COORDINATING SCREENING ACTIVITIES</b> Collaborate to provide screening for suicide risk factors and/or general mental health screening.</p>	
<p><b>RESOURCE SHARING</b> Share resources pertaining to suicide prevention services. This could include sharing funding for providing services, equipment or personnel for community meetings, facilities, etc.</p>	
<p><b>REFERRALS SENT</b> Refer suicidal individuals to another agency.</p>	
<p><b>REFERRALS RECEIVED</b> Receive suicidal referrals from another agency.</p>	
<p><b>COORDINATING TRAINING ACTIVITIES</b> Collaborate to provide or receive training or education related to suicide prevention.</p>	