Team Social Capital in Self-Managed Project Teams: A Case Study of a Shared Leadership Development Intervention

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Team Social Capital in Self-Managed Project Teams:

A Case Study of a Shared Leadership Development Intervention

Leah J. Osborn, Ph. D.

University of Connecticut, 2019

As organizational structures have flattened and the global business environment has become more complex, many organizations have turned to self-managed project teams to effectively accomplish organizational objectives. Research shows that shared leadership and team social capital are important attributes of self-managed project teams. While leadership development programs continue to focus on the development of individual leaders, preliminary studies suggest that integrated leadership development interventions may be more effective in developing team social capital in project teams than traditional approaches.

The purpose of this qualitative case study was to explore how team internal social capital developed through participation in an integrated leadership development intervention. Activities designed to build team social capital were integrated into the project team’s work and data were gathered through artifacts, reflection questionnaires, interviews and observation. Data analysis involved social network analysis and the inductive analysis of artifact, interview and reflection data.

Analysis of the study data revealed that as members of a self-managed project team participated in an integrated leadership development intervention, four aspects of team social capital—Knowledge Sharing Network Ties, Team Mental Models, Situation Mental Models, and Influence Reciprocity Network Ties—emerged. The findings answered the research question: How does team internal social capital develop through participation in an integrated leadership development intervention?
I drew two conclusions based on the findings: (a) team internal social capital develops in response to intervention activities that are integrated into the work of self-managed project teams when these teams have the appropriate organizational support; and (b) shared leadership, which manifests itself through patterns of Influence Reciprocity Network Ties across team decision events, relies on the development and interaction of multiple aspects of team internal social capital, including Knowledge Sharing Network Ties, shared Team Mental Models, and shared Situation Mental Models.

The findings of this study inform adult learning professionals tasked with the design and delivery of leadership development programs and/or the support of self-managed project teams. Recommendations address how individuals responsible for leadership development or management of project teams can implement strategies that support the development of team internal social capital and expand shared leadership capacity within the organization.
Team Social Capital in Self-Managed Project Teams:
A Case Study of a Shared Leadership Development Intervention

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A Dissertation
Submitted in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Philosophy
at the
University of Connecticut
2019
Team Social Capital in Self-Managed Project Teams:
A Case Study of a Shared Leadership Development Intervention

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ACKNOWLEDGEMENTS

Over the course of my time in the Adult Learning Ph.D. program at the University of Connecticut, I have had the privilege of working with three different advisors, each of whom has contributed to my scholarship and ultimately to the completion of this project. Many thanks to Robin Grenier, Sandy Bell, and Marijke Kehrhahn for their guidance, inspiration, and support throughout the program, and especially through the process of planning and writing this dissertation. I particularly appreciate Sandy and Marijke sticking with me even after moving on to exciting new phases in their own lives.

As an instructional designer, I appreciate the structure of the Adult Learning program, where major assignments that support the research process are strategically embedded in the coursework in preparation for the tasks associated with a dissertation. Several years ago, as part of the Workplace Learning course—Marijke may remember that semester when every other week was a snow day—I completed a literature review assignment on team mental models, which provided valuable experience in conducting a literature review, as well as exposure to ideas that ultimately led to my research topic. It was in Robin’s Organizational Learning course that I was first exposed to Action Learning, which became an underlying theme for my study design. The time and attention that Sandy devoted to the proposal development process was invaluable to helping me develop a well-planned research project. Her thoughtful encouragement and feedback were instrumental in helping me build confidence in my writing abilities, and her suggestions always resulted in a much better product.

Robin’s expert guidance through the qualitative data analysis process helped me determine how to tackle the variety of data sets that resulted from this study, and her practical suggestions about how to manage large sets of data saved me many hours of frustration. I would
also like to thank Robin for being willing to take over as my major advisor when Sandy retired and guiding me through these final stages of development. Finally, I would also like to thank Jennie Weiner and Eric Bernstein for serving as committee members for my proposal and dissertation defense. I appreciate the time and effort that they devoted to reviewing my work, and the thoughtfulness of their input and feedback.

While, for reasons of confidentiality, I cannot refer it by name, I would like to thank the agency where I conducted my research for supporting the project and giving me the opportunity to work with its wonderful staff. Many thanks to the members of the project team for their commitment to the project, and for being willing to take the time to thoughtfully complete the various reflection questionnaires that provided critical data to this study. They were a fabulous group to work with, and I enjoyed every minute of it. I would especially like to thank “Joyce,” the project manager, for her wisdom and good humor as we worked our way through the project, balancing the needs of the organization with the requirements of the research study.

During my time in the program, all three of my children completed college degrees. It was fun to share the student experience with them, and I want to thank each of them—Matthew, Sam, and Hilary—for their enthusiasm and encouragement. I am very proud of each of them and their accomplishments. I also want to thank my husband, Ed, for his unwavering support. His encouragement and interest in my study kept me going even when the path forward seemed daunting. We have gone through life as partners in all things, and this journey was no different. We spent many mornings over coffee discussing team social capital and went through many red pens as he provided valuable feedback on my work. Finally, I would like to dedicate this study to my parents, Ardis and Dick Edmondson, who instilled in my sisters and me the belief that we can do anything we want, if we are willing to work for it. I miss them both!
# TABLE OF CONTENTS

LIST OF FIGURES ........................................................................................................ xi
LIST OF TABLES ............................................................................................................. xiii

CHAPTER 1: INTRODUCTION ...................................................................................... 1
Problem Statement ........................................................................................................ 4
Conceptual Framework ................................................................................................. 7
Theme 1: Shared leadership capacity and enhanced team effectiveness are promoted when self-managed project teams engage in one or more complex adaptive challenges ........................................... 16
Theme 2: Network ties and shared team mental models, two aspects of team internal social capital, contribute to expanded shared leadership capacity ................................................................. 19
Theme 3: Facilitated intervention activities integrated into project team work develop team internal social capital. ............................................................................................................. 31
Chapter Summary and Research Questions ............................................................... 42

CHAPTER 2: METHODOLOGY AND METHODS .................................................. 43
Methodology .................................................................................................................. 43
Setting ......................................................................................................................... 43
Sampling ..................................................................................................................... 44
Recruitment and Permissions .................................................................................... 44
Participants .................................................................................................................. 46
Intervention Overview ............................................................................................... 47
Data Collection Methods and Procedures ............................................................... 49
Data Analysis Methods Overview ............................................................................. 51
Trustworthiness .......................................................................................................... 72
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

Subjectivity............................................................................................................................................. 73

Limitations................................................................................................................................................ 75

Chapter Summary..................................................................................................................................... 75

CHAPTER 3: FINDINGS ............................................................................................................................. 77
Finding 1: As project team members collaborate in smaller subgroups, Knowledge Sharing
Network Ties are established and strengthened ......................................................................................... 77
Finding 2: Shared Team Mental Models develop when individual team members have
opportunities to share knowledge or demonstrate expertise through project tasks and
activities...................................................................................................................................................... 84
Finding 3: Shared Situation Mental Models emerge in response to critical incidents (significant
events) in the project life-cycle and inform key team decisions ............................................................ 93
Finding 4: Influence Reciprocity Network Ties emerge through collaborative decision-making
processes when senior members of the project team embrace shared leadership, encourage team
members to participate, and mentor fellow team members ....................................................................... 109

Chapter Summary ..................................................................................................................................... 134

CHAPTER 4: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS ............................. 135

Discussion ............................................................................................................................................... 135

Conclusions ............................................................................................................................................... 139

Conclusion 1: Team internal social capital develops in response to intervention activities
integrated into the work of self-managed project teams when these teams have the appropriate
organizational support. ............................................................................................................................. 139

Conclusion 2: Shared leadership, which manifests itself through patterns of Influence
Reciprocity Network Ties across team decision events, relies on the development and interaction
of multiple aspects of team internal social capital, including Knowledge Sharing Network Ties, shared Team Mental Models, and shared Situation Mental Models. ................................. 148

Implications for Theory ................................................................. 155

Implications for Practice ................................................................. 166

Recommendations for Future Research .................................................. 172

Final Thoughts ................................................................................. 174

REFERENCES ................................................................................. 177

Appendix A: Data Sources Chart ......................................................... 191

Appendix B: Intervention Summary Chart ............................................. 192

Appendix C: Data Collection Procedures ............................................. 196

Appendix D: Pre-Launch Reflection .................................................... 198

Appendix E: Monitoring Reflection .................................................... 201

Appendix F: Project Completion Reflection .......................................... 205

Appendix G: Situation Analysis Reflection ........................................... 209

Appendix H: Self-Reflection ............................................................... 211

Appendix I: Interview Protocol – Participant ....................................... 216

Appendix J: Interview Protocol – Project Manager ................................. 217

Appendix K: TMM Roles, Responsibilities, and Resources Matrix ........... 218

Appendix L: Knowledge Sharing Network Ties Matrix .......................... 233

Appendix M: Influence Reciprocity Matrix ......................................... 237

Appendix N: Critical Incident Data Analysis Chart ............................... 239
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

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# LIST OF FIGURES

**Figure 1:** Leadership Development Interface Model *(Hanson, 2013, p. 114)* .......................... 7  
**Figure 2:** Team Leadership Cycle *(Day, Gronn, & Salas, 2004)* ........................................ 9  
**Figure 3:** Team Social Capital Development Model *(Osborn, 2019)* ................................. 15  
**Figure 4:** Matrix Example *(Hatala, 2006, p. 59)* ................................................................. 22  
**Figure 5:** Sociogram Example *(Hatala, 2006, p. 61)* ......................................................... 23  
**Figure 6:** Open-Coded Transcript ......................................................................................... 57  
**Figure 7:** Initial Code List ....................................................................................................... 58  
**Figure 8:** Updated Code List .................................................................................................. 59  
**Figure 9:** Transcript Coded in DeDoose ................................................................................ 60  
**Figure 10:** Exported Coded Transcript .................................................................................. 61  
**Figure 11:** Exported Code List from DeDoose ..................................................................... 62  
**Figure 12:** Coded Excerpts ..................................................................................................... 63  
**Figure 13:** Pre-Launch Reflection Data Chart ....................................................................... 66  
**Figure 14:** Project Completion Reflection Data Chart .............................................................. 67  
**Figure 15:** Influence Reciprocity Matrix—Monitoring Reflection ............................................ 68  
**Figure 16:** Influence Reciprocity Matrix—Completion Reflection ............................................ 68  
**Figure 17:** DeDoose Code List with Number of References ..................................................... 69  
**Figure 18:** Completion Reflection results on participant perceptions of Knowledge Sharing  
Network Ties with co-participants at the end of the project ...................................................... 79  
**Figure 19:** Influence Reciprocity Matrix—Monitoring Reflection ............................................ 111  
**Figure 20:** Influence Reciprocity Matrix—Completion Reflection ............................................ 112  
**Figure 21:** Training Program Recommendation ..................................................................... 117
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

Figure 22: Presentation Storyboard ................................................................. 118

Figure 23: Recommendation Slide ................................................................. 121

Figure 24: Team Recommendation ................................................................. 123

Figure 25: Team Social Capital Development through an Integrated Leadership Development Intervention (Osborn, 2019) ................................................................. 137

Figure 26: Expanded View of the Team Social Capital Development through an Integrated Leadership Development Intervention (Osborn, 2019) ................................................................. 138
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

LIST OF TABLES

Table 1: Participant Profiles ................................................................. 46
Table 2: Pre-Launch Reflection Data ...................................................... 78
Table 3: Organizational Goals and Research Categories .......................... 98
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CHAPTER 1
INTRODUCTION

Business organizations in the United States spend more than $15 billion each year on leadership development in an effort to improve organizational performance, representing 35% of all spending on corporate training (Meinert, 2014; O'Leonard, 2014). While leadership development programs typically focus on the development of individual leadership skills and attributes, traditional top-down leadership hierarchies have given way to flatter organizational structures that rely more heavily on project teams to accomplish organizational objectives (DeChurch & Mesmer-Magnus, 2010; Pearce & Conger, 2003). Due to their inherent variety of knowledge, resources, and perspectives, multidisciplinary project teams enhance innovation, maximizing the organization’s ability to adapt to complex and dynamic environments (Reuveni & Vashdi, 2015).

In contrast to traditional leadership hierarchies, these flatter structures alter the leadership dynamic, with leadership responsibilities distributed across the team (Clarke, 2012a; Salas, Sims, & Burke, 2005). The shared leadership capacity of teams has become an important resource for addressing today’s complex business challenges (Clarke, 2012b; Day et al., 2004; D. Wang, Waldman, & Zhang, 2014). According to Pearce and Conger (2003), shared leadership is defined as “a dynamic interactive influence among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both” (p. 1). Shared leadership has been shown to positively impact team performance (Hoch, 2014; Pearce & Conger, 2003). For example, in a study of 71 change management teams, Pearce and Sims (2002) found shared leadership to be a strong predictor of team effectiveness as measured by managers, internal customers, and team members. The authors used regression analysis to predict
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

team effectiveness. Use of shared leadership behaviors by team members explained between 18–52% of the variance in team effectiveness, with the lower percentage explained when team effectiveness was assessed by managers and the higher percentage explained when team effectiveness was rated by team members themselves.

Shared leadership depends on strong team internal social capital. In the context of teams, internal social capital, sometimes called bonding social capital, refers to both the relationship networks within the team and the resources embedded within the team that become available through these networks (Clarke, 2012a; Nahapiet & Ghoshal, 1998). Team internal social capital extends the collective ability of team members to effectively undertake leadership roles by enhancing network ties among team members (Lee, Park, & Lee, 2015). Expanded network ties enhance the flow of information and resources within the team, which positively impacts team performance by enhancing shared leadership capacity (Chen, Chang, & Hung, 2008; Galli & Müller-Stewens, 2012; Lee et al., 2015).

Network ties, an aspect of team social capital, refers to the pattern of connection between individuals that forms the basic building block of a social network. A network tie is a relational entity that exists if two individuals are considered connected in some respect and does not belong to any single individual (Mayo, Meindl, & Pastor, 2003). In the context of a project team, network ties reflect team-level systems for utilizing and integrating individually and collectively held expertise and influence (Carson, Tesluk, & Marrone, 2007; Hatala, 2006). In a study of 54 research & development (R&D) project teams, Chen et al., (2008) found that network ties were strongly correlated with team creativity ($r = .63, p < .001$) a key performance measure for R&D teams. Network ties provide efficient access to knowledge resources and information flows.
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

among team members, as well as opportunities for shared decision-making through bi-directional influence reciprocity (Hatala, 2006; Mayo et al., 2003).

Shared mental models, a key aspect of cognitive social capital, facilitate collaborative team processes and effective decision-making (Clarke, 2012a; Lee et al., 2015; Mäkelä & Brewster, 2009; Nahapiet & Ghoshal, 1998). Rook (2013) defined a mental model as “a concentrated, personally constructed, internal conception of external phenomena (historical, existing, or projected), or experience, that affects how a person acts” (p. 42).

Shared mental models refers to the accuracy and similarity of individual mental models within a team, reflecting collective cognition (Carson et al., 2007). Team and situational mental models are two types of shared mental models most relevant to shared leadership (Burke, Fiore, & Salas, 2003; Cooke, Salas, Cannon-Bowers, & Stout, 2000). Team mental models include declarative, procedural, and strategic knowledge pertaining to team roles, resources, and responsibilities. Situational mental models reflect the team’s collective understanding of a situation at a particular point in time, which guides team actions and decisions (Burke et al., 2003). In a study of 492 Information System Design (ISD) professionals in 118 ISD teams, Xiang et al. (2013) found that shared mental models were a significant mediator in the relationship between social capital and ISD team knowledge sharing: in the structural equation model without shared mental models social capital accounted for only 15% of the variance in knowledge sharing, whereas 55% of the variance was accounted for when shared mental models was added as a mediator. In addition, shared mental models accounted for 39% of team performance.
Problem Statement

While researchers and leadership development professionals agree that team internal social capital should be a primary outcome of leadership development programs, few programs adequately address the development of team internal social capital in their designs (Clarke, 2012a; Hanson, 2013; Van De Valk & Constas, 2011). Traditional leadership development programs typically bring together leaders or potential leaders from multiple organizations outside of the context of their home organization. Studies show that while these programs are often effective in developing individual participant’s leadership skills, they have minimal impact on the development of team internal social capital in the home organization (Leitch, McMullan, & Harrison, 2013; R. J. Thomas, Jules, & Light, 2012; Wageman, Nunes, Burrus, & Hackman, 2008). For example, in a qualitative study of the impact of a leadership development program designed to improve regional economic and social development, Iles and Preece (2006) found that while external social capital was enhanced through participation in the program, the resulting networks reflected relationships with leaders from other organizations in the region, not with team members from the home organization.

Preliminary studies suggest that leadership development that is integrated with organizational work is more effective in developing team internal social capital than traditional off-site approaches. By correlating leadership development data with evidence of social capital development within the organization, Galli and Müller-Stewens (2012) found that leadership development practices that enable contact, assimilation, and identification experiences, such as job assignments or action learning, have the potential to facilitate the development of strong forms of social capital within the organization most efficiently.
In a meta-analysis of 200 studies reporting on the causal impact of interventions on leadership, Avolio et al. (2009) found slightly larger effects on outcomes for integrated interventions such as scenarios and work assignments ($ESr = .69; k = 101; n = 8679$), than traditional training-oriented interventions ($ESr = .60; k = 37; n = 4423$). While this study did not address team social capital specifically, it suggests that traditional training approaches are less effective in achieving intended leadership development outcomes than integrated approaches (Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009).

Action learning, defined as an approach to organizational learning that involves a small group or team addressing real organizational problems (Eskerod, 2010; Marquardt & Yeo, 2012; Volz-Peacock, Carson, & Marquardt, 2016), shows promise as a method of integrating leadership development into the actual work of teams. In a recent analysis of case study data from more than 200 action learning sessions, trained coaches reported that the action learning approach was effective in developing leadership skills that were transferrable to the workplace while working to solve important organizational problems (Volz-Peacock et al., 2016). The action learning projects highlighted in the study focused on the development of individual leadership skills and abilities, and not on the development of team social capital. A gap in the research exists in exploring the impact of action learning projects on team social capital.

Individuals charged with providing leadership development need new models for delivering integrated, team-focused leadership development that build team internal social capital. Few leadership development programs, however, reflect an integrated approach (Clarke, 2012a; Volz-Peacock et al., 2016). In a recent review of the leadership development literature I found that only two (Galli & Müller-Stewens, 2012; Hirst, Mann, Bain, Pirola-Merlo, & Richver, 2004) of the 18 studies reviewed actually addressed leadership development programs that took
place primarily within organizational teams. While these studies explored the impact of integrated leadership development practices on the growth of social capital, they did not provide much detail about the specific characteristics of the integrated methodologies included in the study, reflecting another gap in the literature.

At the organizational level, an over-emphasis on traditional programs that focus on individual leader development results in a missed opportunity to use professional development resources more effectively to improve organizational performance by building social capital within teams (Barnett & Weidenfeller, 2016; Day et al., 2004; Hanson, 2013). The scarcity of non-traditional programs also suggests that human resource development professionals are underprepared to deliver integrated team-based leadership development programs. Individuals charged with building social capital through leadership development are typically experienced in delivering classroom-based professional development, but may not have the skills needed to design and deliver integrated leadership development interventions at the team level (Dalakoura, 2010; Hedges, 2014; R. J. Thomas et al., 2012).

Because teams with higher levels of social capital perform more effectively (Gupta, Huang, & Yayla, 2011; Xiang, Lu, & Gupta, 2013), a better understanding is needed of how participation in an integrated leadership development intervention relates to the development of team internal social capital and improved team performance. The results of this study inform the efforts of leadership development and human resource development professionals to design and deliver integrated leadership development programs that effectively improve both team and organizational performance by enhancing development of team internal social capital and shared leadership capacity.
Conceptual Framework

Background

The conceptual framework for this study is situated within the larger context of leader/leadership development prevalent in the leadership development literature. In this section I will illustrate the relationship between models of leader/leadership development found in the literature and the emergence of shared leadership capacity through the development of team social capital. I will build on these concepts to introduce the Team Social Capital Development Model which guided my study.

Day (2000) is often credited with making the distinction between individual leader development and leadership development, making the case for why leadership development is important. Traditional leader development focuses on the individual leader, typically outside of the organizational context, while leadership development focuses on developing leadership capacity at all levels of the organization. Hanson (2013) extended this distinction into a four-quadrant Leader/Leadership Development Interface model:

![Image](image.png)

*Figure 1: Leadership Development Interface Model (Hanson, 2013, p. 114).*

Quadrant III of Hanson’s model includes leadership development supports that are integrated into organizational work and linked to organizational performance. Quadrant III
leadership development is characterized by facilitated development projects with defined performance expectations (Hanson, 2013). Hanson’s Quadrant III framework provides the context for my study, where I explore how leadership development interventions that are integrated into organizational work expand shared leadership capacity through the development of team social capital.

As Hanson’s model suggests, leadership development throughout the organization is needed to improve organizational performance. Turregano and Gaffney (2012) advocate strategic multi-level leadership development to build a “vibrant leadership culture” (p. 18) throughout the organization, enhancing both communication and collaboration. Based on an analysis of five published leadership studies, McCallum and O’Connell (2009) suggest that leadership development efforts should actively build social capital throughout organizational networks. In addition to the organization and community levels, Clark (2012a) identified individuals, dyads, and teams as important targets for leadership development within an organization. My study builds on these recommendations by focusing the development of social capital in project teams through integrated leadership development interventions.

**Team Shared Leadership**

At the team level, building shared leadership capacity is particularly important as organizations increasingly depend on teams to design new products, address complex challenges, and solve organizational problems (Ensley, Hmieleski, & Pearce, 2006; Pearce & Conger, 2003; Pearce & Sims, 2002). In a study of new venture top management teams, Ensley, Hmieleski, and Pearce (2006) found that shared leadership, characterized by leadership processes that are carried out by the team as a whole rather than a designated leader, played an important role in the effectiveness of top management teams. The authors used a hierarchical regression analysis to
predict new venture performance for both vertical leadership and shared leadership using two samples. The first sample was drawn from the annual Inc. 500 list of fastest growing startups. The second was drawn from a national database of startup companies. Use of shared leadership explained 28% of the variance of new venture performance in the first sample compared to 18% for vertical leadership. In a second sample, shared leadership explained 30% of the variance compared to 15% for the vertical leadership sample. The study showed that a need exists to “broaden the behavioral range of leadership development” (p.228) to include shared leadership (Ensley et al., 2006).

Day, Gronn, and Salas (2004) proposed a cyclical Input/Mediator/Output/Input (IMOI) model for development of leadership capacity in teams that fits nicely in Quadrant III of Hanson’s model (Hanson, 2013).

Figure 2: Team Leadership Cycle (Day et al., 2004)
The Team Leadership Cycle model details a cyclical process wherein team leadership capacity is both an input and an output of integrated Quadrant III-type (Hanson, 2013) leadership development activities. The primary input to the cycle is team member resources which consist of individual human capital, social capital, and existing team leadership capacity. The primary output is enhanced team leadership capacity, which becomes an input into the next team process. Team leadership capacity is characterized in terms of team internal social capital which is defined as cognitive, motivation, and affective states of sharedness, distributedness, and connectivity of team members. Team leadership capacity is developed by addressing complex adaptive challenges with leadership development supports designed to increase both teamwork and team learning. The Team Leadership Cycle Model supports the conceptual framework of my study by illustrating the important relationship between team social capital and leadership capacity in teams.

Self-Managed Project Teams

Leadership development that focuses on building team internal social capital in self-managed project teams has the potential to expand shared leadership capacity within the organization. Angles (2007) described shared leadership as a phenomenon that emerges in self-managed project teams. As team members work together to solve problems, design products, or address complex challenges, the team develops an increased capacity for shared leadership.

Relational team bonding social capital refers to the relationship characteristics that develop within the team, while cognitive team bonding social capital refers to the shared understanding among team members about the structure of the team, and the task at hand (Clarke, 2012a; Nahapiet & Ghoshal, 1998). Enhanced team internal social capital sets the stage for shared leadership in self-managed project teams by expanding information sharing networks
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

within the team and fostering a shared understanding of the situation (Carson et al., 2007; L. Wang, Han, Fisher, & Pan, 2017).

Self-managed project teams provide an appropriate context for leadership development focused on building team social capital and shared leadership capacity. Team members have both the freedom and the responsibility to share leadership among the members of the team in order to efficiently and effectively achieve their goals (Angles, 2007; Ensley et al., 2006; L. Wang et al., 2017). Self-managed project teams, sometimes referred to as self-directed project teams or self-managed work teams, share responsibility for successfully achieving the team’s objectives within the project parameters established by organizational leaders who are not themselves a part of the team (Angles, 2007; Carte, Chidambaram, & Becker, 2006; L. Wang et al., 2017). Selecting a self-managed project team for this study provided an environment conducive to the emergence of shared leadership through team social capital development.

Complex Adaptive Challenge

In contrast to hierarchical teams led by a designated leader, self-managed project teams have been shown to be particularly effective in addressing complex adaptive challenges and developing creative solutions (Angles, 2007; Carson et al., 2007; Pearce & Sims, 2002). A complex adaptive challenge is defined as a problem without a pre-determined solution as opposed to more routine technical challenges which can be solved using existing resources, problem-solving strategies, and protocols (Day et al., 2004; Heifetz & Laurie, 1997). A complex adaptive challenge requires new thinking to develop innovative solutions to complex problems. Self-managed project teams are uniquely poised to address these challenges by dynamically accessing and synthesizing the diverse knowledge, expertise, and leadership abilities of the team (Angles, 2007; Carson et al., 2007; Day et al., 2004; Heifetz & Laurie, 1997). The project team
in this study was tasked with developing recommendations to address the changing workforce demographics in their organization, which required the innovative thinking characteristic of a complex adaptive challenge.

**Integrated Leadership Development Interventions**

Researchers have identified a variety of interventions that support leadership development in teams. Two of the most promising are Action Learning popularized by the work of Leonard and Marquardt (2010) and Teaming which operationalizes Edmondson’s (2012) research on team psychological safety.

**Action Learning.** Action learning (Leonard & Marquardt, 2010; Marquardt & Yeo, 2012) emphasizes integrating learning opportunities into organizational work, providing a framework for accomplishing integrated, team-focused leadership development as advocated by Hanson (2014) and Day et al. (2004). A form of learning through experience, action learning was introduced in the 1940s by Reg Revans to address industrial problems facing the mining industries of England and Wales (Leonard & Marquardt, 2010; Marquardt & Yeo, 2012; Smith, 2001). Over the years, action learning has evolved to address the complex problems of the 21st century, and has been used by corporations, government agencies, educational organizations, small businesses, and non-profit organizations around the globe (Marquardt & Yeo, 2012; McKee & Markless, 2017; Pedler & Abbott, 2008b; Raudenbush & Marquardt, 2008).

Based on 31 action learning cases, Marquardt and Yeo (2012) highlight 10 critical principles for “breakthrough problem solving” with action learning that align well with the tenets of self-managed project teams and shared leadership:

1. Select a problem that is urgent and complex
2. Use questions and reflection
3. Foster a receptive mindset and attitude among action learning team members
4. Use skilled coaching/facilitation of the action learning team
5. Integrate learning into the action learning project
6. Establish clear norms and enforce them
7. Formulate explicit timelines and expectations for the action learning team
8. Allocate power and responsibility to the action learning team
9. Ensure membership diversity within the action learning team
10. Enlist the commitment and support of top leadership.

In a review of 21 studies that measured the impact of action learning, Leonard and Marquardt (2010) found evidence to support two key findings:

1. Action learning develops broad executive and managerial leadership skills, particularly collaborative leadership and coaching skills.
2. Action learning improves the ability of managers to develop win/win solutions to conflict situations.

These findings suggest that integrated interventions based on action learning principles have the potential to foster the development of team internal social capital and shared leadership.

**Teaming.** “Teaming” refers to an approach to leadership development in teams that emphasizes using teams to foster innovation (Edmondson, 2012). By integrating learning into work—what Edmondson refers to as “execution as learning”—organizations combine continuous learning with high performance. Key behaviors that support teaming success include collaboration, experimentation, reflection, and “speaking up,” defined as team communication that includes asking questions, seeking feedback, offering suggestions, and discussing problems, mistakes, and concerns (Edmondson, 2012). By integrating learning opportunities that support
goal setting, collaboration, communication, and reflection, teams build skills that support innovation and high performance (Edmondson, 2012; Nawaz et al., 2014).

The literature on Action Learning and Teaming provide valuable insights into effective ways to integrate leadership development into the work of the team. The principles and strategies championed by these approaches informed the integrated intervention strategies used in this study to develop team internal social capital in project teams.

Conceptual Framework: Team Social Capital Development Model

The conceptual framework for this study, illustrated below in Figure 3, presents a model of team social capital development in self-managed project teams. As the Team Social Capital Development Model illustrates, self-managed project teams, engaged in addressing one or more complex adaptive challenges, participate in integrated intervention activities designed to cultivate team internal social capital. Building team internal social capital within the context of the project team’s work contributes to the expansion of shared leadership capacity within the organization.
The Team Social Capital Development model fits within Quadrant III of Hanson’s model, where leadership development supports are integrated into organizational work, and where team-focused leadership development complements other aspects of organizational leader/leadership development (Hanson, 2013). The model focuses on one phase of the leadership development cycle proposed by Day et. al. (2004) in the IMOI Team Leadership Development Cycle model. The output of the Team Social Capital Development model—organization shared leadership capacity—becomes a potential input to future team projects within the organization.

The facilitated integrated intervention activities detailed in the Team Social Capital Development model draw from Action Learning (Marquardt & Yeo, 2012) and Teaming (Edmondson, 2012) where learning opportunities are integrated into organizational work, and project teams are tasked with addressing real organizational problems characterized by one or more complex adaptive challenges. A trained coach or facilitator is assigned to support team
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

processes and facilitate integrated intervention activities (Day et al., 2004; Leonard & Marquardt, 2010; Marquardt & Yeo, 2012). The conceptual framework illustrated in the Team Social Capital Development Model guided this study of how team internal social capital develops through participation in integrated leadership development interventions.

Themes in the Literature

In the following section, I illustrate how key concepts within the model are supported by themes in the literature on the development of team internal social capital and shared leadership capacity.

**Theme 1: Shared leadership capacity and enhanced team effectiveness are promoted when self-managed project teams engage in one or more complex adaptive challenges.** Self-managed project teams create an environment conducive to shared leadership emergence by distributing responsibility for team performance and project outcomes among team members (Angles, 2007; Hackman, 2002; Orsburn, Moran, Musselwhite, & Zenger, 1990; Pfeffer, 1998; L. Wang et al., 2017; Yang & Guy, 2011). Based on his work with highly successful organizations, Pfeffer (1998) noted that “organizing people into self-managed teams is a critical component of virtually all high-performance management systems” (p. 104).

Hackman (2002) places self-managing teams in a continuum of four levels of team self-management. At the lowest level—manager-led teams—the team has responsibility to execute the task, but all other aspects of team direction come from the manager. At the next level, self-managing teams have the responsibility for executing the team task, and monitoring and managing work process and progress. Higher levels of team self-management include self-designing teams, who have the responsibility for designing the team and its organizational
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

context, and self-governing teams, who have the responsibility of setting overall direction for the team.

Yang and Guy (2011) conducted a study of the effectiveness of self-managed work teams in government organizations. The researchers gathered data through a national survey of 176 city government employees from 24 American cities. The hypotheses were tested using structural equation modeling (SEM). Outcomes indicated that self-management, defined as autonomy in making decisions, and teamwork, defined as team spirit and collaboration, were positively related to resource attainment ($\beta = 0.49, \rho < 0.01$) and teamwork was positively related to job satisfaction ($\beta = 0.22, \rho < 0.1$) and team performance ($\beta = 0.83, \rho < 0.01$). In the teams studied, team members were collectively responsible for the end-product, and team leaders “functioned as facilitators rather than controllers” (p. 532).

According to Hackman (2002), team effectiveness results in a product, service, or decision that meets or exceeds the standards of quantity, quality and timeliness established by the team’s clients. Shared leadership has been shown to be a predictor of team effectiveness by enhancing a project team’s ability to address complex adaptive challenges (Barnett & Weidenfeller, 2016; Bergman, Rentsch, Small, Davenport, & Bergman, 2012; Chen et al., 2008).

Researchers have found shared leadership to be positively correlated with indicators of team performance across a variety of contexts and settings. In a study of 59 consulting teams composed of MBA students from a large eastern university ($n = 348$), Carson et al. (2007) found that shared leadership was a strong positive predictor of team performance as rated by the end user of the team’s work ($\beta = 0.65, \rho < .05$). Data from the teams were collected through surveys administered during the project, while data from clients were collected after the project.
deliverables were completed and delivered to the clients. Shared leadership accounted for 26% of the variance in team performance ($\Delta R^2 = .26$, $\rho < .001$).

Results of a meta-analysis of shared leadership and team effectiveness by D. Wang et al. (2014) found a moderately strong association between shared leadership and team effectiveness with a corrected overall mean correlation of .34 ($k=42, N = 3,439, \rho = .34$). Results of two meta-analyses found that shared leadership is correlated with team performance in the range of .21 (D’Innocenzo, Mathieu, & Kukenberger, 2016) ($k=50, N = 3,198, r = .21$) and .35 (Nicolaides et al., 2014) ($k=54, N = 3,882, r = .35$). In a review of the literature on shared leadership and team performance, Barnett and Weidenfeller (2016) concluded that shared leadership “is an important and useful, albeit complex and sophisticated construct that can enhance achievement of a variety of valuable team outcomes” (p. 347).

**Summary.** The Team Social Capital Development Model illustrates the process of self-managed project teams engaged in a project involving one or more complex adaptive challenges, providing the context for integrated interventions designed to develop team internal social capital. Self-managed project teams are uniquely suited to address complex adaptive challenges by encouraging flexible and dynamic access to team member’s knowledge, expertise, and leadership abilities. Shared responsibility for team performance creates an environment conducive to shared leadership emergence.

While shared leadership is the phenomenon that predicts team effectiveness, self-managed project teams are the organizational structure that nurture the emergence of shared leadership. By tasking self-managed project teams with finding solutions to one or more complex adaptive challenges, organizations set the stage for the emergence of shared leadership capacity, improving team effectiveness and performance.
Theme 2: Network ties and shared team mental models, two aspects of team internal social capital, contribute to expanded shared leadership capacity. Well-developed team internal social capital enhances interpersonal relationships, improving team member collaboration and team performance (Chen et al., 2008; Pearce & Conger, 2003; Xiang et al., 2013). Team internal social capital, sometimes called bonding social capital, refers to a wide range of factors that impact relationships and interactions between team members (Adler, 2002; Chen et al., 2008; Xiang et al., 2013).

Many researchers utilize the “three dimensions of social capital” model proposed by Nahapiet and Ghoshal (1998)—the relational dimension, the structural dimension, and the cognitive dimension—to study the dynamics of social capital. The relational dimension includes trust, norms, duties, and a sense of identity among team members. The structural dimension refers to characteristics or configurations of an organizational network, based on the network ties among group members. The cognitive dimension refers to shared codes, languages, and vision (Nahapiet & Ghoshal, 1998).

Researchers manipulate the three dimensions in a variety of ways to study the complex interaction of these factors. For example, in a study of the impact of team social capital on information systems development project team performance, Lee, Park and Lee (2015) explored the interrelationships among social ties (structural dimension), shared vision (cognitive dimension), and trust (relational dimension) and their relationship to team performance. Social ties were found to have a positive relationship with trust ($\beta = 0.204, \rho < 0.01$) and shared vision ($\beta = 0.347, \rho < 0.001$). Both shared vision and trust were found to have a significant positive relationship with team performance ($\beta = 0.210, \rho < 0.01; \beta = 0.550, \rho < 0.001$). These findings
suggest that social ties precede both shared vision and trust, providing an indirect positive influence on team performance.

Research suggests that two aspects of team internal social capital—network ties (structural dimension) and shared team mental models (cognitive dimension)—are particularly relevant to expanding shared leadership capacity. In their review of the literature regarding shared leadership and team performance, Barnett and Weidenfeller (2016) identified shared mental models and social network ties as key operating mechanisms for shared leadership in project teams, helping teams establish a climate that is supportive of and conducive to shared leadership.

Xiang et al. (2013) explored the relationship between social capital and team performance in information system development teams. The results suggest that while various aspects of team social capital enhance and potentially amplify other aspects of team social capital, shared mental models and knowledge sharing, an aspect of network ties, explained 39.1% of the variance in ISD team performance. The significance of these findings supports increased attention on identifying effective strategies for developing shared mental models and knowledge sharing network ties in project teams.

**Network Ties.** Network ties support shared leadership by providing efficient access to knowledge resources and information flows among team members, as well as opportunities for shared decision-making through bi-directional influence reciprocity (Carson et al., 2007; Hatala, 2006; Mayo et al., 2003). Teams represent social networks in which members exchange and receive knowledge (Oh, Chung, & Labianca, 2004; Xiang et al., 2013). A network tie is a relational entity that exists if two individuals are considered together and does not belong to any single individual (Mayo et al., 2003). In the context of a project team, network ties reflect team-
level systems for utilizing and integrating individually and collectively held expertise and influence (Carson et al., 2007; Hatala, 2006).

Social network analysis creates a visible picture of the structural dimension of team social capital, by highlighting the network ties between members of the team. Network analysis data can provide valuable insights into how the structural aspects of shared leadership play out within the team (Barnett & Weidenfeller, 2016; Bolino & Turnley, 2002; Mayo et al., 2003). By analyzing the social network configuration, important characteristics of the relationships between team members can be identified and measured. For example, a social network configuration that contains structural holes illustrates the absence of connections between team members. A social network configuration in which linkages are concentrated among a few individuals reflects centralization. The density of a social network configuration reflects the extent to which all team members are interconnected relative to the total number of possible connections (Bolino & Turnley, 2002; Chou, Chen, & Pan, 2006). A social network configuration with high density, low centralization, and few structural holes would suggest that the team is exhibiting shared leadership. Network configurations can also be analyzed based on the types of interactions taking place within the social network, including knowledge sharing and influence reciprocity (Carson et al., 2007; Hatala, 2006; Mayo et al., 2003), providing additional insights into the dynamics of shared leadership within a team.

Network analysis data can be presented in a variety of ways, depending on the purpose of the analysis. Two common ways of presenting network analysis are matrix data and sociograms (Hatala, 2006). The example below, from an extensive literature review of network analysis methods conducted by Hatala (2006), illustrates how network analysis data can be presented in matrix format. In this fictitious example, team members were asked how often they request help
or information from other team members, with 1 being never and 5 being daily. The matrix format of the data shows the relative strength and direction of network ties between members of the team.

A sociogram is a visual representation of the data. Lines with arrowheads on each end represent bi-directional relationships, while lines with a single arrowhead represent unidirectional relationships. The strength of the relationship can be indicated by different line weights or styles. In the example below, Hatala (2006) “dichotomized” the matrix data presented above, where the values of 1-4 became 0, and the value 5 become 1. The resulting sociogram indicated with whom each team member interacted on a daily basis.

**TABLE 2: Valued Data Presented in a Matrix Format (bi-directional)**

<table>
<thead>
<tr>
<th></th>
<th>Bob</th>
<th>Julie</th>
<th>Sam</th>
<th>David</th>
<th>John</th>
<th>Kim</th>
<th>Ralph</th>
<th>George</th>
<th>Kent</th>
<th>Byron</th>
</tr>
</thead>
<tbody>
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<td>Julie</td>
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<td>Sam</td>
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<td>David</td>
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<td>Kim</td>
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<tr>
<td>Ralph</td>
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<td>George</td>
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**NOTE:** The names used in this example are fictitious.

*Figure 4: Matrix Example (Hatala, 2006, p. 59)*
Knowledge Sharing Network Ties. One way that team members can be linked with each other is through sharing knowledge. Shared leadership relies on the sharing of knowledge, which includes the sharing of information and expertise, among team members to generate ideas, make decisions, and accomplish team objectives. Xiang et al. (2013) defined knowledge sharing as “the individuals’ willingness to share the knowledge or experience he/she has acquired or created with others” (p. 1026). Knowledge sharing network ties have been shown to play both a direct and mediating role in shared leadership and team performance (Hoch, 2014; Hu & Randel, 2014; Robert, Dennis, & Ahuja, 2008). In a field study of 46 teams in two different organizations, Hoch (2014) showed that shared leadership was positively related to team performance ($\beta = 4.73, \rho < 0.01$) and to knowledge sharing ($\beta = 0.17, \rho < 0.01$). Knowledge sharing was also associated with team performance ($\beta = 20.94, \rho < 0.001$). Using mediation
analysis, the authors concluded that knowledge sharing played a mediating role between shared leadership and team performance (Hoch, 2014).

While explicit knowledge can be transferred in a variety of ways, including reading documents and interacting with others, tacit knowledge sharing requires extensive personal contact, trust, and opportunities for shared personal experience (Hu & Randel, 2014). In a study of 219 work teams, Hu and Randel (2014) demonstrated that tacit knowledge sharing, in particular, was a strong predictor of team innovation. In this study, both explicit and tacit knowledge sharing had moderate to strong positive correlations with three types of social capital, ranging from \( r = .27 \) for the correlation between explicit knowledge sharing and both cognitive and relational social capital, to \( r = .51 \) between tacit knowledge sharing and cognitive social capital.

With regard to the dependent variable of team innovation, regression analyses to explain variance in team innovation indicated that although the binomial correlation between cognitive social capital and team innovation was \( r = .50 \) (\( p < .01 \)), when tacit knowledge sharing is entered into the equation, cognitive social capital is not significantly related to team innovation (\( B = .20, p > .05 \)), yet tacit knowledge sharing remains significant (\( B = .13, p < .05 \)), suggesting that tacit knowledge sharing mediated the relationship between cognitive social capital and team innovation. The mediating role of tacit knowledge was confirmed via structural equation modeling, with the final parsimonious model indicating a moderate relationship between cognitive social capital and tacit knowledge sharing (path coefficient = .39, \( p < .01 \)), which, in turn, was strongly correlated with team innovation (path coefficient = .83, \( p < .01 \)). These findings suggest that intervention activities that involve close personal interaction among team members are beneficial for improving team innovation.
members encourage tacit knowledge sharing, thus enhancing the relationship between cognitive social capital and team innovation.

**Influence Reciprocity Network Ties.** Shared leadership is characterized by flexible, multidirectional influence among team members (Bergman et al., 2012; Conger & Pearce, 2003; Pearce & Sims, 2002). Influence reciprocity, another aspect of network ties, reflects input and influence from multiple team members in making team decisions (Carson et al., 2007; Mayo et al., 2003).

In a qualitative study of shared leadership in 45 ad hoc decision-making teams consisting of 180 undergraduate students, Bergman et al. (2012) assessed the leadership behaviors of each team member by coding videotapes of team discussions during a simulated multiparty negotiation. The coded results were analyzed using cluster analysis. The results indicated that teams that developed patterns of leadership behavior involving multiple leaders and a variety of leadership types experienced significantly better intermediate team processes, such as cohesion, consensus, lack of conflict, and trust, than teams without leadership diversity.

Like knowledge sharing network ties, influence reciprocity network ties can be identified, documented, and analyzed using social network analysis. Bi-directional influence reciprocity means that team members both contribute influence and accept the influence of other members of the team (Mayo et al., 2003). A network characterized by influence evenly distributed among the team members suggests shared leadership, while a network characterized by influence or leadership by a few individuals would suggest a highly centralized leadership structure (Carson et al., 2007; Mayo et al., 2003).

While the overall density of influence reciprocity network ties is an important indicator of shared leadership in teams, the dynamics of how influence patterns relate to the tasks and
decisions faced by the team provide important insights into how shared leadership emerges within the team (Aime, Humphrey, Derue, & Paul, 2014; Cott, 1997). In a study of 45 teams containing 516 directional dyads, Aime et al. (2014) found that “heterarchical structures in which the expression of power actively shifts among team members to align team member capabilities with dynamic situational demands can enhance team creativity” (p. 327). The results of the study showed that shifts in power expression explained 6% of the variance in team creativity \([\beta = .24, \rho < .05]\). These findings provide justification for continued research into how integrated intervention activities support the development of knowledge sharing network ties and influence reciprocity network ties, as reflected in the Team Social Capital Model that guided this study.

**Shared Team Mental Models.** Shared leadership is characterized by the dynamic transfer of leadership functions among team members in response to the demands of the situation (Burke et al., 2003). The smooth transference of leadership requires a common understanding of the complexities of the circumstances, as well as an accurate understanding of the knowledge and expertise resources available within the team (Burke et al., 2003; Clarke, 2012b). Shared team mental models, which reflect the cognitive dimension of team social capital, refer to shared knowledge systems among team members that enable the team to rapidly process information (Robert et al., 2008). Cannon-Bowers and Salas (1997) define shared mental models as “shared or common knowledge about the task and/or team held by at least two members” (p. 161).

While individual mental models are internal and personally constructed (Rook, 2013), shared team mental models reflect knowledge structures that emerges between two or more individuals through team processes, collaboration, or training (Cannon-Bowers & Salas, 1997).
Salas et al. (2005) suggest that shared mental models act as a supporting coordinating mechanism for mutual performance monitoring, back-up behavior, and adaptability—three of the five core components of teamwork.

Studies show that shared team mental models play a significant role in team effectiveness and performance (Mathieu, Goodwin, Heffner, Salas, & Cannon-Bowers, 2000; McIntyre & Foti, 2013; Rentsch & Klimoski, 2001; Reuveni & Vashdi, 2015). In a study of 40 self-directed teams, McIntyre and Foti (2013) explored the relationship between shared leadership, teamwork mental models, and team performance. The participants were 40 undergraduate computer science teams from universities throughout the northeast United States, participating in a regional computing competition. Teamwork mental models were measured using a set of nine concepts related to team interaction. The participants were asked to rate the relatedness of pairs of concepts. Team performance was measured using the final score in the team competition. The researchers found that teamwork mental model similarity and accuracy significantly predicted team performance \( R^2 = .32, \rho < .01 \).

In a study of 55 multidisciplinary high-tech research and development (R&D) teams in Israel, Reuveni and Vashdi explored the relationship between shared mental models and innovation. Shared mental models were measured using a scenario-based questionnaire, where each scenario reflected a critical incident situation typically faced by R&D teams. Experts from outside the organization evaluated the final product for innovation by responding to a questionnaire. Data analysis was performed using the SPSS program. Shared team mental models, which reflected a shared understanding of the roles and responsibilities of the team members and their interaction patterns, explained 15.3% of the variance (Reuveni & Vashdi, 2015).
Mathieu et al. (2000) explored the influence of shared mental models on team process and performance using a computer-based flight-combat simulation program. The participants were 56 undergraduate dyads enrolled in a university psychology course. Mental models were evaluated for “sharedness” using individually completed paired comparison matrices. Both task-based mental models and team-based mental models were significantly related to team process \( [R^2 = 0.10, F(4, 108) = 3.30, p < 0.05; \beta_{\text{team}} = 0.26, p < 0.01; \text{and } \beta_{\text{task}} = 0.31, p < 0.01] \). The researchers regressed the data to determine the relationship between shared mental models and team performance. The direct effect of team-based mental model convergence on team performance was significant \( [\beta = 0.87, p < 0.01] \).

In another study, Rentsch and Klimoski (2001) explored the antecedents of team member schema agreement, a similar concept to shared mental models, and their indirect effects on team effectiveness. The participants were 315 individuals representing 41 work teams from a U.S. Department of Defense organization. The teams represented different types of teams, including advice teams, project teams, service teams, and action teams. Teamwork schema agreement was measured using Teamwork Schema Questionnaire developed based on teamwork factors elicited from 54 individuals representing 21 teams. Team effectiveness was measured using a team effectiveness scale based on three dimensions: client satisfaction, team viability, and team member growth. Participants completed the questionnaires during a meeting with the researchers. The researchers found that composite measures of team effectiveness had a strong positive correlation with team member teamwork schema agreement \( [\beta = 0.48, p < 0.01] \). The significance of these findings suggest that the development of shared team mental models is an important factor in team effectiveness.
Shared team mental models, sometimes referred to as shared cognition, may reflect different types of knowledge relationships between team members (Cannon-Bowers & Salas, 2001; Cooke et al., 2000). Cannon-Bowers and Salas (2001) defined four categories of what “shared” means: shared or overlapping, similar or identical, compatible or complimentary, and distributed. Some types of complex tasks benefit from complimentary or distributed task-specific knowledge, sometimes referred to as taskwork mental models. However, other aspects of team shared mental models such as situation awareness, knowledge of team roles, and understanding of the team mission benefit from similar or identical shared mental models (Cannon-Bowers & Salas, 1997; Cannon-Bowers & Salas, 2001).

Team Mental Models and Situational Mental Models are two specific types of shared team mental models most relevant to shared leadership (Burke et al., 2003; Cannon-Bowers & Salas, 1997; Cooke et al., 2000). Burke et al. (2002) suggest that these two types of shared mental models support the fluid transfer of leadership functions characteristic of shared leadership. A Team Mental Model includes declarative, procedural, and strategic knowledge pertaining to team roles, resources, and responsibilities. Team Mental Models facilitate the team’s ability to accomplish the task efficiently and effectively by strategically accessing the knowledge, skill, and leadership resources available within the team (Burke et al., 2003; Cooke et al., 2000). Team Mental Models develop over time, are relatively long-lasting, and are useful across a variety of tasks and situations (Cannon-Bowers & Salas, 1997; Cooke et al., 2000).

Situational Mental Models reflect the team’s collective understanding of a situation at a point in time, which guides team actions and decisions (Burke et al., 2003). In contrast to Team Mental Models, Situational Mental Models are dynamic, changing in response to the changing circumstances faced by the team (Cooke et al., 2000). Situational Mental Models guide the team
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

in assessing and responding to the unique aspects of the situation, and in determining when the leadership function needs to transfer (Burke et al., 2003; Cooke et al., 2000). These findings provide justification for continued research into how integrated intervention activities support the development of Team Mental Models and Situational Mental Models, as reflected in the Team Social Capital Model that guided this study.

Summary. In summary, network ties and shared team mental models, two aspects of team internal social capital, contribute to the expansion of shared leadership capacity. Network ties represent the structural domain of team social capital. Knowledge Sharing Network Ties support the emergence of shared leadership by facilitating the sharing of knowledge and information among team members. Influence Reciprocity Network Ties reflect the patterns of bi-directional influence characteristic of shared leadership.

Team shared mental models reflect the cognitive domain of team social capital. Team Mental Models and Situation Mental Models are two specific types of shared team mental models that contribute to the emergence of shared leadership. Team Mental Models facilitate efficient access to knowledge and expertise within the team, while Situation Mental Models support a coordinated team response to changing circumstances.

Network ties and shared team mental models play an important role in the expansion of shared leadership in teams, as the Team Social Capital Development Model suggests. In this study, integrated intervention activities designed to develop Knowledge Sharing Network Ties, Influence Reciprocity Network Ties, Team Mental Models, and Situation Mental Models, were integrated into the work of the project team in an effort to enhance team social capital and expand shared leadership capacity.
Theme 3: Facilitated intervention activities integrated into project team work
develop team internal social capital. An integrated intervention is a set of activities or processes designed to facilitate learning within the context of actual work (Hackman, Wageman, & Fisher, 2009; Okhuysen & Eisenhardt, 2002). Integrated intervention activities that focus on building team internal social capital have the potential to expand shared leadership capacity and improve team performance (Edmondson, 2012; Leonard & Lang, 2010; Nawaz et al., 2014; Pedler & Attwood, 2011). For example, in an experimental study involving 180 university students randomly assigned to 45 problem solving groups, Okhuysen and Eisenhardt (2002) found that structured interventions involving questioning others and managing time resulted in enhanced knowledge integration within the group, which resulted in improved team processes. The structured intervention activity involved a set of simple instructions related to questioning others about information relevant to the problem and managing time while the team was working on the assigned problem. Using the total number of critical facts identified as the primary measure of knowledge integration, the groups in the managing time condition had significantly higher knowledge integration than the control group, \((t(18) = -2.19, p < .005)\) as did the groups in the questioning others condition, \((t(18) = -2.19, p < .006)\). While this study took place in a university setting, the outcomes are relevant to workplace teams because they highlight how structured intervention activities can enhance group knowledge sharing.

The literature suggests that leadership development that is integrated with organizational work is more effective in developing team internal social capital than traditional classroom-based training or off-site leader-development programs (Avolio et al., 2009; Galli & Müller-Stewens, 2012; Volz-Peacock et al., 2016). Based on their work with leadership teams, Hackman et al. (2009) recommended integrating leadership development interventions at strategic points in the
team life cycle including when the team is launched, at the midpoint, and at the end of the project. In addition, interventions may be needed “on the fly” to address issues related to team effort, strategy, and/or knowledge and skill. In the current study, integrated interventions designed to develop team social capital are integrated strategically throughout the project life cycle to target the development of network ties and shared team mental models.

While integrated interventions such as Action Learning have been shown to support the development of team internal social capital, few researchers have explored the relationship between specific intervention strategies such as teambuilding and aspects of team social capital such as network ties and shared team mental models, a gap that is addressed by this study. Researchers have shown that intervention strategies such as teambuilding, concept mapping, reflection, and collaborative decision making can be effective in developing team social capital and improving team performance, which suggests that they may be effective in developing more specific aspects of team social capital such as network ties and shared team mental models. This section will focus on the empirical support that exists for these strategies and how they might be effective in developing team social capital. I provide a detailed description of the integrated interventions used in the study in Chapter 3: Methods.

**Teambuilding.** The literature on teams and teambuilding propose a variety of strategies for developing relationships among team members, particularly in newly formed teams. Teambuilding strategies that focus on goal setting, role clarification, problem solving, and interpersonal relationships have been shown to correlate with positive team outcomes including effectiveness and efficiency (Hoegl & Parboteeah, 2003; Klein et al., 2009).

The results of a meta-analysis conducted by Klein et al. (2009) found that four specific components of teambuilding—goal setting, interpersonal relations, problem solving, and role
clarification—had moderate positive effects on team outcomes, including cognitive, affective, process, and performance outcomes. The results, based on 39 correlations, showed goal setting had an effect size of $\rho = .37$ ($k = 10; N = 258$) with these outcomes, followed by role clarification ($\rho = .35; k = 5; N = 54$), interpersonal relations ($\rho = .26; k = 13; N = 140$), and problem solving ($\rho = .24; k = 11; N = 326$). The authors highlight that the moderate positive correlations appeared across most populations, suggesting the effects of team building activities may “generalize across most situations and settings” (p. 211).

Goal-setting activities integrated into the project launch phase provide an opportunity to clarify the project objectives, articulate the team’s purpose, and establish common goals (Edmondson, 2012; Hackman et al., 2009; Nawaz et al., 2014; Williams, 1993). In a qualitative study involving 145 software development teams, Hoegl and Parboteeah (2003) found goal setting to be positively related to team effectiveness ($r = .18, \rho < .05, n = 154$ teams) and efficiency ($r = .13, \rho < .10, n = 154$ teams). Based on extensive work with collaborative teams, Williams (1993) recommended using goal-setting strategies that result in a visual artifact, such as a Vision Chart, to reinforce the team’s shared mental model, and provide a reminder of the team’s common goals throughout the project. In the Team Social Capital Development Model that guided this study, goal-setting activities provided an opportunity to develop shared team mental models related to the project goals, the organization’s expectations, and the team’s shared commitment to the project.

Teambuilding activities focused on interpersonal relationships involve developing trust in one another and confidence in the team (Klein et al., 2009). In her work on “teaming”, Edmondson (2012) suggested that as teams form, individual frames based in self-protection must
be “reframed” towards a collaborative, learning-oriented frame, which creates opportunities for building network ties.

Findings from a meta-analysis conducted by Breuer, Hüffmeier, and Hertel (2014) of 52 studies with 54 independent samples representing 12,615 individuals in 1,850 teams, found a positive overall relationship between team trust and team effectiveness ($p=.33$), highlighting the positive impact that teambuilding activities that foster trust among members can have on team performance. Based on her work with leadership teams, Edmondson (2012) suggested that teambuilding activities that involve sharing information and expertise help to overcome boundaries and build trust, which is critical to the development of strong network ties. In the Team Social Capital Development Model that guided this study, teambuilding activities focused on interpersonal relationships provided an opportunity to establish the trust relationships necessary to establish strong network ties.

Role clarification, another important aspect of team building, involves developing a shared understanding of team member roles and responsibilities (Klein et al., 2009). Edmondson (2013) emphasized the importance of a shared understanding of team member roles, responsibilities, and resources in responding to the dynamic circumstances faced by teams. In her work with teams in a variety of types of organizations, Edmondson (2013) found that “effective teaming happens when everyone remains highly aware of others’ needs, roles, and perspectives” (p. 5). In a qualitative multiple-case study, Brault et al. (2014) used the Canadian National Interprofessional Competency Framework, which defined the essential components of role clarification among professionals, to outline processes for clarifying professional roles when a new role was introduced to a clinical team. The study involved six cases and 34 semi-structured interviews with key informants involved in the introduction of a new role to the team.
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

Findings indicate that the highest performing teams used a variety of planned strategies to carry out role clarification such as developing a matrix to clarify roles, allocating dedicated time to discuss roles, and ensuring that individual team members could articulate their professional role in the team. As proposed in the Team Social Capital Development Model that guided this study, resource mapping activities were included in the integrated interventions to help team members develop a common understanding of team member roles and responsibilities and become familiar with the knowledge and skill resources that exist within the team in order to develop a shared Team Mental Model of team roles and responsibilities.

**Collaborative Decision Making.** One of the hallmarks of shared leadership is the distribution of leadership and influence among team members. Collaborative problem-solving and decision-making processes encourage team member involvement and facilitate the development of network ties. Problem solving, as defined by Klein et al. (2009), involves identifying task-related problems faced by the team, identifying potential solutions, and developing action plans for implementing solutions. Decision making is inherent in each of these processes. For the purposes of this discussion, collaborative decision making refers to both problem-solving and decision-making processes.

Collaborative decision making appears to play a role in the development of team social capital. In a quantitative study, Wong et al. (2018) explored the relationship between participative decision making, psychological safety, and individual team member creativity, among other factors. Researchers collected survey data from 256 employees in one company and their 45 direct supervisors. Team participative decision making was measured using a 4-point scale, psychological safety was rated using Edmondson’s 7-point scale (Edmondson, 1999), and individual team member creativity was rated by the individual’s supervisor using a
Findings indicate that team participative decision making had a moderately high positive correlation with psychological safety (r = .47, p < .01) and psychological safety was positively associated with individual team member creativity (r = .17, p < .01), suggesting an indirect relationship between participative decision-making and individual team member creativity. The direct correlation between participative decision making and psychological safety found in this study suggests that collaborative decision making may play a role in the development of network ties by encouraging team psychological safety and trust (Edmondson, 1999; Wong, Chow, Lau, & Gong, 2018).

While project teams are often tasked with addressing a single primary decision or problem, such as addressing problems with product quality or process efficiency, major decisions typically involve a series of subordinate but important decisions along the way. As Fisher (1975) describes, “group decision making is a process of cumulative development of consensus decisions. Groups achieve consensus on decisions through interaction patterns which modify, reject, accept, or combine previously introduced decision proposals” (p. 145). Collaborative problem-solving and decision-making processes provide a structured opportunity to share expertise and expand network ties as project teams encounter key decision points (Carson et al., 2007; Fisher, 1974; Galli & Müller-Stewens, 2012; Orsburn et al., 1990).

Collaborative decision-making processes are typically broken down into multiple steps or phases (Kearny, 1995; Kepner & Tregoe, 1981; Weinberg & Brandon, 1999). Kearney (1995) described the process of collaborative decision making as a cycle of expanding and narrowing that is “something like breathing” (p. 13). The expanding phase involves gathering information, exploring different perspectives, generating ideas, and seeing possibilities. The narrowing phase involves sorting and classifying, synthesizing and editing, comparing and evaluating, and making
decisions. In a complex project, these phases are repeated multiple times to address each key decision point encountered by the team. Similarly, Weinberg and Brandon (1999) proposed six steps to facilitating collaborative decision making: 1) Ensure leadership and commitment; 2) Frame the problem; 3) Develop evaluation models and formulate alternatives; 4) Collect meaningful, reliable data; 5) Evaluate alternatives and make decision; and 6) Develop an implementation plan.

Studies show that collaborative decision-making activities have the potential to promote trust among team members, thereby positively impacting team performance (Klein et al., 2009; Wong et al., 2018). The Team Social Capital Development Model that guided this study supports the inclusion of collaborative decision-making activities to develop both Knowledge Sharing Network Ties and Influence Reciprocity Network Ties.

**Concept mapping.** Concept mapping involves creating a visual representation of related concepts and ideas. In a project team environment, facilitated concept mapping activities can be used to develop a common understanding of complex ideas and concepts related to the project task, as well as develop a shared understanding of the current situation (Rentsch, Delise, Salas, & Letsky, 2010; Rosas, 2017; Sutherland & Katz, 2005). For example, De George-Walker and Tyler (2014) conducted a case study to explore the use of collaborative concept mapping by a research team to determine research team capabilities. Using two collaborative concept mapping sessions, the researchers found that collaborative concept mapping enabled shared exploration, articulation, and negotiation among team members, resulting in a visual representation of the team’s shared construct of team capabilities (De George-Walker & Tyler, 2014).

Concept mapping also supports knowledge transfer, which plays an important role in developing shared team mental models. In a study of problem-solving teams involving 120
university students, Rentsch et al. (2010) demonstrated the efficacy of team-developed concept mapping on knowledge transfer and team performance. Forty teams were randomly assigned to either a control condition or a training condition, in which teams participated in training related to using collaboratively developed concept maps to share and organize information. All teams were provided task information related to planning a military non-combatant evacuation operation. Teams in the training condition scored significantly higher in knowledge transfer (t = 2.28, p < .05) than the control teams, and had greater understanding of their own role knowledge (t = 1.99, p < .05), and of their teammates’ unique role knowledge (t = 2.06, p < .05).

Importantly, the quality of the final product—a rescue plan—was higher for the teams in the training condition (t = 2.93, p < .05). According to the researchers, the “information boards” (i.e., concept maps) used by the teams who received the training allowed the team members to visually manipulate, remember, draw attention to, and structure information available to the team. These findings suggest that collaborative concept mapping supports the development of shared team mental models. The Team Social Capital Development Model that guided this study included concept mapping as a strategy for developing shared team mental models.

**Reflection.** Reflection is a critical part of the learning process for both individuals and teams as documented in the leadership development literature (Edmondson, 2012; Galli & Müller-Stewens, 2012; Watkins, Lysø, & deMarrais, 2011). According to Edmondson (2013), reflection is “the habit of critically examining the results of actions to assess results and uncover new ideas” (p. 55). Reflection activities provide an opportunity for team members to discuss and clarify individual roles and responsibilities, as well as the contribution of knowledge and skill resources available within the team (Domke-Damonte & Keels, 2015). In a study of the effect of individual and team reflection on team outcomes, Domke-Damonte and Keels (2015) found that
team-level shared reflection was significantly correlated with team effectiveness ($r = .19; p < .05$), team work satisfaction ($r = .14; p < .10$), and the task project score ($r = .22; p < .01$). While this study took place in an undergraduate classroom setting, the capstone project involved a multi-phase collaborative consulting project for a publicly traded firm, reflecting an authentic project team experience. The focus of the reflection intervention in the study was the development of shared team behavioral norms, suggesting that team reflection may contribute to the development of shared team mental models (Domke-Damonte & Keels, 2015; Gabelica, Van, De Macyer, Segers, & Gijselaers, 2014).

Based on her work with corporate teams, Edmondson (2012, 2013) emphasized the critical role of ongoing learning to team performance. According to Edmondson, team learning involves quickly and efficiently determining what is working, what isn’t working, and what to do about it. Edmondson suggested that both formal and informal opportunities for reflection are an important part of team learning. Formal processes, such as after-action reviews, can be used to systematically review and analyze team performance at the end of a project, or major project phase. In addition, periodic informal reflection—through check-in’s, team discussions, or surveys—can be used to assess and improve team processes throughout the project, serving more of a diagnostic function than a post-mortem. According to Edmondson (2013), diagnosis involves “sizing up the situation and the challenges that might lie ahead” (p. 100). Encouraging team reflection at key points during the project provides an opportunity to develop a shared situation mental model based on reflective diagnosis. The Team Social Capital Development Model that guided this study included reflection activities to develop both Team Mental Models and Situation Mental Models in response to key team events.
**The role of the coach/facilitator.** Self-managed project teams, by definition, operate without a designated leader. However, most experts agree that a skilled coach/facilitator can play a critical role in the effectiveness of self-managed project teams, particularly those that are newly formed, or are temporary in nature (Marquardt & Yeo, 2012; Volz-Peacock et al., 2016; Wageman et al., 2008; Wageman, 1997). Effective coaching in self-managed project teams involves reinforcing the idea that the team is responsible for making decisions and managing itself, while facilitating problem-solving and decision-making processes in a way that does not impose the coach/facilitator’s view of a solution (Wageman et al., 2008; Wageman, 1997).

Hackman (2002) and Wageman et al. (2008) suggest that opportunities for team coaching are particularly important at the beginning, midpoint, and end of the project life cycle, with each phase requiring a different type of coaching. The beginning of the project is the time for motivating and energizing the team, to “create energy and focus the team on its purpose” (Wageman et al., 2008, p. 167). The midpoint requires coaching that is consultative, and that helps the team assess progress and make necessary alterations to their processes. The end of the task or project provides an opportunity for coaching to focus on learning from the experience in order to enhance the team’s long-term capabilities (Hackman, 2002; Wageman et al., 2008).

While there is a significant body of literature that describes the role of coaching and facilitation in project teams, there is little empirical data regarding the impact of expert facilitation on team outcomes. In a structured literature review, Seeber et al. (2014) synthesized existing research, while identifying gaps in the literature where additional research is needed. Based on a sample size of 36 quantitative studies, the researchers analyzed the results utilizing an input/mediator/output model. The results of the study confirmed that facilitation can positively
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

impact team effectiveness, however more research is needed to explore how facilitation practices actually impact team processes and emergent states—the mediators in the study model.

While there is a scarcity of empirical data regarding team facilitation, there is a significant body of work by practitioners regarding recommended facilitation practices. Proponents of Action Learning emphasize that while teams can be successful without a trained coach, using a skilled facilitator generally results in a smoother and more efficient team problem-solving process (Leonard & Lang, 2010; Marquardt & Yeo, 2012; Volz-Peacock et al., 2016).

As the coach facilitates group discussion, decision-making, and reflection, the team-members are free to focus on thoughtful analysis, reflection and contributions to decisions and solutions (Marquardt & Yeo, 2012; Pedler & Abbott, 2008a).

Skilled facilitators use a variety of strategies to encourage participation in team discussions and decisions. Edmondson (2012) emphasized the importance of establishing team psychological safety in order to encourage team member participation, or what she refers to as “speaking up.” Trained facilitators bring expertise in establishing positive team relationships and working through conflict in productive ways (Wageman et al., 2008).

A skilled coach/facilitator plays a valuable role in facilitating integrated interventions designed to develop team internal social capital. The facilitator can select and adapt appropriate strategies to maximize the development of network ties and team mental models. For example, the facilitator could design a brainstorming activity that encourages the development of network ties by including both a dyad/triad phase and a large group phase, while also incorporating a concept mapping phase to encourage the development of team mental models. The coach/facilitator can also act as a link between the team and the rest of the organization, sometimes referred to as a “boundary spanner” (Yazid, 2015). While project team interventions
focus on the development of internal or “bonding” team social capital, the coach/facilitator can perform a bridging function to connect the team to the rest of the organization. This link between a team and the rest of the organization is sometimes referred to as “bridging” team social capital (Clarke, 2012a; Mäkelä & Brewster, 2009).

In addition to facilitating integrated intervention activities during team meetings, the coach/facilitator can take responsibility for compiling project status reports, communicating team progress to organizational leaders, and gathering information from other parts of the organization, ensuring efficient use of team member resources. The Team Social Capital Development Model that guided this study emphasized the role of the coach/facilitator in guiding intervention activities within the context of self-managed project teams to develop network ties and shared team mental models.

Chapter Summary and Research Question

In summary, integrated intervention activities such as team building, goal setting, collaborative decision making, concept mapping, and reflection, have potential to facilitate the development of network ties and shared team mental models—two aspects of team internal social capital—in self-managed project teams. Team internal social capital positively impacts team performance by enhancing shared leadership capacity. This study explored how team internal social capital developed among members of a project team who participated in a 10-month integrated leadership development intervention that included a variety of the interventions discussed in Theme 3. The study addressed the following research question: How does team internal social capital develop through participation in an integrated leadership development intervention?
CHAPTER 2

METHODOLOGY AND METHODS

Methodology

For this study I followed a qualitative explanatory single case study design to explore how team social capital develops through participation in an integrated leadership development intervention (Merriam, 1998; Yin, 2014). Using an approach similar to the multicultural education program designed and implemented by Sleeter (1992), I designed and facilitated the interventions in addition to collecting data and analyzing results. A case study approach enabled me to explore the process of team social capital development through participation in an integrated leadership development intervention (Yin, 2014). The unit of study in the case was the project team. Data sources included participant interviews (Merriam, 1998; Sleeter, 2012; Yin, 2014), facilitator observations (Merriam, 1998; Sleeter, 2012), meeting videotapes, and researcher-generated documents—including reflections, concept maps, and other artifacts that resulted from intervention activities (Merriam, 1998; Sleeter, 2012). The data sources are summarized in Appendix A: Data Sources Chart. In the fall of 2016 my home institution’s Institutional Review Board (IRB) approved all the methods I used for this study including sampling, data collection, and data analysis.

Setting

The context of the case study was a project team tasked with addressing the challenges of changing workforce demographics in a state agency. The project team consisted of 12 individuals employed at the agency selected by the project manager and other administrators from a pool of more than 30 applicants. In addition to the quality of their application, team members were selected to provide representation from across the organization in terms of
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

department, tenure, position, and ethnicity. The tenure of the participants ranged from less than three years at the agency to more than 30 years.

The project team met once or twice per month for 10 months to accomplish the objectives of the project charter, as defined by upper management. As a participant-observer, my role was to collaboratively plan the meetings with the project manager and act as the team facilitator during the meetings. A series of intervention activities were integrated into the project team meetings with the goal of facilitating the development of two specific aspects of team social capital: network ties and shared mental models (see Appendix B: Intervention Summary Chart).

**Sampling**

I used a typical sampling method based on a critical case (Maxwell, 2013; Merriam, 1998). The critical case, consisting of the project team and project, was selected based on predetermined criteria. Typical sampling (Creswell, 2012; Creswell, 2013) is a form of purposeful sampling that involves selecting a case or sample that is typical for a situation. The sample consisted of all members of the project team, including the project manager, and reflected a typical organizational project team.

**Recruitment and Permissions**

In the spring of 2016, I presented at a conference with my faculty advisor on topics related to my study. The audience consisted of human resource professionals and individuals responsible for training at state agencies. As part of the presentation, I described my upcoming study and invited individuals to contact me if they were interested in being a site for the study. Joyce (pseudonym), a training coordinator at a state agency, contacted me shortly after the conference and indicated that she was responsible for some project team activities in her agency and was interested in being part of the study. Joyce and I met several times, along with other
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

agency leaders, to discuss the parameters of the study and how it might fit with an agency team project. The agency had structures and processes in place to support project team work that aligned well with the parameters that I had established for my study. Joyce, as the training coordinator for the agency, was well suited to partner with me to plan and facilitate the project team intervention. For these reasons, I did not think it necessary to try to recruit other organizations.

Joyce developed a proposal for a project related to workforce demographics and succession planning. The primary goal of the project was to develop research-based recommendations for how to address changing workforce demographics within the agency. Joyce met with agency leaders and departmental managers to promote the project. By the fall of 2016, she had obtained support for the project to move forward, and to be part of this study. Joyce was named Project Manager for the project in accordance with established agency project requirements. The Project Sponsor was the commissioner of the agency, which reflects the level of support for the project that Joyce was able to establish within the agency.

In the spring of 2017, Joyce completed the research study application, providing information about why the organization was interested in participating in the study, how the project team would be selected, what the project would be, and who would be responsible for the project. Agency representatives signed the letter of intent to participate in the study. Joyce finalized the project charter and began the process of project team recruitment by attending departmental meetings to explain and promote the project, and meeting with managers to encourage support for employee participation. She developed and distributed an application form to all agency employees and received over 30 applications. The application included a brief description of the project and asked the applicant to describe why they were interested in
the project, what unique qualities they brought to the team, and if they were willing to be part of a research study.

The project team parameters detailed in the project brochure limited the size of the project team to between 5-8 participants. However, based on the strong response and the quality of the applicants, Joyce and I agreed to increase the number of project team participants to 12. Each participant, including Joyce, signed an informed consent form. The first project team meeting was held in March 2017.

**Participants**

In Table 1, I provide profiles of the 12 project team members and the project manager including their role in the project team and their tenure at the agency.

*Table 1: Participant Profiles*

<table>
<thead>
<tr>
<th>ID Code</th>
<th>Alias</th>
<th>Role</th>
<th>Tenure at Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>P01</td>
<td>Tina</td>
<td>PT -Project Team Member</td>
<td>11-15 yrs.</td>
</tr>
<tr>
<td>P02</td>
<td>Roger</td>
<td>PT -Project Team Member</td>
<td>26+ yrs.</td>
</tr>
<tr>
<td>P03</td>
<td>Sheila</td>
<td>PT -Project Team Member</td>
<td>1-5 yrs.</td>
</tr>
<tr>
<td>P04</td>
<td>Kim</td>
<td>PT -Project Team Member</td>
<td>1-5 yrs.</td>
</tr>
<tr>
<td>P05</td>
<td>Jon</td>
<td>PT -Project Team Member</td>
<td>21-25 yrs.</td>
</tr>
<tr>
<td>P06</td>
<td>Carrie</td>
<td>PT -Project Team Member</td>
<td>1-5 yrs.</td>
</tr>
<tr>
<td>P07</td>
<td>Ned</td>
<td>PT -Project Team Member</td>
<td>26+ yrs.</td>
</tr>
<tr>
<td>P08</td>
<td>Nora</td>
<td>PT -Project Team Member</td>
<td>21-25 yrs.</td>
</tr>
<tr>
<td>P09</td>
<td>Ron</td>
<td>PT -Project Team Member</td>
<td>1-5 yrs.</td>
</tr>
<tr>
<td>P10</td>
<td>Bonnie</td>
<td>PT -Project Team Member</td>
<td>1-5 yrs.</td>
</tr>
<tr>
<td>P11</td>
<td>Sam</td>
<td>PT -Project Team Member</td>
<td>1-5 yrs.</td>
</tr>
</tbody>
</table>
**Intervention Overview**

The project team met 17 times over 10 months, between late March 2017 and early February 2018. Joyce and I worked closely to plan and document each meeting. Prior to each meeting I drafted a planning agenda based on where we left off at the last meeting, incorporating study-related intervention activities and data collection methods as appropriate. The planning agenda included notes and details regarding how each agenda item would be facilitated. Joyce and I met via webinar a few days prior to each meeting to talk through and finalize the planning agenda. After the meeting, I drafted a meeting summary documenting the results of the meeting. Joyce reviewed and update the summary as needed, and then distributed the meeting summary to the project team and saved a copy in the project team’s shared folder on the agency’s internal network. Joyce managed the meeting scheduling logistics and communication with the project team, except for items related to the research study. I emailed reflection questionnaires and related communication directly to the participants.

Throughout the intervention I made a conscious effort to balance my role as project facilitator with that of a researcher. As an experienced team facilitator, my tendency was to approach the tasks of meeting planning and facilitation from the perspective of a facilitator. As someone new to research, I had to deliberately stop and think about the process from the point of view of a researcher. One strategy that I used to maintain this balance was to develop a format for Field Notes that included a planning section and a reflection section for the project and for the research. Prior to the meeting, I thought through the processes and activities from the
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

perspective of moving the project team forward in accomplishing the project objectives. I then thought through the processes and activities from the point of view of the research project. My goal was to develop a plan that accomplished the objectives of the project team while meeting the requirements of the research project. In some cases, this required modifying an intervention activity in some way to better meet the needs of the project team, while still accomplishing the research purpose. An example of this type of situation came during Meeting 7. In developing my research plan, I envisioned using some type of group concept mapping activity in combination with an individual concept mapping activity to address situation analysis mental model data collection. While I incorporated concept mapping into the individual reflection, group concept mapping did not seem like an effective way to facilitate the team discussion at that point in time. I modified my plan for that meeting to focus on reviewing the results of the individual situation analysis and documenting the team discussion through other types of visual representation and decision-making documentation.

After each meeting I reflected on what happened from each perspective (project facilitator and researcher) and documented my thoughts in the Field Notes template. From a project perspective, I thought about what the project team accomplished during the meeting, how effective the collaborative activities were, what issues needed to be dealt with, and what was the best path forward heading into the next meeting. From a research perspective, I thought about team interactions that reflected types of team social capital, as well as the impact of intervention activities in developing team social capital. Using this strategy to consciously shift perspectives was helpful in ensuring that I had both purposes in mind while planning, implementing, and reflecting on the project activities.
In addition to managing the project team meeting and communication logistics, Joyce played an important role in keeping the project sponsor informed of the team’s progress and reporting back to the project team with any additional direction from the project sponsor. Joyce also played a role in facilitating communication and removing barriers with other departments in the agency.

The first phase of the project involved project launch activities, including the pre-launch reflection, team-building activities, and goal-setting activities. The next phase was the project research phase, where the team divided into smaller subgroups to research various aspects of succession planning and demographics. Once the research phase was complete, the team worked through developing recommendations. The final phase involved presenting the team’s recommendations to agency leaders. The key activities for each meeting are summarized in Appendix B: Intervention Summary Chart.

**Data Collection Methods and Procedures**

For the purposes of the study, I gathered data using a variety of methods common to qualitative research. Data sources included researcher-generated documents (Merriam, 1998), participant interviews (Merriam, 1998; Yin, 2014), and facilitator observations (Merriam, 1998). Data were collected throughout the intervention through reflections, meeting artifacts, observation, and interviews (see Appendix C).

**Reflection Questionnaires**

I conducted a series of five individual participant reflections over the course of the intervention. All reflection questionnaires were emailed directly to the participants between meetings. Participants returned the completed reflections via email. I used a *Pre-Launch Reflection* (Appendix D) to collect baseline data about individual participant’s understanding of
the project goals, the relevant knowledge and expertise that they brought to the project, and their social network ties with other team members at project launch. I administered a Monitoring Reflection (Appendix E) approximately half way through the intervention and a Project Completion Reflection (Appendix F) at the end of the intervention. In addition to narrative data, I used these three reflections to gather information related to team network ties using Social Network Analysis methodologies (Hatala, 2006; Mayo et al., 2003). The three reflections gathered similar network ties data at three points in time, which provided longitudinal data on network ties development.

Approximately halfway through the intervention, I used a Situation Analysis Reflection (Appendix G) to gather data on individual situation mental models utilizing both narrative responses and individual concept maps. I conducted a Self-Reflection (Appendix H) at the end of the project utilizing a critical incident approach to gather data on important events in the project team life cycle (Bott & Tourish, 2016; Byrne, 2001; Flanagan, 1954; Graybill et al., 2017).

Meeting Artifacts

The intervention activities produced a variety of types of artifacts. Meeting artifacts included goal-setting documents, resource mapping documents, collaborative decision-making documentation, visual representations, and meeting summaries. Meeting artifacts are detailed in Appendix B: Intervention Summary Chart.

Meeting Audio and Video Tape Recordings.

I audio taped all project team meetings using a digital audio recorder and I videotaped all but one meeting using a stationary video camera positioned in one corner of the room. Meeting 5 was not videotaped due to user error.

Facilitator observation.
I used facilitator observation to triangulate the data through interviews, reflections, and
document analysis (Maxwell, 2013; Merriam, 1998). I documented facilitator observations using
field notes and memos.

**Interviews**

I conducted in-depth interviews at the end of the project to gather individual perceptions
about how team social capital developed during the course of the project. The 60-90- minute
semi-structured interviews consisted of open-ended questions related to team social capital
development. Interview questions reflecting Critical Incident Technique (CIT) (Bott & Tourish,
2016; Byrne, 2001; Flanagan, 1954; Graybill et al., 2017) were used to gather information about
key team decision points. Participants were asked to describe one or more key decision points to
identify critical behaviors involved in team decision making, shedding light on the development
of team shared mental models and network ties (see Appendix I). Joyce, the project team
manager, was interviewed using a slightly different interview protocol (see Appendix J), which
included questions about her role as the project manager.

**Data Analysis Methods Overview**

Inductive analysis is an approach used by qualitative researchers to analyze data collected
through observation, interviews, text analysis, and other qualitative methods. Sometimes
referred to as thematic analysis, inductive analysis consists of allowing themes to emerge from
the data through in-depth review and analysis (Bernard, Wutich, & Ryan, 2017). Commonly
associated with the grounded theory approach to qualitative research (Glaser & Strauss, 1967),
inductive analysis is a systematic process of coding raw data, and reviewing and recoding the
data until relevant categories and themes emerge (Creswell, 2003; Grbich, 2013). As described
by Bernard et al. (2017), inductive analysis “involves the search for pattern from observation and
the development of explanations – theories for those patterns through a series of hypotheses” (p. 219). In contrast, deductive analysis begins with a premise or hypotheses and uses observation to either prove or disprove it (Bernard et al., 2017).

While inductive analysis is closely associated with specific approaches to qualitative research such as grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 1998) and phenomenology (Grbich, 2013; Hycner, 1985), the process has been adapted for use in many types of qualitative studies. D. R. Thomas (2006) proposed a “general inductive approach” (p. 237) that builds on the foundations of grounded theory, while avoiding some of its theoretical complexities. According to Thomas there are three main purposes for using a generic inductive analysis approach. The first is to summarize and condense raw data into manageable components. The second is to establish clear links between the findings derived from the raw data and the research objectives. The third is to develop a model or theory based on the structures that emerge from the raw data through the analysis process (D. R. Thomas, 2006).

The inductive analysis process begins with a close reading of the text, and the identification of text segments that contain meaningful concepts and ideas. These segments are given a label, tag or code that reflects the meaning and ideas contained in the segment (D. R. Thomas, 2006). This initial coding, often referred to as “open coding,” is designed to identify initial concepts and ideas in the data that relate to the purpose of the research. “In vivo” coding is a strategy whereby the coder selects words or phrases found explicitly in the text to use as codes. This approach to coding helps to maintain a strong link to the original meaning of the text (Gribich, 2013). Writing marginal notes and/or theoretical memos to capture ideas and insights inspired by the data is also an important part of the coding process (Gribich, 2013; Tuckett, 2005).
The hallmark of inductive analysis is the commitment to a systematic process of reading and re-reading the data to ensure a thorough understanding of its meaning. Creswell (2003) describes the process of inductive analysis as a “continual reflection about the data, asking analytic questions, and writing memos throughout the study” (p. 190). Once the initial coding phase is complete, the next step in the process is to refine the codes, and begin to synthesize codes into categories and themes, which become the basis for the researcher’s findings. This step is sometimes referred to as axial coding (Grbich, 2013; Strauss & Corbin, 1998).

Rather than waiting until all of the data is collected to begin the analysis process, many researchers recommend using the Constant Comparison Method (CCM) as data is collected. First proposed by Glaser and Strauss (1967) as part of the grounded theory method, CCM involves incorporating new data by comparing it to previous findings. While the comparison process will vary depending on the kind of data involved in the study, CCM typically involves three types of comparison: (a) comparison of data within a single data set; (b) comparison of data between data sets within the same data group; and (c) comparison of data sets from different data groups (Boeije, 2002). These comparisons provide the basis for refining codes, categories and themes throughout the analysis process.

While the stated outcome of grounded theory research is the development of a theory, D. R. Thomas (2006) suggests that the desired result of the general inductive approach is to identify important themes. Ideally these reflect the most significant themes that relate to the research objectives, as too many themes could indicate that the inductive analysis was incomplete (D. R. Thomas, 2006).

As with other forms of qualitative research, an inductive analysis must demonstrate the four key types of trustworthiness: credibility, transferability, dependability, and confirmability.
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

(Lincoln & Guba, 1985). D. R. Thomas (2006) recommends conducting peer debriefings and stakeholder checks to establish credibility. Dependability requires that the reader is able to follow how information is collected and transformed into data, and how the data is analyzed to determine the results. Maintaining a detailed audit trail of how data is collected, how categories are derived, and how decisions are made throughout the study supports dependability (Merriam, 1998). Confirmability relates to objectivity and ensuring that the findings are shaped by the respondents and not the researcher’s bias, motivation, or self-interest (McKenney & Reeves, 2013). Maintaining extensive field notes and a reflexive journal support confirmability. Transferability requires that readers are in a position to make inferences and determine whether the findings can be applied to their own settings. Comprehensive and thorough descriptions of the inductive analysis process and the findings, sometimes referred to as “thick descriptions” accomplish this criterion (Merriam, 1998).

Applying the Inductive Approach to Interview Data

I began the data analysis process by applying the inductive approach to the data collected via participant interviews. I conducted the participant interviews at the end of the project, and included open-ended questions designed to gather data about the participant’s perspective on team social capital development. I felt that the interview data would provide the most comprehensive picture of team social capital development through integrated intervention activities. Themes that emerged through analysis of the interview data were then verified through analysis of other data sources including individual participant reflections, meeting videotapes, meeting artifacts, and field notes.

As I began the process of analyzing interview data, I was looking for a software tool to assist with data analysis and data management that would be useful throughout the dissertation
writing process. After exploring several different software applications, I selected Dedoose (www.dedoose.com) and began a one-month free trial period. The system seemed to be relatively simple to use yet sophisticated enough to meet my needs given the various types of data that I needed to analyze for my study. During the initial steps of analyzing my interview data, I was also learning how to use Dedoose to set up a coding system, code interview transcripts, analyze data, and generate reports. The analysis process described below illustrates the transition from interview transcripts in MS Word to coded data exported from Dedoose.

**Step 1: Clean the transcripts.** The interview audio tapes were transcribed by a professional company. My first step was to clean the transcripts in MS Word. The cleaning process involved several steps:

1. First, I changed participant names to pseudonyms and removed specific references to the agency where the study took place.
2. As I read through each transcript, I audited the audio file to clarify sections of the transcript that were deemed inaudible by the transcriber.
3. I formatted the transcript using 1.5 line spacing and added line numbering.
4. I began the analysis process by highlighting passages that seemed to include relevant data that should be coded.
5. I removed some extraneous data, such as conversation that was off-topic, but not too much because I did not want to lose the context of the interview.

**Step 2: Plan the process.** As I worked through the transcript cleaning process, I set up a practice project in Dedoose to determine how best to approach the transition from an MS Word transcript to coding in Dedoose. I also began keeping a data analysis journal. This is an excerpt from my data analysis journal as I planned my process:
Interview transcripts

1. Clean up – change names, remove references.
2. Use find/replace to change names.
3. Remove any extraneous data.
4. Open code by hand using in vivo coding.
5. Upload to Dedoose (Project #1).
6. Link to participants.
7. Add participant alias’s to descriptor ID.
8. Show line numbers.
9. Add any additional codes needed from the open coding phase.
10. Code and analyze.

**Step 3: Round 1 and 2 - manual open coding.** I conducted the first round of open coding manually using a hard-copy printout of each cleaned highlighted MS Word transcript.

The inductive analysis focused on the research question addressed in the study:

*How does team social capital develop through participation in an integrated leadership development intervention?*

The semi-structured interview questions were designed to elicit participant descriptions about how they perceived team social capital development during the project. The interview questions related specifically to aspects of team social capital including team knowledge sharing, team decision making, and team shared mental models. Interview questions also explored the participant’s perspective on significant events during the project, reflecting a Critical Incident Technique approach.
I read through the transcript, underlining words and phrases that seemed to have some relationship to the research question. I wrote notes in the margins and started a hand-written list of codes. This is an example of what the transcript looked like once I cleaned, highlighted, and open-coded the hard copy:

![Open-Coded Transcript](image)

*Figure 6: Open-Coded Transcript*

As I manually coded the remaining transcripts, I continued to add to the hand-written code list. After I finished manually open-coding the interviews, I typed up my hand-written code list which looked like this:
Figure 7: Initial Code List

At that point, I began to try to consolidate the list by grouping codes together. I reviewed the transcripts again, added additional codes manually, and updated my code list which started to look like this:
PH1 Open coding Round 2

Project Team Emotional Journey [tied to critical incidents, and Team Situation MM]
TER – Team Emotional Reaction
PER – Personal Emotional Reaction
Overwhelmed
Excited
Confused
Low point
  • Discouraged
  • Pessimistic
  • Shocked
  • Disheartening

"ah ha" moment
  Momentum
Frustrated
Worried
Rushed

Figure 8: Updated Code List

Once I had manually coded the transcripts and consolidated the code list, I was ready continue coding in Dedoose. I set up a new project in Dedoose and uploaded the transcripts, code list, and participant data.

Step 4: Round 3 - coding transcripts in Dedoose. Once the project was set up in Dedoose, I began another round of coding. I used the hard-copy coded transcript as a starting point but continued to refine my code list and my transcript coding. In Dedoose, the first step in coding is to select an “excerpt” by highlighting a section of text. Once I selected the excerpt, I had access to the code list, and associated one or more codes with that excerpt. I also wrote memos and linked them to the excerpt. I add additional codes and sub-codes as needed and
accessed and edited the code list easily at any time. This is a note from my journal as I began this process:

Coding Transcripts – Round 3

I started coding Bonnie’s transcript, and I think the codes are working well.

I also need to think about using Memos as I do the coding.

As I work with the coding, I need to look for emerging themes, and figure out how to group codes to support that.

This is what coding looks like in Dedoose:

![Figure 9: Transcript Coded in DeDoose](image)

The highlighted sections are excerpts, and the code list is available in the lower right corner. The process involved selecting a code from the list, and sliding it to the upper right box, where it becomes associated with the excerpt. I set the program so that any sub-code that I selected also linked the parent code to the excerpt. Once the transcript was coded, I exported the coded transcript to MS Word, and reviewed the excerpts and codes, which looked like this:
Figure 10: Exported Coded Transcript

I printed it out, reviewed, and refined the code list and coded transcripts several times in an effort to consolidate the codes and identify emerging themes. I also exported the updated code list into an MS Excel file so that I could continue to review and refine the codes and write descriptions. The exported code list looks like this (color highlights added after export):
**Figure 11: Exported Code List from DeDoose**

The parent ID and Depth indicate the hierarchical structure of the codes. In Dedoose, this hierarchy is color-coded, making it much easier to see. While it is not necessary to export the code list in order to work on it, I used the exported list to share with my team members for feedback, and to review and think about the codes and descriptions.

When the coding of the interview transcripts was complete, I used the reporting features in Dedoose to print out sets of excerpts related to particular codes and emerging themes. This is an example of two excerpts contained in a report generated based on the code Knowledge Sharing Network Ties:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Id</td>
<td>Parent Id</td>
<td>Depth</td>
<td>Title</td>
<td>Description</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Collaborative Decision Making</td>
<td>Processes that involve the whole team.</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>Brainstorming</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>Nominations</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>1</td>
<td>Resource Mapping</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>1</td>
<td>Storyboarding</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>0</td>
<td>Collaborative Tools</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>1</td>
<td>email</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>1</td>
<td>Shared Network Drive</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>0</td>
<td>Critical Incident</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>1</td>
<td>CI - Commissioner Presentation</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>9</td>
<td>1</td>
<td>CI - Consolidate Recommendations</td>
<td>Critical Incident: When the team worked through a collaborative decision-making process to consolidate their recommendations.</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
<td>1</td>
<td>CI - Demographic data</td>
<td>Critical Incident: When the team became aware of the current demographic data for the agency.</td>
</tr>
<tr>
<td>13</td>
<td>9</td>
<td>1</td>
<td>CI - Presentation decision</td>
<td>Critical Incident: When the team had to decide who would deliver the planning projects that had not been implemented.</td>
</tr>
<tr>
<td>14</td>
<td>9</td>
<td>1</td>
<td>CI - previous SP projects</td>
<td>Critical Incident: When the team became aware of the previous success</td>
</tr>
<tr>
<td>15</td>
<td>5</td>
<td>0</td>
<td>Facilitator</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>0</td>
<td>Great Quotes</td>
<td>References to different kinds of interactions between project team members.</td>
</tr>
<tr>
<td>17</td>
<td>0</td>
<td>0</td>
<td>Interactions</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>17</td>
<td>1</td>
<td>Mentoring</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>17</td>
<td>1</td>
<td>Reaching out</td>
<td>Reaching out to other individuals for information, help, or advice</td>
</tr>
<tr>
<td>20</td>
<td>17</td>
<td>1</td>
<td>Respectful interactions</td>
<td>Reference to how team members treated each other.</td>
</tr>
<tr>
<td>21</td>
<td>0</td>
<td>0</td>
<td>Network Ties</td>
<td>Network ties among project team members</td>
</tr>
<tr>
<td>22</td>
<td>21</td>
<td>1</td>
<td>Influence reciprocity</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>21</td>
<td>1</td>
<td>Knowledge sharing</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>23</td>
<td>2</td>
<td>Lack of TM KS</td>
<td>Perception of a lack of team member knowledge sharing</td>
</tr>
<tr>
<td>25</td>
<td>23</td>
<td>2</td>
<td>LGKS</td>
<td>Large group knowledge sharing</td>
</tr>
<tr>
<td>26</td>
<td>23</td>
<td>2</td>
<td>SGKS</td>
<td>Small group knowledge sharing</td>
</tr>
</tbody>
</table>
Figure 12: Coded Excerpts

As I reviewed the reports, I looked for emerging themes, and highlighted excerpts that I thought might be useful data for supporting the emerging findings. I also began to look for patterns of codes that tended to show up together, such as subgroups and knowledge sharing network ties.
Based on an inductive analysis of the interview data, several preliminary themes began to emerge to answer the research question:

*How does team social capital develop through participation in an integrated leadership development intervention?*

- As project team members communicate and collaborate in smaller subgroups, Knowledge Sharing Network Ties are established and strengthened.
- Shared Situation Mental Models emerge in response to critical incidents (significant events) in the project life-cycle, which often trigger key team decisions.
- Influence reciprocity expands when senior members of the project team embrace shared leadership, encourage team members to participate, and mentor fellow team members.
- Incorporating a subgroup research phase early in the project establishes team member expertise which facilitates the development of Team Mental Models (roles, resources, and responsibilities) by establishing areas of expertise within the team.
- Large group collaborative decision-making processes provide opportunities for knowledge sharing and influence reciprocity through both verbal and non-verbal team-member contributions.
- Team Mental Models develop through activities that provide an opportunity for individual team members to share or demonstrate knowledge and expertise.

**Applying Social Network and Inductive Analysis to Reflection Data**

Once I completed the initial analysis of the interview data, I began to compile the data from the *Pre-Launch Reflection*, the *Monitoring Reflection*, and the *Completion Reflection* (see Appendices D-F). The reflections resulted in four sets of data collected at three different points in the project:
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

- Narrative responses to questions relating primarily to the participant’s perception of the situation being faced by the team at the time and key decisions made.
- A chart requesting that the responder provide information about the knowledge and skill resources held by other team members, and the roles and responsibilities.
- Likert scale ratings related to Knowledge Sharing Network Ties.
- Likert scale ratings related to Influence Reciprocity Network Ties.

I analyzed these types of data different ways. I cleaned the narrative data and uploaded it to a new project in Dedoose. I uploaded the code set developed through the interview transcript analysis to the new project, and coded the narrative data using the same process as the interview data. No new codes or themes emerged. I generated excerpt reports from Dedoose according to code combinations related to the preliminary findings. I then analyzed these excerpt reports, looking for additional insights. I then incorporated any relevant excerpts into the findings.

I cleaned the chart data related to roles, responsibilities, and resources to remove any references to identifying information and compiled the data into three master matrices—one matrix for each reflection—pre-launch, monitoring, and project completion (see Appendix K). I used the master matrices to identify similarities and differences between participant perceptions of their fellow team members’ roles, responsibilities, and resources at three different points in the project. Below is an example of the compiled chart data from the Pre-Launch Reflection:
I analyzed network ties data gathered through the Likert Scale ratings using Social Network Analysis procedures (Hatala, 2006; Mayo et al., 2003). The Likert scale ratings related to Knowledge Sharing Network Ties were compiled into master matrices by reflection (See Appendix L). I then analyzed the matrices to identify sets of strong bi-directional network ties based on ratings of 3 or 4 by both parties. I compared the master matrices to the subgroup lists to determine how many of the sets of individuals with strong bi-directional Knowledge Sharing Network Ties had worked together in a subgroup at some point in the project. This example shows the compiled Knowledge Sharing Network Ties data from the Project Completion Reflection:
I compiled the Likert scale ratings related to Influence Reciprocity Network Ties into master matrices by reflection (see Appendix M). The matrices also included a brief statement related to the decision point that the participant had identified. I then analyzed the matrices to identify patterns of influence reciprocity at different points of the project, and in relation to different decision points. These example shows the compiled Influence Reciprocity Network Ties data from the Project Monitoring Reflection Project and the Completion Reflection:

![Figure 14: Project Completion Reflection Data Chart](image-url)
## Influence Reciprocity Matrix – Monitoring Reflection

**Key:**
- **Rater:** Individual completing the Reflection
- **Target:** Team member being rated by the Rater

**Level of Influence Rating Scale:**
- 0 = no influence, 1 = little influence, 2 = moderate influence, 3 = moderate to strong influence, 4 = strong influence

<table>
<thead>
<tr>
<th>DECISION</th>
<th>RATER</th>
<th>Tina</th>
<th>Roger</th>
<th>Sheila</th>
<th>Kim</th>
<th>Jon</th>
<th>Carrie</th>
<th>Ned</th>
<th>Nora</th>
<th>Ron</th>
<th>Bonnie</th>
<th>Sam</th>
<th>Lisa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action steps</td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consolidate recommendations</td>
<td></td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Consolidate recommendations</td>
<td></td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Consolidate recommendations</td>
<td></td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Consolidate recommendations</td>
<td></td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>No survey submitted NA</td>
<td></td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td></td>
</tr>
<tr>
<td>Develop “visual alarm” presentation</td>
<td></td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sub-group decision (not whole team) NA</td>
<td></td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td></td>
</tr>
<tr>
<td>Recommendation for a Succession Planning oversite team</td>
<td></td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Develop “visual alarm” presentation and report</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
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<td>3</td>
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<td>3</td>
<td>4</td>
<td>4</td>
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<td>1</td>
<td>3</td>
<td>1</td>
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<tr>
<td>Develop implementation timeline</td>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>2</td>
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<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 15: Influence Reciprocity Matrix – Monitoring Reflection**

## Influence Reciprocity Matrix – Completion Reflection

**Key:**
- **Rater:** Individual completing the Reflection
- **Target:** Team member being rated by the Rater

**Level of Influence Rating Scale:**
- 0 = no influence, 1 = little influence, 2 = moderate influence, 3 = moderate to strong influence, 4 = strong influence

<table>
<thead>
<tr>
<th>DECISION</th>
<th>RATER</th>
<th>Tina</th>
<th>Roger</th>
<th>Sheila</th>
<th>Kim</th>
<th>Jon</th>
<th>Carrie</th>
<th>Ned</th>
<th>Nora</th>
<th>Ron</th>
<th>Bonnie</th>
<th>Sam</th>
<th>Lisa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation and report revisions</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>&quot;No decisions made&quot; NA</td>
<td></td>
<td>roger</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Presentation decisions</td>
<td></td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Presentation and report revisions</td>
<td></td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
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</tbody>
</table>

**Figure 16: Influence Reciprocity Matrix – Completion Reflection**
I compared the results of the reflections conducted at different points in time to determine changes in patterns of knowledge sharing and influence reciprocity. The results of this analysis lent support to preliminary findings. Based on the analysis of the interview data and the reflection data, I updated my preliminary themes and drafted eight initial findings.

**Using Critical Incident Technique to Correlate Interview, Reflection, Observation, and Meeting Artifact Data**

I utilized Critical Incident Technique (CIT) (Bott & Tourish, 2016; Byrne, 2001; Graybill et al., 2017) throughout the data collection procedures to highlight key events in the project life cycle. I used interview questions to elicit participant perceptions of critical incidents. As participants discussed events that appeared to be critical incidents, I added sub-codes to my code list in DeDoose and coded the excerpts. Results of the inductive analysis of interview data showed 66 participant references to seven different critical incidents. In the figure below, the numbers next to the Critical Incident code, and the sub-codes indicate how many times an interview excerpt was coded with that code and sub-code. I was then able to use these codes to run reports of interview excerpts that were coded to these critical incidents.

![DeDoose Code List with Number of References](image)

*Figure 17: DeDoose Code List with Number of References*
I administered the *Self-Reflection* (Appendix H) near the end of the project. The reflection questionnaire included a Critical Incident Timeline to facilitate participant reflection about key events in the project life cycle. Then, during the final project team meeting, the team collaboratively developed a Critical Incident Timeline as part of the After-Action Review process. I put labels up on the wall for each of the prior 16 project team meetings. Participants were given sticky notes and markers and were asked to identify their top 1 or 2 critical incidents, write them on sticky notes, and place them on the timeline. We then went around the table and each participant explained why they considered each event a critical incident.

After the meeting, I recorded the Critical Incident Timeline information in the meeting summary. To analyze the critical incident data, I combined data from the participant Self-Reflections and the team Critical Incident Timeline into a *Critical Incident Data Analysis Chart* (see Appendix N). I used these data to identify the critical incidents most commonly identified by participants and to inform the continued development of the findings.

Once the primary critical incidents were identified, I used other data sources to triangulate the data, including interview data, meeting transcripts, meeting artifacts, and reflection data. For example, the *Situation Analysis Reflection* (Appendix G) was conducted between Meeting 6 and Meeting 7, just prior to the critical incident most often cited by participants—the discovery of two previous succession-planning projects. Several participants referenced this situation in their *Situation Analysis Reflection*, which provided additional support for identifying this event as a critical incident. I used this data to triangulate the critical incident data that emerged from the interviews, reflections, and meeting artifacts. Similarly, I examined field notes, meeting transcripts, and other meeting artifacts to gain additional insight into the critical incidents.
As I worked through the data analysis process, it became apparent the some of my initial findings were actually supporting elements to other findings, rather than being independent findings. For example, it became apparent that collaborative decision-making processes played a role in the development of team situation mental models in response to critical incidents, rather than standing alone as a key factor in the development of shared situation mental models. Similarly, while team-building activities played a role in initiating Knowledge Sharing Network Ties, the most significant knowledge-sharing relationships resulted from participants working together in subgroups. The comprehensive analysis of data resulted in consolidating the eight preliminary findings into four:

**Finding 1:** As project team members communicate and collaborate in smaller subgroups, Knowledge Sharing Network Ties are established and strengthened.

**Finding 4:** Shared Team Mental Models develop when individual team members have opportunities to share knowledge or demonstrate expertise through project tasks and activities.

**Finding 3:** Shared Situation Mental Models emerge in response to critical incidents (significant events) in the project life-cycle and inform key team decisions.

**Finding 4:** Influence Reciprocity Network Ties emerge through collaborative decision-making processes when senior members of the project team embrace shared leadership, encourage team members to participate, and mentor fellow team members.

**Applying the Inductive Approach to Meeting Videos, Field Notes, and Artifacts**

The final step in the data analysis process was to systematically review and analyze all meeting-related data for the 17 project team meetings. This process involved verifying and cleaning the meeting transcripts by reviewing the meeting videos. As I reviewed the meeting
videos, I kept observation notes and occasionally added memos to the meeting transcripts based on any important events or interactions that I observed.

I then uploaded the meeting transcripts into a new project in Dedoose and coded them using the same code list utilized in the analysis of the interview and reflection data. No new codes or themes emerged. In addition, I reviewed and analyzed the meeting summaries, planning agendas, field notes, and artifacts. These documents provided additional insights into the four findings but did not result in any additional findings. The meeting data primarily served to triangulate the data obtained through the interview and reflections.

**Trustworthiness**

To ensure that the design and execution of this study is regarded as trustworthy, I addressed four criteria throughout the research process: credibility, dependability, confirmability, and transferability (Lincoln & Guba, 1985). Credibility refers to establishing confidence in the “truth” value of the findings and requires a faithful account of what was captured during the study (McKenney & Reeves, 2013). The study took place over several months, providing an opportunity for prolonged engagement, which is one method of ensuring credibility (Merriam, 1998). In addition, I gathered data from multiple sources, ensuring triangulation (Merriam, 1998).

Dependability requires that the reader is able to follow how information is collected and transformed into data, and how the data is analyzed to determine the results (Merriam, 1998). To meet the dependability criterion, I maintained a detailed audit trail of how data was collected, how categories were derived, and how decisions were made throughout the study (Merriam, 1998). Confirmability relates to objectivity and ensuring that the findings are shaped by the respondents and not the researcher’s bias, motivation, or self-interest (McKenney & Reeves,
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

2013). To meet this criterion, I maintained extensive field notes, a reflexive journal, and an audit trail. Transferability requires that readers are in a position to make inferences and determine whether the findings can be applied to their own settings. Thick descriptions of the process and the findings were used to address this criterion (Merriam, 1998). In addition, I engaged in peer debriefing throughout the study to ensure that this study will be of optimal use to readers.

Subjectivity

Avoiding bias is a significant component of research ethics. Yin (2014) points out that because case study researchers must understand the issues of the case beforehand, they must be particularly careful to not allow their interpretation of the evidence to be swayed by underlying personal or professional biases. These risks can be minimized by acknowledging the potential biases that the researcher brings to the study due to background and previous experience (Creswell, 2014). As a researcher seeking to understand how team social capital changes through participating in integrated leadership development interventions, it is important that I share the professional experiences that have shaped my biases and opinions.

Early in my career I was an administrator at an organization that embraced many aspects of the quality movement of the mid-1990s, including an emphasis on utilizing teams to accomplish organizational goals. During that time, I had the opportunity to participate in professional development opportunities related to both managing and participating in teams. I participated in organizational teams for a variety of purposes and implemented team-based processes within my department. These experiences led me to both value the potential of team-based processes, as well as to recognize the inherent complexities of working with teams.

In more recent years I have worked in a small team-based organization. One of the services that we provide to clients is facilitation of collaborative, team-based processes to
develop course and program curriculum. Through these experiences I have participated in project teams from a variety of roles and perspectives—as a team member, a facilitator, and a manager of project teams. I believe that the strategic use of project teams is beneficial to organizations in several ways. Teams provide a vehicle for capturing the ideas and expertise of several individuals and applying that expertise to developing creative solutions to problems. I also believe that teams improve the overall climate of the organization, because individuals feel more connected to others, and feel that their ideas are valued. By working in teams, groups of individuals develop a shared understanding of complex organizational issues, and an appreciation of each other’s unique skills and abilities. Individuals who have worked on a project team also tend to support the results of the project, which can facilitate organizational buy-in for new initiatives.

In this study I acted as the designer and lead facilitator of the leadership development interventions, as well as the researcher, which could have resulted in bias in my interpretation of events. As a researcher, it was important for me to maintain an awareness of these biases and to remain open to a new understanding of project teams through this study. I used two primary strategies to address my potential biases. First, I used detailed field notes to document my perceptions while planning each meeting, and to reflect on the events of the meeting. I divided the field notes into two sections. I used one section to think through the meeting activities and events from the perspective of a project facilitator. I used the other section to think through the activities and events from the perspective of a researcher. This strategy helped me to maintain awareness of my dual roles, and how my perceptions changed depending on the perspective used to consider events. Second, Joyce and I met prior to each meeting to plan the meeting agenda and activities and met after each meeting to debrief. Joyce had a clear understanding of the
purpose of the research, as well as the perspective of a facilitator. These meetings provided opportunities for peer debriefing which helped me to revise or validate my perceptions. I believe that these strategies helped me to maintain an awareness of my potential biases and allowed me to mitigate them as much as possible.

**Limitations**

I acknowledge that my own subjectivities may have posed a potential threat to this study’s trustworthiness. In addition, I recognize that other potential threats—transferability, credibility, reliability, and confirmability—also may have compromised this study’s trustworthiness. However, I have sought to control for these threats to the greatest extent possible, and in so doing, I accept these limitations.

This study addressed the development of team social capital in a single project team, operating under unique circumstances. Therefore, the results of this study do not represent the full range of factors that may impact team social capital development in self-managed project teams. For example, this study did not control for issues of participant race, gender, ethnicity, social class, or other factors that may impact how individuals relate to one another in a project team environment.

**Chapter Summary**

In this chapter, I have described the methodology and methods I used to conduct this qualitative case study. Specifically, I described my procedure for selecting the site, provided information about the participants, and outlined the processes used to plan, implement, and document the work of the project team. I discussed my data collection techniques and reviewed my data analysis strategies, as well as the methods I used to ensure trustworthiness for this study.
I described my own subjectivities to show how I addressed my own potential biases as a researcher. Finally, I concluded this chapter by addressing the limitations of this study.
CHAPTER 3

FINDINGS

The purpose of this study was to explore how team internal social capital develops through participation in an integrated leadership development intervention. In Chapter One I reviewed the literature on team social capital from a leadership development perspective and explained the conceptual framework I developed to answer my research question. In Chapter Two I described the methods I used to conduct this qualitative explanatory case study, along with the data collection and analysis procedures. In Chapter Three, I present four findings that emerged from my analysis of the data. Specifically, my findings illustrate how four aspects of team internal social capital—Knowledge Sharing Network Ties, Influence Reciprocity Network Ties, Team Mental Models, and Situation Mental Models—developed through an integrated leadership development intervention.

Finding 1: As project team members collaborate in smaller subgroups, Knowledge Sharing Network Ties are established and strengthened.

Knowledge Sharing Network Ties, one of the aspects of team internal social capital I addressed in this study, are relationships between individuals within a team that facilitate the sharing of knowledge and information among team members. As network ties strengthen, individuals become more aware of the knowledge and expertise possessed by other individuals and become more comfortable in requesting input and in sharing their own knowledge and information. One of the ways that Knowledge Sharing Network Ties developed between project team members in this study was through working together in subgroups.

According to the responses to the Pre-Launch Reflection, participants did not know most of the other project team members at the beginning of the project. When asked to identify any
knowledge and/or skills that they knew were possessed by other team members, 11 of 12 participants were able to identify knowledge or skills for fewer than half of the team members, while three quarters of participants identified knowledge or skills for three or fewer team members.

*Table 2: Pre-Launch Reflection Data*

<table>
<thead>
<tr>
<th>Participant</th>
<th># of other team members that the participant knew something about</th>
<th>Participant</th>
<th># of other team members that the participant knew something about</th>
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<tbody>
<tr>
<td>Tina</td>
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<td>Ned</td>
<td>3</td>
</tr>
<tr>
<td>Roger</td>
<td>3</td>
<td>Nora</td>
<td>3</td>
</tr>
<tr>
<td>Sheila</td>
<td>0</td>
<td>Ron</td>
<td>1</td>
</tr>
<tr>
<td>Kim</td>
<td>2</td>
<td>Bonnie</td>
<td>5</td>
</tr>
<tr>
<td>Jon</td>
<td>5</td>
<td>Sam</td>
<td>1</td>
</tr>
<tr>
<td>Carrie</td>
<td>1</td>
<td>Lisa</td>
<td>3</td>
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For example, Kim indicated that she knew Ned primarily through his reputation as a long-term employee at the agency, and that she had done some work with Lisa. Otherwise she did not know any of the other participants. Sheila, who worked in a remote location, did not know anyone on the team at the beginning of the project. Carrie, Sam, and Ron each knew one other person. Even Roger and Ned, who were the longest tenured employees on the team, only knew three other people at the beginning of the project—including each other. By the time of the *Monitoring Reflection*, about five months into the project, 10 of the 12 participants were able to share something about all other members of the team, indicating the emergence of network ties.
At the fourth project team meeting, approximately two months into the project, the team established five research teams—the first set of project team subgroups. Members of the research teams worked together for several months to conduct research on their assigned topic, compile reports, and propose recommendations. At Meeting 10, approximately six months into the project, the project team re-organized into four new subgroups tasked with developing a proposed action plan to implement one of the four project team recommendations. This reorganization reflected some shifting around of subgroup members, but not a complete re-organization. This meant that some individuals—including Sheila, Carrie, and Ron—worked with a completely different set of team members, while Bonnie and Kim worked together in both subgroups. In the final phase of the project, new subgroups were formed based on tasks related to the final presentation and report.

The results of a network analysis of Knowledge Sharing Network Ties showed that by the end of the project, 17 sets of strong bi-directional Knowledge Sharing Network Ties had developed. This is in contrast to four sets of strong bi-directional Knowledge Sharing Network Ties at the start of the project. More than two thirds of these (11 of 17 sets) reflected pairs who worked together on one or more of the subgroups as illustrated in Figure 3.1.

Figure 18: Completion Reflection results on participant perceptions of Knowledge Sharing Network Ties with co-participants at the end of the project.

Participants were asked to select the rating that reflects how often you request input from that individual to access knowledge or expertise within the context of the team project

Rating Scale: Never or almost never 0 1 2 3 4 Frequently or almost always

Green = Strong Bi-directional Knowledge Sharing Network Ties (Individuals rate each other as 3 or 4)
SG = Bi-directional Knowledge Sharing Network Ties between individuals who worked together on a subgroup

As Ron explained “all these little subgroups … were the people I ended up connecting with on a deeper level” (Interview Excerpt: 5889). Bonnie described her experience with the subgroups as “I think that was invaluable … those smaller group interactions because I think sometimes at least for me in a larger group you feel maybe you don’t get your turn. Sometimes it takes me a little while to let things marinate. Then you know what? By the time I have something to say it’s either they’ve moved on or like they’re in the next point. For me those smaller group interactions were important” (Interview Excerpt: 2461).

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<tr>
<th>TARGET</th>
<th>Tina</th>
<th>Roger</th>
<th>Sheila</th>
<th>Kim</th>
<th>Jon</th>
<th>Carri</th>
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<td>Lisa</td>
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The subgroups worked primarily outside of the project team meetings to accomplish their tasks. Each subgroup developed its own communication and coordination strategies. The effectiveness of these strategies appeared to have an impact on the strengthening of Knowledge Sharing Network Ties within the group, particularly when subgroups included team members who worked in satellite locations.

Subgroups that utilized email extensively to ensure that all subgroup members were included appeared to be able to maintain strong and effective communication and knowledge sharing processes. Nora described her experience as “my first subgroup was with Kim and Bonnie. That went really well because we understood what our job was, and we bounced off each other. We did a lot of emailing back and forth… that worked out really well” (Interview Excerpt: 16879).

Kim described her experience with the subgroup as:

The research one was very interesting… it was Bonnie who just took the wheel a little bit and directed where we were going. I looked to see if I could find what had been done before. She did some … informal interviews through like emails, individuals, to find out what succession planning is going on right there and then Nora reached out to our HR folks and to our diversity committee folks to talk about sort of what programs and things existed in those areas. What we did is we just kind of all went off on our own so we have a small group that you know was tasked with something [laughs] and we focused on it even further and then we came back and combined what we were doing. (Interview Excerpt: 25664)

Carrie, Tina, and Sheila also had a positive experience utilizing email to facilitate communication and knowledge sharing, even though Sheila worked in a remote office. Carrie
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

shared that “it was very easy to work together because we would email HR as a group” (Interview Excerpt: 7160). The team would then analyze the information they received and share their ideas via email, eventually compiling their research report. She stated that “we were all in the same loop the whole time. It’s what made it really easy” (Interview Excerpt: 7160). In addition to developing communication strategies, subgroups developed strategies for coordinating the work of the team. As Sheila described, “I got the information. I would send out emails and be like, ‘Okay, Carrie and Tina, I’ve sent this out.’ I would cc them on it. Then we would look at the information together, I would do some analysis and would send out what I had to get feedback from them” (Interview Excerpt: 15132).

Other subgroups relied more on face-to-face meetings. Ron described his appreciation for the knowledge-sharing relationship that developed through face-to-face meetings with one member of his research team subgroup:

For me I think that the strongest relationship I built through this was with Jon in the beginning. We took on researching some managers and he just went above and beyond and kind of got together and met and he had a lot of knowledge that was very interesting to me not being here that long. Just his opinions and he was open to sharing them all. (Interview Excerpt: 4496)

Lisa, another member of the management research subgroup with Jon and Ron, was based in a satellite office, and was not as accessible for face-to-face meetings. Ron described the effect of this communication limitation on his knowledge sharing relationship with Lisa: “We bonded through that, but she was in a different area. She is one of the people who doesn’t report directly to the central office, so I didn’t see her as much as I did Jon. I feel like that took a little bit away from our bond” (Interview Excerpt: 5160). Jon described the subgroup and his
relationship with Lisa as “that little team was great … we did some … group emails but then on one occasion she was in service in the field and she came up early and one morning we met in the cafeteria for an hour” (Interview Excerpt: 14287). For both Jon and Ron, the opportunity to meet in person seemed to be important to establishing Knowledge Sharing Network Ties. However, this strategy resulted in a situation where Lisa was not always involved in the face-to-face conversations and knowledge sharing.

While Lisa may have been less involved in face-to-face communication with Ron and Jon, she took on a coordinating role for the subgroup. She shared:

In the beginning—I’m a number’s person, I’m a data person, so I like doing the research, that’s my thing. In this first group that I was in, we were researching about the managers and supervisor training. In my group…when we all got the information together, I took everything and put together and it's like, ‘Okay, here’s the research for our group’.

(Interview Excerpt: 6521)

Ron expressed some frustration with not always knowing what was going on: “we also had a member who was doing a lot behind the scenes and not really telling the other members” (Interview Excerpt: 14183), apparently referring to Lisa. Not ensuring that the subgroup communication strategies were consistently inclusive resulted in some breakdown in knowledge sharing within the group.

In the second round of subgroups, Ned, Jon, Sheila, and Lisa worked together to develop an action plan for the management training recommendation. Utilizing a combination of email and face-to-face meetings worked well for this subgroup even though both Sheila and Lisa worked in remote offices. As Ned described “we were constantly in communication… we worked very, very well via email. Then, we would meet and discuss our findings. I thought
everything went very well. I was proud of it” (Interview Excerpt: 2310). Lisa continued her coordination role of compiling and disseminating information with this subgroup, and described a somewhat more positive experience with overall subgroup communication and knowledge sharing in this group:

We communicated pretty much through email the entire time as a group. We didn’t really exclude anyone at any point in time. It was always a group. Everyone was copied on the email and included in the group discussion that way. Then we would meet a little bit before—because we were from field office and we couldn’t meet just at any time—we would set aside some time before we would come to our big group meeting. So that if there was anything that we needed to hash out we could do it all before then. (Interview Excerpt: 7882)

In summary, as project team members collaborated in smaller subgroups, Knowledge Sharing Network Ties were established and strengthened. The development of consistently inclusive communication and coordination strategies appeared to be an important factor in developing Knowledge Sharing Network Ties within project team subgroups. Communication strategies varied based on personalities and conditions, such as home office location.

**Finding 2: Shared Team Mental Models develop when individual team members have opportunities to share knowledge or demonstrate expertise through project tasks and activities.**

Shared Team Mental Models are another aspect of team internal social capital addressed in this study. A Team Mental Model is a shared understanding of the knowledge and skill resources that reside within a team, and an awareness of the roles and responsibilities of individual team members. In this study, a shared Team Mental Model developed when
individual team members had opportunities to share knowledge or demonstrate expertise through project tasks or activities.

The development of a shared Team Mental Model begins with an awareness by individual team members of the knowledge and expertise needed to accomplish team objectives, as well as a recognition of the knowledge and expertise resources that they bring to the team. In this study, the process of building such awareness began with the project team application process, where aspiring project team members were asked to describe the unique qualities or skills that they would bring to the team. These responses were considered during the project team selection process. Once the team was selected, project team members completed a Pre-Launch Reflection Questionnaire that asked them to think about the knowledge and skill resources that would be most important to achieving the project objectives as defined in the project charter. They were asked about the relevant knowledge and skills that they brought to the team, as well as the role they anticipated playing in the team.

The next step in building a shared Team Mental Model is developing an awareness of the knowledge and skill resources held by other members of the project team. Not surprisingly, responses to the Pre-Launch Reflection Questionnaire indicated that most team members did not know most of the other team members at the beginning of the project. As Becky stated, “There were a lot of them I had no idea who they were, what they did, but as the project went on and they started to reveal themselves through what they were offering as a group that’s when I realized that we have a wide knowledge base that everybody had a little bit something different to share” (Interview Excerpt: 890).

During the first few meetings, Joyce and I facilitated a variety of team-building activities designed to help team members get to know one another. As Joyce explained, “Honestly, to me,
that’s a big takeaway from this whole project. That when teams come together for the first time, they spend that time talking about each other and what people bring and what people know, what people hope to accomplish. Then get to the work of the project. I just think that makes a big difference” (Interview Excerpt: 49324).

In Meeting 3, Joyce and I facilitated a resource mapping activity that was designed to help team members learn about each other’s areas of expertise. Team members were asked to pair up with someone that they had not worked with previously and were provided a worksheet to guide the activity. The worksheet included a list of knowledge, skill, and attribute resources compiled from the responses to the pre-launch questionnaire. Participants were asked to review the list of resources, add any that they thought were missing, and then identify the top five resources that they brought to the work of the project team.

Team members then interviewed their partner about their top five knowledge, skill, and attribute resources, and used a Venn Diagram included in the worksheet to identify any overlaps in their skill sets. For example, Carrie identified technical skills, problem-solving skills, and analytical thinking among her top five resources, while Lisa emphasized her knowledge of client needs, active listening skills, and experience working collaboratively in teams. While most of their skill sets differed, Carrie and Lisa identified a shared desire to improve and increase agency efficiency. The pairs reported out by summarizing the resources that their partner brought to the project.

In the previous meeting, the team had identified some preliminary research questions to guide the research phase of the project. These questions had been grouped into six research categories. The next step was to establish research teams. Each research category was listed on a flip chart. Team members were asked to select their top three choices by writing their name on
the corresponding flip chart, prioritizing their choices by putting a number next to each one. Each team member was asked to make a case for why they should be on their first-choice research team, using their resource mapping results as justification. According to my field notes, “The resource mapping activity worked well to set up the research team assignments. People were able to articulate very clearly why they were a good fit for their top research team choice” (Field Notes Excerpt).

This sequence of activities provided the team with several opportunities to learn more about the knowledge and skill resources of other team members. As Joyce explained, “I like the way we did it where people had to then talk about the other person … because that means they had to listen and they had to take in and remember what someone else told them … that I thought was an important activity in terms of starting to understand what people have” (Interview Excerpt: 13513).

The research teams spent approximately six weeks researching their assigned topic. Another opportunity to develop the team’s shared Team Mental Model came when the research teams reported out during Meeting 5 and Meeting 6. Each team demonstrated an extensive amount of knowledge and expertise through an oral presentation, a written report, and project team discussion. For the remainder of the project, team members were considered “experts” in the areas that they had researched. Sheila observed, “I feel like Kim and Bonnie were very knowledgeable on the succession planning” (Interview Excerpt: 5239). And Jon explained, “Bonnie, I wasn’t on any of the teams with her, but when she would present about the succession plan research you could tell that she’d done a lot of the work behind the scenes” (Interview Excerpt: 4398).
One of the values of a shared Team Mental Model is that team members know where knowledge and expertise resides within the team, so that it doesn’t have to be duplicated across the team. The scope of the project required that the research teams specialize in certain areas. These research teams then became the resource for specialized expertise. As Ron explained, “When I was on those subgroups that’s what I was focusing on. I wasn’t researching succession planning when I’m researching recruitment. I didn't load that folder up and do the homework. I didn’t have the time. I was doing my part and I was relying on the other members to do their part” (Interview Excerpt: 19436). From my field notes later in the project I observed, “When it came time to do the final report and the presentation, team members felt strongly that the research and recommendation teams should write/present their sections, even though that made it somewhat challenging to synthesize the information into a cohesive presentation/report” (Field Notes Excerpt).

Approximately halfway through the project, I administered the Monitoring Reflection, which gathered data on Team Mental Model development. Team members were asked to identify the relevant knowledge and skills that their fellow team members brought to the team, and to describe the roles and responsibilities they embraced. In contrast to the Pre-Launch Reflection, at this point in the project team members had a much greater awareness of the roles, resources, and responsibilities of their fellow team members. To a large extent, the comments reflected knowledge and expertise demonstrated through the research group reports and other project team meeting discussions. For example, Bonnie, who was generally quiet in meetings, received comments from other team members related to her research, data analysis, and succession planning expertise:
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

➢ Refers to the info we already have, like Mission Statement, Succession Planning projects and advocates to follow their suggestions. Did great job on interviewing some agency employees.

➢ Knowledge of the department, experience in reorganization, knowledge of her unit, knowledge of the succession project and active participant.

➢ Quiet and reserved during meetings, but very active obtaining research outside of meetings and offering input in group emails.

➢ Bonnie offers great insight into our many different scenarios! Great data gathering skills and analytical.

➢ Data collection/analysis

Sam, another relatively quiet team member, received comments acknowledging his expertise in management from his work in more than one organization:

➢ Sees the big picture, has knowledge about management

➢ Knowledge of the department, knowledge of training and working outside of the department, knowledge of how younger employees are thinking, good at research and active participant

➢ Background knowledge of programs outside of agency

➢ Has experience as an agency intern, special interest in expanding cross training and career development within the agency, valuable in terms of retention and succession planning

➢ Leadership skills, knowledge of employee care outside our agency
In response to the questions about team roles and responsibilities, team members who tended to actively participate in project team meeting discussions, were recognized as active participants. For example, Sheila received comments like:

- Will drive a conversation, not afraid to take charge. Good positive energy.
- Ability to shift focus to areas that haven’t been considered
- Freely expresses ideas and opinions

The more reserved members of the team, such as Tina, were recognized for their behind-the-scenes responsibilities related to research, data analysis, and report preparation.

In Meeting 11, the recommendation planning subgroups reported out, providing another opportunity for team members to demonstrate expertise. Ron, having been coached by Roger, delivered the recruitment team presentation. Sheila delivered her team’s presentation using a slide presentation that she had developed.

Later in the meeting, we conducted a nomination process for who would work on the final three tasks: write the final report, develop the final presentation, and deliver the presentation. With the recommendation team reports fresh in their minds, Sheila received a strong nomination to create the final presentation due to her technical skills, while Ron received a strong nomination to deliver the presentation. Bonnie, Kim, and Jon received strong nominations to compile the final report, based on their attention to detail and their demonstrated ability to conduct research and communicate data effectively.

It was clear that the opportunity to demonstrate knowledge and expertise through the recommendation team reports expanded the team’s shared Team Mental Model. As Sheila observed, “I think a lot of people don’t know PowerPoint. I feel like because I showed some
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

PowerPoint then I felt like I was nominated … I feel people were nominated based on what they saw in the meetings or who they worked with” (Interview Excerpt: 11873).

The nomination process helped the team expand their shared Team Mental Model regarding team member capabilities, which gave the team confidence as they approached the final phase of the project. As Ron explained, “I was confident in all of our research thanks to the great work that our entire team did. I knew that we weren’t presenting something that didn’t make any sense” (Interview Excerpt: 31593). Carrie also described having confidence in her fellow team members:

When we had to pick what we were going to do for like the final things like the report who was going to write this? Who is going to present? Who was going to make the presentation? I think it made us feel more like a team when people stepped up and said like ‘Oh, I’ll do the presentation, I’m not comfortable with it, but I’m willing to do it’, because some people like there’s no way I was going to be able to get in front of people … you know you can say here’s a million dollars and … I’m not doing it. That made me more confident in my team members and it made me learn that to do more also, like you know, people step up and want to do things even if it makes them uncomfortable. (Interview Excerpt: 5039)

Bonnie shared, “Overall, I think we all fell in where our strengths are, whether we admitted it or not, some people are just generally better at speaking. Some are also better at writing the technical kind of things. I think we all just made it work in a really cohesive way” (Interview Excerpt: 6267).

At the end of the project, the participants completed the Project Completion Reflection questionnaire, and participated in individual participant interviews. The data gathered through
the questionnaire and participant interviews provided insights into the project team’s shared Team Mental Model at the end of the project. The data showed remarkably consistent shared perspectives regarding the roles, responsibilities, and resources of the project team members, particularly for Ron, Sheila, and Kim, the team members who delivered the final presentation. Ned explained, “We all knew Sheila was great with the computer. We knew Kim was our studious one. We knew that kind of stuff. Then, Ron was our talker. Everybody had a different role to play as far as that” (Interview Excerpt: 6832).

Jon also emphasized Sheila’s computer skills: “I didn’t know that she had that expertise in PowerPoint. You could see that she … put a lot of work into editing. I’ve done some newsletters and things like that. That’s not easy. I was impressed that she could do it that quickly” (Interview Excerpt: 3407). Kim shared a similar perspective: “We were all very familiar that Shiela was really good at presentation, she put together the PowerPoint and that sort of thing” (Interview Excerpt: 23965).

The team also had a shared appreciation for Kim’s ability to formulate and communicate ideas stemming from her role as an attorney in the organization. As Jon explained, “I knew Kim was great in meetings. She would formulate ideas crystal clear instantly like you are in court and you are cross-examining somebody, and a little nugget of info and you just change” (Interview Excerpt: 22950). Sheila commented: “Kim’s so legal … that’s her role. I think that a lot of people went to her for writing or how to say things and stuff like that. She’s very good at that” (Interview Excerpt: 8102). And Nora shared, “I saw Kim as a strong person. I liked how she could present. I think she had a lot more knowledge even though she’s probably a lot newer than a lot of us” (Interview Excerpt: 11313).
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

Each team member had relatively consistent perceptions of other team members. Jon was known for his technical ability in creating data charts and graphs, Nora was known for her knowledge of her department and her union background, and Roger and Ned were valued for their experience, knowledge of the organization, and willingness to coach and mentor others.

In summary, a shared Team Mental Model about team member roles, responsibilities, and knowledge, skill, and attribute resources, developed when individual team members had opportunities to share knowledge or demonstrate expertise through project tasks or activities. As team members became more aware of each other’s skills and abilities, the team was able to make sound decisions about team member task assignments, which resulted in a shared confidence in the team’s ability to accomplish team objectives.

Finding 3: Shared Situation Mental Models emerge in response to critical incidents (significant events) in the project life-cycle and inform key team decisions.

A shared Situation Mental Model is a shared understanding of the situation faced by the team at a specific point in time. In this study, as the project team worked through critical incidents, a shared understanding of the situation emerged. These critical incidents often involved a strong personal and team emotional response. Participants described these events as critical turning points that often led to key team decisions. Data from participant interviews, reflections, and meeting artifacts showed that the events most often identified by team members as both a critical incident and a time when the team developed a shared understanding of the situation were (a) the project launch, (b) the discovery of previous succession planning projects, and (c) the consolidation of recommendations. In each case, the critical incident triggered a shared Situation Mental Model which informed one or more key team decisions.
Critical Incident 1: Project launch. Through participant interviews, the Self Reflection questionnaire, and the team After Action Review process, project team members identified the project launch phase as a critical incident in the project life cycle as well as a time when the project team developed a shared understanding of the situation. The project launch process involved a variety of integrated activities over the course of the first few meetings. They were designed to encourage the development of a shared understanding of the project mission and the role of the project team in addressing project objectives. As the project manager, Joyce developed the official Project Charter based on input from the project sponsor and other organizational leaders. The charter detailed the business need as well as the project mission, objectives, and parameters. The primary task of the project team, as defined in the charter, was to develop research-based recommendations for how the organization could address challenges and opportunities resulting from changing workforce demographics.

Prior to the first meeting, Joyce distributed the Project Charter to the team members. In spite of having the Project Charter in hand, responses to the Pre-Launch Reflection indicated that team members were coming into the project with varied ideas about the primary purpose of the project. When asked to describe their understanding of the project assignment, some participants referenced the key objectives stated in the charter, including succession planning, training, and engagement. For example, Nora described her understanding of the project assignment as “planning the future of the agency, with a focus on Succession Planning, professional development, training, and engagement” (Reflection Excerpt: 289941). Others, like Sam, focused on the project deliverables: “research-based assessment of the impact of changing workforce demographics at the agency in the next 5-10 years” and “develop, pilot and evaluate
2-3 key strategies in the areas of succession planning, professional development, training or engagement to address impact” (Reflection Excerpt: 455).

Several participants, including Sheila, Lisa, Jon, and Bonnie described their understanding of the team assignment in terms of developing teamwork skills. For example, Sheila stated “I believe that the objective of the project is to implement team building skills within the group and then try to use these skills to help with future goals and projects within the agency” (Reflection Excerpt: 473). Bonnie and Jon described the project deliverables in terms of professional development and training. For example, Bonnie described the deliverables as “preparing newer staff to become future leaders of the agency” and “encouraging senior staff to take mentor roles in order to enable transfer of knowledge” (Reflection Excerpt: 95) and Jon described the deliverables as “develop new strategies to train and grow employees and develop new teamwork skills” (Reflection Excerpt: 454). While the majority of these responses reflected some aspect of the project charter, it was clear that the team was coming into the project with different priorities and perspectives and needed to develop a shared vision around the purpose of the project. And then there was Roger, who responded to the survey question with “first meeting is in 16 days … hopefully at this meeting the organizers will let us know the project objectives” (Reflection Excerpt: 461) suggesting that he had not read the Project Charter at all at that point.

During the first few meetings, Joyce and I facilitated introductory activities and goal-setting activities designed to develop a shared understanding of the project team’s mission and to prepare the team to operate as a self-directed work team. Team members described these initial meetings in terms of a critical incident where they came to understand the scope of the project, as well as the make-up and responsibilities of the project team. The emotional reaction to this realization by most team members involved feelings of being overwhelmed by the scope of the
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

project, while at the same time being very positive about the project team and its ability to address the challenge.

One of the strategies that Joyce and I used in the initial meetings was to provide multiple opportunities for team members to interact in pairs or small groups. For example, during the first meeting, we put both colored dots and numbers on the participant table tents, and used these to organize groupings for different activities, ensuring that each participant engaged directly with several different people during the first meeting. Having the opportunity early on to begin to get to know the other team members and interact with them directly in pairs and small groups resulted in positive feelings about the team. Jon shared that working in pairs and small groups was “really good at letting people get to know and work with others on a smaller scale, not as daunting as full-on discussions involving all 12 members. I feel it helped create a team atmosphere very quickly” (Self-Reflection CI Timeline). Ron shared that introductory activities “showed me that we had a team of like-minded individuals that were here to be proactive and genuinely try to help change our agency for the better” (Self-Reflection CI Timeline). Carrie shared that “it was … apparent in that meeting that we were a diverse group, and that would work to our benefit” (Self-Reflection CI Timeline).

As Ron reflected on the first project team meeting, he described his perception of the team’s shared understanding: “When all of us got together it was like a big ‘ah ha’. We are these positive people that applied to be on this team, we were chosen and now we have a task at hand” (Interview Excerpt: 27447). He continued by noting, “I think there was a big realization there of like ‘wow this is going to happen. They’re making this an initiative’” (Interview Excerpt: 27447).
In contrast to the positive feelings about the project team, many team members described feeling overwhelmed as they developed a clearer understanding of the scope of the project. Bonnie shared that it was “terribly overwhelming to realize that we had so much work to do. As a team, I think we struggled on how/where to begin” (Self-Reflection CI Timeline). Carrie shared that “it became a bit overwhelming to know that we would be part of something so huge” (Self-Reflection CI Timeline). In reflecting on the first meeting Ned shared that he had “underestimated the overall size of this project. After discussion it was much larger than I thought” (Self-Reflection CI Timeline).

In addition to establishing a cohesive team, a primary focus of the project launch phase was to develop a shared vision for the project that aligned with the mission and objectives detailed in the project charter. To accomplish this, Joyce and I facilitated a collaborative goal-setting activity, which encouraged the team to personalize the official mission of the project by collaboratively articulating organizational, team, and personal goals. The goal-setting activity involved a collaborative brainstorming activity called an affinity process where participants write their ideas on sticky notes and post them on the wall. Once all the ideas were on the wall, participants reviewed the notes, and began to group them into categories of similar ideas. One of the benefits of this process was that it incorporated input from all team members through non-verbal communication, which allowed for input from team members less comfortable with speaking up in a group. In addition, the wall became a visual representation of the team’s emerging shared Situation Mental Model regarding the project mission, objectives, and scope. It also helped to clarify the relationship between the objectives related to changing demographics and succession planning, and the teamwork aspect of the project that some members had emphasized in their survey responses. The team validated their goals in Meeting #3, using the
project charter as a reference point. The final Goals document provided a visual representation of the team’s shared understanding of the project mission.

Working through the goal-setting activity helped the project team develop a shared Situation Mental Model of the project mission and objectives. By the end of Meeting 4, Ned shared that he “felt more comfortable as all information was considered. Direction was starting to appear” (Self-Reflection CI Timeline). In reflecting on the goal-setting activity at the end of the project, Bonnie described the sense of shared understanding: “the goals and the objectives … to look back at them now and see that we were pretty spot-on in what we were trying to accomplish … everybody had the same thoughts. Everybody wanted to get to that place” (Interview Excerpt: 9023).

One of the first decisions that the team needed to make was how to proceed with the research phase of the project. In Meeting 2 and Meeting 3, the team began identifying research questions, grouping them into categories, and developing preliminary work plans for each research category. The shared Situation Mental Model of the project mission and objectives that was reflected in the Goals document informed the team’s decision to develop research questions and a preliminary workplan to guide the research phase of the project. For example, the six research categories defined by the team corresponded closely with the three primary goals identified for the organization in the Goals document:

**Table 3: Organizational Goals and Research Categories**

<table>
<thead>
<tr>
<th>Organizational Goals</th>
<th>Research Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop a Succession Plan for the organization</td>
<td>Demographics</td>
</tr>
<tr>
<td></td>
<td>Succession Planning</td>
</tr>
<tr>
<td></td>
<td>Recruitment</td>
</tr>
<tr>
<td>Provide effective training and professional development for all staff</td>
<td>Managers/Supervisors</td>
</tr>
<tr>
<td></td>
<td>Retention</td>
</tr>
<tr>
<td>Improve organizational culture</td>
<td>Organization</td>
</tr>
</tbody>
</table>
In summary, the launch phase of this project provides an example of how a shared Situation Mental Model emerged from a critical incident in the project life cycle and informed a key project decision.

**Critical Incident 2: Discovery of previous succession planning projects.** Another critical incident identified by project team members that resulted in a shared Situation Mental Model was the realization by the project team during Meeting 6 of the extent to which the agency’s workforce was nearing retirement, and the related discovery by the succession planning research team of two prior succession planning projects that had never been implemented.

During Meeting 6, the demographics research team, which consisted of Tina, Carrie, and Sheila, reported on their findings related to the changing demographics at the agency. The project team’s reaction to this information is captured in this exchange from the Meeting 6 transcript:

Sheila: We’re looking at 76 percent of the workforce in 10 years would be “eligible” to retire. Not that they would but --

Ned: That's an eye-popping statistic.

Sheila: It’s very—Yes.

Ned: That’s huge.

Sheila: It’s very huge.

Joyce: In 10 years time, three quarters of the people here could be gone.

(Mtg. 6 Transcript Excerpt: 9820)

Following the demographic research team report, the succession planning research team, which consisted of Bonnie, Kim, and Nora, described their discovery of two previous succession planning projects—one five years prior to the current project, and a follow-up project three years prior to the current project. The results of these projects had never been implemented. In her
participant interview at the end of the project, Bonnie, who was on the succession planning research team, described the team’s reaction to the discovery of two previous succession planning projects:

There was a lot of great information that had already been researched. We looked at each other like, ‘Well, what was our purpose here?’ Then to bring it back to the larger group and say, ‘Hey, look it was a lot of research done. What's our purpose here?’ We all just looked at each other like, ‘Well, where do we go from here? We spent all these months researching stuff that technically has already been researched. Have we wasted our time and now what do we do?’ (Interview Excerpt: 4848)

As participants described this event, they expressed a strong emotional reaction that made the incident particularly memorable. For example, Sheila described the news about the previous succession planning projects as “disheartening” (Interview Excerpt: 17316). Jon described the team emotional reaction as “a lot of alarm and shock” (Interview Excerpt: 33259).

My field notes from after Meeting 6 state:

Some of the more striking findings include:

➢ the potential rate of staff turnover in the next few years. 30% of staff are currently eligible for retirement, and within 10 years, 80% of current staff will be eligible for retirement.

➢ Apparently, [the agency] went through a Succession Planning initiative in the past 5 years, but the results were not widely implemented. The Project team was a little shocked by this, and the Succession Planning Research Team intends to try to find out why the findings were never implemented. [Field Notes 7/20/18]
As the meeting wrapped up, the team identified next steps. One of those next steps was for the Succession Planning Research Team to have another meeting with HR in order to find out why the prior projects were never implemented.

After Meeting 6, I conducted the *Situation Analysis Reflection*, which was one of the planned data collection methods for the monitoring phase of the project. The purpose of the questionnaire was to collect individual participant data about how the participants viewed the situation at an approximate mid-point to the project, and then facilitate a follow-up large group discussion at the next meeting to determine the similarities between the individual Situation Mental Models as reflected in the reflection responses and the shared team Situation Mental Model as reflected in the large group discussion. The *Situation Analysis Reflection* was distributed after Meeting 6, and the results were compiled and distributed prior to Meeting 7.

The responses to the *Situation Analysis Reflection* showed that team members were concerned about the number of pending retirements as reported by the demographics research team. In response to the question about potential concerns for project team members, Lisa responded “there is an alarming number of people that are eligible for retirement in the next 5 – 10 years and we are currently in a hiring freeze. How are we going to be able to fill these positions? How are we going to retain the ‘knowledge’ of the employees leaving?” In response to a question about potential threats of the situation, Nora responded, “the potential treats are employees in key positions could leave with the knowledge which could potentially create a brain drain.”

Others expressed concern about the previous succession planning projects, and what impact that might have in the current project. For example, Roger commented “there is already a project dedicated to succession planning. Aren’t we duplicating that effort?” In response to the
question about potential threats, Ron stated, “the potential threats for this situation is that upper management does not put into effect the plan of which we develop (has happened twice so far.)”

The plan for Meeting 7 was to begin by responding to the compiled results of the Situation Analysis Reflection, and then return to the research team findings. When asked about any themes or observations that they had from reviewing the compiled results, Sheila responded “one theme that I think we have is that there’s a lot of hurdles in that … as far as succession planning or the changing workforce project has been already touched on before and then no implementation has happened. … Maybe this is just me, but it feels as though it’s—I’m a little discouraged that this is going to actually have actual results that are going to be helpful” (Mtg. 7 Transcript Excerpt: 7308).

The rest of the team agreed, and were anxious to hear what the Succession Planning Research Team learned from HR. Ned asked, “Did we ever get an answer as to why the previous two succession plans never continued? Did anybody ever get the answer to that?” (Mtg. 7 Transcript Excerpt: 7308). This exchange between Ned and Nora, who was also on the succession planning research team, illustrates how the team’s understanding of the situation began to change:

Nora: We got some information on it.

Ned: Okay, good because why they failed is important for us to know so we can know what not to do. We want it to be successful.

Nora: Don’t use the word fail because they didn’t fail.

Ned: Well, they stalled.

(Mtg. 7 Transcript Excerpt: 8363)
Kim, who took the lead in acquiring additional information about the previous succession planning projects, responded, “I think the way we’ve been thinking about what the first two projects did is a little bit different than the way they thought they approached it” (Mtg. 7 Transcript Excerpt: 8709). Kim went on to say that the individuals who had completed the first two succession planning projects felt they had completed their assigned task, which was to develop the tools, which they then handed it back to management for implementation. Kim explained:

I think that’s what’s happening actually. I think we’re the next stage of this continuing project. I think we all got very disheartened when we saw there’s a succession plan out there already and we’ve been told, ‘Oh, we need to put together a succession plan. Are we duplicating work?’ I don’t think we are. My understanding … is while this might not be what was originally envisioned as the next step, having a team like this put that plan in place. I think that is what we are, we are the next step. We’re the group that’s going to put together the plan for how to implement tools that we’ve been given and the tools that have already been developed if that makes sense. (Mtg. 7 Transcript Excerpt: 9026)

The team went on to discuss this new information and began to grapple with the idea of implementing the prior succession planning tools in light of the more recent demographic data—the urgency of the situation had increased dramatically in five years. Carrie shared her concerns about the urgency of the situation for younger employees as “a lot of pressure is going to be on us when everyone evacuates” (Mtg. 7 Transcript Excerpt: 18969). Nora proposed that the project team should meet with the Project Sponsor to begin to address the urgency of the situation. Ned contributed, “I had a note in here. It said, ‘create a visual alarm’, because a visual alarm for him would be, what are you going to have here in three years? I mean like a shock
factor. This is reality. Three years from now, you’re going to have a lot of evacuation” (Mtg. 7 Transcript Excerpt: 34533). The idea of the “evacuation” and the “visual alarm” captured the team’s imagination and became a rallying point as they moved ahead with their project.

As the team reflected both individually and together on the information provided by the research teams, a shared Situation Mental Model emerged. In her interview, Sheila described the team’s shared understanding of the situation in this way: “I think that brought everybody back to, ‘We need to get this figured out.’ In my opinion, I think that was a big key meeting sort of thing” (Interview Excerpt: 17847). Prior to the succession planning report, the demographics research team had reported out on the projected demographics of the organization, which indicated that a large percentage of employees will be eligible for retirement within three to five years. This information, along with the discovery of the prior succession planning projects, resulted in the emergence of a shared Situation Mental Model. The project team realized that they needed to make the organizational leaders aware of the urgency of the situation. Nora described it as “that was our ah-ah moment. I think Ned nailed it, the visual alarm. That stood out” (Interview Excerpt: 26795). Ron shared that at that point the team “realized what our true purpose was” (Interview Excerpt: 6946) while Jon explained that it “galvanized us to ‘okay. Well, this one’s going to be the one that they take serious now’” (Interview Excerpt: 32816).

In response to the news of the previous succession planning projects, participants described a shared realization about what the information meant for their project, and how this event triggered a key decision about the team’s path forward. As Bonnie explained, “that's when we started to focus on implementation and how do we use what they’ve already prepared in other projects to our advantage” (Interview Excerpt: 5440). She went on to say, “that was just huge. I think that totally twisted the momentum of the team into something else and frankly probably got
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

us where we are now” (Interview Excerpt: 5440). Similarly, Sheila described the incident as a “game changer” explaining that “it shifted a lot of our thinking in terms of, are we just going to follow this through and put together a report … to the whole thing of, ‘We need to sound the alarm’” (Interview Excerpt: 27369). When asked to describe how the team decision to change direction was made in this situation, Ron responded, “I guess that was just a bit of intergalactic magic. It all came together on that one. [laughter] That one was cool and it was like a wild thing” (Interview Excerpt: 8053).

The next steps defined in the Meeting 7 Summary illustrate that the team had come together in agreement regarding the direction of the project:

**Next Steps:**

- The team agreed that the research phase of the Changing Workforce Project is pretty well complete at this point.
- Based on the results of the research phase, the project team feels that it is critical that organizational leaders become aware of the urgency of the situation and the importance of implementing a succession planning strategy as soon as possible.
- The team agrees that the tools and processes developed by previous Succession Planning projects need to be widely implemented to address the current situation.
- The team determined that setting up a meeting with the Commissioner to brief him on the project team’s findings is a critical step. [Meeting Summary 7/20/17]

Approximately a month after Meeting 7, I conducted the Monitoring Reflection, which was designed to collect a variety of types of information related to team social capital development during the middle of the project life cycle. Participant responses to the survey questions reflect an ongoing commitment to the decisions made in Meeting 7. When asked to
describe a recent key decision point faced by the project team, Ned responded “to make our presentation to the Project Sponsor a ‘visual alarm’ presentation so he is so alarmed by our team’s statistics that he will want to act immediately to implement our suggestions” (Reflection Excerpt: 2065). Similarly, Becky stated “we decided that based on our research findings that we should start creating a report out to the Commissioner based on key findings and ‘visual alarm’ data” (Reflection Excerpt: 1877). When asked to describe their understanding of the current status of the Changing Workforce project, several participants independently referenced either the visual alarm presentation, or efforts to develop an implementation plan based on the work of the previous succession planning projects. Kim stated, “we are in the process of developing and fleshing out findings and recommendations; developing strategy for presentation to the project sponsor and future project spin-offs” (Reflection Excerpt: 488). Lisa described the current status of the project as, “we are trying to develop ways to successfully implement the tools of the prior succession plans as well as working on new areas of concern” (Excerpt Package: 484). Ned responded that, “our current status will be to usher in the final piece of the previous two succession plans … which is implementation” (Reflection Excerpt: 492).

In summary, the discovery of urgent demographic data along with two prior succession planning projects that had never been implemented provides another example of how a shared Situation Mental Model emerged from a critical incident. As team members reflected on the information provided by the research teams both individually and together, their shared Situation Mental Model emerged, and informed a key team decision.

**Critical Incident 3: Consolidation of recommendations.** Following the research team reports, the project team began to compile key findings from the research, which became the basis for their recommendations. Using collaborative decision-making processes over the course
of four meetings, the team consolidated their recommendations and fleshed out implementation plans. Through participant interviews, survey results, and the After-Action Review, participants identified the process of consolidating the recommendations as a critical incident, where the team developed a shared understanding of the situation.

The process of developing and consolidating recommendations began at the end of Meeting 8, where the team began to brainstorm potential recommendations and strategies based on the results of the research phase of the project. Prior to Meeting 9, Leah and Joyce consolidated the results of the brainstorming session into nine recommendation statements. Each statement was written on a separate sheet of colored paper which was posted on the wall at the beginning of Meeting 9. During Meeting 9, the team used a collaborative decision-making process to consolidate the recommendations into four key recommendations and developed a preliminary 5-year implementation timeline. Jon described this process as “there was a lot of just throwing out ideas brainstorming originally. Then we started … poster-boarding and grouping them and narrowing down first areas that were important … then from there how we would work out our recommendations” (Interview Excerpt: 8138). In her Self-Reflection critical incident timeline for Meeting 9, Shiela commented “the activity used to consolidate the recommendations that the team was going to present was very collaborative. Very positive again from my standpoint. Everyone had a voice, and everyone was able to add valuable input” (Self-Reflection CI Timeline).

In Meeting 10, the team conducted a nomination process to establish four work teams to flesh out implementation plans and timelines for each recommendation. During the one-month gap between Meeting 10 and Meeting 11, the four recommendation teams developed their
implementation plans, and begin to think about how best to communicate their recommendation in the “visual alarm” presentation and the final report.

When the team came back together for Meeting 11, they began to see how the four recommendations were interconnected. This realization became the basis for a shared Situation Mental Model. In her Self-Reflection critical incident timeline for Meeting 11, Shiela commented “the team was starting to see that all of the recommendations that it had come up with were overlapping … it felt as though all of the team’s work was coming back together in an overall recommendation.” In his Self-Reflection critical incident timeline for Meeting 11, Ned commented “I thought this meeting had the biggest impact of our team coming together. It seemed that we all had the same vision of this report coming together and the impact it will have on our Agency.”

In this situation, the emotional responses to the critical incident were primarily positive. Sheila highlighted this point in the project when the team’s recommendations were really coming together: “We realized how interwoven they all were with each other. I think that was the big thing where everybody was like, ‘Yes, this relates to this. This relates to that. Everything works together’” (Interview Excerpt: 18222).

The shared Situation Mental Model that emerged as the project team consolidated their recommendations, resulted in the final set of recommendations that the project team brought forth to the agency leadership through a presentation and final report. As Nora described the process, “once we looked at them … everybody came up with their idea of where we wanted to go and we took pieces from that and built on it” (Interview Excerpt: 5424). She explained, “I think we had a clearer vision of what our mission was going forward, and I think that was really good” (Interview Excerpt: 5424). Jon described how the team’s decision-making process came
out of a shared understanding of the situation as “I think it was all—what’s that Roger said a couple times—we were all pulling the oar in the same direction, we all had a goal at the end” (Interview Excerpt: 26716). In summary, the collaborative process of consolidating recommendations provides another example of how a shared Situation Mental Model emerged from a critical incident and informed key team decisions.

At several key points in the project, participants experienced critical incidents characterized by both personal and team emotional reactions. These critical incidents led to the emergence of a shared Situation Mental Model which informed one or more key decisions. In some cases, structured individual and team reflection opportunities appeared to play a role in the emergence of the team’s shared Situation Mental Model. As participants experienced critical incidents during the project life cycle, they often experienced strong emotions, both positive and negative. These emotional reactions reflect the significance of these events to the participants and provide additional insight into how team Situation Mental Models emerge and how they are perceived by the team members.

**Finding 4: Influence Reciprocity Network Ties emerge through collaborative decision-making processes when senior members of the project team embrace shared leadership, encourage team members to participate, and mentor fellow team members.**

Influence reciprocity refers to input and influence from multiple team members in making team decisions—a hallmark of shared leadership. Influence Reciprocity Network Ties refers to the pattern of input and influence among team members over the course of one or more team decision-making events. In this study, Influence Reciprocity Network Ties emerged through collaborative decision-making processes throughout the project life cycle. A key factor that facilitated this emergence was when senior members of the project team embraced shared
leadership, encouraged team member participation, and mentored fellow team members. In this section, I will describe the emergence of Influence Reciprocity Network Ties through collaborative decision-making processes and will explore the role that senior team members played in facilitating this emergence.

**Emergence of Influence Reciprocity Network Ties.** As part of the monitoring and completion reflection questionnaires, administered in the middle and at the end of the project respectively, participants were asked to describe a recent key decision point faced by the project team, and then to rate their fellow team members based on the level of influence that they had on the decision. The compiled data for the two questionnaires is illustrated in *Figure 19: Influence Reciprocity Matrix—Monitoring Reflection* and *Figure 20: Influence Reciprocity Matrix—Completion Reflection.* Of the 21 decisions identified, all of the decisions reflected moderate to strong influence by at least three of the project’s 12 participants. In addition, 10 of the 12 team members were rated as providing strong influence on at least one decision.

These patterns suggest that the project team experienced significant influence reciprocity across several decisions. In the earlier monitoring questionnaire, administered approximately half way through the project, strong influence – coded as a 4 in the matrix – was distributed among six members of the project team for the decisions identified. By project completion, the matrix shows that strong influence was distributed among 10 of the 12 team members, suggesting an increase in influence reciprocity within the team by the end of the project.
**TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS**

**Figure 19: Influence Reciprocity Matrix—Monitoring Reflection**

<table>
<thead>
<tr>
<th>DECISION</th>
<th>RATER</th>
<th>Tina</th>
<th>Roger</th>
<th>Sheila</th>
<th>Kim</th>
<th>Jon</th>
<th>Carrie</th>
<th>Ned</th>
<th>Nora</th>
<th>Ron</th>
<th>Bonnie</th>
<th>Sam</th>
<th>Lisa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action steps</td>
<td></td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>3</td>
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<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Consolidate recommendations</td>
<td>Sheila</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Consolidate recommendations</td>
<td>Sheila</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Consolidate recommendations</td>
<td>Kim</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Consolidate recommendations</td>
<td>Jon</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
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<tr>
<td>No survey submitted</td>
<td>Carrie</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Develop “visual alarm” presentation</td>
<td>Ned</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sub-group decision (not whole team) NA</td>
<td>Nora</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Recommendation for a Succession Planning oversight team</td>
<td>Ron</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Develop “visual alarm” presentation and report</td>
<td>Bonnie</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Prioritization of recommendations</td>
<td>Sam</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Develop implementation timeline</td>
<td>Lisa</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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**Collaborative decision-making processes.** Collaborative decision-making processes played a role in the emergence of Influence Reciprocity Network Ties in this study. By encouraging participation by all team members, either verbally or non-verbally, collaborative processes enabled the team to work through a variety of potential options, and to synthesize diverse perspectives and ideas into the decision, providing opportunities for influence reciprocity among team members.

Joyce described her perceptions of how the collaborative decision-making processes used in this study differed from other group decision-making processes she had experienced:

Oftentimes … someone comes in and says ‘this is the way I think it needs to be done’ and then right away everybody is either for it or against it. Whereas that’s not how we did it at all. The group came up with ideas. The group weighed the pros and cons. The group looked at alternatives … after you’ve had an open discussion and everybody’s had a
chance to go out there, the actual making of the decision generally I think becomes clear.

The clarity just comes. It’s when you have that adversarial thing at the beginning, where it’s like, ‘it’s either this way—’ and people don’t feel like they have an opportunity to offer alternatives that the decision-making people dig in their heels. (Interview Excerpt: 23779)

The collaborative decision-making processes used in this study typically involved creating some type of visual representation of the thoughts and ideas under consideration. Brainstorming processes that utilized sticky notes, index cards, or flip charts provided a record of team member contributions, and how ideas evolved through discussion. As Ron described, “you’d have each member go up and put up their thought. I think there was a lot of weight to that … saying everybody’s thought matters” (Interview Excerpt: 3598). Sheila also emphasized the value of incorporating everyone’s ideas:

Just visually having it out there made it easier for people to say or be individually writing it and then having it up there so that people could review it. Those instances I think were really good because maybe the people that are not as vocal … still got their ideas expressed in their input up there … everybody got to try to at least put some input into it by doing that writing and then discussing it after the fact. I think in some instances when it was just people talking, some didn’t voice their opinions. (Interview Excerpt: 10694)

Two team decisions that illustrate how Influence Reciprocity Network Ties emerged through collaborative decision-making processes in this study were the recommendation consolidation process which took place during Meetings 8 and 9, and the presentation storyboarding process which took place during Meeting 12. These decisions involved one or
more collaborative decision-making processes, providing opportunities for Influence Reciprocity Network Ties to emerge.

**Consolidating recommendations.** The process of consolidating the team’s recommendations was identified as a key team decision by several team members in the monitoring questionnaire, and as a critical incident in self-reflections and in the team After Action Review. The process of developing recommendations based on the research phase of the project began in Meeting 8. The team had developed a list of key findings based on the research results. Working in pairs, team members were asked to brainstorm potential recommendations or solutions that would address the key findings. We didn’t have time in Meeting #8 to review the results of the brainstorming process, so the team members were asked to submit their ideas to Joyce via email. Joyce compiled them into a single list to be addressed at the next meeting.

In Meeting 9 the team started with the nine main recommendations that had been submitted and consolidated since the previous meeting. Each recommendation was written on an individual card and was taped on the wall. Five blank flip charts were posted on the wall – one for each final recommendation. The goal of the decision-making process was to consolidate the nine preliminary recommendations into four or five recommendations that would then be fleshed out through action-planning. The consolidation process involved talking through each of the nine recommendations, clarifying the intent and scope of the recommendation, determining where there was overlap between recommendations, and consolidating the recommendations as appropriate.

This process illustrates how influence reciprocity emerged through a collaborative decision-making process. The nine recommendation cards posted on the wall at the beginning of Meeting 9 reflected a synthesis of team input from the meeting before. The discussion that took
place during Meeting 9 reflected the input and ideas from multiple team members, which influenced the final decision regarding the recommendations that would move forward into the action-planning phase.

One example of how this occurred was the discussion surrounding combining a supervisory-manager training recommendation with a cross training recommendation from the preliminary list. During the 20-minute discussion, several members of the project team contributed ideas and suggestions that ultimately became part of the final recommendation. At one point the discussion focused on the importance of recommending mandatory training. The following interaction highlights some of the contributions of team members. Roger pointed out “that’s a huge cultural change from how we stagnate around here. It’s a huge cultural difference. I mean it’s like a shift, a tectonic shift” (Mtg. 9 Transcript). Sheila responded “I think right now if you are motivated, you’re going to get the training. I don’t think any training is mandatory. I think … training itself has to be mandatory … you should be required to take, at least, a couple classes a year … otherwise you’re going to have employees that are never ever going to train. We need to have some guidelines where they’re taking at least, some sort of course” (Mtg. 9 Transcript). Jon, who had been part of the research group that investigated training programs in other states, contributed “maybe we could revisit how we promote those supervisors and managers. We’re looking at research like California, it says they very strongly require [department specific knowledge] before they get the promotion. That’s not a priority here, any more. We can’t change supervisors and managers that are already in position, but we could, maybe, recommend that we need to go back to have them putting an emphasis on that. So then when they’re in that position, and they’re making the decisions of ‘I want to cut that project or not, or re-staff’ they know the impact of what their people do” (Mtg. 9 Transcript).
The team wrestled with how specific they should be in their recommendation, since there were so many important factors to consider. Sheila made the case for emphasizing cross-training as a way to increase the technical knowledge of potential supervisor/managers “If we implement cross-training, we’ll have people who have a wider knowledge base that are able to step into this – we’ll have a larger supervisor pool. Now … when they need a supervisor or a manager they’re limited and then people get pulled from somewhere where they have no knowledge on where they are going” (Mtg. 9 Transcript).

Ned added another perspective: “There’s two sides to your story too, Jon. There’s the manager who knows the [department specific knowledge] but has no people skills and then there’s the person that has the people skills but doesn’t have the [department specific] knowledge. … We want to achieve that manager who has [department specific] knowledge and has the people skills to go along with it that’s an effective manager” (Mtg. 9 Transcript). After additional discussion, Kim proposed “maybe our recommendation is like a team be put together to look at that and one of their charges can be to determine what the priorities are of the agency, with respect to developing managers.” Jon added “and they can implement that training plan” (Mtg. 9 Transcript).

In the end, all of these ideas were incorporated into the final recommendation. The project team recommended that a training advisory team be formed during the first year of implementation. That team would be charged with planning, implementing and monitoring a comprehensive training program as illustrated in this slide from the project team’s final presentation:
Figure 21: Training Program Recommendation

This discussion provides an example of how Influence Reciprocity Network Ties emerged through a collaborative decision-making process. Five team members—Sheila, Kim, Jon, Ned, and Roger—contributed significantly to the final decision which corresponds with the ratings captured in the monitoring questionnaire influence reciprocity ratings for this decision. As Jon reflected on this experience he shared “in the last project meeting, the project team had to narrow down our various ideas and research areas into four or five key points that will ultimately become the basis for the project’s final recommendations. It was a roundtable discussion with everyone able to offer input. I feel everyone was/is respectful of everyone else’s opinions, though some people are very open about offering opinions while others take a more wait-and-see approach and are less vocal. Further, while most people come in from various backgrounds with different experiences, I feel everyone is generally open-minded to accepting an opposing or differing view. The project team came to their final recommendation points with general
consensus and no real disagreement or dissension that I could detect” (*Monitoring Reflection* Excerpt: 3066).

**Storyboard presentation.** Another example of Influence Reciprocite Network Ties emerging through collaborative decision making was the process of storyboarding the presentation, which took place in Meeting 12. The goal of the decision-making process was to gather input from the whole project team to decide how the presentation should be structured. Prior to the meeting, the project team had compiled research results, identified key findings, developed recommendation plans, and established an implementation timeline. The challenge was to storyboard a presentation that incorporated key information and could be delivered in 20 minutes.

To facilitate the process, a list of the information sources was posted on a flip chart. A preliminary presentation outline was put on the wall using flip charts:

<table>
<thead>
<tr>
<th>Intro./Set the stage</th>
<th>Visual Alarm – make the case</th>
<th>Rec. #1 Justify (2 slides each?)</th>
<th>Rec. #2 Justify (2 slides each?)</th>
<th>Rec. #3 Justify (2 slides each?)</th>
<th>Rec. #4 Justify (2 slides each?)</th>
<th>Imp. Timeline</th>
<th>Conclusion Question(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Figure 22: Presentation Storyboard*

After some initial discussion about the overall structure of the presentation, the team was asked to work in pairs or small groups to brainstorm the key points that should be addressed under each section, along with any other ideas that they had, such as graphics, that could be used to present information. While working in pairs and small groups on the different sections, there
was a significant amount of discussion within and among the groups about different aspects of the presentation. The result was a set of flip charts representing the major sections of the presentation, with sticky notes, hand-written notes, and ideas for graphics. Each section represented the input of multiple team members.

The next step in the process was to talk through the storyboard and finalize the key points under each section. Three decision points during this process illustrate how Influence Reciprocity Network Ties emerged through the collaborative decision-making process. The first was a decision as to what information to present in the introductory slides. The second was a discussion about how to show the interrelationship between three of the key recommendations, while the third was a decision about the relationship between the Succession Planning Implementation Team, the Training Advisory Committee, and smaller project teams associated with the retention and recruitment recommendations.

The process began with a discussion about the introductory slide. During the work session, someone had posted a note about demographic information, along with several pictures of pie charts representing demographic data. I began the discussion by asking that whoever posted the notes speak to it. Carrie responded, “I thought it made more sense to put all of our demographics and the graphics for that in the intro because every section seems to use a piece of that. There’s no point in saying it over and over and over again” (Mtg. 9 transcript).

Jon brought up another point which triggered some additional discussion: “I didn’t look at that one before. Just looking at it now with fresh eyes but, I think … we should maybe mention that they’ve had these projects, in 2013 and 2015 and they stagnated. We really now, out of necessity, have to bring this up again. I don’t know if it helps visual alarms but – I don’t want to say that we’ve failed to act but…”
Joyce: “We did fail to act”.

Ned: “We failed to implement” (Mtg. 9 transcript).

After some additional discussion, the team agreed that in addition to demographic data, the introductory slides should include a reference to the two previous succession planning processes as a segue to the current recommendations, emphasizing as Ned expressed that “we took the ball and we ran with it” (Mtg. 9 transcript). This decision reflected significant input from both Carrie and Jon, as well as Ned and others. It is also useful to note that during this discussion, the team members in attendance were Carrie, Ned, Tina, Jon, Becky, Sheila, and Lisa. The others were absent for all or part of the meeting.

The second significant decision point during the storyboarding process involved how to present the interrelationship between three of the key recommendations: training, retention, and recruitment. In the preliminary storyboard, the four key recommendations were presented in sequential order based on how they appeared in the recommendation list. Ned suggested ordering the slides based on importance to the organization: “It depends on how important we really think they are in this presentation. I know that management has shown in the past that retention hasn’t been that important, but if we want to bring that to the forefront and say retention is important, then we keep as a primary category. If we don’t feel it’s as important, I don’t know. With recruitment, if you’re going to lose people, then you need to recruit people to make up for what you’re losing. Or you cross train, whatever it is you have to do” (Mtg. 9 transcript).

Sheila proposed that the order should reflect a sequential process approach. “Maybe how it needs to go, the unit analysis, then to recruit employees, then how to keep those employees, and then the training of those employees …because you have your unit analysis and this is
saying this is where we are … this is the issue that we’re going to be having and then next, you talk about recruiting people to fill those positions. Then after that it’s keeping them … if we’re going to offer all this training, which is going to make them more engaged and want to be working here. … I’m just thinking because you’re saying retention is going before recruitment, but before you can retain employees, you got to make sure you have them” (Mtg. 9 transcript).

Becky added “I think … we’re talking about retaining who we have concurrently but you’re seeing it from the opposite side. Our discussion was that we don’t have money to recruit at this point. We weren’t focusing on that” (Mtg. 9 transcript). Sheila went on, “we’re going to want to attract employees from the get go to make a career out of this. Not just the ones that are here.” and Ned contributed “retaining new hires. That’s really, okay” (Mtg. 9 transcript).

Through this discussion the team realized that the three recommendations were highly interrelated, and the presentation needed to reflect that. They decided to introduce the three recommendations by highlighting how interrelated they are, as illustrated in this slide from the project team’s final presentation:

![Recommendations - Interrelated](image)

*Figure 23: Recommendation Slide*
This decision reflected significant input from Sheila and Ned, with some input from Becky and others. This example illustrates how the collaborative decision-making process resulted in a new idea that evolved from the original ideas proposed by Ned and Sheila. Instead of ordering the slides based on importance (Ned’s initial suggestion), or sequence (Sheila’s initial suggestion), the collaborative process helped them to see the interrelationship between the recommendations and resulted in a decision to present the recommendations in that way.

A third significant decision point during the storyboarding process involved how to present the relationship between the teams responsible for implementing the recommendations. As the team discussed how to structure the slides for recruitment and retention, Sheila pointed out that the team had not really given much thought to how the retention and recruitment initiatives would be led. She shared “I’m just thinking out loud, I’m sorry. I know we came up with establishing a succession planning implementation team and a training advisory team. As far as retention and recruitment, are we just wanting to give our suggestions to human resources or is it something that we want to address that there needs to be someone looking at these and really addressing them? Because if we’re just really saying, ‘Hey, retention is going to be a problem. Hey, recruitment’s going to be a problem.’ We’re not giving them a recommendation” (Mtg. 9 transcript).

I pointed out that in their recommendation report the recruitment team had suggested creating an ad hoc committee to assist human resources with the recruitment recommendations. Joyce responded “right, but you probably do need a team that comes together to come up with a list of retention things that you want the agency to look at” (Mtg. 9 transcript). Kim, who had returned from another meeting, suggested “what if it would operate like some other projects … where you have an oversight team that manages little mini projects … perhaps that’s what we’re
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

looking at here … the succession and planning team that is charged with ensuring that each of these little mini-projects actually get off the ground and move forward and coming up and developing mini projects for each one. It’ll be a little slightly different people for each project that’s necessary, but you can have the succession planning team in charge with ensuring that each step moves forward” (Mtg. 9 transcript).

As the Training Program Coordinator for the organization, Joyce had some concerns about putting training under the succession planning team, because the responsibilities of the training department were broader than succession planning. She stated “I could agree with that for retention and recruitment. I wouldn’t want them to be overseeing the training. I think the training needs its own advisory team” (Mtg. 9 transcript).

Ultimately the team decided to recommend establishing a Succession Planning Implementation Team and a Training Advisory Committee as illustrated in this slide from the final presentation:

![Figure 24: Team Recommendation](image)

Figure 24: Team Recommendation
The Succession Planning Implementation Team would be charged with overseeing the implementation of the succession planning recommendations, including establishing smaller project teams for retention and recruitment. The Training Advisory Committee would liaison with the Succession Planning Team to implement training related to succession planning. This decision reflected significant input from Sheila, Kim, and Joyce, illustrating how the collaborative decision-making process resulted in a re-thinking and clarification of some previous team decisions.

The presentation storyboarding process provides another example of how Influence Reciprocity Network Ties emerged through collaborative decision-making processes in this study. As Joyce reflected on key decision points during the project, she shared:

The thing that stood out for me—I think I put that as one of my critical instances—is when we were storyboarding the presentation. We had set it up in the way we thought it ought to go and then, after discussions, and back and forth on what we’re going to say, we changed it all around. That was a group decision … we started talking about, ‘Wouldn’t it make sense if we bookended this and this, and put these in the middle?’ We talked about how we really wanted to emphasize the interrelationship of everything … I just thought that that came together, the decision to do that, just came together in this tremendously smooth and organic way. It wasn’t any one person’s idea, and yet, I couldn’t tell you whose idea it was to move things around … that’s what’s great is that you don’t have to say, ‘that was so-and-so’s idea.’ Instead it was, ‘wow, that decision—we decided on this all together.’ It ended up being very different than we thought it was going to be when we started out. (Interview Excerpt: 25048)
Joyce’s description illustrates how Influence Reciprocity Network Ties emerged through the process, as multiple team member’s ideas influenced the final decision.

**Senior members of the project team.** Another factor that supported the emergence of Influence Reciprocity Network Ties in this study was when senior members of the project team embraced shared leadership, encouraged team members to participate in discussions and decisions, and acted as mentors to other members of the project team. These efforts helped to build the confidence of other, less-experienced team members, which enabled them to actively participate in team discussions and decisions.

One of Joyce’s goals for the project team application process was to establish a team that was representative of the organization in terms of departmental representation, while also taking into consideration an individual’s position and tenure with the agency. Since the mission of the project team was to explore agency succession planning, she felt that it was important to have project team members that reflected a variety of tenure ranges, while emphasizing input from employees with less tenure and more potential future years with the agency. As a result of this emphasis, more than half of the project team members—seven out of 12—had five or less years of tenure with the agency, while only four had over 20 years of tenure.

Ned and Roger, the most senior members of the project team, represented leadership positions within the agency. They had a reputation among project team members for extensive supervisory experience and agency knowledge. As Kim expressed in her pre-launch questionnaire, “although I have not worked directly with Ned, I believe that he has a significant amount of institutional knowledge and will be able to provide very useful information about the department. Additionally, he is very friendly and will make a great team member”. Bonnie explained “and then people like Ned who’ve been here forever. I thought, ‘Oh my gosh.’
They’re revered because they’ve been here … but he’s just such a down-to-earth guy and so easy to talk to” (Interview Excerpt: 1910). Jon, in his pre-launch questionnaire, commented on Rodger’s years of supervisory experience at the agency. Lisa described him as able to deal with all types of people, and “has been with the organization for a while and knows the ups and downs and struggles of the organization” (Pre-Launch Reflection).

As agency leaders used to having decision-making responsibility, both Ned and Roger were a little uncomfortable with the shared-leadership environment at the beginning of the project. As leader/supervisors, Ned and Roger felt responsible for team decisions in a way that other members of the team did not. They expressed unease that the path forward was not more clearly laid out. In his self-reflection, Ned wrote that at the end of Meeting 2, he “exited the meeting not clear on our direction at this point”. After Meeting 3 things were “still unclear”. By Meeting 4, he stated that “direction was starting to appear” and by Meeting 7 he wrote “Big Directional swing! I felt more confident that we were nearing our goal.” Ned described his experience adjusting to a shared leadership environment:

You didn’t want to feel like taking total charge of the project … especially as a supervisor, I didn’t want to do that. I’m so trained to do that in my job as a supervisor to always make decisions based on the information that I’m getting from everybody, but in this particular case, I’m not the supervisor. I had to take that hat off and I had to say, ‘Wait a minute. We’re all equals here’, or ‘Even though I am a supervisor in my other job, I’m not a supervisor here, so everybody’s opinion is the same and we’ll do it the democratic way. We’ll gather all the information and let the entire team make that decision of what we want, where we want to go from there.’ (Interview Excerpt: 4359)
Roger also expressed concern about a perceived lack of team direction early in the project. He stayed after one of the earlier meetings to talk with Joyce and me about his concerns. He expressed his discomfort with the apparent lack of team direction and shared that in his experience, the project manager and/or project leader typically laid out a clear step-by-step path for the team to follow to accomplish their objectives. We encouraged him to trust the process, emphasizing that in a shared leadership environment, the project team needed to work through the decision-making process together, which included determining the steps to take to address the project objectives.

In spite of their unease, both Ned and Roger embraced the idea of shared leadership and found numerous ways to encourage the involvement of other team members throughout the project. Roger described his role in the first several meetings as “I think a lot of people were guarded … rather than the personalities like myself and or Ned. I think we tried to hold back” (Interview Excerpt: 1725). He went on to describe how he interacted with other members of the team who were not speaking up in the early meetings: “they were very quiet, and that just might be their personalities, then I read facial expressions like, ‘Okay, they’re thinking about something, it looks like they want to say something and they’re not’. It wasn’t my job to pull it out of them … but if I just kept coming up saying, ‘It’s this, it’s this, it’s this’ … sometimes other people would hold back. I think I tried to let them get to a comfort level where they could speak” (Interview Excerpt: 4474).

During the first meeting, Joyce provided introductory information regarding the project team’s assignment, and I introduced the idea of shared leadership and the role of the project team. I emphasized that Joyce and I were there as facilitators, not decision makers, and that each member of the project team had shared decision-making responsibility. After facilitating some
introductory activities, we moved into the project team’s first collaborative decision—
establishing project team goals. To accomplish this task, we used a modified brainstorming
process called an “affinity process” where each individual contributes ideas using sticky notes.
Team members then silently group these ideas into related categories. Once everyone is satisfied
with the groupings, they go back to their seat. This process illustrates how collaborative
decision-making synthesizes ideas from all team members. Individuals less comfortable
speaking in a large group are able to contribute non-verbally. The final groupings, which
became the basis for the team goals, reflect the ideas of all team members. In my observation
notes I commented that “Lisa and Carrie were two of the most quiet individuals throughout the
project, and rarely spoke up in large group discussions. And yet they were one of the first to
provide input using the grouping strategy” (Mtg. 1 Observation Notes).

The next step in the process of establishing goals was to break into small groups to use
the affinity groupings to propose goal statements. According to my observation notes, during
this process both Ned and Roger provided leadership to their groups, guiding them to where they
the group could sit, making sure the group was together, and doing some facilitation of the group
discussion. All of the team members appeared to actively participate in the small group
discussions. The final step in the goal-setting process was to debrief as a large group and finalize
the goal statements. My observation notes state that “both Ned and Roger are
supervisor/managers and are comfortable providing leadership in both small group and large
group settings. Ned set an example of contributing to the large group discussion, and Roger
encouraged team member input” (Mtg. 1 Observation Notes).

It was during this discussion that both Ned and Roger took steps to endorse the idea of
shared leadership and shared responsibility. Roger commented “I want to just chime in. One
thing that our group started with is we said this is a lump of clay. We are all going to have our hands in it. If I want to do one thing and Sam wants to do something else, it’s like no animosity. Let us come out with the best piece of clay we can have. We go through this thing, no hard feelings because we want to make the best piece of clay we can make … Okay. There’s a thing called playing devil’s advocate and at some point, everybody here is going to do that so I’m not going to take it personally because this is our goal. Someone wants to play devil’s advocate, speak up because it’s not a reflection on the person. Are we all with that?” (Mtg. 1 Transcript).

Ned suggested the idea of incorporating an emphasis on working as a team into the team goals. He proposed “one thing we really don’t do enough of in the agency is learning how to work together in a team … a lot of us have come off meetings a lot, some of us don’t have meetings at all, so you’re not used to working in this team environment. We really need to understand what our roles are in this team environment, working together as a team to accomplish these goals. Learning how to work together as a team is important, I think, under team goals” (Mtg. 1 Transcript). These comments helped to set the stage for shared leadership and encouraged participation of all team members in the decision-making processes.

In addition to actively encouraging team member participation in discussions and decisions, Ned and Roger also served as mentors by sharing knowledge and expertise, and coaching younger team members. Several team members commented on the role that Rodger and Ned played in the team by sharing valuable knowledge, expertise, and insights into organizational situations. Ron described how Roger helped to put some things into perspective “we were aware that … in a perfect world a lot could change and we would love to change a lot. But the reality was that, there were some limiting factors and we wanted to take those into account and focus on the things that we determined could realistically be changed. He (Roger)
had a good aspect on that, more so than even I. I’m a dreamer. I think he is a little bit too, [laughs] but he’s been here 30 years” (Interview Excerpt: 10845). Jon observed “Roger and Ned … having been here for so long, they could look at things and they know how the agency works and they could—even if it was just on the fly—they could give input. That was really useful” (Interview Excerpt: 1783).

Roger described an example of how he tried to mentor team members to not get discouraged when they hit a dead end:

Frustration occurs when expectation doesn’t meet reality. Generally, in the beginning, if you say, ‘Okay, we’re going to do these things, and some are going to fail, we’re going to have to go down some rabbit holes to find out there’s nothing there.’ One of the rabbit holes was, ‘Hey, we found two succession plans, okay, now we got to change tack and do something.’ In the beginning, I brought that out saying, ‘Hey, you know what? We’re going to do these things. Something they’re not going to pan out.’ That way if somebody did something like, ‘I didn’t contribute, I didn’t do anything.’ Well, no, you did, you found out, that’s a dead end, and that’s important because otherwise, they feel frustrated that they actually didn’t do anything. (Interview Excerpt: 33230)

Later in the project, four subgroups were formed to flesh out action steps for the project team’s recommendations, requiring some re-organizing of the groups. Ron, who had the shortest tenure at the agency, teamed up with Roger who had been with the agency for more than 25 years. Ron shared that through their work in the subgroup Roger “actually has become a little bit of a mentor of mine here which is great” (Interview Excerpt: 5889). When the second round of subgroups were ready to report out, Roger encouraged Ron to present their subgroup report to
the project team, coaching him in presentation skills, which ultimately resulted in Ron being nominated to be one of the presenters of the final project team report.

Roger described the role he played in coaching Ron to deliver the presentation: “Previous to that meeting, Ron and I were working on our subproject, and were working on him presenting it to our group. … I said to Ron, ‘You’re up and coming, you want to get in front of everybody and you want to work on your skills sets. I’m going to push you to do that.’ We thought about it, then we discussed it and he’s like, ‘Yes, you’re right.’ I said, ‘Take the opportunity because you might not have that opportunity in the next project or coming down the line’ (Interview Excerpt: 12094).

Ned’s and Roger’s efforts to encourage and mentor their less-experienced team members, helped those individuals build the confidence needed to actively participate in the project team discussions and decisions. When asked to describe the interactions of the team during decision making processes, Carrie described the tendency of younger, less tenured employees to defer to the more experienced team members: “I think that there are definitely the followers, the people that would want to go with the flow of being told what to do and the people that are more the leaders and I do think that generally the leaders were people that have been here for a long time. People that were like me being a newer person is not going to be like, ‘Hey Ned, this is what you are going to do.’ I think that’s just the natural way of things” (Interview Excerpt: 6221).

Given this tendency of younger, less tenured employees to defer to more experienced team members, Ned’s and Roger’s efforts to encourage team member involvement in decisions were important to fostering Influence Reciprocity Network Ties. One key team decision that highlighted this dynamic was the decision about who would deliver the project team’s final presentation. The processes involved in this decision took place over several meetings. At the
end of Meeting 11, team members were asked to complete a Nomination Worksheet to identify team members that they were best suited to work on the remaining tasks. These tasks included writing the final report, developing the final presentation, and delivering the final presentation. They completed the worksheets and submitted them prior to leaving the meeting. Between Meeting 11 and Meeting 12, I compiled the results of the nomination forms, and distributed the compiled results to the project team. Ron, Roger, Norm, Nora, Sheila, and Kim were nominated by several team members to deliver the presentation.

At the next meeting, during the presentation storyboarding process, Roger made this suggestion “when we did the surveys, my name came up for the delivery of the presentation. I have no problem doing the presentation, but it’s an opportunity for the younger cats to get the skills … getting in front of people because I’m out of here in four years. If you want me to do it, I have no problem, but I think you guys would want to take that opportunity because whether you do it here or you do it somewhere else, it’s an opportunity. Whatever you guys decide is fine with me but—” (Mtg. 12 Transcript). Ned chimed in “I agree with that. … I used to do speaking presentations all the time. I don’t want to do them anymore. It’s not my turn anymore. It’s time for the new generation to start doing this and you guys are representing the new generation so you guys should decide on who wants to—or you could do a joint presentation. Doesn’t have to be one person. You can just do it as a joint or decide how you want to do it, but I think you are the future of the organization. Roger and I, I’m sorry, are not, but you guys are the future” (Mtg. 12 transcript).

At the end of Meeting 12, the team decided that the final decision on who would present would be made at the next meeting. Each work team would identify a person to potentially be a spokesperson for their group, and Roger and Ned would provide coaching to the presenters to
help them prepare. The final decision was made during Meeting 13, with Sheila, Kim, and Ron being selected as the presenters. Roger and Ned acted as coach/mentors for the presenters throughout the process of preparing for the presentation.

This interaction provides an example of how Roger and Ned mentored the other team members and encouraged Influence Reciprocity Network Ties in a key team decision by strategically downplaying their own influence. Several team members commented on this event in their interviews. Lisa described her perceptions of the role Ned and Roger played in the presentation decision as “I knew in my mind who I thought would be good to present, but then Roger also played a big part in me rethinking everything because he was very into trying to get the less—I don’t want to say the younger—the newer group to get out there and to do their thing and to get their voice heard and their face out there and everything like that” (Interview Excerpt: 4996). Similarly, Jon described how Ned and Roger influenced his thinking: “I felt Ned should be on the speaker’s role. He’s a clear speaker, he’s awesome and he has enough seniority where he would carry some clout. Then he and Roger immediately literally, well this is a time for a young person to shine. It is” (Interview Excerpt: 16424). Nora reflected, “it was good that Ned and Roger gave the younger recruits an opportunity to really shine” (Interview Excerpt: 12416).

Summary

In summary, Influence Reciprocity Network Ties emerged through collaborative decision-making processes when senior members of the project team embraced shared leadership, encouraged team members to participate, and mentored fellow team members. Collaborative decision-making processes facilitated the synthesis of input from multiple team members, which provided the foundation for Influence Reciprocity Network Ties to emerge. By encouraging and mentoring their less experienced team members, senior members of the project
team helped these individuals develop the confidence needed to actively participate in team discussions and decisions, thus enabling Influence Reciprocity Network Ties to emerge.

Chapter Summary

In this chapter, I described four findings based on my analysis of the study data. As members of a self-managed project team participated in an integrated leadership development intervention, four aspects of team social capital emerged: (a) as project team members collaborate in smaller subgroups, Knowledge Sharing Network Ties are established and strengthened; (b) Shared Team Mental Models develop when individual team members have opportunities to share knowledge or demonstrate expertise through project tasks and activities; (c) shared Situation Mental Models emerge in response to critical incidents (significant events) in the project life-cycle and inform key team decisions; and finally (d) Influence Reciprocity Network Ties emerge through collaborative decision-making processes when senior members of the project team embrace shared leadership, encourage team members to participate, and mentor fellow team members.

These findings answer the research question: How does team social capital develop through participation in an integrated leadership development intervention?
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

CHAPTER 4
DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

Studies show that team internal social capital plays an important role in facilitating shared leadership in teams (Chen et al., 2008; Clarke, 2012a; Galli & Müller-Stewens, 2012), which contributes to project team effectiveness (Conger & Pearce, 2003; Ensley et al., 2006; Hoch, 2014). However, few studies have explored how aspects of team social capital develop in project teams. This study addressed this gap in the literature by exploring how four aspects of team internal social capital—Knowledge Sharing Network Ties, Influence Reciprocity Network Ties, Team Mental Models, and Situation Mental Models—developed through an integrated leadership development intervention.

The purpose of this study was to answer the research question: How does team internal social capital develop through participation in an integrated leadership development intervention? In Chapter 3, I presented four findings from my study:

1. As project team members collaborate in smaller subgroups, Knowledge Sharing Network Ties are established and strengthened.

2. Shared Team Mental Models develop when individual team members have opportunities to share knowledge or demonstrate expertise through project tasks and activities.

3. Shared Situation Mental Models emerge in response to critical incidents (significant events) in the project life-cycle and inform key team decisions.
4. Influence Reciprocity Network Ties emerge through collaborative decision-making processes when senior members of the project team embrace shared leadership, encourage team members to participate, and mentor fellow team members.

These findings provide a nuanced understanding of how team social capital developed in a self-managed project team through participation in an integrated leadership development intervention while addressing a complex adaptive challenge as depicted in Figures 25 and 26. As I will explain in more depth in my conclusions, organizational supports such as having a well-defined project charter and providing a trained facilitator, created an environment conducive to team social capital development.

Facilitated intervention activities, such as team building, goal setting, resource mapping, reflection, concept mapping, and collaborative decision-making played an important role in the development of four specific aspects of team internal social capital. As project team members worked in smaller subgroups, Knowledge Sharing Network Ties emerged. As the subgroups reported out on their findings, these subgroup reports informed expanded Team Mental Models, as well as triggering Critical Incidents that in turn, triggered team shared Situation Mental Models.
Figure 25: Team Social Capital Development through an Integrated Leadership Development Intervention (Osborn, 2019)
Figure 26: Enlarged view of Team Social Capital Development through an Integrated Leadership Development Intervention (Osborn, 2019)
Team-Building activities and Resource Mapping activities provided opportunities for project team members to share their knowledge and expertise, contributing to an expanded Team Mental Model. Goal-setting activities and various collaborative decision-making activities triggered Critical Incidents, which resulted in the emergence of shared Situation Mental Models. Both team and individual reflection and concept mapping activities also contributed to the development of shared Situation Mental Models, which, along with the team’s shared Team Mental Model, informed key team decisions characterized by Influence Reciprocity Network Ties. Because senior members of the project team embraced shared leadership, collaborative decision-making processes contributed to the development of Influence Reciprocity Network Ties, supporting shared leadership within the team. In summary, the structure of the team, along with clear project parameters, and integrated intervention activities facilitated by a trained facilitator, resulted in team social capital development and expanded shared leadership capacity within the organization.

**Conclusions**

In this chapter, I present two conclusions based on the findings and discuss them in relation to existing literature. I also present theoretical and practical implications, and recommendations for future research, before closing with some final thoughts.

**Conclusion 1: Team internal social capital develops in response to intervention activities integrated into the work of self-managed project teams when these teams have the appropriate organizational support.**

Based on the findings of my study, I conclude that the structure of the project team, along with the supports provided by the organization, resulted in a project team environment that enabled team internal social capital to develop in response to integrated intervention activities.
This conclusion aligns with the literature, while providing new insight into the relationship between self-managed project teams, organizational supports, integrated intervention activities, and team internal social capital development.

**Self-managed project teams.** Self-managed project teams share responsibility for successfully achieving the team’s objectives within the project parameters established by organizational leaders who are not themselves a part of the team (Angles, 2007; Carte et al., 2006; L. Wang et al., 2017). As Figures 25 and 26 suggest, this shared responsibility creates an environment where shared leadership can emerge. A self-managed project team that is structured based on shared responsibility for team decisions, rather than on a leadership hierarchy that defines and limits decision-making responsibility, is well-positioned to develop key aspects of team social capital.

In this study, the project parameters as defined in the project charter stated that the project team “will exemplify shared leadership in that all members will share responsibility for meeting the team’s key objectives.” This statement established the team as a self-managed project team, with shared decision-making responsibility. While the agency where the study took place had many structures in place to support project team work, previous projects teams were more hierarchical, with leadership responsibility limited to one or two team leaders. As I worked with Joyce, the designated project manager, to plan the project, she built support among organizational leaders to take a shared-leadership approach to the project team, in order to align with the requirements of the research study.

Shared responsibility for team decisions was established from the beginning and played a role in how team members approached decision-making processes. As detailed in Finding 4, both Ned and Roger were experienced supervisor/managers comfortable in the role of decision-
maker. If the project parameters had not clearly defined shared decision-making responsibility among all team members, Ned or Roger might have naturally moved into a more traditional leadership and decision-making role based on their level of knowledge and experience within the organization. Alternatively, the team could have assumed that Joyce’s role as project manager made her the default decision-maker. Instead, Joyce made it clear from the beginning that her role was to facilitate the meetings and act as a liaison between the team and the organization, not to be the team decision-maker. Ned and Roger also embraced the idea of shared leadership, encouraging other team members to participate in decision-making processes and discussions, as described in Finding 4.

One of the 10 critical principles for “breakthrough problem solving” with action learning, as defined by Marquardt and Yeo (2012), is to allocate power and responsibility to the team. In this study, defining the team structure in terms of shared decision-making responsibility early in the project created a team environment that nurtured team social capital development.

Organizational supports. Project teams do not exist in a vacuum. Instead, they operate within the culture and structure of the larger organization. The literature suggests that organizational supports can have a significant impact on the effectiveness of the project team, and on the development of team internal social capital. Hackman (2002) proposed five enabling conditions for high functioning teams including (a) establishing clear team parameters, (b) providing a compelling direction, (c) creating an enabling team structure, (d) building a supportive team context, and (e) providing expert coaching. Similarly, five of the 10 critical principles for “breakthrough problem solving” defined by Marquardt and Yeo (2012) address organizational supports considered crucial to the success of Action Learning teams, which are a form of self-managed project team:
1. Enlist the commitment and support of top leadership

2. Select a problem that is urgent and complex

3. Formulate explicit timelines and expectations for the action learning team

4. Ensure membership diversity within the action learning team

5. Use skilled coaching/facilitation of the action learning team

In my study, these conditions and principles played an important role in establishing an organizational environment conducive to project team work and the development of team internal social capital. The agency where the study took place had well-developed processes in place for establishing and monitoring project teams. Each project was assigned a Project Sponsor—usually a high-level organizational leader—and a Project Manager, responsible for project planning, recruitment of project team members, and ongoing facilitation of the project. In this study, Joyce was the designated Project Manager, and the Project Sponsor was the commissioner of the agency where the study took place. With direction and input from the Project Sponsor, Joyce clarified project objectives, developed the project charter, and built support for the project among agency leaders, managers, and supervisors, thus addressing two of Marquardt and Yeo’s (2012) critical principles: enlisting the commitment and support of top leaders and formulating timelines and expectations.

Having the parameters of the project clearly defined helped Joyce build agency support for the project. In addition to having the CEO of the agency as the Project Sponsor, Joyce built support for the project with other organizational leaders, including the supervisors and managers of agency units and departments. This organization-wide support for the project proved critical to its success. Departmental supervisors were supportive of project team members’ participation,
resulting in high levels of meeting attendance, and supervisory support for time spent outside of project team meetings on activities such as research and subgroup meetings.

One of Hackman’s (2009) enabling conditions for high performing teams is having a compelling direction that energizes, orients, and engages the team. In my study, the goals of the project, as defined in the project charter, involved developing recommendations related to agency succession planning in response to changing workplace demographics. This project objective reflected an organizational problem that was urgent and complex, as recommended by Marquardt and Yeo (2012). The literature suggests that by tasking self-managed project teams with finding solutions to one or more complex adaptive challenges, organizations set the stage for the emergence of shared leadership capacity, improving team effectiveness and performance (Bergman et al., 2012; Conger & Pearce, 2003). Based on the results of a study of 71 change management teams, Pearce and Sims (2002) suggest an important relationship between shared leadership and complex tasks. Further exploration by Pearce and colleague Conger (2003) found that task complexity may play a critical role in the implementation of shared leadership due to the need for complementary skills and abilities. In a meta-analysis of shared leadership and team effectiveness, D. Wang et al. (2014) found that the complexity of the work performed by teams in the primary studies served to moderate the relationship between shared leadership and team outcomes. With 42 independent samples, work complexity was positively related to the effect size ($b = .04$, $SE = .02$, one-tailed $p = .05$, 90% CI = .005, .07). The results of my study support these findings. The complexity of the problem provided the project team with many opportunities to build team internal social capital through integrated intervention activities, and required the complementary skills and abilities provided through the diversity of the team.
Hackman (2002) emphasized selecting team members that provide the right mix of skills and experiences to achieve project objectives. In previous projects at the agency, project teams were hand-selected by departmental supervisors to participate in organizational projects. This often led to the same people being selected over and over, creating a perception among agency employees that the selection was driven by favoritism rather than fairness, and fostering resentment among employees who never had the opportunity to participate in organizational projects. To counteract this aspect of the organization’s culture, Joyce advocated for an application process open to all agency employees. She described her rationale: “I just feel like we hear that a lot … it’s just the same people all the time… a project team gets formed and then it’s announced, ‘We’re having this project, and these are the people on the team.’ And there are people who would say, ‘I would have volunteered if I knew because that’s right up my alley—that’s really interesting to me.’ They don’t hear about it until it’s too late. Personally, I just think that’s wrong … you can bring people in from other areas and they can learn while they’re serving the team and they bring in whatever background or expertise they have” (Interview Excerpt: 8093).

The selection process was based on the information provided by the applicant, with the goal of establishing a project team that was representative of the agency in terms of age, ethnicity, tenure, and position within the agency, thus addressing another one of Hackman’s (2002) enabling conditions and Marquardt and Yeo’s (2012) critical principles: Ensure membership diversity within the team. The application process resulted in a strong sense of commitment by project team members to the project, and a level of confidence in the capabilities of the team.
Under some circumstances, well established self-managed work teams can function effectively without a designated manager or facilitator. However, most experts suggest that project teams that are temporary in nature, and formed to accomplish a particular task within a given time frame, benefit from skilled coaching and facilitation (Hackman, 2002; Leonard & Marquardt, 2010; Marquardt & Yeo, 2012; Wageman et al., 2008). In an analysis of case study data from more than 200 action learning sessions, Volz-Peacock et al. (2016) described the responsibilities of the coach/facilitator as setting the tone, encouraging teamwork, improving team performance, ensuring reflection, and identifying learnings. Based on their work with leadership teams, Hackman et al. (2009) identified the availability of expert coaching as one of the five conditions for team effectiveness. In a case study of critical success factors for self-managed teams (Wageman, 1997), team members identified the facilitation of problem solving discussions and use of problem-solving processes as coaching behaviors that were positively related to effective team self-management.

In addition to facilitating team activities, the coach/facilitator can act as a link between the team and the rest of the organization, sometimes referred to as a “boundary spanner” (Yazid, 2015). While project team interventions focus on the development of team internal social capital, the coach/facilitator performs a bridging function to connect the team to the rest of the organization (Clarke, 2012a; Mäkelä & Brewster, 2009).

As Project Manager, Joyce served the role of liaison with the rest of the organization for the project team in this study. She met regularly with the Project Sponsor to keep him informed and facilitated the process of obtaining information from other departments to support the research phase of the project. She also took charge of meeting logistics such as room scheduling and setting up a shared network drive to manage project documents and information. While
Joyce and I worked together to plan meeting activities. I facilitated the majority of the group activities during the meetings because I had extensive experience in facilitating collaborative team activities. Having the support of both a project manager and team facilitator allowed the project team members to focus on the research, discussion, decision-making, action-planning, and reporting activities required to meet the project objectives.

**Integrated intervention activities.** As the findings show, facilitated intervention activities played an important role in team social capital development in this study. These activities took place within a team environment molded by the organizational supports and team structures described above.

Advocates of integrated intervention activities include Edmondson (2012), who emphasized using teams to foster innovation, as well as proponents of action learning, such as Marquardt and Yeo (2012). According to Edmondson (2012), integrating learning opportunities that support goal setting, collaboration, communication, and reflection into the work of the team supports innovation and team performance. While these experts advocate the use of integrated activities to accomplish project team work, few studies have explored how specific kinds of integrated activities impact team social capital development. The lack of research on the role of integrated intervention activities in the development of team social capital represents a gap in the literature. My study addressed this gap by showing how six specific types of intervention activities including team building, goal setting, resource mapping, reflection, concept mapping, and collaborative decision-making played an important role in the development of team internal social capital.

A variety of intervention activities were integrated into the work of the project team in this study to support the development of team internal social capital, as illustrated in the Figures.
25 and 26. Team-building activities early in the project provided opportunities for team members to get to know each other and build an awareness of each other’s knowledge and skill resources, setting the stage for the development of shared Team Mental Models. Goal-setting activities, as part of the project launch, contributed to a Critical Incident that triggered the development of a shared Situation Mental Model regarding the goals of the project as described in Finding 3. Resource mapping, as described in Finding 2, helped the team develop a shared understanding of the knowledge and skill resources available to the team, furthering the development of a shared Team Mental Model. Collaborative decision-making activities facilitated the emergence of Influence Reciprocity Network Ties, as described in Finding 4.

Both individual and team reflection activities played an important role in the development of team internal social capital in this study. Reflection has been shown to have a significant impact on team performance. For example, the results of an experimental study conducted by Gabelica et al. (2014) involving 212 undergraduate students found that the teams receiving performance feedback and guided reflection performed significantly better than teams that only received performance feedback, or teams that received no feedback.

In a study of the effect of individual and team reflection on team outcomes, Domke-Damonte and Keels (2015) found that team-level shared reflection was significantly correlated with team effectiveness \( (r = .19; p < .05) \), team work satisfaction \( (r = .14; p < .10) \), and the task project score \( (r = .22; p < .01) \). While this study took place in an undergraduate classroom setting, the capstone project involved a multiphase collaborative consulting project for a publicly traded firm, reflecting an authentic project team experience. The focus of the reflection intervention in the study was the development of shared team behavioral norms, suggesting that team reflection may contribute to the development of shared team mental models.
In my study, reflection played a particularly significant role in the development of shared Situation Mental Models as shown in Figures 25 and 26. Reflection provides an opportunity to assess results of team activities and come up with new ideas. Individual reflection opportunities, such as the *Situation Analysis Reflection*, which involved a concept mapping activity, and the subsequent team reflection activities, helped to trigger a critical incident which resulted in a shared Situation Mental Model regarding the previous succession planning projects, as described in Finding 3. Reflection activities at the end of the project provided opportunities for the project team to reinforce what they learned through the project, preparing them to apply these lessons in future project team situations.

In summary, the findings of this study show that facilitated intervention activities played an important role in the development of team internal social capital in this study, as illustrated in Figures 25 and 26. These findings contribute to the existing literature on team internal social capital by providing insight into how integrated intervention activities contribute to team internal social capital development. The findings also suggest that self-managed project teams with strong organizational supports provide an environment conducive to the development of team internal social capital, supporting previous findings in the literature.

**Conclusion 2:** Shared leadership, which manifests itself through patterns of Influence Reciprocity Network Ties across team decision events, relies on the development and interaction of multiple aspects of team internal social capital, including Knowledge Sharing Network Ties, shared Team Mental Models, and shared Situation Mental Models.

The literature suggests a strong relationship between shared leadership and team internal social capital, as described in Chapter 1 of this study (Barnett & Weidenfeller, 2016; Hoch, 2014; McIntyre & Foti, 2013). Carson et al. (2007) defined shared leadership as “an emergent
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

team property that results from the distribution of leadership influence among multiple team members” (p. 1218). Researchers have shown that social network analysis provides a useful methodology for studying the patterns of Influence Reciprocity Network Ties that emerge in a shared leadership environment (Carson et al., 2007; Mayo et al., 2003). In this study, Influence Reciprocity Network Ties—one of four aspects of team internal social capital addressed in this study—developed across team decision events, suggesting the emergence of shared leadership. As described in Finding 4, patterns of Influence Reciprocity Network Ties were documented and analyzed using a network analysis approach.

These decision-making events drew on multiple aspects of team internal social capital that developed over the project life cycle. While previous studies have shown how various aspects of team social capital relate positively to team performance (Hoch, 2014), creativity (Chen et al., 2008), and innovation (Hu & Randel, 2014), the findings of this study extend the literature by illustrating how specific aspects of team social capital developed, interacted with each other, and played a role in team decision-making processes, thus supporting shared leadership in teams.

The results of my study, as described in Finding 1, suggest that Knowledge Sharing Network Ties, the primary interpersonal connection between individual project team members, developed within subgroups that were established to conduct research and develop recommendation action plans. Knowledge Sharing Network Ties have been shown to play a direct role in team creativity (Chen et al., 2008) as well as a mediating role in shared leadership and team performance (Hoch, 2014; Hu & Randel, 2014; Robert et al., 2008). In my study, the knowledge and expertise that resided in the subgroups became an important aspect of the team’s shared Team Mental Model.
Shared leadership is characterized by the dynamic transfer of leadership functions among team members in response to the demands of the situation (Burke et al., 2003). The smooth transference of leadership requires a common understanding of the complexities of the circumstances, as well as an accurate understanding of the knowledge and expertise resources available within the team (Burke et al., 2003; Clarke, 2012b). Team Mental Models and Situation Mental Models are two specific types of shared team mental models most relevant to shared leadership (Burke et al., 2003; Cannon-Bowers & Salas, 1997; Cooke et al., 2000).

Team Mental Models facilitate the team’s ability to accomplish the task efficiently and effectively by strategically accessing the knowledge, skill, and leadership resources available within the team (Burke et al., 2003; Cooke et al., 2000). Studies show a strong relationship between Team Mental Models and team performance. For example, in a study of team performance using a computer-based flight-combat simulation program, Mathieu et al. (2000) found a strong direct effect of team-based mental model convergence on team performance \([\beta = .87, p < .01]\).

In this study, Team Mental Models developed through opportunities for team members to demonstrate knowledge and expertise. As described in Finding 2, one opportunity to develop the team’s shared Team Mental Model came when the research teams reported out during Meeting 5 and Meeting 6. Each team demonstrated an extensive amount of knowledge and expertise through an oral presentation, a written report, and project team discussion. For the remainder of the project, team members were considered “experts” in the areas that they had researched. Sheila observed, “I feel like Kim and Bonnie were very knowledgeable on the succession planning” (Interview Excerpt: 5239). And Jon explained, “Bonnie—I wasn’t on any of the teams
with her, but when she would present about the succession plan research you could tell that she’d done a lot of the work behind the scenes” (Interview Excerpt: 4398).

The project team then drew on their Team Mental Model when making decisions. As described in Finding 2, the subgroups became the team’s primary resource for specialized expertise. As Ron explained, “When I was on those subgroups that’s what I was focusing on. I wasn’t researching succession planning when I’m researching recruitment. I didn’t load that folder up and do the homework. I didn’t have the time. I was doing my part and I was relying on the other members to do their part” (Interview Excerpt: 19436). From my field notes later in the project I observed, “When it came time to do the final report and the presentation, team members felt strongly that the research and recommendation teams should write/present their sections, even though that made it somewhat challenging to synthesize the information into a cohesive presentation/report.”

Similarly, when it came time to make the decision about who would deliver the team presentation, the team drew from their Team Mental Model to recognize where knowledge and expertise resided within the team. As highlighted in Finding 2, the team participated in a nomination process for who would work on the final three tasks: write the final report, develop the final presentation, and deliver the presentation. Sheila received a strong nomination to create the final presentation due to the technical skills that she demonstrated during her recommendation subgroup presentation, while Ron received a strong nomination to deliver the presentation, based on his recommendation subgroup presentation. The shared Team Mental Model also resulted in confidence in the team’s decisions. As Ron explained, “I was confident in all of our research thanks to the great work that our entire team did. I knew that we weren’t presenting something that didn’t make any sense” (Interview Excerpt: 31593).
In this study, the Knowledge Sharing Network Ties that developed within subgroups resulted in demonstrated areas of knowledge and expertise within the team, thus contributing to the team’s shared Team Mental Model. The Team Mental Model became an important resource during team decision-making events, resulting in confidence in the team’s decision.

Situation Mental Models, another type of shared mental model addressed in this study, reflect the team’s collective understanding of a situation at a point in time, which guides team actions and decisions (Burke et al., 2003). Situation Mental Models guide the team in assessing and responding to the unique aspects of the situation, and in determining when the leadership function needs to transfer (Burke et al., 2003; Cooke et al., 2000).

In this study, shared Situation Mental Models emerged in response to critical incidents in the project life cycle, triggering key team decisions. As described in Finding 3, these critical incidents often involved a strong personal and team emotional response. At project launch, team members described being a little overwhelmed by the scope of the project, but also positive about the project team and its ability to address the challenge. Upon discovery of the previous succession planning projects, team members described feeling discouraged and concerned. As the process of consolidating the team’s recommendations unfolded, team members described feelings of satisfaction, as their hard work began to coalesce into a meaningful whole.

Participants described these events as critical turning points that often led to key team decisions. The team decision events provided opportunities for Influence Reciprocity Network Ties to emerge, as team members participated collaboratively in team decision-making processes, drawing on the knowledge and expertise resources that resided within the team.

As described in Finding 3, the discovery of previous succession planning projects represented a critical incident that resulted in a shared Situation Mental Model, which guided a
key team decision. In this situation, the sequence of events that led to the critical incident involved a series of research group reports. During Meeting 5, the demographic research group reported out on their findings related to the impending “retirement tsunami” being faced by the agency. In Meeting 6, the succession planning research group reported out on their discovery of two previous succession planning projects that had not been implemented. Between Meeting 6 and Meeting 7, the participants completed the *Situation Analysis Reflection*, which provided an opportunity for individual team members to reflect on the significance of what they had learned.

As the team responded to this critical incident in Meeting 7, they developed a shared understanding of the situation which led to the decision to sound the alarm about the urgency of the situation and recommend implementation of the previous succession planning projects. My observation notes from Meeting 7 describe the patterns of Influence Reciprocity Network Ties that took place during the decision-making process:

**Mtg. 7 Observation Note:**

Lots of good Influence Reciprocity conversations here – Roger, contributing institutional knowledge, Nora and Kim, reporting out on HR findings and their conclusions based on experience in various divisions. Carrie speaking up as one of the younger people who will be on the hook when everyone “evacuates”. “Training for everyone” recommendation – promoted by Nora, support by several others.

This sequence of events provides a useful illustration of the role that the various aspects of team social capital played in this key team decision. Strong Knowledge Sharing Network Ties developed within the subgroups. These subgroups became recognized as areas of knowledge and expertise within the team, resulting in the development of a shared Team Mental Model. The knowledge and expertise shared by these subgroups with the larger project team triggered a
critical incident that resulted in the emergence of a shared Situation Mental Model. The team’s response to the critical incident, informed by their shared Team Mental Model and shared Situation Mental Model, resulted in a key team decision.

The following observation note from Meeting 7 captures the interaction between these aspects of team social capital, and their role in team decision-making over several meetings:

**Meeting 7 Observation Note:**

This meeting, along with meeting 5 and 6, provide an interesting example of how some aspects of team social capital play off each other.

- In meetings 5 and 6, the research teams reported out on their findings, providing an opportunity for team members to demonstrate their expertise and expand the team’s Team Mental Model regarding where expertise resides within the team.
- Some of the findings, particularly the demographic information and discovery of the previous succession plan, triggered a team Situation Mental Model regarding the project team’s purpose and future direction (i.e., implement previous plans).
- In Meeting 7, Influence Reciprocity Network Ties are evident in the number of individuals contributing to some key team decisions that ultimately either became team recommendations or became the team’s stated purpose for the remainder of the project. These decisions included the team’s change in direction to focus on implementation of the previous succession planning projects and recommending that management training be made available for all employees.
- Intervention activities that appear to have played a role in this process include individual reflection and situation analysis through completion of the *Situation Analysis Reflection*, team reflection on the results of the situation analysis survey,
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

visual representations of the Situation Mental Model from the survey, brainstorming (collaborative decision making) on where the team should go next, and the timeline (visual representation).

In summary, as team social capital developed through an integrated leadership development intervention in this study, aspects of team social capital contributed to the development of other aspects of team social capital, ultimately resulting in collaborative team decision-making. Network analysis of the patterns of Influence Reciprocity Network Ties illustrated a distributed pattern of influence reciprocity across team decisions characteristic of shared leadership.

Implications for Theory

As described in Chapter 1, the conceptual framework for this study was situated within the larger context of leader/leadership development prevalent in the leadership development literature. Figure 25: Team Social Capital Development through an Integrated Leadership Development Intervention, builds on previous models of leader/leadership development proposed by Hanson (2013) and Day et al. (2004). This study contributes to the leadership development literature by providing a detailed model for accomplishing Hanson’s (2013) “Quadrant III” leadership development (see Figure 1), where leadership development supports are integrated into organizational work, and where team-focused leadership development complements other aspects of organizational leader/leadership development.

As described in Conclusion 1, the findings of this study suggest that the context of the integrated leadership development intervention—both endorsed and supported by the broader organization—contributed to the development of team internal social capital. Integrated leadership development interventions that take place within a broader organizational structure for
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

leadership development, both benefit from and contribute to leader/leadership development throughout the organization, as suggested by Hanson’s (2013) *Leadership Development Interface Model* (see Figure 1). The results of my study support Hanson’s hypothesis.

Shared leadership has gained prominence in the leadership development literature, as organizations increasingly rely on teams for both productivity and innovation (Hoch, 2014; Pearce & Conger, 2003). Day, Gronn, and Salas (2004), in their review of emerging perspectives on team leadership, provided an early contribution to the literature on how leadership develops in teams with their *Team Leadership Cycle Model* (see Figure 2) which details a cyclical process wherein team leadership capacity is both an input and an output of integrated leadership development interventions. The results of my study support this concept. As described in Conclusion 1, the structuring of the team as a self-managed project team at the beginning of the project established a shared leadership context that supported the development of team social capital, which resulted in expanded shared leadership capacity as reflected in the development of Influence Reciprocity Network Ties as described in Conclusion 2.

Team internal social capital has been shown to be a critical component of shared leadership capacity (Carson et al., 2007; Gupta et al., 2011). Research suggests that two aspects of team internal social capital—network ties and shared team mental models—are particularly relevant to expanding shared leadership capacity. In their review of the literature regarding shared leadership and team performance, Barnett and Weidenfeller (2016) identified shared mental models and social network ties as key operating mechanisms for shared leadership in project teams, helping teams establish a climate that is supportive of and conducive to shared leadership. Xiang et al. (2013) explored the relationship between social capital and team performance in information system development teams. The results suggested that while various
aspects of team social capital enhance and potentially amplify other aspects of team social
capital, shared mental models and knowledge sharing, an aspect of network ties, explained the
greatest variance in team performance ($R^2 = 39.1\%$).

The findings of my study contribute new knowledge to the literature by describing how
two specific aspects of social network ties—Knowledge Sharing Network Ties and Influence
Reciprocity Network Ties—and two specific aspects of shared mental models—Team Mental
Models and Situation Mental Models—developed through an integrated leadership development
intervention.

**Knowledge Sharing Network Ties**

Shared leadership relies on the sharing of knowledge, which includes the sharing of
information and expertise, among team members to generate ideas, make decisions, and
accomplish team objectives. Xiang et al. (2013) defined knowledge sharing as “the individual’s
willingness to share the knowledge or experience he/she has acquired or created with others” (p.
1026). Knowledge sharing network ties have been shown to play a direct role in team creativity
(Chen et al., 2008) as well as a mediating role in shared leadership and team performance (Hoch,
2014; Hu & Randel, 2014; Robert et al., 2008).

Researchers have studied Knowledge Sharing Network Ties fairly extensively, typically
in relation to other aspects of social capital and team effectiveness, innovation, or performance.
For example, Lee, Park, and Lee (2015) explored the interrelationships among social ties
(structural dimension), shared vision (cognitive dimension), and trust (relational dimension) and
their relationship to team performance. Social ties, which are similar to Knowledge Sharing
Network Ties, were found to have a positive relationship with trust ($\beta = 0.204, p < 0.01$) and
shared vision ($\beta = 0.347, p < 0.001$). Both shared vision and trust were found to have a
significant positive relationship with team performance ($\beta = 0.210, p < 0.01; \beta = 0.550, p < 0.001$).

In a study of 219 work teams, Hu and Randel (2014) demonstrated that tacit knowledge sharing, in particular, was a strong predictor of team innovation. Both explicit and tacit knowledge sharing had moderate to strong positive correlations with three types of social capital, ranging from $r = .27$ for the correlation between explicit knowledge sharing and both cognitive and relational social capital, to $r = .51$ between tacit knowledge sharing and cognitive social capital. These findings suggest a somewhat complex inter-relationship between knowledge sharing and other aspects of team social capital, as I found in my study.

While numerous studies have explored the relationship between Knowledge Sharing Network Ties and other aspects of team social capital, or between Knowledge Sharing Network Ties and team performance, few studies have explored how Knowledge Sharing Network Ties develop. My study addresses this gap in the literature by providing insight into how Knowledge Sharing Network Ties developed within a project team.

In forming project teams, practitioners typically establish teams that are small enough to manage, while being large enough to provide diversity of expertise and to distribute the workload efficiently. Hackman (2002) suggests that the ideal size for work teams is six members while Wageman et al. (2008) suggest that the optimal size for senior leadership teams is eight members. The project team in my study consisted of 12 participants who were selected in part to represent the agency in terms of tenure, position, gender, and ethnicity. While this is larger than some experts recommend, the size of the group proved to be important in terms of diversity of outlook and distribution of the workload. A smaller team would have had difficulty accomplishing the project objectives within a reasonable timeframe. While 12 members is not
an overly large team, the findings from my study suggest that Knowledge Sharing Network Ties developed within smaller subgroups of 3-4 people. These findings contribute to the literature by suggesting that project teams that are larger than 5-6 people, may benefit from performing at least some tasks in smaller subgroups to maximize the potential for establishing Knowledge Sharing Network Ties. In addition, future studies on Knowledge Sharing Network Ties may want to take into consideration the size of the project team, and the potential role of smaller subgroups in the team process.

**Influence Reciprocity Network Ties**

Shared leadership is characterized by flexible, multidirectional influence among team members (Bergman et al., 2012; Conger & Pearce, 2003; Pearce & Sims, 2002). Influence reciprocity, another aspect of network ties, reflects input and influence from multiple team members in making team decisions (Carson et al., 2007; Mayo et al., 2003), suggesting a relationship between the two concepts.

Unlike Knowledge Sharing Network Ties, Influence Reciprocity Network Ties have not been widely studied in the context of self-managed project teams. However, a few researchers have explored the relationship between Influence Reciprocity Network Ties and team performance. For example, in a study of 45 teams containing 516 directional dyads, Aime et al. (2014) found that “heterarchical structures in which the expression of power actively shifts among team members to align team member capabilities with dynamic situational demands can enhance team creativity” (p. 327) thus providing evidence of the relationship between Influence Reciprocity Network Ties and creativity, an important component of team performance.

Similarly, in a qualitative study of shared leadership in 45 ad hoc decision-making teams consisting of 180 undergraduate students, Bergman et al. (2012) assessed the leadership
behaviors of each team member by coding videotapes of team discussions during a simulated multiparty negotiation. The coded results were analyzed using cluster analysis. The results indicated that teams that developed patterns of leadership behavior involving multiple leaders and a variety of leadership types experienced significantly better intermediate team processes, such as cohesion, consensus, lack of conflict, and trust, than teams without leadership diversity.

The results of my study contribute to the literature regarding the relationship between team social capital and shared leadership by illustrating how shared leadership manifests itself through patterns of Influence Reciprocity Network Ties across multiple team decisions as described in Conclusion 2. These findings support the concept proposed by Carson et al. (2007) that network analysis provides a useful framework for observing shared leadership in teams, and that analysis of patterns of Influence Reciprocity Network Ties across multiple team decisions provides a useful way of understanding shared leadership in teams.

The results of my study also contribute to the literature by providing insights into how Influence Reciprocity Network Ties develop. As described in Finding 4, Influence Reciprocity Network Ties emerge through collaborative decision-making processes when senior members of the project team embrace shared leadership, encourage team members to participate, and mentor fellow team members. These findings shed light on the importance of a commitment to shared leadership by senior members of the project team and highlight the role that collaborative decision-making processes play in developing Influence Reciprocity Network Ties.

**Team Mental Models**

As described in Chapter 1, shared leadership is characterized by the dynamic transfer of leadership functions among team members in response to the demands of the situation (Burke et al., 2003). The smooth transference of leadership requires a common understanding of the
complexities of the circumstances, as well as an accurate understanding of the knowledge and expertise resources available within the team (Burke et al., 2003; Clarke, 2012b).

As researchers have studied the relationship between shared mental models and team performance, they have defined and categorized shared mental models in a variety of ways. For example, Mathieu et al. (2000) identified four types of shared mental models in teams found in the literature: (a) technology/equipment; (b) job/task; (c) team interaction; and (d) team member, which they then consolidated into two: teamwork mental models, which included team member and team interaction, and taskwork mental models, which included technology/equipment and job/task.

Team Mental Models, as used in this study, include declarative, procedural, and strategic knowledge pertaining to team roles, resources, and responsibilities and have been shown to be particularly relevant to shared leadership (Burke et al., 2003; Cooke et al., 2000). For example, in a study of 55 multidisciplinary high-tech research and development (R&D) teams, Reuveni and Vashdi explored the relationship between Team Mental Models, Task Mental Models, and innovation. Team Mental Models, which reflected a shared understanding of the roles and responsibilities of the team members and their interaction patterns, explained 15.3% of the variance in innovation (Reuveni & Vashdi, 2015).

Team Mental Models facilitate the team’s ability to accomplish a task efficiently and effectively by strategically accessing the knowledge, skill, and leadership resources available within the team (Burke et al., 2003; Cooke et al., 2000). Team Mental Models develop over time, are relatively long-lasting, and are useful across a variety of tasks and situations (Cannon-Bowers & Salas, 1997; Cooke et al., 2000).
In my study, as the literature suggests, the project team’s Team Mental Model developed over time, as team members had opportunities to share knowledge and expertise, and proved useful across a variety of tasks, situations, and decisions. As described in Finding 2, the development of the team’s shared Team Mental Model began with the teambuilding activities conducted during the first couple of meetings. These activities provided opportunities for team members to begin to get to know each other’s areas of expertise. The resource mapping activity conducted in Meeting 3, provided another key opportunity for team members to articulate the skills, knowledge, and attributes that they brought to the team, and led to the establishment of the research subgroups based on each team member’s areas of expertise.

As described in Finding 2, the research team reports during Meeting 5 and Meeting 6 provided a significant opportunity for team members to demonstrate their knowledge and expertise in areas directly related to the project team’s mission. This contributed to a shared Team Mental Model that informed key team decisions throughout the remainder of the project.

The findings of my study contribute to the literature by providing insights into how a Team Mental Model developed through team participation in an integrated leadership development intervention. Providing team members with multiple opportunities to share their knowledge and expertise through integrated intervention activities such as team building, resource mapping, and subgroup reports, contributed to a shared Team Mental Model that informed key team decisions, and enabled the project team to accomplish its objectives.

**Situation Mental Models**

As described in Chapter 1, Situation Mental Models reflect the team’s collective understanding of a situation at a point in time, which guides team actions and decisions (Burke et al., 2003). In contrast to Team Mental models, Situation Mental Models are dynamic, changing
in response to the changing circumstances faced by the team (Cooke et al., 2000). Situation Mental Models guide the team in assessing and responding to the unique aspects of the situation (Burke et al., 2003; Cooke et al., 2000).

While Situation Mental Models have been recognized by researches such as Burke et al. (2003) and Cooke et al. (2000) as an important construct of shared team cognition, they have not received as much attention from researchers as other types of shared team mental models. My study addressed this gap in the literature by exploring how shared Situation Mental Models emerged in response to Critical Incidents (significant events) in the project life cycle and informed key team decisions, as well as by highlighting the role of strong emotional responses to the development of shared Situation Mental Models.

As described in Finding 3, participants identified three Critical Incidents during the course of the project which resulted in a shared understanding of the situation: (a) the project launch, (b) the discovery of previous succession planning projects, and (c) the consolidation of recommendations. In each case, the Critical Incident involved strong individual and team emotions, and triggered a shared Situation Mental Model which informed one or more key team decisions.

As the literature suggests, these findings illustrate that shared Situation Mental Models are dynamic, they change in response to the changing circumstances of the team, and they guide the team in assessing and responding to the unique aspects of the situation. For example, at project launch, the team developed a shared Situation Mental Model regarding the project goals and objectives. However, when they encountered the discovery of previous succession planning projects, they realized that their situation had changed, and that they needed to change direction in order to meet the project goals and objectives. The shared Situation Mental Model at each of
these points in time reflected the changing circumstances of the team. The shared Situation Mental Model that emerged as the team addressed the third Critical Incident—the consolidation of recommendations—guided the team’s final efforts in achieving the project team’s objectives.

The findings of this study contribute to the literature by providing insights into the relationship between Critical Incidents, Situation Mental Models, and team decisions. In addition, the findings of this study shed light on the role of team member emotional response in the development of shared Situation Mental Models.

**Integrated Interventions**

Finally, this study addressed a significant gap in the literature regarding the role of integrated intervention activities in team internal social capital development. Studies suggest that leadership development that is integrated with organizational work is more effective in developing team internal social capital than traditional off-site approaches. By correlating leadership development data with evidence of social capital development within the organization, Galli and Müller-Stewens (2012) found that leadership development practices that enable contact, assimilation, and identification experiences, such as job assignments or action learning, have the potential to facilitate the development of strong forms of social capital within the organization most efficiently.

Action learning—a specific type of integrated intervention—has been widely utilized in organizational settings to promote learning through actual work. In an analysis of case study data from more than 200 action learning sessions, trained coaches reported that the action learning approach was effective in developing individual leadership skills that were transferrable to the workplace while working to solve important organizational problems (Volz-Peacock et al., 2016). While the results suggest that integrated interventions can be effective, the focus of the
action learning sessions was on the development of individual leadership skills rather than on the development of team internal social capital.

Few researchers have explored the relationship between specific intervention strategies and aspects of team social capital, a gap that is addressed by this study. In an experimental study involving 180 university students randomly assigned to 45 problem solving groups, Okhuysen and Eisenhardt (2002) found that structured interventions involving questioning others and managing time resulted in enhanced knowledge integration within the group, which resulted in improved team processes. The structured intervention activity involved a set of simple instructions related to questioning others about information relevant to the problem and managing time while the team was working on the assigned problem. Using the total number of critical facts identified as the primary measure of knowledge integration, the groups in the managing time condition had significantly higher knowledge integration than the control group, \( t(18) = -2.19, p < .005 \) as did the groups in the questioning others condition, \( t(18) = -2.19, p < .006 \). While this study took place in a university setting, the outcomes highlight how structured intervention activities enhanced group knowledge sharing.

My study builds on this promising start by suggesting that integrated intervention activities including team building, goal setting, resource mapping, reflection, concept mapping, and collaborative decision making contribute to the development of aspects of team social capital in a variety of ways. These findings contribute to the literature by providing insight into how facilitators can utilize these techniques to enhance team social capital development in self-managed project teams in a workplace setting.
Implications for Practice

The results of this study highlight how an integrated leadership development intervention can promote the development of team internal social capital. I have identified five implications for practice based on the results of this study. I have framed these implications as recommendations for practitioners who are responsible for leadership development within their organization or for facilitating organizational teams.

Create an Environment Conducive to Shared Leadership and Team Social Capital Development

The first recommendation is to create a team environment conducive to shared leadership and team internal social capital development by establishing self-managed project teams to address organizational challenges and providing appropriate organizational supports. The results of this study suggest that clarifying the team’s shared responsibility for accomplishing team objectives and making team decisions from the very beginning can be an important contributor to team internal social capital development. In this study, Joyce the project manager, and Ned and Roger, the two most senior team members, embraced the idea of shared leadership, thus encouraging the rest of the team to participate fully in team discussions and decisions.

In addition, appropriate organizational supports can help to create a team environment conducive to team social capital development. In this study, the organization had project team procedures in place that helped to create a positive team environment. Assigning a Project Manager and Project Sponsor ensured that the upfront planning for the project was in line with organizational priorities and supported by organizational leaders. The development of the Project Charter helped to define project objectives and parameters, which provided an important reference point for the team throughout the project. The strategic application process used to
select project team members resulted in a team that was representative of the organization and committed to the team’s success.

The results of this study also suggest that if senior managers are going to be part of the team, it is worthwhile to look for managers whose management style is compatible with a shared leadership approach. In this study, both Ned and Roger embraced the shared leadership environment and played an important role in the development of team internal social capital through their encouragement of other less senior team members. If they had been more authoritarian, or resistant to shared leadership, things might have turned out quite differently.

**Structure the Project to Support Team Internal Social Capital Development**

The second recommendation is to structure the project in a way that supports team internal social capital development by establishing subgroups and incorporating a research phase into the project. The results of this study suggest that establishing smaller subgroups of two or three individuals can support the development of Knowledge Sharing Network Ties, which represent the most fundamental aspect of team internal social capital.

As an experienced team facilitator, it did not surprise me that strong Knowledge Sharing Network Ties developed in the smaller subgroups. What did surprise me is that none of the team members reported developing Knowledge Sharing Network Ties with team members that they had not worked with in a small group. While conducting the participant interviews, I was surprised on a couple of occasions, when a project team member could not remember the name of another team member, even though they had worked together on the project team for close to a year. In each case, they had not worked with that individual in a smaller subgroup. As I reflected on this, I realized that in my work with teams as a facilitator, I have made a point of establishing Knowledge Sharing Network Ties with every member of the team during the course
of the project. In the past, I have assumed that team members felt the same connection with all of the other members of the team that I did. I realize now that this may not always be the case. By establishing smaller subgroups, the project facilitator can increase the likelihood that strong Knowledge Sharing Network Ties will develop.

Another way to structure the project that proved valuable in this study was to conduct a research phase at the beginning of the project. As Joyce worked with the Project Sponsor to establish the parameters of the project, one of the Project Sponsor’s requirements was that the final recommendations needed to be research-based. Therefore, a research phase was built into the initial project timeline. Given the complexity of the challenge facing the project team, this approach was critical to accomplishing the objectives of the team.

The results of this study suggest that the research phase also contributed significantly to the development of team internal social capital in several ways. The research phase was conducted in smaller subgroups, which provided an opportunity to develop Knowledge Sharing Network Ties as described above. When the research subgroups reported out to the larger project team, they demonstrated their knowledge and expertise which supported the development of a shared Team Mental Model. As described in Finding 3, the research subgroup reports triggered a critical incident due to the significance of the information reported, resulting in the emergence of a shared Situation Mental Model which informed a key team decision.

Often, when organizations utilize teams to address a challenge or solve a problem, the team is assembled based on the idea that the solution to the problem resides somewhere in the collective knowledge and expertise of the team. While this may be true, it is also possible that there are gaps in the knowledge of the team, or misconceptions that need to be addressed. In this study, the research phase uncovered a significant body of institutional knowledge that the project
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

team was unaware of. The research phase provided an opportunity for the team to challenge pre-conceived ideas and uncover gaps in team knowledge.

Incorporating a research phase into a project provides opportunities to validate initial assumptions, identify new information, and demonstrate knowledge and expertise. Incorporating a research phase has great potential value in terms of developing team internal social capital, even for shorter-term projects where the potential solutions may appear more obvious than they did in this case.

Utilize an Experienced Facilitator

A third recommendation is to utilize an experienced facilitator. The results of this study show that integrated intervention activities, such as collaborative decision-making processes, play an important role in the development of team internal social capital. Facilitating these types of activities effectively takes practice and experience.

When Joyce and I began working together, she had a significant amount of experience as an organizational trainer but was not as familiar with many of the collaborative techniques that we used during the project. One of her personal goals was to gain experience in how to facilitate a broad range of collaborative team processes. During the course of the project, in her organizational role as training coordinator, Joyce had an opportunity to work with another team in the organization on a different project. She used that opportunity to try out some of the collaborative techniques she learned working with me. Going forward, she planned to incorporate collaborative processes as appropriate in her work with teams. Organizational leaders who are interested in expanding the shared leadership capacity of their workforce would do well to invest in training one or more team facilitators. These facilitators could then become a resource for teams throughout the organization.
Plan Integrated Interventions

A fourth recommendation is to plan integrated intervention activities designed to support the development of team internal social capital. In this study, a variety of types of integrated intervention activities were used to support the development of aspects of team internal social capital. Teambuilding activities were used to encourage development of Knowledge Sharing Network Ties and shared Team Mental Models. Goal-setting and reflection activities were used to develop shared Situation Mental Models. Resource mapping activities were used to develop Team Mental Models, and collaborative decision-making processes were used to develop Influence Reciprocity Network Ties. The results of the study show that each of these activities played a role in the development of team internal social capital, within the context of a self-managed project team with appropriate organizational supports.

The activities used in this study could also be adapted in a variety of ways to meet the needs of a particular team. For example, as Joyce practiced her team facilitation skills with another organizational team, she adapted the Resource Mapping activity to better meet the needs of the group. Instead of having them work in pairs off a worksheet that listed the knowledge, skills and attributes previously identified by the team, she had the team brainstorm a list of the resources needed to accomplish the team’s objectives, and then create a list of the knowledge and skill resources that they brought to the project. Joyce described her perception of using the resource mapping activity with another team:

I liked it and then I used it shortly after that with a new team that was being formed … because that team was coming together from all different parts and they were being formed brand new and a lot of them didn’t know each other. It also gave them an opportunity to examine all that the team together as an aggregate brought to the table. I
think that’s good for us, you can map it out and say, ‘Look at all these skills that as a group we have, not as an individual, but as a group that we have.’ I think it bore out in the work with the team. (Interview Excerpt: 14632)

While there is a lot of potential value to building team social capital through integrated intervention activities, it is important not to lose sight of the project team’s primary mission, which in this case, was to develop recommendations to address changing workplace demographics. As Joyce and I planned each meeting, we considered the planned activities carefully to ensure that they played a useful role in accomplishing project team objectives, as well as in building team internal social capital. Too much emphasis on activities designed to build team social capital, at the expense of accomplishing team objectives, could undermine the productivity of the team.

**Monitor the Development of Team Internal Social Capital**

The fifth and final recommendation is for team managers, coaches, or facilitators to monitor the development of team internal social capital throughout the project life cycle. Several of the data collection methods used in this study could prove useful for monitoring the development of internal social capital in a project team. Network analysis techniques provided a useful strategy for monitoring the development of both Knowledge Sharing Network Ties and Influence Reciprocity Network Ties in this study. By conducting surveys periodically throughout the project, a project manager or facilitator could monitor how network ties are developing, and actively intervene if it appeared that either Knowledge Sharing Network Ties or Influence Reciprocity Network Ties were becoming too centralized.

Critical Incident Technique proved to be a valuable technique for framing both individual and team reflection activities in this study. Critical Incident Technique was used primarily at the
end of the project, to reflect on the project trajectory. Alternatively, a project team facilitator could use Critical Incident Technique at key points during the project, through individual or team reflection activities, to identify potentially significant Critical Incidents and respond accordingly. The results of this study suggest that critical incidents provide opportunities for teams to establish shared Situation Mental Models that potentially drive key team decisions. By actively monitoring for Critical Incidents, the facilitator may be able to recognize Critical Incidents in a timely way and use them as opportunities to foster shared Situation Mental Models that may inform team decisions.

**Recommendations for Future Research**

The results of my study provide insight into how team internal social capital develops through an integrated leadership development intervention. Further research is needed to test the findings and conclusions of this study with other project teams to shed more light on how team internal social capital develops and the types of integrated intervention activities that best promote team social capital development.

The potentially rigid organizational culture of bureaucratic organizations can provide challenges to working in teams. However, in my study, extensive planning and strong organizational supports resulted in a successful team experience within a state agency. Since each type of organization holds its own unique challenges, future studies of project teams in different organizational settings could prove helpful in adapting strategies to meet the needs of different types of organizations.

Of the four aspects of team internal social capital addressed in this study, Influence Reciprocity Network Ties appears to have the strongest natural relationship to shared leadership, and yet it has been the least studied. This would suggest that further research on how influence
reciprocity develops among team members could be an important direction for scholars interested in team internal social capital within the context of shared leadership. In this study, network analysis proved useful in studying team member perceptions of influence reciprocity, as well as patterns of Influence Reciprocity Network Ties over one or more decision-making events. Future research utilizing network analysis could shed additional light on the development of Influence Reciprocity Network Ties in teams. In addition, other types of analysis, such as conversation analysis to analyze team dialog, could prove useful.

Studies show that as team size increases, the ability of teams to effectively make decisions decreases (Hackman, 2002; Pearce & Sims, 2002). The project team in this study was larger than the ideal team size of six to eight recommended by Hackman (2002) and Wageman et al. (2008) yet was able to effectively make a number of significant team decisions, possibly due to the use of subgroups to accomplish some tasks. Additional research into the relationship between team size, use of subgroups in larger teams, and team decision-making could provide additional insight into this dynamic.

Studies to date suggest a complex relationship between aspects of team internal social capital and team performance and effectiveness. While my study focused primarily on the development of four aspects of team internal social capital, the inter-relationship between them became readily apparent, as described in Conclusion 2. Additional research into the inter-relationships between the four aspects of team internal social capital addressed in this study, and other aspects of team internal social capital would also be beneficial.

Additional research into the types of integrated intervention activities that impact team social capital development are also needed. The integrated interventions employed in this study appeared to have value in developing team internal social capital, but more research is needed to
confirm their usefulness, as well as to explore the effectiveness of other strategies. Collaborative
decision-making processes, in particular, proved effective in fostering the development of team
internal social capital. Additional research on the role of collaborative decision making in team
social capital development would have value.

Final Thoughts

Organizations devote significant resources to leadership development on an annual basis,
most of which focuses on individual leader development. While the development of strong
individual leaders is important, the literature shows that shared leadership in teams provides
significant advantages to organizations through greater innovation and enhanced team
effectiveness. Hanson (2013) recommended that those responsible for leadership development
regularly assess the “balance, accountabilities, and emphasis for the collective leadership
development activities on offer” (p. 116) within an organization. For organizations interested in
establishing and maintaining this balance, my study provides a useful model for expanding
“Quadrant III” leadership development efforts, enabling organizations to enact the “holistic and
systemic frame” for leadership development advocated by Hanson (2013, p. 117).

The purpose of this study was to explore how four aspects of team internal social capital
developed through participation in an integrated leadership development intervention. A better
understanding of how participation in an integrated leadership development intervention results
in the development of team internal social capital enables leadership development and human
resource development professionals to design and deliver effective integrated shared leadership
development programs, potentially improving team and organizational performance.

Participation in a well-structured leadership development intervention that results in the
development of team internal social capital can increase the potential for project team success,
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

while at the same time expanding the organization’s capacity for shared leadership. Team
members who have participated in the project and reflected on Critical Incidents in the project
life cycle bring a wealth of experience with them to the next team project, as well as their
ongoing work in their individual department teams.
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REFERENCES


TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS


TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS


TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS


TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS


Hanson, B. (2013). The leadership development interface: Aligning leaders and organizations toward more effective leadership learning. *Advances in Developing Human Resources, 15*(1), 106-120. doi:10.1177/1523422312465853


TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS


TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS


TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS


TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS


TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS


# Appendix A

## Data Sources Chart

<table>
<thead>
<tr>
<th>Element</th>
<th>Project Launch</th>
<th>Project Monitoring</th>
<th>Project Completion</th>
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<tbody>
<tr>
<td><strong>Network Ties</strong></td>
<td>Pre-Launch Reflection</td>
<td>Network Ties Reflection</td>
<td>Network Ties Reflection</td>
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<tr>
<td></td>
<td>Observation</td>
<td>Team Decision Making Artifacts</td>
<td>Self-Reflection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Observation</td>
<td>Team Reflection</td>
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<td></td>
<td>Interviews</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Observation</td>
</tr>
<tr>
<td><strong>Team Mental Models</strong></td>
<td>Pre-Launch Reflection</td>
<td>Visual Representations</td>
<td>Self-Reflection</td>
</tr>
<tr>
<td></td>
<td>Plan of Work Artifact</td>
<td>Team Decision Making Artifacts</td>
<td>Team Reflection</td>
</tr>
<tr>
<td></td>
<td>Resource Mapping Artifact</td>
<td>Resource Mapping Artifacts</td>
<td>Interviews</td>
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<tr>
<td></td>
<td>Observation</td>
<td>Observation</td>
<td>Observation</td>
</tr>
<tr>
<td><strong>Situation Mental Models</strong></td>
<td>Pre-Launch Reflection</td>
<td>Visual Representations</td>
<td>Self-Reflection</td>
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<tr>
<td></td>
<td>Goal Clarification Artifact</td>
<td>Team Decision Making Artifacts</td>
<td>Team Reflection</td>
</tr>
<tr>
<td></td>
<td>Plan of Work Artifact</td>
<td>Resource Mapping Artifacts</td>
<td>Interviews</td>
</tr>
<tr>
<td></td>
<td>Observation</td>
<td>Observation</td>
<td>Observation</td>
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<tr>
<td><strong>Intervention Activity Impact</strong></td>
<td>Pre-Launch Reflection</td>
<td>Visual Representations</td>
<td>Self-Reflection</td>
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<td></td>
<td>Resource Mapping Artifact</td>
<td>Team Decision Making Artifacts</td>
<td>Team Reflection</td>
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<tr>
<td></td>
<td>Goal Clarification Artifact</td>
<td>Resource Mapping Artifacts</td>
<td>Interviews</td>
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<td></td>
<td>Observation</td>
<td>Observation</td>
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## Appendix B

### Intervention Summary Chart

<table>
<thead>
<tr>
<th>Meeting #</th>
<th>DATE(s)</th>
<th>KEY MEETING ACTIVITIES</th>
<th>MEETING ARTIFACTS</th>
</tr>
</thead>
</table>
| MTG #1    | 3/22/17 | Welcome and Introductions  
Project Overview  
Team Project Goal Clarification activity:  
• Organization Goals  
• Team Goals  
• Personal Goals  
Project Execution Overview and Timeline:  
• Phase 1: Situation Analysis (2-3 months)  
• Phase 2: Develop Key Strategies (2-3 months)  
• Phase 3: Pilot Strategies (2-3 months) | Meeting Summary  
Project Goals Document |
Identified Key Research Questions.  
Began drafting a Phase 1 workplan. | Meeting Summary  
Key Research Questions  
Phase 1 Workplan |
| MTG #3    | 5/9/17  | Reviewed and revised Team Goals from Mtg. #1.  
Conducted Resource Mapping activity in pairs.  
Established Research Teams. | Meeting Summary  
Project Goals Document  
Resource Maps  
Research Team Assignments |
| MTG #4    | 5/23/17 | Finalized Research team assignments.  
Developed research guidelines and parameters. | Meeting Summary  
Research Team Assignments  
Research Guidelines and Parameters |
| MTG #5    | 6/20/17 | Research Team Reports:  
• Recruitment | Meeting Summary  
Research Reports |
<table>
<thead>
<tr>
<th>Meeting #</th>
<th>DATE(s)</th>
<th>KEY MEETING ACTIVITIES</th>
<th>MEETING ARTIFACTS</th>
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</thead>
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<tr>
<td>MTG #6</td>
<td>6/30/17</td>
<td>Research Team Reports:</td>
<td>Meeting Summary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Demographics</td>
<td>Research Reports</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Succession Planning</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Organization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Next Steps: Homework for</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>next meeting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Review research results</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Identify potential strategies</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complete Individual Situation Analysis Survey</td>
<td></td>
</tr>
<tr>
<td>MTG #7</td>
<td>7/20/17</td>
<td>Situation Analysis: Team Debrief</td>
<td>Meeting Summary</td>
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<td></td>
<td></td>
<td>Succession Planning Research Team update on meeting with</td>
<td>Situation Analysis Results</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HR.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Team Conclusions:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The Research Phase of the Changing Workforce Project is</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>pretty much completed.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• The tools and processes developed by previous Succession</td>
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<tr>
<td></td>
<td></td>
<td>Plan Projects need to be implemented.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Organizational Leaders need to be made aware of the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>urgency of the situation.</td>
<td></td>
</tr>
<tr>
<td>MTG #8</td>
<td>8/15/17</td>
<td>Reported out on unit-specific pictures.</td>
<td>Meeting Summary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compiled results of Key Findings and Potential Solutions.</td>
<td>Key Findings and Potential</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>Solutions</td>
</tr>
<tr>
<td>MTG #9</td>
<td>8/23/17</td>
<td>Consolidated Research Team Recommendations and draft</td>
<td>Meeting Summary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Implementation Timeline.</td>
<td>Research Team</td>
</tr>
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<td></td>
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<td>Recommendations</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>Implementation Timeline</td>
</tr>
<tr>
<td>MTG #10</td>
<td>9/12/17</td>
<td>Conducted a nomination process to establish work teams.</td>
<td>Meeting Summary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Established four work teams to flesh out implementation plans</td>
<td>Nomination Results</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and timelines.</td>
<td>Phase 2 Workplan</td>
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</table>
## TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

<table>
<thead>
<tr>
<th>Meeting #</th>
<th>DATE(s)</th>
<th>KEY MEETING ACTIVITIES</th>
<th>MEETING ARTIFACTS</th>
</tr>
</thead>
</table>
| MTG #11   | 10/10/17| Work teams reported out on Recommendation Plans. Conducted a nomination process to address the 3 remaining major tasks:  
- Develop a final report  
- Develop the presentation  
- Plan for delivery of the presentation | Meeting Summary Recommendation Plans |
| MTG #12   | 10/24/17| Team participated in a collaborative process to Storyboard the presentation. Reviewed compiled Team Nomination forms. Established work teams and next steps to develop the presentation and compile the report. Discussed options for delivery of the presentation. Decision will be made at the next meeting. | Meeting Summary Presentation Storyboard Nomination Results Phase 3 Workplan |
| MTG #13   | 11/21/17| Team members provided an update on the development of the presentation and the report. Team decided on how the presentation will be delivered: Erica, Ray and Emilia will be the main presenters. All team members will be prepared to address questions. | Presentation Documentation |
| MTG #14   | 12/1/17 | Presentation planning and preparation. | Presentation Documentation |
| MTG #15   | 12/6/17 | Presentation Discussion Team Debrief | |
| MTG #16   | 1/9/18  | Project Transition:  
- Plan for future presentations  
- Finalize Project Report  
- Where do we go from here? | Presentation Documentation Final Report Documentation |
| MTG #17   | 2/1/18  | After Action Review:  
- Developed a team Critical Incident Timeline  
- Debriefed on project team processes | Meeting Summary AAR Critical Incident Timeline |
<table>
<thead>
<tr>
<th>Meeting #</th>
<th>DATE(s)</th>
<th>KEY MEETING ACTIVITIES</th>
<th>MEETING ARTIFACTS</th>
</tr>
</thead>
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<tr>
<td>After Action</td>
<td></td>
<td>• Revisited Project Goals</td>
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<td>Review</td>
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TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS
Appendix C

Data Collection Procedures

### Project Launch Phase

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<thead>
<tr>
<th>Data Source/Artifact</th>
<th>Purpose</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Launch Reflection of project team members</td>
<td>Conduct a reflection to establish baseline of <strong>Team Network Ties</strong> (Knowledge Sharing) and Individual <strong>Team Mental Models</strong></td>
<td>Social Network Analysis, Reflection Response Analysis</td>
</tr>
<tr>
<td>Team Goal Clarification Activity</td>
<td>Facilitate and record a group discussion on alignment between individual, team, and organizational understanding of project goals.</td>
<td>Artifact Analysis</td>
</tr>
<tr>
<td>Team Resource Mapping Activity</td>
<td>Facilitate a resource mapping activity to gather data on <strong>team mental models</strong> regarding team roles, responsibilities, and resources.</td>
<td>Artifact Analysis</td>
</tr>
</tbody>
</table>

### Project Monitoring Phase

<table>
<thead>
<tr>
<th>Data Source</th>
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<th>Data Analysis</th>
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<tr>
<td>Network Ties Reflection</td>
<td>Conduct a reflection on <strong>team network ties</strong> at key decision points (Knowledge Sharing and Influence Reciprocity)</td>
<td>Social Network Analysis</td>
</tr>
<tr>
<td>Team Resource Mapping Activity</td>
<td>Facilitate a resource mapping activity to gather data on <strong>team mental models</strong> regarding team roles, responsibilities, and resources.</td>
<td>Artifact Analysis</td>
</tr>
<tr>
<td>Situation Analysis Activity documentation</td>
<td>Facilitate the development of individual and team concept maps to gather data on the relationship between individual and <strong>team mental models</strong> regarding situation analysis</td>
<td>Artifact Analysis</td>
</tr>
<tr>
<td>Collaborative problem-solving/decision making activity documentation</td>
<td>Facilitate and document collaborative problem-solving and decision-making processes to gather data on <strong>team mental models</strong> and <strong>network ties</strong> at key decision points</td>
<td>Artifact Analysis</td>
</tr>
<tr>
<td>Project Meeting Summary Reports</td>
<td>Provide a reference point for <strong>team mental models</strong> regarding project status and team performance</td>
<td>Artifact Analysis</td>
</tr>
<tr>
<td>Facilitator Observation</td>
<td>Record observations on critical behaviors to team decision making through field notes and video tape.</td>
<td>Field Notes Analysis, Analysis of Video Recording</td>
</tr>
<tr>
<td>Data Source</td>
<td>Purpose</td>
<td>Data Analysis</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Network Ties Reflection</td>
<td>Conduct a reflection on <strong>team network ties</strong> at key decision points (Knowledges Sharing and Influence Reciprocity)</td>
<td>Social Network Analysis</td>
</tr>
<tr>
<td>Individual Written Reflection</td>
<td>Facilitate individual written reflections to gather data on individual perceptions of project goal attainment and team performance</td>
<td>Artifact Analysis</td>
</tr>
<tr>
<td>AAR – Team Reflection Documentation</td>
<td>Facilitate and document an After Action Review (AAR) team reflection process to gather data on team perceptions of project goal attainment and team performance. Facilitate and document a group discussion on changes in <strong>team mental models</strong> regarding team roles, responsibilities, and resources</td>
<td>Artifact Analysis</td>
</tr>
<tr>
<td>Project Completion Report</td>
<td>Provide a reference point for <strong>team mental models</strong> regarding project goal attainment and team performance</td>
<td>Artifact Analysis</td>
</tr>
<tr>
<td>In-depth Interviews</td>
<td>Conduct and record in-depth individual interviews to gather data on Individual perceptions of changes in <strong>team social capital</strong> at key decision points.</td>
<td>Constant Comparative Analysis</td>
</tr>
</tbody>
</table>
Appendix D

Pre-Launch Reflection

The Changing Workforce Project Team
Pre-Launch Reflection

Name: ___________________________ Job Title: ___________________________ Date: ___________________________

Instructions: This reflection is designed to collect bench-mark data about your understanding of The Changing Workforce Project, and how familiar you are with your fellow team-members’ knowledge and expertise related to the project. Please answer as accurately as possible, based on your current level of information and understanding.

If you have any questions about this reflection, or the research study associated with The Changing Workforce project, please feel free to contact me by phone or email.

➢ Leah Osborn
➢ Cell Phone: --------
➢ Email: --------------

Please send the completed survey to me via email at ------------------ by Friday, March 3, 2017.

Part 1: Project Situation Analysis
Describe your understanding of the project assignment that your team has been given:

• What is the objective of the project?
• What are the expected deliverables?
• What are the established project parameters?
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

Part 2: Project Roles, Relationship, Resources
Based on your current understanding of the project assignment, what knowledge and skill resources do you think will be most important to achieving the project objectives?

Describe your potential role in the team:
- What relevant knowledge and skills do you bring to the team?
- What role do you anticipate playing in the team?

For each of the team members listed below, identify any relevant knowledge and skills that you are aware of, that they bring to the project team:

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Relevant Knowledge and Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tina</td>
<td></td>
</tr>
<tr>
<td>Roger</td>
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<tr>
<td>Sheila</td>
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<td>Kim</td>
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<td>Sam</td>
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<td>Lisa</td>
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</tbody>
</table>
Part 3: Network Ties: Knowledge-sharing
Knowledge sharing refers to an awareness of the knowledge and skills possessed by another individual, and a comfort level in requesting input from the individual based on the perceived level of expertise.

Directions:
For each team member listed below, select the rating that reflects how often you anticipate requesting input from that individual to access knowledge or expertise within the context of the team project. Please **bold** your selection.

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Knowledge Sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tina</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>Roger</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>Sheila</td>
<td>0 1 2 3 4</td>
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<td>0 1 2 3 4</td>
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<tr>
<td>Lisa</td>
<td>0 1 2 3 4</td>
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</tbody>
</table>

Thank you for taking the time to complete this reflection.

Please send the completed reflection to Leah Osborn at ----- by Friday, March 3, 2017.
Appendix E

Monitoring Reflection

The Changing Workforce Project Team
Monitoring Reflection

Name: ______________________ Date: ______________________

Instructions: This reflection is designed to collect bench-mark data about your understanding of the current status of the Changing Workforce Project, and the roles, resources, and responsibilities of your fellow project team members. Please answer as accurately as possible, based on your current level of information and understanding.

If you have any questions about this reflection, or the research study associated with The Changing Workforce project, please feel free to contact me by phone or email.

➢ Leah Osborn
➢ Cell Phone: -----------
➢ Email: ------------

Please send the completed reflection to me via email at ___________ by Friday, September 8, 2017.

Part 1: Project Status
1. Describe your understanding of the current status of the Changing Workforce project:

2. What team-member knowledge and skill resources do you think will be most important to achieving the project objectives going forward?

3. What relevant knowledge and skills do you bring to the team?

4. How would you describe the role that you play in the project team?

5. What responsibilities have you embraced as a member of the project team?
Part 2: Team Roles, Resources, and Responsibilities

For each of the team members listed below, identify any relevant knowledge and skills that they bring to the project team. In your own words, describe the role that each team member plays, and the responsibilities that they have embraced as a member of the project team.

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Relevant Knowledge and Skills</th>
<th>Roles and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tina</td>
<td></td>
<td></td>
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<tr>
<td>Roger</td>
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<td>Lisa</td>
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</tbody>
</table>
Part 3: Network Ties - Knowledge-sharing

Knowledge sharing refers to an awareness of the knowledge and skills possessed by another individual, and a comfort level in requesting input from the individual based on the perceived level of expertise.

Directions:
For each team member listed below, select the rating that reflects how often you request input from that individual to access knowledge or expertise within the context of the team project. Please **bold** your selection.

Never or almost never  0  1  2  3  4  Frequently or almost always

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Knowledge Sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tina</td>
<td>0 1 2 3 4</td>
</tr>
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<td>Roger</td>
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<tr>
<td>Lisa</td>
<td>0 1 2 3 4</td>
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</tbody>
</table>
Part 4: Network Ties - Influence Reciprocity

Influence reciprocity refers to the influence that team members have on each other in making key decisions within the context of the team project.

Directions:
Describe a recent key decision point faced by the project team:

For each team member listed below, select the rating that reflects the level of influence that they had on your input into the decision. Please **bold** your selection.

0 = no influence; 2 = moderate influence; 4 = strong influence

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Influence Reciprocity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tina</td>
<td>0 1 2 3 4</td>
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<tr>
<td>Roger</td>
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</table>

Thank you for taking the time to complete this reflection.

Please send the completed reflection to Leah Osborn at ------------------by Friday, September 8, 2017.
Appendix F

Project Completion Reflection

The Changing Workforce Project Team
Project Completion Reflection

Name: ___________________________ Date: ___________________________

Instructions: This questionnaire is designed to collect benchmark data about your understanding of the current status of the Changing Workforce Project, and the roles, resources, and responsibilities of your fellow project team members. Please answer as accurately as possible, based on your current level of information and understanding.

If you have any questions about this reflection, or the research study associated with The Changing Workforce project, please feel free to contact me by phone or email.

➢ Leah Osborn
➢ Cell Phone: ---------------------
➢ Email: -------------------------

Please send the completed reflection to me via email at _____________ by Friday, January 16, 2018.

Part 1: Project Status
6. Describe your understanding of the current status of the Changing Workforce project.

7. What team-member knowledge and skill resources do you think have been most important to achieving the project objectives to date?

8. What relevant knowledge and skills do you bring to the team?

9. How would you describe the role that you play in the project team?

10. What responsibilities have you embraced as a member of the project team?
Part 2: Team Roles, Resources, and Responsibilities

For each of the team members listed below, identify any relevant knowledge and skills that they bring to the project team. In your own words, describe the role that each team member plays, and the responsibilities that they have embraced as a member of the project team.

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<tr>
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Part 3: Network Ties - Knowledge-sharing
Knowledge sharing refers to an awareness of the knowledge and skills possessed by another individual, and a comfort level in requesting input from the individual based on the perceived level of expertise.

Directions:
For each team member listed below, select the rating that reflects how often you request input from that individual to access knowledge or expertise within the context of the team project. Please bold your selection.

Never or almost never     0   1  2   3   4 Frequently or almost always

<table>
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</tbody>
</table>
Part 4: Network Ties - Influence Reciprocity

Influence reciprocity refers to the influence that team members have on each other in making key decisions within the context of the team project.

Directions:
Describe a recent key decision point faced by the project team:

For each team member listed below, select the rating that reflects the level of influence that they had on your input into the decision. Please bold your selection.

0 = no influence;  2 = moderate influence;   4 = strong influence

<table>
<thead>
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<td>Sam</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>Lisa</td>
<td>0 1 2 3 4</td>
</tr>
</tbody>
</table>

Thank you for taking the time to complete this reflection.

Please send the completed reflection to Leah Osborn at *********** by Friday, January 26, 2018.
Appendix G

Situation Analysis Reflection

Name: ___________________________  Date: _____________________

Directions:
Think about the situation currently being faced by your project team.

1. What are the major tasks being faced by the team?
2. What key decisions need to be made?
3. What information is needed to make these decisions?
4. What are the potential threats/opportunities of the situation?
5. What are some potential concerns for project team members?
6. What are some steps that could be taken to address the concern(s)?

Write a one-two paragraph description of the situation.

Concept Mapping
Developing a concept map or graphical representation of a situation can be a helpful step in analyzing the relationship between different aspects of a situation. Here are some examples:
If possible, draw a concept map or graphical representation illustrating and prioritizing key concerns, decisions, potential solutions, and action steps needed to address the current situation.
Appendix H

Self-Reflection

The Changing Workforce Project Team
Self-Reflection

Name: ___________________________
Date: __________________________

Instructions: This reflection worksheet is designed to collect information about significant events in the growth of the Project Team over the course of the project. Please answer as accurately as possible, based on your current level of information and understanding. If you have any questions about this survey, or the research study associated with The Changing Workforce project, please feel free to contact me by phone or email.

➢ Leah Osborn
➢ Cell Phone: --------------
➢ Email: -------------------

Please send the completed worksheet to me via email at ------------ by Friday, January 26, 2018. In addition, please plan to bring a copy of your completed worksheet with you to the After Action Review (AAR) meeting scheduled for February 1, 2018.

Critical Incident Timeline Survey

• A Critical Incident is a memorable event that had a significant impact on you as an individual, on all or most of the team, or both, in the context of the growth of the project team. A Critical Incident typically results in an individual insight, a team insight, or a team decision. It could be positive, negative, or neutral.

• The timeline below includes all of the Changing Workforce Project Team meetings to date, along with the key activities for each meeting.

• Think about each meeting, and try to remember the activities that the team participated in during the meeting. Review the Meeting Summaries for more detail if needed.

• Use the timeline to identify any particular meetings or meeting activities that resulted in what you would consider to be a Critical Incident in the growth of the team. Briefly describe the effect of the incident on you, the team, or both. Don’t feel that you need to enter something for every meeting. Focus on the events that you feel had a strong impact on you and/or the team.

• If a Critical Incident took place outside of a scheduled meeting, for example while you were meeting with your research team, either add an additional row between meetings, or include it in with the meeting just prior to the event, but indicate that it took place outside of the meeting.
<table>
<thead>
<tr>
<th>Meeting #</th>
<th>DATE(s)</th>
<th>KEY MEETING ACTIVITIES</th>
<th>CRITICAL INCIDENT? PLEASE DESCRIBE</th>
<th>DESCRIBE THE IMPACT OF THE INCIDENT ON YOU, THE TEAM, OR BOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG #1</td>
<td>3/22/17</td>
<td>Welcome and Introductions Project Overview (Joyce) Team Project Goal Clarification activity: • Organization Goals • Team Goals • Personal Goals Project Execution Overview and Timeline: • Phase 1: Situation Analysis (2-3 months) • Phase 2: Develop Key Strategies (2-3 months) • Phase 3: Pilot Strategies (2-3 months)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG #4</td>
<td>5/23/17</td>
<td>Finalized Research team assignments. Developed research guidelines and parameters.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG #5</td>
<td>6/20/17</td>
<td>Research Team Reports: • Recruitment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting #</td>
<td>DATE(s)</td>
<td>KEY MEETING ACTIVITIES</td>
<td>CRITICAL INCIDENT? PLEASE DESCRIBE</td>
<td>DESCRIBE THE IMPACT OF THE INCIDENT ON YOU, THE TEAM, OR BOTH</td>
</tr>
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<td>---------------------------------------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>MTG #6</td>
<td>6/30/17</td>
<td>Research Team Reports: • Demographics • Succession Planning • Organization Next Steps: Homework for next meeting • Review research results • Identify potential strategies • Complete Individual Situation Analysis Survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG #7</td>
<td>7/20/17</td>
<td>Situation Analysis: Team Debrief Succession Planning Research Team update on meeting with HR. Team Conclusions: • The Research Phase of the Changing Workforce Project is pretty much completed. • The tools and processes developed by previous Succession Plan Projects need to be implemented. • Organizational Leaders need to be made aware of the urgency of the situation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG #8</td>
<td>8/15/17</td>
<td>Reported out on unit-specific pictures. Compiled results of Key Findings and Potential Solutions.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

<table>
<thead>
<tr>
<th>Meeting #</th>
<th>DATE(s)</th>
<th>KEY MEETING ACTIVITIES</th>
<th>CRITICAL INCIDENT? PLEASE DESCRIBE</th>
<th>DESCRIBE THE IMPACT OF THE INCIDENT ON YOU, THE TEAM, OR BOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG #9</td>
<td>8/23/17</td>
<td>Consolidated Research Team Recommendations and draft Implementation Timeline.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG #10</td>
<td>9/12/17</td>
<td>Conducted a nomination process to establish work teams. Established four work teams to flesh out implementation plans and timelines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG #11</td>
<td>10/10/17</td>
<td>Work teams reported out on Recommendation Plans. Conducted a nomination process to address the 3 remaining major tasks:  - Develop a final report  - Develop the presentation  - Plan for delivery of the presentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG #12</td>
<td>10/24/17</td>
<td>Team participated in a collaborative process to Storyboard the presentation. Reviewed compiled Team Nomination forms. Established work teams and next steps to develop the presentation and compile the report. Discussed options for delivery of the presentation. Decision will be made at the next meeting.</td>
<td></td>
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</tr>
<tr>
<td>MTG #13</td>
<td>11/21/17</td>
<td>Team members provided an update on the development of the presentation and the report.</td>
<td></td>
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</tr>
<tr>
<td>Meeting #</td>
<td>DATE(s)</td>
<td>KEY MEETING ACTIVITIES</td>
<td>CRITICAL INCIDENT? PLEASE DESCRIBE</td>
<td>DESCRIBE THE IMPACT OF THE INCIDENT ON YOU, THE TEAM, OR BOTH</td>
</tr>
<tr>
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<td>----------------------------------------------------------------</td>
</tr>
<tr>
<td>MTG #14</td>
<td>12/1/17</td>
<td>Presentation planning and preparation.</td>
<td></td>
<td></td>
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<tr>
<td>PRESENTATION to Commissioner</td>
<td>12/6/17</td>
<td>Presentation Discussion Team Debrief</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG #15</td>
<td>1/9/18</td>
<td>Project Transition:</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>- Plan for future presentations</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Finalize Project Report</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Where do we go from here?</td>
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</tbody>
</table>

**Reflection Question:**
As you reflect on the work of the Changing Workforce Project Team, what factors do you feel had the biggest impact on the growth and effectiveness of the Team? Please describe.

**Thank you for taking the time to complete this survey.**
Please send the completed survey to me via email at ____________ by **Friday, January 26, 2018**. In addition, please plan to bring a copy of your completed survey with you to the After Action Review (AAR) meeting scheduled for **February 1, 2018**.
Appendix I

Interview Protocol - Participant

1. Knowledge sharing refers to an awareness of the knowledge and skills possessed by another individual, and a comfort level in requesting input from the individual based on the perceived level of expertise. Please describe how the knowledge-sharing relationship between you and other team members evolved during the course of the project. Which team members were you most likely to engage with to access knowledge or expertise?

2. Please describe any events or team activities that had an impact on your knowledge-sharing relationship with other team members. Can you describe the impact?

3. Please describe two or three key decision points that the team encountered during the course of the project. How did the team go about making these decisions? What was your role in the decision-making process? [Critical Incident Technique: ask about the incident – decision points - and use the response to gage the importance of various factors, such as intervention activities]

4. Please describe any events or team activities that had an impact on team member influence on team decisions. Describe the impact.

5. Please describe your perception of your team’s shared understanding of the situation at key decision points. Did any particular events or activities help your team develop a shared understanding of the situation?
Appendix J

Interview Protocol – Project Manager

1. How would you describe your role in the project team?

2. I would like to ask a few questions to get your input about knowledge sharing among project team members. Knowledge sharing refers to awareness of knowledge and skills possessed by another individual, perceptions of that person’s level of expertise, and the level of comfort requesting input from that individual.
   a. Do you feel project team members engaged in knowledge sharing? Please describe.
   b. How did knowledge-sharing relationships among team members evolved during the course of the project?
   c. Where there any specific events or team activities you believe had an impact on knowledge-sharing relationships among team members? Please describe.

3. Were there any key decision points that the team encountered during the course of the project? How did the team go about making each decision? What was your role in the decision-making process? [Critical Incident Technique: ask about the incident – decision points - and use the response to gage the importance of various factors, such as intervention activities]

4. Please describe any events or team activities that had an impact on team member influence on team decisions. Describe the impact.

5. For each key decision point, what were the circumstances or situation that led up to that point? Did any particular events or activities help the team develop a shared understanding of the situation?

6. Is there anything else you would like to add about . . .
## Appendix K
### TMM Roles, Responsibilities, and Resources Matrix

**Knowledge and Skills**

**Pre-Launch Reflection – February 2017**

<table>
<thead>
<tr>
<th>TARGET</th>
<th>Tina</th>
<th>Roger</th>
<th>Sheila</th>
<th>Kim</th>
<th>Jon</th>
<th>Carri e</th>
<th>Ned</th>
<th>Nora</th>
<th>Ron</th>
<th>Bonnie</th>
<th>Sam</th>
<th>Lisa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RATE R</strong></td>
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</tr>
<tr>
<td>Tina</td>
<td>Don’t know</td>
<td>Don’t know</td>
<td>we were together on a previous project but did not interact a lot</td>
<td>were together on fundraiser project</td>
<td>She helped my unit during rush</td>
<td>we work together to help clients</td>
<td>we interact together to help clients, were together on fundraiser project</td>
<td>Don’t know</td>
<td>we interact as we help clients</td>
<td>Don’t know</td>
<td></td>
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<tr>
<td>Roger</td>
<td></td>
<td>Lawyer</td>
<td>Solid Access Knowledge. Easy to talk with.</td>
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<tr>
<td>Sheila</td>
<td>Don’t know</td>
<td>Don’t know</td>
<td>Don’t know</td>
<td>Don’t know</td>
<td>Don’t know</td>
<td>Don’t know</td>
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<td>Don’t know</td>
<td>Don’t know</td>
<td>Don’t know</td>
<td></td>
</tr>
<tr>
<td>Kim</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Although I have not worked directly with Ned, I believe that he has a significant amount of institutional knowledge and will be able to provide very useful information about the Department. Additionally, I have had limited experience working with Lisa, but from my experience she is extremely hardworking and dedicated. She is extremely organized and has a meticulous eye for</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
</tr>
<tr>
<td>Name</td>
<td>Role</td>
<td>Experience</td>
<td>Communication</td>
<td>Team</td>
<td>Additional Notes</td>
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<tr>
<td>Jon</td>
<td>Helpful. Tina has helped with payments issues on occasion.</td>
<td>Supervisory, years of experience at agency</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Supervisory, much job-specific knowledge, years of experience at agency</td>
<td>Experience assisting clients, stays up to date on issues</td>
<td>Don’t Know</td>
<td>Friendly (I only have met Sam on a few occasions)</td>
<td>Don’t Know</td>
<td></td>
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</tr>
<tr>
<td>Carrie</td>
<td>Very analytical, organized thinker, knowledgeable about many areas of the agency.</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
<td>Don’t Know</td>
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</tr>
<tr>
<td>Ned</td>
<td>Hard worker, reliable.</td>
<td>Excellent communicator</td>
<td>Communicator Skills</td>
<td>Team Player</td>
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</tr>
<tr>
<td>Nora</td>
<td>Hard worker, research, team player</td>
<td>Competent, Team player</td>
<td>Competent, knowledgeable</td>
<td></td>
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<td></td>
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<tr>
<td>Ron</td>
<td></td>
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<td></td>
<td>Hard working, goal oriented, team player.</td>
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<tr>
<td>Bonnie</td>
<td>Good problem solving skills</td>
<td></td>
<td></td>
<td>Many years of agency experience, very knowledgeable, willing to help</td>
<td>Many years of agency experience, very knowledgeable</td>
<td></td>
<td>Diligent worker, good analytical skills, open minded</td>
<td>Good problem solving skills</td>
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<tr>
<td>Sam</td>
<td></td>
<td></td>
<td></td>
<td>Customer service,</td>
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</tbody>
</table>
## TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

<table>
<thead>
<tr>
<th>Lisa</th>
<th>Frontline – ability to deal with all types of people. Has been with the organization for a while, and knows the ups and downs and struggles of the organization.</th>
<th>Legal – knowledgeable in law</th>
<th>Organized. Gets people involved. Has been with the organization for a while, and knows the ups and downs and struggles of the organization.</th>
</tr>
</thead>
</table>

### Knowledge and Skills

<table>
<thead>
<tr>
<th>TARGET</th>
<th>Monitoring Reflection – September 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAT ER</td>
<td>Tina</td>
</tr>
<tr>
<td>Tina</td>
<td>Experienc e and expertise in department task area, knows what happened in the past</td>
</tr>
</tbody>
</table>
## TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

| Role   | Informatio n on workings in her unit, good researcher, & active participant. | Knowledge of the departmen t, Thinks outside of the box, Brings up interestin g points. | Knowledge of the successi on planning information from the work in the research team, brings up interesting points, active participant. | Knowledge e of the departmen t and different units, good at presenting statistic al data, experien ce working on other projects and is an active participant in meeting s. | Knowledge of the departmen t and ways that it has changed over the years, knowledge of management workings, experience with reorganization, active participant in the meetings. | Knowledge of the departmen t, experience working for different managers, experience with reorganizati on, and active participant. | Knowledge of the department, experience in non-existent training plan, knowledge of his unit, brings a younger viewpoint to the group and is an active participant in the meetings and online discussions. | Knowledge of the department, experience in reorganizati on, knowledge of her unit, knowledge of the succession project and active participant. | Knowledge of the department, knowledge of management, knowledge of her unit, knowledge of lack of training, experience working for different managers/supervisors, knowledge of reorganization and active participant. |
|--------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
| Sheila | Informatio n on workings in her unit, good researcher, & active participant. | Knowledge of the departmen t, Thinks outside of the box, Brings up interestin g points. | Knowledge of the successi on planning information from the work in the research team, brings up interesting points, active participant. | Knowledge of the departmen t and different units, good at presenting statistic al data, experien ce working on other projects and is an active participant in meeting s. | Knowledge of the departmen t and ways that it has changed over the years, knowledge of management workings, experience with reorganization, active participant in the meetings. | Knowledge of the departmen t, experience working for different managers, experience with reorganizati on, and active participant. | Knowledge of the department, experience in non-existent training plan, knowledge of his unit, brings a younger viewpoint to the group and is an active participant in the meetings and online discussions. | Knowledge of the department, experience in reorganizati on, knowledge of her unit, knowledge of the succession project and active participant. | Knowledge of the department, knowledge of management, knowledge of her unit, knowledge of lack of training, experience working for different managers/supervisors, knowledge of reorganization and active participant. |
| Kim    | Creativity; Unique Perspecti ve; Detail Oriented | Historical & Institution al Knowled ge | Unique Perspecti ve; Thinks globally about issues | Dedicatio n; Organizati on; Creativity | Historical & Institution al Knowled ge | Thorough understandi ng of issues; organization; dedication | Dedication; Organizatio n; Creativity | Thorough understandi ng of issues; organization; dedication | Backgro und knowled ge of program s outside of agency | Dedication; Organization; Creativity |
| Jon    | Hard-working and driven, has interest in expanding | Extensive experienc e at agency, possesses superviso ry skills, Passionat e and energetic, voices ideas or opinions, along | Very knowledg eable, possesses manageria l experience | Knowledgeable as to working within Operation s, in my opinion | Extensive experienc e at agenc, possesses supervis or and | Has years of experience in the agency; extensive contact assisting | Brings experience as a field examiner with contacts in other states | Quiet and reserved during meetings, but very active obtaining | Has experien ce as an agency intern, special interest | Along with Sheila one of only two project members from a field office, has maintained |
### TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

<table>
<thead>
<tr>
<th></th>
<th>Training and career opportunities within agency which is valuable in terms of employee retention and succession planning</th>
<th></th>
<th></th>
<th>Operation s is the work area with the biggest variety of different job functions and job duties. Succession planning and identifying unique or key job functions is very important for Operations</th>
<th>Training skills, extensive knowledge of the workings of the agency</th>
<th>Public through work in Walk-in Client Services and outside companies, has knowledge of management from past studies</th>
<th>Research outside of meetings and offering input in group emails</th>
<th>In expanding cross training and career development within the agency, valuable in terms of retention and succession planning</th>
<th>Contact with examiner working in another state, a useful resource for obtaining research on workings of another revenue service agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrie</td>
<td>NA (no reflection completed)NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Ned</td>
<td>Determination and Strength</td>
<td>History with agency and great perspectives</td>
<td>Great Communicator offering insight and different perspectives!</td>
<td>Good people skills analyzer. Brings forth good ideas when asked.</td>
<td>Great perspective! Quiet but contributes good insight.</td>
<td>Offers yet another different viewpoint on issues. Good communication skills.</td>
<td>Good analyzer and Communicator!</td>
<td>Becky offers great insight into our many different scenarios! Great data gathering skills and analytical.</td>
<td>Very analytic. Loves to analyze.</td>
</tr>
<tr>
<td>Nora</td>
<td>Training and development</td>
<td></td>
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<td></td>
<td>Makes good team contribution to topics discussed. Enjoys teamwork.</td>
</tr>
<tr>
<td></td>
<td>People, Demographics, HR</td>
<td>Organizational Knowledge, Leadershi p, Critical Thinking, Public Speaking</td>
<td>Work Ethic</td>
<td>Critical Thinking, Public Speaking, Leadershi p</td>
<td>Analytical, Work Ethic</td>
<td>Positive Mindset, Work Ethic, Realist</td>
<td>Organizational Knowledge, Leadershi p, Work Ethic</td>
<td>Demographics, Organizational Knowledge, Work Ethic</td>
<td>Organizational Knowledge, Work Ethic</td>
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</tr>
<tr>
<td>Ron</td>
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</tr>
<tr>
<td>Bonnie</td>
<td>Varying knowledge is related to specific agency work area. Everyone’s listening skills, gathering of data, analyzing of data, and communication skills were utilized.</td>
<td>Same for all</td>
<td>Same for all</td>
<td>Same for all</td>
<td>Same for all</td>
<td>Same for all</td>
<td>Same for all</td>
<td>Same for all</td>
<td>Same for all</td>
</tr>
<tr>
<td>Sam</td>
<td>Knowledge of department tasks.</td>
<td>Knowledge of department tasks</td>
<td>Knowledge of department tasks</td>
<td>Attorney</td>
<td>Knowledge of department tasks</td>
<td>Supervisor</td>
<td>Business team member</td>
<td>Knowledge of department tasks</td>
<td>Knowledge of department tasks</td>
</tr>
<tr>
<td>Lisa</td>
<td>Data collection</td>
<td>Analysis of information</td>
<td>Analysis of information</td>
<td>Legal knowledge</td>
<td>AGENCY related knowledge</td>
<td>Data collection and analysis</td>
<td>Wealth of AGENCY related knowledge</td>
<td>AGENCY knowledge/data collection/analysis</td>
<td>Data collection/analysis</td>
</tr>
</tbody>
</table>
## TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

### Knowledge and Skills

**Final Reflection – January 2018**

<table>
<thead>
<tr>
<th>TARGET</th>
<th>RAT ER</th>
<th>Tina</th>
<th>Roger</th>
<th>Sheila</th>
<th>Kim</th>
<th>Jon</th>
<th>Carrie</th>
<th>Ned</th>
<th>Nora</th>
<th>Ron</th>
<th>Bonnie</th>
<th>Sam</th>
<th>Lisa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tina</td>
<td></td>
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<tr>
<td>Roger</td>
<td>Unknown.</td>
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</table>

**Knowledge and Skills**

- Tina: great awareness and overall knowledge, knows what had happened in the past, very aware of the consequences if we do not act now, very energetic, warns us about politic games within agency, pushed younger staff to present the project, great personal manners.

- Roger: Understanding of management, speaking in public, logic thinking.

- Powerpoint: Computer skills, guiding conversations.

- Organized: Cares about this agency, rare for someone with that many years in service.

- Unknown: Very positive attitude.

- Unknown: She didn’t participate very much.

- Good attitude.

- Good attitude. Organized.
<table>
<thead>
<tr>
<th>Name</th>
<th>Researching Skills, Knowledge of her department, Computer Skills (Charts, Word &amp; PowerPoint)</th>
<th>Researching Skills, Knowledge of his department, Computer Skills (Charts, Word &amp; PowerPoint)</th>
<th>Researching Skills, Knowledge of the entire department, Computer Skills (Word, Charts, PowerPoint)</th>
<th>Researching Skills, Knowledge of her department, Computer skills (Word, Charts)</th>
<th>Researching Skills, Knowledge of her department, Computer skills (Word, Charts &amp; PowerPoint)</th>
<th>Researching Skills, Knowledge of her department, Computer skills (Word, Charts &amp; PowerPoint)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim</td>
<td>Lots of institutional knowledge, preference for working independently on discrete tasks</td>
<td>Offers a unique perspective; creative</td>
<td>Offers a unique perspective; ability to organize data and present it</td>
<td>Team player, time management skills, ability to organize data and present it</td>
<td>Offers a unique perspective; creative</td>
<td>Offers a unique perspective; creative</td>
</tr>
<tr>
<td>Jon</td>
<td>Agency experience: high energy and enthusiasm, very good-natured</td>
<td>Energetic, hard-working, PowerPoint skills, willing to take on tough tasks</td>
<td>Has some management experience, effective speaker, very analytical</td>
<td>Knowledge of success, experience in planning issues that could impact units in Operations</td>
<td>Agency knowledge, experience in supervising training and public speaking</td>
<td>Strong desire to serve public, works to do what is best for the agency</td>
</tr>
<tr>
<td>Carrie</td>
<td>Represented of Law; younger</td>
<td>Rep of older work</td>
<td>Rep older work</td>
<td>Knowledge of the</td>
<td>Knowledge of</td>
<td>Knowledge of</td>
</tr>
</tbody>
</table>

**TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS**

225
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Skills</th>
<th>Team Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ned</td>
<td>Great with numbers</td>
<td>Brings great insight and opinions</td>
<td>Quiet but contributed strong insight and positive suggestions for improvement.</td>
</tr>
<tr>
<td>Nora</td>
<td>Research Institute</td>
<td>Knowledge of computers and statistics, Great feedback analysis</td>
<td>Good Communication with Team</td>
</tr>
<tr>
<td>Ron</td>
<td>Organizational</td>
<td>Work Ethic, HR, Demographics, Critical Thinking, Analytical Skills</td>
<td>Watching Ray grow throughout this process. Gained so much confidence.</td>
</tr>
<tr>
<td>Bonnie</td>
<td>Knowledge of years</td>
<td>Thorough researcher &amp; clear speaker</td>
<td>Well-spoken in front of group &amp; Previous experience with other AGENCY projects.</td>
</tr>
</tbody>
</table>

**TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS**

- Multiple agency divisions.
- Knowledge of the "older" workforce generation
- Workforce rep; highly organized; excellent public speaker
- Force; vast corporation task knowledge and how the department task $ is tracked and how that will affect the agency's bottom line
- Force; knowledge of department task and operations, leadership
- Agency and union
- Department and what it is like to be a new employee. What the training and recruitment is like currently
- Department, hiring process and new hire training
- Hiring process and some training themes
- Department and its practices

**Ned**
- Great with numbers
- Brings great insight and opinions
- Great with computers and statistics
- Great feedback analysis
- Strong Communication skills and good with PC charts & Stats.
- Great observer and offers strong insight. Generally softspoken
- Good communication skills
- Watched Ray grow throughout this process. Gained so much confidence
- Quiet but contributed strong insight and positive suggestions for improvement
- Good Communication with Team
- Behind the scenes crunched numbers

**Nora**
- Research Institute
- Knowledge of computers and statistics, Great feedback analysis
- Research
- Research
- Research
- Research
- Research
- Research
- Research

**Ron**
- Organizational, Analytical
- Work Ethic, HR, Demographics and Powerpoint
- Critical Thinking, Analytical Skills
- Positive Mindset, Work Ethic
- Organizational, Leadership and Positive Influence
- Organizational, Work Ethic
- Organizational, Realist, Work Ethic
- Organizational, Public Sector Knowledge, Organizational

**Bonnie**
- Knowledge of many years of service
- Thorough researcher & clear speaker
- Extremely detail-oriented & well spoken
- Detailed thinker – sees things from all angles
- Detail oriented & good follow through
- Many years of experience & supervisor
- Union backgroun & years of experience
- Previous experience with other AGENCY projects
### TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

<table>
<thead>
<tr>
<th>TEAM</th>
<th>Knowledge of department tasks</th>
<th>Knowledge of department tasks</th>
<th>Attorney</th>
<th>Knowledge of department tasks</th>
<th>Knowledge of department tasks</th>
<th>Supervisor</th>
<th>Business team member</th>
<th>Knowledge of department tasks</th>
<th>Knowledge of department tasks</th>
<th>Outside private sector experience.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sam</td>
<td>Knowledge of department tasks</td>
<td>Knowledge of department tasks</td>
<td>Attorney</td>
<td>Knowledge of department tasks</td>
<td>Knowledge of department tasks</td>
<td>Supervisor</td>
<td>Business team member</td>
<td>Knowledge of department tasks</td>
<td>Knowledge of department tasks</td>
<td>Knowledge of department tasks</td>
</tr>
<tr>
<td>Lisa</td>
<td>Department knowledge, motivating discussion with our meetings</td>
<td>Department knowledge, working in groups</td>
<td>Legal knowledge</td>
<td>Finalizing reports, Department knowledge</td>
<td>Finalizing reports, Department knowledge</td>
<td>Finalizing reports, Department knowledge</td>
<td>Finalizing reports, Department knowledge</td>
<td>Knowledge of department tasks</td>
<td>Knowledge of department tasks</td>
<td>Knowledge of department tasks</td>
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</table>

### Roles and Responsibilities

**Monitoring Reflection – September 2017**

<table>
<thead>
<tr>
<th>TARGET</th>
<th>Tina</th>
<th>Roger</th>
<th>Sheila</th>
<th>Kim</th>
<th>Jon</th>
<th>Carrie</th>
<th>Ned</th>
<th>Nora</th>
<th>Ron</th>
<th>Bonnie</th>
<th>Sam</th>
<th>Lisa</th>
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</tbody>
</table>

| Tina  | Follower, quiet | Will drive the conversation, not afraid to take charge. Good positive energy. | Starting to engage with the group | Does participate both in meetings and on his own. Good positive energy. | Follower, quiet. | Does participate both in meetings and on his own. Good positive energy. | Follower, quiet. | Hard to understand dialect, cares about the project. | Follower, quiet. |
| Roger | Team member – active participant. | Team member – active participant. | Team member – active participant. | Team member – active participant. | Team member – active participant. | Team member – active participant. | Team member – active participant. | Team member – active participant. | Team member – active participant. |
| Sheila | Ability to shift focus to areas that haven’t been considered | Out of the box thinking; big picture thinking | Ability to shift focus to areas that haven’t been considered | Challenges perspective and offers alternative solutions | Ability to shift focus to areas that haven’t been considered | Out of the box thinking; big picture thinking | Develops creative strategies | Focus on practical solutions | Ability to shift focus to areas that haven’t been considered |
| Kim  | Ability to shift focus to areas that haven’t been considered | Ability to shift focus to areas that haven’t been considered | Ability to shift focus to areas that haven’t been considered | Ability to shift focus to areas that haven’t been considered | Ability to shift focus to areas that haven’t been considered | Ability to shift focus to areas that haven’t been considered | Ability to shift focus to areas that haven’t been considered | Ability to shift focus to areas that haven’t been considered | Ability to shift focus to areas that haven’t been considered |
# TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

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<thead>
<tr>
<th></th>
<th>considered</th>
<th>Jon</th>
<th>considered</th>
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<th>considered</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Has conducted extensive research outside of the project meetings</td>
<td>Offers sound direction and ideas that are well-thought out</td>
<td>Freely expresses ideas and opinions</td>
<td>Able to offer counterpoints to the experiences and opinions of other project members, who are front-line employees; can offer insight as to the view from the management side</td>
</tr>
<tr>
<td>Carrie</td>
<td>NA (no reflection completed)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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</tr>
<tr>
<td>Ned</td>
<td>Brings a strong perspective</td>
<td>Good people person, strong understanding of topics, and offers a fun sense of humor when needed.</td>
<td>Always contributes to our conversations. Has good ideas!</td>
<td>Team player. Enjoys working on a team with defined goals.</td>
<td>Good data charts, offers progressive comments and counterpoints when needed.</td>
<td>Total Team player. Very pleasant, and does an excellent job gathering data for team.</td>
</tr>
<tr>
<td>Nora</td>
<td>No responses</td>
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<tr>
<td>Ron</td>
<td>Report preparation</td>
<td>Leader</td>
<td>Leader/Public Speaker</td>
<td>Leader</td>
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<tr>
<td>Bonnie</td>
<td>All the same responsibility</td>
<td>Same for all</td>
<td>Same for all</td>
<td>Same for all</td>
<td>Same for all</td>
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</tbody>
</table>
### TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

<table>
<thead>
<tr>
<th>Roles and Responsibilities</th>
<th>Data analysis</th>
<th>Gets the group going. Provides good information</th>
<th>Asks lots of questions that make us think about other ideas</th>
<th>Gives the legal opinion, something we may not know about</th>
<th>Provides good ideas to brain storm</th>
<th>Newer employee – new way of thinking</th>
<th>Gives us knowledge of processes we do not use anymore</th>
<th>Gathering information</th>
<th>Younger perspective</th>
<th>Data analysis</th>
<th>Brings ideas from outside the agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sam</td>
<td>Researcher.</td>
<td>It appears that he has knowledge of how the management works in this agency which should help us formulating the solution as far as organizational culture concerns.</td>
<td>She can be critical if we decide to change how the union comes in the way of succession planning.</td>
<td>Researcher</td>
<td>Researcher</td>
<td>Researcher</td>
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<td>Researcher</td>
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<tr>
<td>Lisa</td>
<td>Data analysis</td>
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**Final Reflection – January 2018**

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229
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tina</td>
<td>Resource Investigator, team worker</td>
<td>Participated on all levels in meetings, Spoke her thoughts, Thought leader</td>
</tr>
<tr>
<td>Roger</td>
<td>Didn't see Tina taking responsibilities, outside of group participation in meeting</td>
<td>Did see Roger participating in all levels in meetings, spoke his thoughts</td>
</tr>
<tr>
<td>Sheila</td>
<td>Team Member – Responsible for researching demographics and other topics</td>
<td>Participated on all levels in meetings, spoke his thoughts</td>
</tr>
<tr>
<td>Kim</td>
<td>Makes suggestions in areas that haven’t</td>
<td>Participated on all levels in meetings, spoke his thoughts</td>
</tr>
</tbody>
</table>

**Notes:**
- Roger participated in all levels of meetings and spoke his thoughts.
- Sheila, as a Team Member, was responsible for researching demographics and other topics.
- Kim made suggestions in areas that hadn’t been considered.
<table>
<thead>
<tr>
<th>Name</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jon</td>
<td>Presented development and presentation of information, constantly provides good feedback and suggestions, presenter.</td>
</tr>
<tr>
<td>Carrie</td>
<td>Compiled some demographic statistics and generational descriptions, made the presentation and delivered the presentation, kept us on track and helped steer us in the right direction, excellent coaching skills, kept the group on track, helped with the prior success on planning projects.</td>
</tr>
<tr>
<td>Ned</td>
<td>Presenter, data collector, timing and critiquing the presenter, proof reading, preparing the final report for sub-committee, assistance with graphic design.</td>
</tr>
<tr>
<td>Nora</td>
<td>Data collector, timing and critiquing the presenters and offering suggestions.</td>
</tr>
<tr>
<td>Ron</td>
<td>Research and development manager, leader, researcher, worker bee, data collector, worker bee, data collector, leader, worker bee.</td>
</tr>
<tr>
<td>Bonnie</td>
<td>Shares opinion easily &amp; makes suggestions for improvement, good presenter &amp; critical thinker, plays &quot;devils' advocate&quot; to help us think, takes on responsibility &amp; completes tasks given, shares ideas &amp; supports the team effort, offers &amp; takes comments &amp; suggestions easily, presents well in, offers his experience on how other situations may.</td>
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<tr>
<td>Sam</td>
<td>Researcher</td>
</tr>
<tr>
<td>Lisa</td>
<td>Researcher</td>
</tr>
</tbody>
</table>

Research/Reports/Final Report | Researcher | Researcher | Researcher | Researc her |

front of group. | pertain to our conversation.
Appendix L

Knowledge Sharing Network Ties Matrix

Pre-Launch Reflection – February 2017

**Green** = Strong Bi-directional KSNT (Individuals rate each other as 3 or 4)

<table>
<thead>
<tr>
<th>RATER</th>
<th>Tina</th>
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Note: These ratings reflect participants anticipation and willingness to engage in knowledge sharing, even though most participants did not know more than 1 or 2 others at the start of the project. (look at TMM matrix to determine who already know someone). For example, Kim gave everyone a 3 or a 4, even though in the reflection she did not know any of the participants other than Ned whom she knew primarily by reputation, and Lisa who she had done some work with.

Total: 5 sets of anticipated strong bi-directional KSNT.
TEAM SOCAL CAPITAL IN SELF-MANAGED PROJECT TEAMS

Monitoring Reflection – September 2017

Green = Strong Bi-directional KSNT (Individuals rate each other as 3 or 4)
SG = Bi-directional KSNT between individuals who worked together on a sub group

<table>
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<tr>
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Note: The question in this reflection asked “how often do you request input from the individual within the context of the project. Rating Scale: 0 = Never; 4 = frequently or almost always.
Total: 5 sets of strong bi-directional KSNT. Only one of these appears to be related to sub-group work.
Final Reflection – January 2018

Green = Strong Bi-directional KSNT (Individuals rate each other as 3 or 4)

SG = Bi-directional KSNT between individuals who worked together on a sub group

<table>
<thead>
<tr>
<th>TARGET</th>
<th>Tina</th>
<th>Roger</th>
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Data Summary and observations
Note: The question in this reflection asked “how often do you request input from the individual within the context of the project.
Rating Scale: 0 = Never; 4 = frequently or almost always.
Total of 17 sets of Strong bi-directional KSNT. Over 2/3rds of these (11) of these reflect pairs who worked together on a subgroup
Only one participant – Sam – did not develop a strong bi-directional KSNT with anyone in his subgroups. Sam missed several
meetings due to illness, vacation, and work responsibilities. So this may have impacted his connection. In his reflection, he also
talked about working on the research project from home, where he felt a little disconnected from his team. He was reluctant to contact
other team members (Ned) from home.
Sub-group lists
Key: (*) indicates a strong bi-directional network tie with at least one member of the sub-group as of the final reflection.

<table>
<thead>
<tr>
<th>DEMOGRAPHICS</th>
<th>SUCCESSION PLANNING AND RETENTION</th>
<th>ORGANIZATION</th>
<th>MANAGEMENT/ SUPERVISORS</th>
<th>RECRUITMENT</th>
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<tbody>
<tr>
<td>Sheila</td>
<td>(*) Kim</td>
<td>Ned</td>
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<td>Roger</td>
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<tr>
<td>(*) Carrie</td>
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<td>Sam</td>
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<td>(*) Tina</td>
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<tr>
<td>(*) Kim</td>
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</tr>
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<td>Sam</td>
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<td>(*) Sheila</td>
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<td>(*) Ned</td>
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Appendix M

Influence Reciprocity Matrix

Monitoring Reflection – September 2017
Level of Influence Rating Scale: 0 = no influence; 2 = moderate influence; 4 = strong influence

<table>
<thead>
<tr>
<th>DECISION</th>
<th>RATER</th>
<th>Tina</th>
<th>Roger</th>
<th>Sheila</th>
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## Final Reflection – January 2018

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Appendix N

Critical Incident Data Analysis Chart

**Self-Reflection**
- Participants were asked to describe Critical Incidents during the course of the project in their Self-Reflection

**Critical Incident Timeline Activity:**
- Team members were asked to select their top 1 or 2 Critical Incidents, write them on a large Post-It Note, and put it on the timeline.
- Each Team Member reported out on their Critical Incidents, explaining why they felt it was a critical event in the life of the project team.

<table>
<thead>
<tr>
<th>Meeting # Date</th>
<th>KEY MEETING ACTIVITIES</th>
<th>CRITICAL INCIDENT – Team AAR Activity</th>
<th>CRITICAL INCIDENT - Individual Identified as CI in Self-Reflection CI Timeline</th>
<th>Data Analysis Notes</th>
</tr>
</thead>
</table>
| MTG #1 3/22/17 | Welcome and Introductions Project Overview (Barbara) Team Project Goal Clarification activity:  
- Organization Goals  
- Team Goals  
- Personal Goals Project Execution Overview and Timeline:  
- Phase 1: Situation Analysis (2-3 months)  
- Phase 2: Develop Key Strategies (2-3 months) | Initial bringing together and introduction of team members. Team building exercises. Uncovering commonalities: desire to serve agency, mutual respect, pride in doing a good job. Set the foundation of what would be a successful project. Brainstorming activity: Team consolidated and organized project team ideas and goals | Ron  
Bonnie  
Roger  
Carrie  
Sheila  
Joyce  
Tina  
Jon  
Kim  
Ned | Teambuilding Introductions |
<table>
<thead>
<tr>
<th>Meeting # Date</th>
<th>KEY MEETING ACTIVITIES</th>
<th>CRITICAL INCIDENT – Team AAR Activity</th>
<th>CRITICAL INCIDENT - Individual Identified as CI in Self-Reflection CI Timeline</th>
<th>Data Analysis Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG #4 5/23/17</td>
<td>Finalized Research team assignments. Developed research guidelines and parameters.</td>
<td>Getting people comfortable speaking their ideas. Not everyone seemed so.</td>
<td>Ron Roger Carrie Joyce Jon Kim Ned</td>
<td>Demographics – disbelief!</td>
</tr>
<tr>
<td>MTG #5 6/20/17</td>
<td>Research Team Reports: • Recruitment • Management/Supervisors</td>
<td>Speaking to the project manager from the last project to get a sense of why the project stalled. Key moment: Reading each team’s 1st draft of their reports and how powerful that impact was.</td>
<td>Bonnie Carrie Sheila Joyce Kim Ned</td>
<td></td>
</tr>
<tr>
<td>Meeting #</td>
<td>KEY MEETING ACTIVITIES</td>
<td>CRITICAL INCIDENT – Team</td>
<td>CRITICAL INCIDENT - Individual</td>
<td>Data Analysis Notes</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------</td>
<td>--------------------------</td>
<td>--------------------------------</td>
<td>---------------------</td>
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</tbody>
</table>
| MTG #6 6/30/17 | Research Team Reports:  
- Demographics  
- Succession Planning  
- Organization  
Next Steps: Homework for next meeting  
- Review research results  
- Identify potential strategies  
- Complete Individual Situation Analysis Survey | When our sub-group discovered there were two previous succession planning projects, and the work they had accomplished but never got implemented.  
The presentation of demographic findings  
Realization that our team’s “mission” was Implementation of a succession plan. | Identified as CI in Self-Reflection CI Timeline | Ron  
Bonnie  
Roger  
Carrie  
Sheila  
Tina  
Kim  
Ned |
<table>
<thead>
<tr>
<th>Meeting #</th>
<th>KEY MEETING ACTIVITIES</th>
<th>CRITICAL INCIDENT – Team</th>
<th>CRITICAL INCIDENT - Individual</th>
<th>Data Analysis Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG #7 7/20/17</td>
<td>Situation Analysis: Team Debrief Succession Planning Research Team update on meeting with HR. Team Conclusions: • The Research Phase of the Changing Workforce Project is pretty much completed. • The tools and processes developed by previous Succession Plan Projects need to be implemented. • Organizational Leaders need to be made aware of the urgency of the situation.</td>
<td>Time ran out when mojo was flowing. Book longer meeting times. Finding that previous succession planning projects had taken place w/no lasting results. This changed the team momentum and caused us to reflect on what that meant for the purpose of our project. We came up with the term “Visual Alarm”. Urgency became real.</td>
<td>Ron Bonnie Carrie Sheila Joyce Ned</td>
<td>“Huge” Research over, now what?</td>
</tr>
<tr>
<td>MTG #8 8/15/17</td>
<td>Reported out on unit-specific pictures. Compiled results of Key Findings and Potential Solutions.</td>
<td></td>
<td>Ron Carrie Sheila Joyce</td>
<td></td>
</tr>
<tr>
<td>MTG #9 8/23/17</td>
<td>Consolidated Research Team Recommendations and draft Implementation Timeline.</td>
<td></td>
<td>Sheila</td>
<td>Collaborative. Everyone had a voice</td>
</tr>
<tr>
<td>MTG #10 9/12/17</td>
<td>Conducted a nomination process to establish work teams. Established four work teams to flesh out implementation plans and timelines.</td>
<td></td>
<td>Roger Sheila Joyce Jon Kim</td>
<td></td>
</tr>
<tr>
<td>Meeting # Date</td>
<td>KEY MEETING ACTIVITIES</td>
<td>CRITICAL INCIDENT – Team AAR Activity</td>
<td>CRITICAL INCIDENT - Individual Identified as CI in Self-Reflection CI Timeline</td>
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<td>--------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
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<tr>
<td>MTG #11 10/10/17</td>
<td>Work teams reported out on Recommendation Plans. Conducted a nomination process to address the 3 remaining major tasks: • Develop a final report • Develop the presentation • Plan for delivery of the presentation</td>
<td>All recommendations overlapped!</td>
<td>Ron Bonnie Carrie Sheila (*)Tina [outside meeting – sub-group situation] Ned</td>
<td></td>
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<tr>
<td>MTG #12 10/24/17</td>
<td>Team participated in a collaborative process to Storyboard the presentation. Reviewed compiled Team Nomination forms. Established work teams and next steps to develop the presentation and compile the report. Discussed options for delivery of the presentation. Decision will be made at the next meeting.</td>
<td>Discovery of a negative culture/defensive HR Department. Storyboard process was so productive -making sense of everything.</td>
<td>Roger Sheila Joyce Kim</td>
<td></td>
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<tr>
<td>MTG #13 11/21/17</td>
<td>Team members provided an update on the development of the presentation and the report. Team decided on how the presentation will be delivered: Erica, Ray and Emilia will be the main presenters. All team members</td>
<td>Opportunity lost for some to speak in public.</td>
<td>Ron Carrie Sheila Lisa Kim</td>
<td>Presenter decision: “high charged”</td>
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<tr>
<td>Meeting # Date</td>
<td>KEY MEETING ACTIVITIES</td>
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<td>CRITICAL INCIDENT - Individual Identified as CI in Self-Reflection CI Timeline</td>
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<td>------------------------</td>
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<td></td>
<td>will be prepared to address questions.</td>
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<td>MTG #14 12/1/17</td>
<td>Presentation planning and preparation.</td>
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</tr>
<tr>
<td>PRESENTATION Project Sponsor 12/6/17</td>
<td>Presentation Discussion Team Debrief</td>
<td>Commissioner and Deputy Commissioner’s reactions and feedback after our initial presentation.</td>
<td>Ron Bonnie Sheila Lisa Joyce Kim</td>
<td>Project Sponsor Reaction to presentation. Good feedback</td>
</tr>
<tr>
<td>MTG #16 1/9/18</td>
<td>Presentation Planning Meeting</td>
<td></td>
<td>Ron Bonnie Carrie Sheila Lisa Tina (personal reaction) Kim Ned</td>
<td>Post presentation appreciation Decisions to revise presentation based on feedback.</td>
</tr>
<tr>
<td>MTG #17 2/1/18 AAR AAR</td>
<td>AAR</td>
<td></td>
<td>Not Included in Self Reflection Timeline</td>
<td></td>
</tr>
</tbody>
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