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Leading in Leaderless Teams: Exploring the Effect of a Skills Mindset on Shared Leadership and Implicit Mental Models

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Author Note

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Abstract

Employees, students, and individuals are currently expected to perform leadership behaviors more than ever, even when their formal roles do not indicate a leadership position. In this climate, developing transferable leadership skills has become a critical capability. This study explores the effect of maintaining a skills mindset on the display of shared leadership behaviors in leaderless teams. I hypothesize that a skills mindset will lead to more shared leadership behaviors than a roles mindset, that this effect will be explained by increased leadership self-efficacy (LSE) and increased leader identity (LI), and that this effect will be stronger for participants with a prototypical mental model as described by implicit leadership theory (ILT). This study collected data from n = 100 undergraduate students amongst 29 groups. Each leaderless team of 3 to 4 participants was randomly assigned to either the skills or roles mindset condition, performed a survival task, then completed measures of ILT, LSE, and LI. Shared leadership behaviors were obtained from behavioral coding of the video-recorded team task. Results showed that being in the skills mindset condition did not increase instances of SLB, and that LSE and LI were not significantly related to SLB. This study found a strong priming effect of the manipulation on ILT such that all participants with an anti-prototypical mental model were in the roles mindset condition. This indicates that while leadership skills and roles may not be good predictors of shared leadership, they do hold the capacity to alter the way we conceptualize leadership.

Keywords: shared leadership, leadership skills, leadership roles, implicit leadership theory, leaderless teams

Leading in Leaderless Teams: The Effect of a Skills Mindset on Shared Leadership and Implicit Mental Model

In today's workplace, going above and beyond the job description has become the norm, even the expectation. Gone are the days when employees had rigidly defined sets of duties under which all of their work could be classified. With rapid changes in the nature of work as a result of advancements in technology (Scully-Russ & Torraco, 2020), work is becoming an ill-defined set of adaptive tasks and challenges (Fuller et al., 2019). Thus, a different mindset is required of the modern worker, and a different structure is necessary for the modern team (Pulakos et al., 2000). Especially in organizations looking to move with (or ahead!) of the curve, recruiting and developing talent with advanced "soft" skills is a priority (Kosslyn, 2019). Particularly, it has become common to search for leadership skills in employees at all levels, as they are no longer relevant only to individuals who hold what was traditionally considered a leadership position (Zenger, 2014). This demand for everyone to be a leader, or at least be able to lead, exists in the large number of organizations that have experimented with or adopted some form of a leaderless team.

In leaderless teams (teams composed of a group of workers without a formal leader), the leadership tasks that would normally fall to the individual in the leadership position are left unaccounted for. These tasks must then be divided or shared in some way by members of the group in order to produce an output. Shared leadership describes the process by which a group of individuals lead each other to the achievement of a group goal (Pearce & Conger, 2003). This study is interested in exploring shared leadership in leaderless teams, particularly the processes and factors which influence how group

members decide to engage in shared leadership behaviors at the individual level. While past literature has studied shared leadership in depth as it relates to leadership self-efficacy, leader identity, and other aspects of identity (Van Knippenberg et al., 2004; Liu et al., 2010; Anderson et al., 2008; Komives et al., 2005), the present research expands upon this knowledge by introducing a comparison between skills and roles mindsets. This study evaluates whether individuals who are primed to think about their own leadership skills will show more shared leadership behaviors than those primed to think about the leadership roles they have occupied. The purpose of this study is to address the increased need for shared leadership in the workplace by exploring the impact of transferable leadership skills on individuals' behavior in leaderless teams.

Leaderless Teams

Leaderless teams are defined as work groups without a formal leader in which the team is collectively responsible for their team output (Martin, 2002). These teams, sometimes referred to as self-managing teams, are work groups that jointly track and manage their own performance, engage in decision making related to their own work, and accept shared responsibility for accomplishing goals, which are set both internally and externally (Hoch & Dulebohn, 2017). While the concept of leaderless teams has been present since the late 1900s in both blue and white-collar fields (Manz, 1992), and has been discussed in detail since it was first described as "the self-managing unit" (Hackman, 1986), its increasing popularity in the 21st century has arrived due to the nature of the work being performed by teams. In organizations where technology is causing the speed of work to increase, teams need to keep up with these constant changes, so leaderless teams are used to allow flexibility in work type and style.

The decision to adopt leaderless teams is also growing with the widespread transition in workplace culture from the traditional, vertical hierarchy, to a movement for flatter, more horizontal organizational structures. Scholars have found that flatter organizations can lead to increased communication and lower costs (Lawler et al., 1998), and for years have been recommending that organizations consider leadership as a process outside the constraints of positional leadership (Morgeson et al., 2010).

The movement to flatter organizations has been accompanied in recent years by the rise of cross-functional project teams as well as virtual teams (Hoch & Dulebohn, 2017; Avolio et al., 1996). Neither of these are necessarily leaderless teams, but both require the central concept of interest in this study: the need for everybody to do leadership. In situations where teams are composed of individuals with a wide range of different skills and ideas, it is more important than ever for everyone in the team to "do leadership" in some capacity.

Shared Leadership

In leaderless teams, it is necessary for the duties and responsibilities that would typically fall on the leader to be accomplished by somebody else. Several ideas have been proposed and studied surrounding how this process occurs, including emergent leadership, distributed leadership, and self-leadership.

- Emergent Leadership: When leaders 'emerge' from a leaderless group, they are emergent leaders (Hollander, 1961). Emergent leadership refers to the occasion where a leaderless team selects one or a small number of individuals who have emerged as leaders through their actions. This theory is concerned with the appointment of an individual to serve as a leader, ending with one individual

leader as opposed to a group of mutually influential leaders (Pearce & Sims, 2002).

- Distributed Leadership: Views leadership as a collaborative process where leadership duties are conjointly performed by team members (Choi & Schnurr, 2014). Gronn (2002) requires that distributed leadership involve both division of labor and conjoint agency. Distributed leadership is similar to shared leadership but lacks an emphasis on its ongoing and voluntary nature. For this study, it is necessary for individuals to voluntarily participate in the leadership process, which is not an important part of distributed leadership.
- Self-Leadership: In groups without a formal leader, Manz and Sims (1980) propose that individuals can assume responsibility for leading themselves. Their idea builds on the literature searching for substitutes to traditional leadership, and asserts that as long as individuals are motivated, competent, and knowledgeable of the organizational environment, they can take control of their own supervision and goal achievement. Still, self-leadership operates as an isolated process involving only the individual, as opposed to the entire team.

Each of these theories falls short in some way from the constructs of interest for this paper. This study addresses the voluntary and continuous sharing of leadership behaviors at the group level by focusing on the team as the unit of analysis, so shared leadership is the only theory which adequately describes the processes at work.

According to Pearce and Conger (2003), shared leadership can be defined as the process by which a group of individuals leads each other to the achievement of a group goal. Gibb (1954) describes shared leadership as a property of the group as a whole, as

opposed to an individual-level characteristic. He specifies that it is characterized by the distribution of leadership tasks amongst most or all of the group members, as opposed to only a few individuals. Others (Carson et al., 2007; Day et al., 2004) emphasize shared leadership as a mutually influential process embedded in the interactions among team members, making it an innate and learned group characteristic.

Several scholars have found that shared leadership leads to positive outcomes. In a recent meta-analysis, Van Nicolaides et al. (2014) used 467 studies and a total of 3,882 independent teams to find a positive correlation between shared leadership and team outcomes. Hoch et al. (2010) studied 26 real-world consulting teams and also found shared leadership to be associated with higher team performance. Hill (2005) found shared leadership to be linked to collaborative behavior that increases trust and knowledge sharing among team members. In a 2000 study, Stewart and Barrick found that for teams engaged primarily in conceptual tasks, team self-leadership exhibited a positive relationship with performance. Bell and Kozlowski (2002) find shared leadership to be beneficial for teams with members who are already competent in both self-management and self-leadership skills. Such self-leadership skills are similar to skills used to achieve shared leadership (i.e. self-observation, cueing strategies, initiating evaluation, social learning) (Manz & Sims, 1980).

For this study, shared leadership is operationalized as Shared Leadership Behaviors (SLB) demonstrated by the participants. SLB are tangible manifestations of the shared leadership process in the team, and as such can be measured on an individual level. Pearce and Conger (2003) offer four leadership strategies to categorize the behaviors performed during shared leadership. Transactional (creating and maintaining

reward contingencies), transformational (inspirational motivation, intellectual stimulation, idealized influence, charisma), directive (assigning tasks and roles), and empowering (encouraging development and success of peers). A set of SLB that represent the construct of shared leadership is drawn from these strategies as well as literature on observable emergent leadership behaviors (Kickul & Neuman, 2000; Riggio et al., 2003). Using this set of SLB, the present study should support the findings of past research which relate positive performance outcomes to increased instances of shared leadership.

Hypothesis 1. Teams that demonstrate more SLB will show higher team performance than teams with fewer SLB.

Leadership Skills and Roles

Leadership can exist in either the formal or informal state. Formal leadership typically indicates an individual practicing leadership in an official leadership role, whereas informal leadership happens through the practice of leadership skills, with or without an assigned title (Pielstick, 2000).

Individuals in formal leadership roles are sometimes called leaders, but they are also given titles such as manager, supervisor, executive, president, captain, chief, administrator, etc. To be considered a formal leader, an individual must have the responsibility of leading one or more persons, and this is typically defined as an integral part of their job description. The trouble with leadership roles is that aside from defining the general responsibility of leading others, the similarity between positions often ends there.

Research has found that successful leaders in both traditional and nontraditional organizations are most successful when they are able to (1) create mutual respect between workers and themselves, (2) assure that the job gets done, and (3) lead others towards solving problems (Fisher, 2000). Yet these criteria are still broad and non-specific. Fisher also outlines the differences in tasks between a "supervisor" and "team leader", with supervisory tasks including planning, organization, meeting goals, budgeting, and coordination. The tasks of a team leader are more involved, including coaching, motivating, training, and developing team maturity. However, due to the abstract and ill-defined nature of these team leader tasks, the list is limited. Most often, the types of tasks such as "motivation" and "developing maturity" are not what leaders find on their job descriptions, and are not stated as explicit expectations of their role. Further, due to the lack of emphasis on these less concrete tasks, they are rarely included in job descriptions, making leadership positions ill-defined and difficult to generalize. Two individuals in the same organization could hold the same leadership role, yet be performing few if not zero of the same leadership tasks. Further, these secondary tasks are often the ones sacrificed in moments of stress and anxiety, giving way to the more "essential" tasks of meeting deadlines and achieving performance goals.

The other challenge with limiting the scope of research to formal leadership roles is the relative difficulty of obtaining them. By nature, leaders need people to lead, meaning that for every leadership role there must be one or more individual contributor positions in existence. This makes securing a formal leadership role less common than landing a position as an individual contributor. If the study of leadership focuses only on

leadership in individuals who are assigned to lead in their job description, it misses a massive population of the workforce.

Finally, leadership roles are inherently rooted in some degree of influence. A formal leader must hold power in order to be considered one. This power can originate from either a legitimate power base (i.e. a formal position or status one holds), reward power base (i.e. the ability to reward good behavior), or coercive power base (i.e. the ability to punish poor behavior) (French & Raven, 1959). These types of power are assigned, not earned, and can often be less effective in such "Team Leader" tasks as defined by Fisher (2000), namely motivation and developing team maturity. When leaders hold only positional power, they are limited in the types of tasks they are able to accomplish with followers.

On the other hand, informal leadership is best explained by the practice of leadership skills, and is much more conducive to shared leadership. The topic of leadership skills has long been discussed and theorized by researchers, but the most prominent model in the field comes from Mumford et al. (2000). They propose that leadership skills fall into four major categories: cognitive, interpersonal, business, and strategic. Cognitive skills include active learning, speaking, active listening, reading comprehension, writing, and critical thinking (Zaccaro, 2002; Fleishman et al., 1984). Interpersonal skills are things like persuasion (Katz, 1974), coordination, negotiation, and social perceptiveness (Mintzberg 1973). Business skills consist of various types of management, including personnel, material, and financial resources, (Katz, 1974; Mahoney et al., 1965; Copeman, 1971) as well as operational analysis and strategic visioning (Conger & Kanungo, 1987). According to Mumford et. al (2000), each type of

skill becomes more important as individuals move to higher levels of leadership, with the exception of cognitive skills, which become less important. Mumford et. al (2000) also outline creative problem solving, social judgement, and knowledge as key abilities of a successful leader.

Another take on skills is presented by Fisher (2000), who looked at the history of self-guided work teams since the 1960s. He argues that ongoing learning is the most important skill for a leader to possess in order to keep up with changing team and organizational situations.

Finally, research from Kickul and Neuman (2000), discussed above with the literature on leadership behaviors, provides insight as to how behaviors performed by leaders become the skills that they aspire to possess. Planning, coordination, problem solving, and developing group atmosphere are described as important leadership behaviors, and all of these have also been discussed by researchers as important leadership skills. It is evident from this overlap in the research that many of the leadership skills that have been proposed and studied are, when put into practice, ultimately desirable leadership behaviors.

One of the main arguments this paper seeks to make is for the difference between leadership roles and skills being that skills are highly transferable. Intuitively, leadership skills are accessible to all, easy to practice, and generalizable outside a given context. Most of us can recall practicing some of the leadership skills discussed above such as persuasion and problem solving across a variety of different contexts, ranging from the classroom to the workplace to our social and family lives. Limited research has been conducted on this topic, but a study by Zaccaro et al. (1991) showed that leadership

behavior in one situation was correlated with leadership behavior in another. They also found emergent leadership to be stable across group situations.

This finding by Zaccaro et al. supports the theory that the skills learned and emphasized by practicing leadership behavior in one situation can resurface when a different situation calls for the use of those same skills. In contrast, the essence of a past leadership role does not hold anything inherently transferable. Many organizational structures and systems do not translate between leadership settings, giving the recollection of past leadership roles less utility than leadership skills in new settings. It follows that if participants are primed to remember their past experiences by either practicing leadership skills or occupying leadership roles, those recalling the skills would find themselves with more readily accessible tools to use in the moment they are called to perform a new instance of leadership. Based on this theory that leadership skills are more closely linked to the tasks of shared leadership than formal, symbolic leadership roles, skills should have a stronger priming effect on SLB than roles.

Hypothesis 2. Participants in the skills mindset condition will demonstrate more SLB than participants in the roles mindset condition.

Implicit Leadership Theory

Another element to consider when discussing an individual's propensity to engage in SLB is the beliefs they hold about what constitutes a good leader. Everybody holds his or her own idea about how an idea leader looks, sounds, and behaves, and these opinions are often not explicitly developed or even recognized. These ideas are studied in the literature as implicit leadership theories, which assist in creating cognitive categories to separate leaders from non-leaders according to their traits, behaviors, and attitudes (Lord

et al., 1984). Implicit leadership theories provide the underlying mechanisms with which we create explicit theories and constructs, making them especially relevant to consider as we measure SLB to represent shared leadership.

Research on implicit leadership theory (ILT) generally breaks leadership down into a series of traits, which then fall into different prototypes (or anti-prototypes). Prototypes are combinations of traits and attributes which represent a larger category pertaining to leadership. An individual's ILT mental model is determined based on the extent to which he or she values certain attributes (and thus certain prototypes), which is based on past experience and socialization with leaders (Epitropaki & Martin, 2004). After storing past experiences in memory, when the individual interacts with another leader possessing the same characteristics, their memory is triggered and the prototype is reinforced. As such, ILT's are shaped heavily by exposure and personal experience. They also hold the capacity to help us categorize others, and potentially ourselves, as leaders, when we experience characteristics corresponding to those which have been previously reinforced (Lord et al., 1984).

Over the years, researchers have proposed several models of ILT which vary in their definitions of prototypes and the attributes they are composed of (Sharifired et al., 2017). Lord et. al began in 1984 with a series of 59 leadership traits, defining each as either high, neutral, or low in prototypicality. In a more concise manner, Offerman et al. (1994) narrowed these down to 41 traits categorized into eight dimensions: six prototypes and two anti-prototypes. Epitropaki & Martin (2004) brought this to four prototypes and two anti-prototypes, and in the same year House et al. (2004) proposed a model of culturally endorsed implicit leadership theories, which could be categorized as either

"universally positive", "universally negative", or "culturally specific". This study will use the ILT model as proposed by Offerman et al. (1994) because the prototypes closely relate to other measures of interest, namely skills and SLB.

The Offerman et al. model was generated from items proposed by a group of undergraduate students, which then were subject to factor analysis and factor validation. The end result is the following prototypes: sensitivity, dedication, charisma, attractiveness, intelligence, and strength; along with the following anti-prototypes: tyranny and masculinity. Measuring ILT helps demonstrate the effect of having a skills mindset on SLB by creating two different categories of leaders: prototypical and anti-prototypical. When individuals identity a majority of prototypical attributes as being important in their ideal leader, such as "inspiring", "enthusiastic", and "understanding", these attributes coincide with other principles discussed in this paper, like leadership skills and SLB.

For example, leaders who are categorized as "understanding" likely have skill at conflict management, and may succeed at facilitating evaluation (one of the SLB dimensions). Along the same lines, when individuals mainly associate anti-prototypical attributes such as "domineering" and "manipulative" with a good leader, they are unlikely to perform as many SLB as defined by this study. The present study extends the construct of ILT by extrapolating that in their own leadership, individuals will implicitly call on their mental model of what a leader is, and behave in a way that matches this conceptualization. Those in the skills mindset may also be more strongly influenced to perform SLB, as many of the skills recall are strongly related to prototypical the ILT mental model and its attributes in action.

Hypothesis 3a. The effect of the mindset condition on SLB will be stronger for participants with a prototypical ILT mental model than for those with an anti-prototypical mental model.

Hypothesis 3b. Participants with a prototypical ILT mental model will show more SLB than those with an anti-prototypical mental model.

Leadership Self-Efficacy and Leader Identity

A few other individual-level variables are likely to be related to shared leadership. For one, an individual's belief in his or her own ability to lead others could be an important contributor to whether or not leadership occurs. There is a lack of consensus amongst leadership scholars as to a single definition of this concept, but it is most commonly discussed as either leadership self-confidence or leadership self-efficacy. These are rooted in the more widely researched topic of self-efficacy, first studied by Bandura (1978), who found that one's expectations about his or her own effectiveness will have an impact on the realization of their effectiveness.

Most broadly, Murphy (1992) describes leadership self-efficacy (LSE) as an individual's overall belief in his or her ability to lead. Hoyt (2005) adds to this definition by asserting that LSE determines individual, group, and organizational outcomes, and that it plays a role in the way individuals consider what they can do with the skills that they possess. Paglis and Green (2002) added that LSE encompasses one's belief in his or her ability to lead by creating direction for the team, building relationships with followers in order to gain their commitment to change goals, and working with followers to overcome obstacles to change

Hoyt's (2005) finding ties back to the above discussion on skills, again connecting the idea that individuals who possess and remember their own leadership skills should have a stronger belief in their ability to effectively exercise those skills, and therefore see those skills manifest in a leadership situation. In the specific leadership processes defined by Paglis and Green (2002), there is congruence with some of the SLB dimensions in this study, namely directing and empowering followers. In a later paper Paglis (2010) emphasized the difficulty of pinning down exact leadership behaviors that predict LSE, but he does summarize other findings supporting positive relationships between LSE and performance, group motivation, and teamwork. It follows that LSE should appear as an intermediary between a skills-focused mindset and the actual observation of SLB.

Taking one more step back from LSE, another relevant consideration is the extent to which participants believe that they are leaders. This is known as leader identity (LI), and it describes how an individual considers being a leader as an important and defining part of his or her self-concept (Day & Sin, 2011). Day and Sin show that strong leader identities are positively correlated with leader effectiveness over time, indicating that those who believe they are leaders are likely to perform more leadership behaviors than those who do not, making them more effective at "doing leadership". Literature often draws connections between LI and LSE, claiming they are not only correlated (Hiller, 2005), but also that individuals with higher LSE possess a stronger motivation to lead (Chan & Drasgow, 2001), as explained by the increased degree to which they see themselves as leaders (have higher LI). In the context of the current study, there should

be a positive correlation between LSE and LI, and both variables should emerge as mediators in the relationship between mindset condition and observed SLB.

Hypothesis 4a. The effect of a skills mindset on SLB will be explained by LSE and LI. (Figure 1)

Hypothesis 4b. SLB and LSE will have a strong positive correlation.

Hypothesis 4c. SLB and LI will have a strong positive correlation.

Method

Participants

Students in lower-level psychology courses at a southern California college were recruited through Sona Systems and participated in this study in exchange for either course credit or a one-time payment of $10. The total number of individuals who signed up for the study through Sona Systems was 102, while 20 signed up through convenience sampling. Six participants from Sona Systems did not show up for the study, leaving 116 participants. These participants made up a total of 30 groups, including 4 groups of 3 participants and 26 groups of 4 participants. One group is excluded from analysis for failing to complete the group task, bringing the sample size down to 112, making up 29 groups. There were also 12 participants who failed the manipulation check (5 in the skills condition, 7 in the roles condition). These participants were excluded because success of the manipulation was essential to the study. This brought the final sample size to $n = 100$, with 50 participants in each condition.

The sample included a total of 31 men (31%) and 68 women (68%), with one participant selecting not to report a gender (1%). The average age in the sample was 19.77 ($SD = 1.36$) and age ranged from 18 to 24 years. The sample consisted of the

following race breakdown: 27% Asian, 4% Black or African American, 52% White, and 17% other races not listed.

Procedure

The study was a correlational design with two predictors, two mediators, and four dependent variables. One of the predictors, mindset condition, was manipulated through random assignment. The study was advertised on Sona Systems as "Individual and Group Decision Making".

The study was conducted in a laboratory setting, where participants were scheduled in groups of 3 or 4. They were informed that they would be participating in a small-group exercise, and that the activity would be videotaped. If the total number of participants who showed up to the session as at least 3, the group completed the task as planned. If two or more participants did not come, the others were rescheduled.

When they arrived at the laboratory, participants were greeted and seated together while they waited for the rest of the group to arrive. They were then allowed to choose any of the four desks with a computer, where they completed the first survey task, which was the mindset manipulation and manipulation check. During the manipulation task, each team was randomly assigned to either the skills or roles mindset condition (Appendix A). In the skills mindset condition, participants read a short vignette about somebody using leadership skills, then were asked to describe an experience in which they used one or more leadership skills effectively to lead at least one other person. In the roles mindset condition, participants read a similar vignette about somebody's leadership roles, then were asked to record a list of leadership positions they had held in the past and a few details about each position.

The participants were then introduced to each other by the experimenter. They were instructed to sit around a different table in the same room. Each participant received a copy of the survival task "Adventure in the Amazon" (Ukens, 1998). The task describes a scenario where a group was on a small plane travelling in the Amazon and ended up in a crash-landing in the jungle. In the first part of the task, a list of 15 items was presented (e.g., parachutes, safari hats, compass) and participants were instructed to work independently for ten minutes to rank the items in order of importance for survival. In the second part of the task, participants worked together as a team to agree on a final ranking order of the items in the list. The final submission had to be reached by group-consensus. The group was informed that they had fifteen minutes to complete the task, and that they would be evaluated on the accuracy of their rankings against expert opinion. Written materials presented from this task are available in Appendix B.

This part of the experiment was videotaped and evaluated by trained behavioral coders to produce the following dimensions in the Shared Leadership Behaviors Measure:

- Directive Statements: the number of times a participant gave instructions to other members, make statements of fact or opinion (task-related statements)
- Supportive Feedback Statements: the number of times a participant provided feedback to another group member that moved the discussion along ("Good idea", "Yes I understand")
- Stimulating Collaboration: the number of times a participant invited opinions and ideas of other members, asking questions to incorporate other perspectives ("What do you think?", "Why did you rank X there?")

- Facilitating Evaluation: the number of times a participant calls for other members to look at the big picture, to consider different consequences ("What would it mean if we don't include X?", "How will X help us survive?")

At the end of the fifteen minutes, the experimenter re-entered and informed the group that they would be separated again to complete a final set of self-report measures. These included a measure of familiarity with other team members, Leader Identity, Leadership Self-Efficacy, Task Competence, Leadership Experience, and the Implicit Leadership Theory Questionnaire, as well as items on past leadership experience and demographics. Participants were then debriefed on the purpose of the study and dismissed.

Measures

A measure of team performance was taken from the "Adventure in the Amazon" task (Ukens, 1998). The final ranking of items for each team was assigned a score as decided by expert opinion on what items would be empirically most important for survival. Each team earned points for each item determined by the absolute value of the difference between the team's assigned rating and the expert rating. Total team performance was measured by adding the points for all items, with lower scores indicating more success.

Upon completion of the group task, participants were all given measures of LSE, LI, Task Competence, team familiarity, Leadership Experience, and Implicit Leadership Theory.

Leadership Self-Efficacy (LSE)

LSE was measured through an eight-item, self-report instrument (Murphy, 1992) with internal reliability α = .687. The LSE scale determines the extent to which participants believe in their ability to lead others, and asks them to rate each item on a five-point Likert-type scale ranging from *Strongly Disagree* to *Strongly Agree*. Some items include "I know what it takes to make a work group accomplish its task" and "Overall, I believe that I can lead a work group successfully". The total score on the LSE scale reflects an average of the participant's responses to each item. The LSE Scale is available in Appendix C.

Leader Identity (LI)

The scale for LI was a four-item, self-report instrument assessing the extent to which each participant included being a leader as a part of their self-identity (Hiller, 2005). Participants were asked to rate the extent to which they believed each item described them on a five-point Likert-type scale ranging from *Not at all descriptive* to *Extremely Descriptive*. Items include "If I had to describe myself to others I would include the word leader", and "I see myself as a leader". Scores for LI were determined by the average of each participant's responses to the four items. The LI Scale demonstrated acceptable reliability (α = .825), and is available in Appendix D.

Task Competence

Task Competence (TC) was measured by the following two-item scale: "I believe I can perform well on this task", and "I have what it takes to succeed in this task". This scale was tested for internal reliability with $r = .825$.

Team Member Familiarity

Familiarity with other participants was an important potential confound in this study, given the nature of the participant pool in a small college. Knowing that it was likely for most participants to have met and even worked together before, it was essential to obtain an accurate measure of how well participants in a team together knew each other. This scale was modified for the current study from one used by DeChurch and Marks (2001). Items include "How often have you worked with this team member in an academic setting?", "How often do you interact with this team member in an extracurricular setting?", and "How often do you interact with this team member in a social setting?" and are anchored on a 7-point scale ranging from *Never* to *Five or more times per week.* Team Familiarity Measure can be found in Appendix E.

Leadership Experience

LE was measured by asking participants to indicate the number of positions they had held as a member, leader, or founder across each of the following areas: extracurricular activities, community service, jobs/internships, and church/religious group. Points are assigned to each response such that member = 1 point, leader = 2, and founder = 3. Each participant's total LE score is the sum of their points across all four areas. This measure can be found in Appendix F and was adapted from the Undergraduate Leadership Education survey.

Implicit Leadership Theory (ILT)

Participants also completed the Implicit Leadership Theory Questionnaire (Offerman et al., 1994). The ILT Scale is a 41-item, self-report instrument that provides an assessment of an individual's mental model of their ideal leader. The ILT Scale asked participants to rate the importance of 41 traits, each belonging to one of eight factors. Six

prototypical factors included Sensitivity (α = .720), Intelligence (α = .727), Dedication (α = .816), Charisma (α = .733), Strength (*r* = .364), and Attractiveness (α = .813). While the correlation coefficient for Strength is quite low, it is still included in analysis because both attributes contribute to the overall prototypical mental model individually. Two anti-prototypical factors were Tyranny (α = .784) and Masculinity (α = .892). Anti-prototypical traits included "hard-working" and "pushy". Participants responded to the items by rating how characteristic each trait is of their ideal leader from *Not at all characteristic* to *Extremely characteristic*. Participants were identified as having either a prototypical or anti-prototypical mental model according to the relative frequency that they rated traits as characteristic within each factor. The ILT Measure is available in Appendix G.

Shared Leadership Behaviors (SLB)

Finally, a scale of SLB was developed from the leadership behaviors (directive statements, supportive feedback, stimulating collaboration, and facilitating evaluation) coded from each group's video recording. SLB were coded from three time-samples of each video. The sections selected by time sampling were the first two minutes of each video, the middle two minutes (exact time depended on total time the team took to complete the task), and the final two minutes in the video recording.

Each video was examined by two coders, who were all trained and tested for reliability. Coders recorded the number of times each participant performed the four types of behaviors in each sample section. For each participant, a score was generated by each coder which comprised the total SLB in each behavior (e.g. directive statements). Interrater reliability for each SLB was tested, showing r = .859 for directive statements, r

= .789 for supportive feedback, r = .857 for stimulating collaboration, and r = .604 for facilitating evaluation. Although the reliability is fairly low for Facilitating Evaluation, this dimension is included in all analyses along with the others as it exceeds .6. A composite SLB score for each participant was calculated by adding SLB scores in each dimension for each rater, then averaging between the two raters. This composite score yielded r = .939, indicating strong agreement between coders. Materials given to coders to identify and categorize SLB can be found in Appendix H.

Results

Preliminary Analysis

Before conducting any statistical tests, scales were created for LSE (M = 3.83 , SD = .381), LI (M = 3.56, SD = .759), and TC (M = 4.07, SD = .537) by averaging all items in each scale. Composite scales were created for team member familiarity (M = 4.79, SD = 2.231), LE (M = 10.03, SD = 7.923) and SLB (M = 9.065, SD = 4.853) as described in the previous section. Descriptive statistics for each of the four dimensions of SLB can be found in Table 1. The ILT measure was used to create both prototypical and anti-prototypical scales, which were an average of all items from all dimensions of each respective mental model. These were used to classify each individual as either prototypical (n = 80) or anti-prototypical (n = 20) based on whether the score on the prototypical or anti-prototypical scale was larger. Descriptive statistics for all ILT dimensions can be found in Table 2.

Three correlations were calculated to characterize relationships between LSE, LI, and TC. All were significant and positive. Correlations were also calculated between SLB

and LSE, LI, and TC, but were not statistically significant. Results for these correlations can be found in Table 3.

Hypothesis Testing

Hypothesis 1 states that at the team level, SLB will be positively correlated with team performance. This was evaluated by creating a team SLB score by adding the total SLB for all members of each team and dividing by the number of team members. Results showed r = -.228, and p = .233, indicating that the relationship between team SLB and team performance was not significant. A follow-up test showed that the correlation between team SLB and group size was r = -.358, with p = .056, which approaches traditional statistical significance.

Hypothesis 2 was tested with an independent-samples T-Test for the difference in mean SLB between the skills (M = 8.39, SD = 4.581) and roles (M = 9.74, SD = 5.067) conditions. Results showed a test statistic $t(98) = 1.398$, p = .406, indicating no significant difference in SLB between the two conditions. Figure 2 shows this result.

A post-hoc analysis tested the difference in means in the four sub-dimensions of SLB by manipulation condition. These were insignificant for directive statements, supportive feedback, and stimulating collaboration. Facilitating evaluation showed a significant difference in mean SLB between the skills (M = .72, SD = 1.156) and roles (M = .90, SD = .764) conditions with $t(98) = .919$, $p < .05$, which can be seen in Figure 3.

Hypothesis 3a predicted that the impact of the manipulation on SLB would depend on whether participants held a prototypical or anti-prototypical ILT mental model. This was tested using a 2 x 2 between-subjects ANOVA (Figure 4). However, the interaction coefficient could not be calculated because there were no participants in the

skills condition who had an anti-prototypical mental model. The distribution of participants by condition and mental model can be found in Table 4. Instead, a chi-squared test for independence was performed to examine the relationship between manipulation condition and ILT mental model. The test showed a statistically significant relationship, X_2 (1) = 25, $p < .001$.

To test hypothesis 3b, two independent-samples t-tests were conducted. Two scales were created from the ILT data: an average of all prototypical items, and an average of all anti-prototypical items. The t-test for the prototypical scale approached statistical significance, $t(98) = -5.539$, $p = .069$, indicating that participants in the skills condition ranked prototypical characteristics to be slightly more important than those in the roles condition. The test of the anti-prototypical scale showed $t(98) = 6.497$, $p < .001$, demonstrating that those in the roles condition evaluated anti-prototypical characteristics as more important than their counterparts in the skills condition. This is illustrated in Figure 5.

Hypothesis 4a predicted that LSE and LI would explain the relationship between mindset condition and SLB. To conduct a mediation analysis using the Baron and Kenny (1986) method, the predictor, mediator, and criterion variables must all be correlated with one another. Since LSE and LI are not significantly correlated with SLB (see Table 4), this condition is not met, and the mediation analysis cannot be performed. As such, Hypothesis 4a is also rejected.

Exploratory Analysis

To learn more about the effects of manipulation condition and other variables on the ILT mental model, another set of analyses was conducted. First, a multiple linear

regression was performed using the averaged prototypical scale (used in Hypothesis 3b) as the dependent variable ($F(6, 92) = 6.532$, $p < .001$, $R2 = .299$). The independent variables included manipulation condition (categorical variable where skills = 1 and roles = 0), all four sub-dimensions of SLB, and sex (categorical variable where male = 1 and female = 0). Significant predictors included mindset condition ($\beta = .362$, $p < .001$) such that being in the skills condition increased scores on the prototypical scale by .362 on average compared in the roles condition, and directive statements ($\beta = -.034$, $p < .05$). Supportive feedback ($\beta = .033$, $p = .088$) was nearly statistically significant, indicating that a larger sample size could have shown supportive feedback as a predictor of a prototypical mental model. A second multiple regression with the same independent variables and the anti-prototypical scale as the outcome variable also yielded significant results, $F(6, 92) = 7.666$, $p < .001$, $R2 = .333$. This regression indicated that mindset condition ($\beta = -1.264$, $p < .001$) significantly predicted scores on the anti-prototypical scale such that being in the skills condition decreased scores on the anti-prototypical scale by 1.264 on average compared to the roles condition. Sex ($\beta = .398$, $p = .076$) was almost significant, demonstrating that gender may also be a relevant factor in predicting scores on the anti-prototypical scale.

Discussion

This study explored the presence of a skills mindset in leaderless teams. It tested the impact of having a leadership skills or leadership roles mindset on shared leadership, team performance, and ILT mental model. While results did not support the hypotheses that being in a skills mindset increases demonstrations of SLB, they did provide evidence for a strong priming effect of the skills mindset on ILT mental model.

There are several reasons this study may not have found significant relationships between shared leadership and the other variables of interest. Failing to find a correlation between team SLB and team performance may signify that quantity of SLB was not the most important element of shared leadership. For example, each dimension of SLB was weighed equally, but the amount of collaboration or feedback could be disproportionately important and therefore impact team performance more. Additionally, distribution of SLB throughout the course of the group task could be an important consideration. If SLB in the first two-minute section sets the tone for the rest of the task, then weighing these the same as SLB in the middle section would lead to skewed results.

The distribution of SLB amongst team members could also be a key consideration in determining performance. If the majority of SLB are concentrated within one or two participants, group processes evolve differently than if they were more evenly divided. Lastly, SLB could be considered from a quality perspective - maybe it is not the amount of SLB but the content of each behavior that influences team performance.

Variables shown to mediate team performance in past studies may also explain the insignificant correlation between team performance and SLB. For example, trust and knowledge sharing (Hill, 2005) and competence in self-leadership (Bell & Kozlowski, 2002) have been shown to influence team performance. The teams in this study had no reason to trust each other, and there was likely a range of self-leadership skills across participants. The specific nature of the task also introduced some potential mediator variables. In the group task, individuals were asked to rank items in order of their use in a survival situation. Omitted variables such as subject expertise, personal experience,

attention to detail, or even deductive reasoning could have influenced team performance more than shared leadership.

When considering shared leadership at the individual level, results showed that there was not a significant difference in SLB between participants in the skills and roles conditions. In fact, the data indicates a slightly higher average for SLB in the roles condition, which is the opposite direction of the hypothesized effect.

One possible explanation for this is the effectiveness of the manipulation. Participants in each condition were primed to read a short vignette about an individual either demonstrating leadership roles or skills, then to write about a time when they did the same. While past research has supported priming as a manipulation technique (Roediger, 1990), it is possible that this study did not have a strong enough priming effect to transgress the barrier between mindset (internal thoughts) and behavior (external action). This is the most likely explanation, as findings show that the manipulation did successfully impact ILT, which measures an internal mental model.

While a skills mindset may not influence SLB, leadership skills may still be important in predicting shared leadership. The mindset manipulation was a convenient way to prime leadership skills, but there is a difference between thinking about leadership skills and actually having or practicing them. Measured or trained leadership skills may have been more meaningful for understanding the relationship between leadership skills and demonstrations of shared leadership.

Failure to reach significance could also be due to a faulty operationalization of shared leadership. Shared leadership is known to be a complex, mutually influential group process, and it is possible that the SLB dimensions and coding process created for

this study did not adequately measure the construct. Breaking shared leadership into four dimensions to be measured at the individual level is simple, but may lead to some lost elements. In the spirit of Gestalt's theories of perception, shared leadership may consist of more than the summation of individual contributions (Franke, 1997).

In the case that the effect of mindset on SLB is actually in the opposite direction (as suggested by the slight difference in means), experience in past leadership roles could actually make individuals better in shared leadership situations than experience practicing leadership skills. This would support leader identity theory, which states that being called a leader and identifying as a leader makes individuals more likely to engage in leadership activities (Van Knippenberg & Hogg, 2004).

The next section examined the ILT measure. While 20% of participants held an anti-prototypical mental model, none of these participants were in the skills condition. This suggests that some unknown facet of the roles condition primed participants to value anti-prototypical attributes, or some element of the skills condition prevented them from doing so. In support of the former, traditional leadership roles are often associated with power and assertiveness. Therefore, individuals reflecting on their past leadership positions would associate these attributes with themselves, and thus with their ideal leader. It could also be that simply mentioning leadership roles invokes a sense of competition or need for achievement and recognition, which activates an anti-prototypical mental model. On the other hand, participants who read about leadership skills were encouraged to think more deeply about the tangible tasks of leadership. In this process, they may have reflected on different leadership skills more closely tied with characteristics valued in a prototypical mental model, such as dedication. Or, they may

have realized that focusing on skills was a non-traditional way to approach leadership, and intentionally responded more carefully to the ILT measure.

Finding a priming effect was unexpected because ILT is traditionally considered a stable trait, and is typically measured, not manipulated. The study was designed to distance ILT from the manipulation by collecting it in the last set of questions. However, it is evident from the size of the effect of mindset manipulation on ILT mental model that mental models are not fixed traits. This sample was highly suggestible, and participants did not hold strong enough mental models to withstand this manipulation. This further demonstrates how important leadership roles are to the way we conceptualize good leadership.

Analyzing scores on the prototypical and anti-prototypical scales independently (as opposed to the binary ILT variable) provided further support that the manipulation was significant on ILT. Participants in the skills condition rated prototypical characteristics more highly than participants in the roles condition (and vice versa for the anti-prototypical condition). This indicates that the effect of the manipulation was two-fold: it prevented participants in the skills condition from deeming anti-prototypical attributes as characteristic of their ideal leader, and also heightened the degree to which they valued prototypical characteristics (compared to those in the roles condition).

In the exploratory analyses predicting each ILT mental model through linear regression, being in the skills condition and giving more supportive feedback predicted increased scores on the prototypical scale, while making more directive statements had the opposite effect. This suggests a link between supportive feedback and ILT mental model, perhaps indicating that this dimension is more strongly tied to prototypical

characteristics than the others. For the regression with the anti-prototypical scale as the dependent variable, none of the SLB dimensions were significant predictors, but being male was. Given that some of the items include “masculine” and “male”, it aligns that men were more likely than women to rate these as important, indicating that characteristics they possess are critical to success.

Limitations

There are several limitations to this study, beginning with the nature of the sample. Participants were recruited from a consortium of private, liberal arts undergraduate colleges in Southern California. As such, they make up a western, educated, industrialized, rich, and democratic sample and are likely not representative of the general American public or the working-class professionals that this study intended to learn about. Further, the college at which this study took place emphasizes leadership as a critical part of its mission statement and educational curriculum. This means that students may be particularly inclined to pursue leadership as a result of selection bias from the admissions process. The college also offers an abundance of on-campus leadership opportunities, and publicly celebrates the value of these positions. This may have affected the way participants conceptualized leadership roles and could explain their tendency to value anti-prototypical attributes in the roles condition.

The college is also small, currently enrolling under 1,400 students, meaning that many participants knew each other prior to the study. While there was a measure of team member familiarity, this study was unable to fully encapsulate the intricacies of a diverse range of personal relationships. The measure asked participants to recall how often they had interacted with other group members across three different settings (social,

extracurricular, and academic). However, there was no opportunity to report emotional valence, which may relate to feelings of comfort and self-efficacy, as well as cognitive functioning and ability to perform under pressure. Given the low degree of anonymity, it is also likely that demand characteristics emerged as participants monitored their behavior to adhere to socially desirable group norms.

It is also important to note the small sample size, with only $n = 100$ individual participants (50 in each condition), and $n = 29$ groups (15 in the roles condition and 14 in the skills condition). This means that effect sizes are small and power is low. The t-test for mindset condition and SLB achieved $d = .02$ and a power of .283, indicating that $\beta = .717$, a 71.7% chance of failing to detect an effect that actually exists (making a Type 2 error). Power is even lower in analysis at the team level, indicating that a much larger sample size is necessary. This reveals the high probability of Type 2 error present throughout this study, signifying the possibility for there to be an effect of a skills mindset on shared leadership and team performance in larger samples.

The next three limitations concern the methodology of the study. First, this was a laboratory study, and it used ad-hoc teams as opposed to in-tact teams. This means that unlike real-world teams, groups in this study likely had low levels of team trust, group cohesion, and commitment. Individuals had no motivation to succeed on their own or as a group, which presents a threat to external validity. They may have been less inclined to spend time and effort on the tasks than they would if they had a job or grade on the line.

Evaluation apprehension also presents limitations to results on the leadership measures. Participants also knew they were being observed and that the study was about leadership, which may have primed them to alter their responses and behaviors to meet

what they believed were the expectations of the experimenter. This could have created a general inflationary effect on several leadership measures, including LSE, LI, LE, and even SLB. This caveat poses a threat to the internal validity of the study, as the data may reflect participants' projections of how they think they should view leadership instead of their actual views.

The next methodological limitation concerns the formulation of the SLB variable. While reliability for most dimensions of SLB was fairly high, each video was still only evaluated by two coders. Ideally, each group would be evaluated by three coders to obtain a Cronbach's alpha to test reliability, but due to limited resources and time as a result of the coronavirus outbreak, this was not possible. Additionally, scores for SLB were coded from three time-sampled intervals for each video. While samples came from the same sections in each video (the first, middle, and final two minutes), this does not account for the fact that individual contribution may not be consistent within these time frames. It also does not consider that some groups took longer than others to complete the task, thus having more opportunity to demonstrate SLB. This may be related to both SLB and team performance.

The final methodological limitation is the strength of the mindset manipulation. Given the absence of significant differences between participants in the skills and roles conditions for most outcome variables, it appears that the manipulation was quite weak. However, the significant impact on ILT mental model conveys that the manipulation was not entirely ineffective, thus deeming the overall effectiveness of the manipulation ambiguous.

Implications

This study suggests that leadership skills are not any more or less important than leadership roles in predicting shared leadership. In corporations where work groups operate without leaders, HR professionals are charged with creating programming to increase team capacity for shared leadership. This study indicates that for the purpose of training and development, reflection exercises should not ignore leadership roles just because leadership skills are a trending topic. Taking the time to reflect on past leadership roles can be just as effective on predicting increases in future leadership. However, this should come with the caveat that reflecting on leadership roles does influence the way we conceptualize good leadership, perhaps favoring a more anti-prototypical mental model. Still, this study provides reason to believe that having experience in leadership positions is significant, and that such positions should be actively pursued.

When it comes to hiring and team composition, many organizations are trying to shift towards a skills-based job economy, away from relying on the ambiguity of job titles. This study demonstrates that individuals are highly impressionable when it comes to how they characterize a good leader, and that focusing on leadership roles makes negative characteristics like dominance and power-seeking appear more desirable. If the goal is to hire individuals and construct teams who agree that the ideal leader is intelligent, sensitive, and motivated (as opposed to masculine and tyrannical), organizations should hire individuals who prioritize and emphasize leadership skills.

The final implication speaks to leadership education. In academic settings, most institutions advocate for ethical, compassionate, and merit-based leadership. If the goal of these institutions is to create prototypical leaders, they should emphasize the importance

of leadership skills in both curricular and co-curricular learning. If the goal is to encourage students to participate in shared leadership, institutions should be aware that the current system is failing to teach that leadership skills can matter just as much if not more than roles in our ability to lead. Administrators, faculty, and career counselors should consider the impact of the pressure placed on students to achieve leadership positions, and whether this succeeds in promoting effective leadership.

Future Directions

More research must be conducted to understand the relationship between leadership skills, leadership positions, and shared leadership. Future studies should utilize larger sample sizes in order to increase external validity and decrease probability of Type 2 error. This is especially important for understanding the team level variables. Additionally, this study took place at an undergraduate college, but many of the implications speak to professional organizations. Further research should use populations of working-class adults across a variety of industries, and should avoid using ad-hoc teams in a laboratory setting. More accurate and meaningful conclusions may be drawn by observing in-tact teams in their natural work environments, where there are meaningful rewards, consequences and social relationships. Using real-world teams could reveal additional variables that impact the relationship between leadership skills and shared leadership, such as cohesion, trust, and organizational structure.

Future research should also consider a different method to prime participants to think about leadership skills and roles. Participants could verbally describe their past experiences, which would have a stronger impact than the writing task. Researchers can also expand the area of interest beyond the skills mindset by measuring achieved

leadership skills. Obtaining leadership skills reviews from leaders and peers, conducting skills evaluations, or even administering formal self-report measures could help to better understand the correlation between leadership skills and shared leadership. To make causal inference, participants could be randomly assigned to a training session, a group discussion, or a one on one conversation with a confederate about either leadership skills or roles.

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Table 1

Descriptive Statistics for Dimensions of Shared Leadership Behaviors

	Minimum	Maximum	Mean	Standard Deviation
Directive Statements	0	12.00	3.89	2.41
Supportive Feedback	0	8.50	2.62	1.88
Stimulating Collaboration	0	9.50	1.75	1.89
Facilitating Evaluation	0	4.00	0.81	0.98

Table 2

Descriptive Statistics for Dimensions of Implicit Leadership Theory

	Minimum	Maximum	Mean	Standard Deviation
Intelligence	3.00	5.00	4.04	0.56
Sensitivity	2.88	6.00	4.12	0.53
Dedication	3.00	5.00	4.32	0.57
Strength	2.00	5.00	3.76	0.71
Charisma	3.00	5.00	4.06	0.54
Attractiveness	1.50	6.00	3.81	1.18
Masculinity	1.00	6.00	3.29	1.86
Tyranny	1.00	5.30	2.39	0.82

Table 3

Correlation for Shared Leadership Behaviors, Leadership Self-Efficacy, Leader Identity, and Task Competence

Measure	1	2	3	4
SLB	-			
LSE	.04 (.69)	-		
LI	.02 (.86)	.59** (.00)	-	
Task Competence	.05 (.64)	.37** (.00)	.23* (.02)	-

Note. SLB = shared leadership behaviors, LSE = leadership self-efficacy, LI = leader identity.

* $p < .05$, ** $p < .01$

Table 4

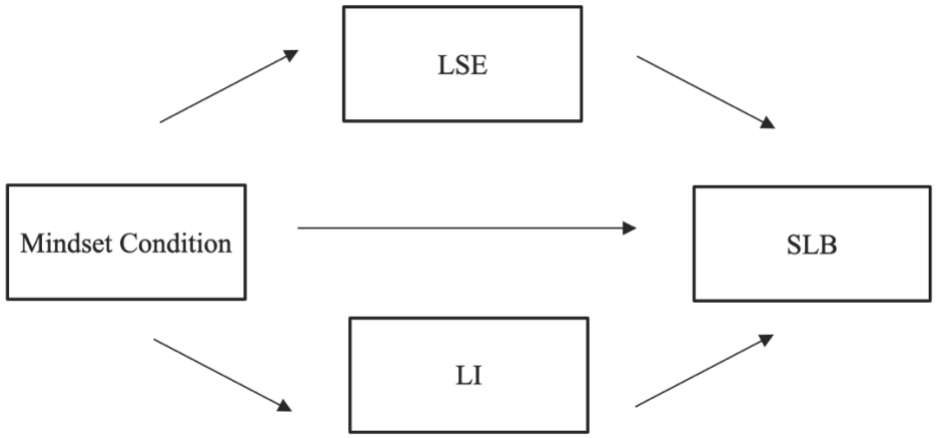
Distribution of Participants by Condition and ILT Mental Model

	ILT Mental Model	
Mindset Condition	Prototypical	Anti-Prototypical
Skills	50	0
Roles	30	20

Note. ILT = implicit leadership theory.

Figure 1

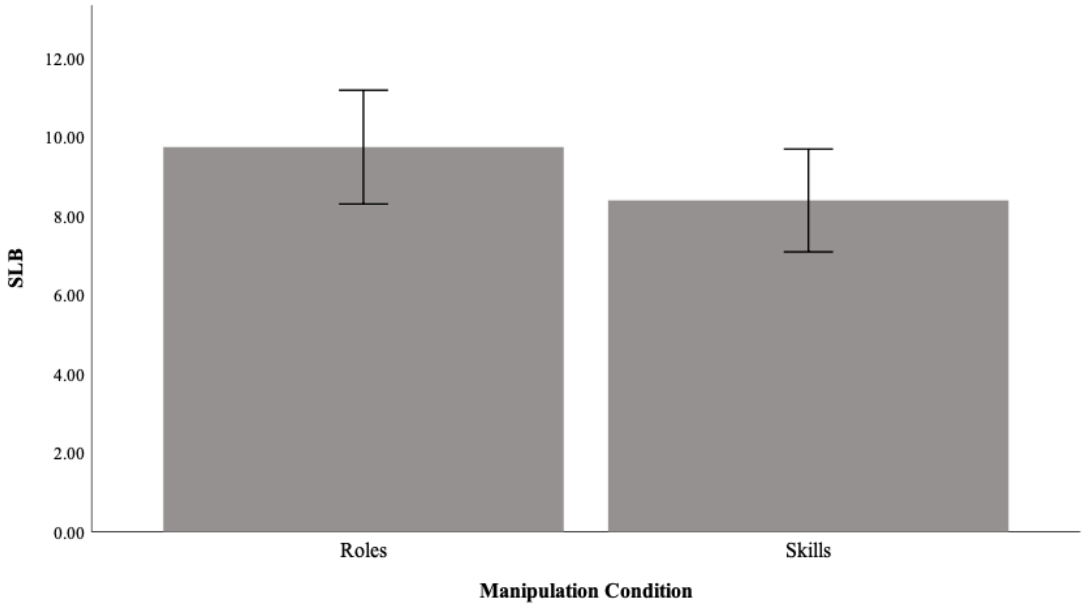
Leadership Self-Efficacy and Leader Identity Mediating the Effect of Condition on Shared Leadership



Note. LSE = leadership self-efficacy, LI = leader identity, SLB = shared leadership behaviors.

Figure 2

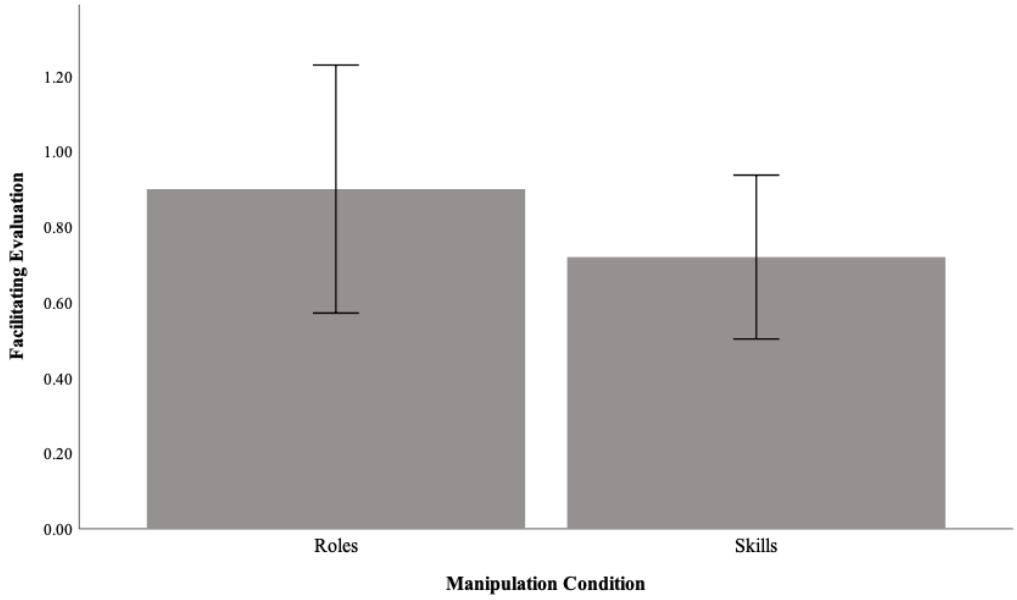
Shared Leadership Behaviors by Manipulation Condition



Note. SLB = mean of shared leadership behaviors. Error bars represent 95% confidence internal.

Figure 3

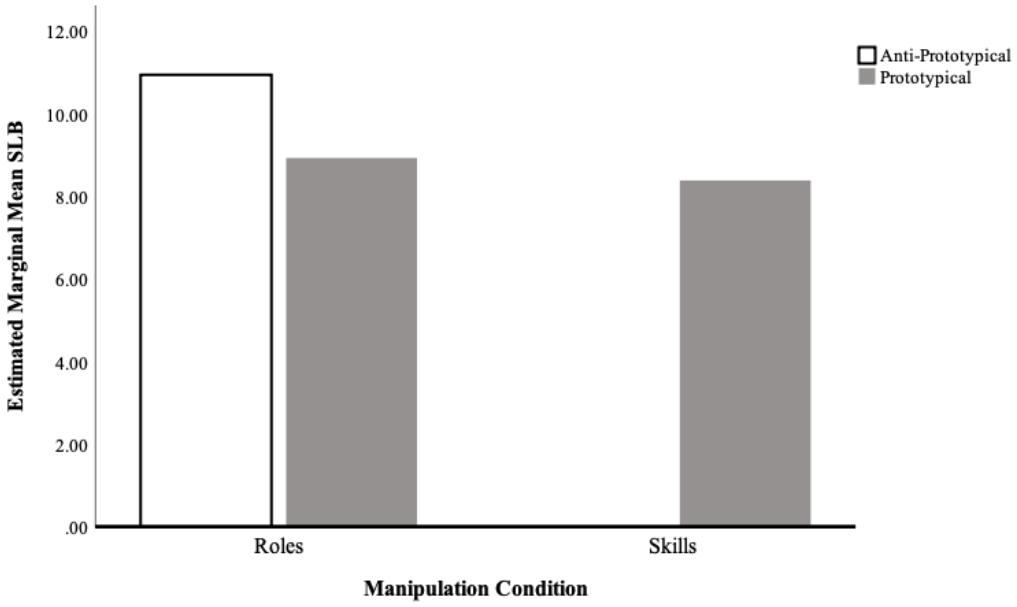
Facilitating Evaluation by Manipulation Condition



Note. Error bars represent 95% confidence internal.

Figure 4

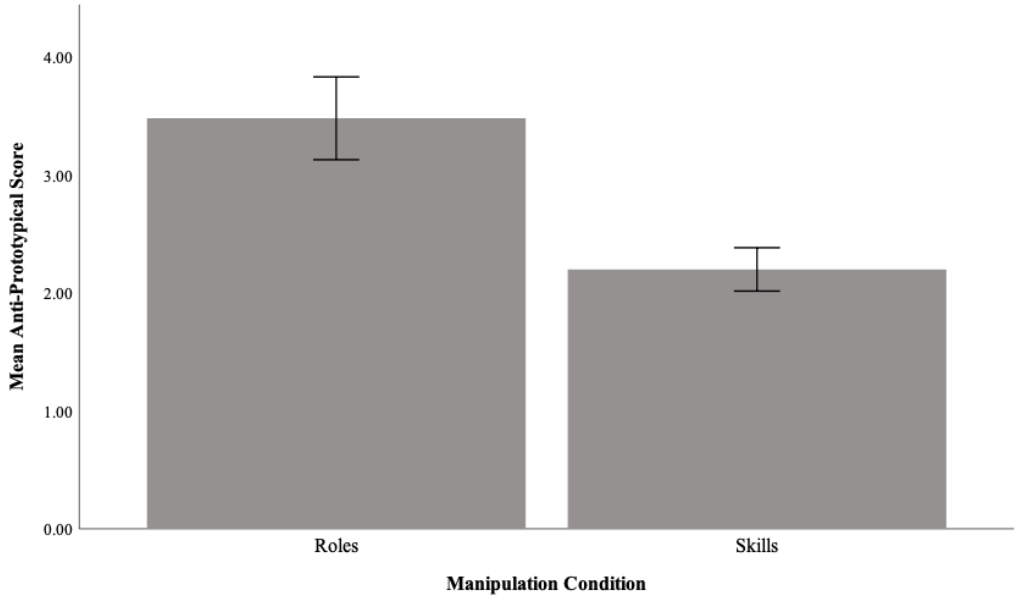
Shared Leadership Behaviors by Condition and Mental Model



Note. SLB = shared leadership behaviors.

Figure 5

Anti-Prototypical Mental Model Scores by Manipulation Condition



Note. Error bars represent 95% confidence internal.

Appendix A

Mindset Manipulation Materials

Roles Mindset Manipulation

Think of the leadership roles you have held in the past few years. Make a mental list of your own formal leadership positions in your head as you read the following scenario. Read the next scenario carefully, as you will be asked to remember the details later on.

Jordan has held three leadership positions over the course of four years at college. Here is a summary of each of these roles and the responsibilities they entail:

1. Youth Mentor
Responsible for organizing a group of elementary school children and helping them complete a science fair project. Reported to the elementary school president, had 8 followers.

2. Sophomore Class President
Responsible for organizing events for the students in sophomore class; meeting with faculty, parents, and board members; representing the college at public functions. Reported to student body president, had 5 direct reports in the cabinet.

3. Club Soccer Captain
Coordinated matches with teams from other colleges, planned transportation for the team, and ran practices. Reported to the Athletics Director of the college, had a team of 12 followers.

Now consider again your own experiences. Recall the times when you have been in leadership roles. This can be in college, work experience, high school, or any extracurricular activity. The roles must correspond to an official title, and must be roles in which you were responsible for leading at least one other person.

Briefly describe your own leadership roles. What organizations were they for? Who were you responsible for leading

Skills Mindset Manipulation

Think of the skills you have that are useful in your interpersonal relationships. Consider some of these skills in your mind while you read the following scenario. Read the next scenario carefully, as you will be asked to remember the details later on.

Jordan is often in situations where it is useful to practice important skills. Over the course of four years in college, Jordan has developed confidence in three skills through experiences in various classroom and extracurricular activities. Here are brief examples of times that Jordan exercised these skills to successfully lead others:

1. Listening
Jordan volunteers to help a group of elementary school children with science projects. When working with a team of 8-year-olds to build a model solar system, Jordan found that the students were reluctant to participate, and kept looking out the window. Confused about why the group couldn't seem to focus, Jordan decided to start the next week's session by asking the students how they felt about the project, and why they were interested in outer space. Through this conversation, it surfaced that the students had never learned about the planets before, and Jordan realized they needed to learn some background in order to become interested in the project.

2. Persuasion
Jordan works at the college phone bank, soliciting donations from alumni and parents. In this role, Jordan has used the techniques of persuasion to collect many donations for the school. Amongst these techniques are telling personal anecdotes, employing the principle of reciprocity, and finding common ground with potential donors (ex. the same major, hometown, favorite sports team). Because of this impressive track record, Jordan was promoted to teach the incoming group of student workers, who ended up exceeding the past year's goals by 20%.

3. Delegating
As a member of the club soccer team, Jordan is responsible for coordinating transportation, organizing matches, and running practices. One week, Jordan had two midterms and knew there would not be time to call the bus company to arrange that weekend's transportation (it was often a lengthy process to do so). Instead of taking time away from studying, Jordan contacted Alex, a friend on the team whose midterms had finished the week before, and asked Alex to arrange that weekend's transportation. Alex was more than willing to help out a teammate, and Jordan was able to do well in both midterms.

Now consider again your own experiences. Recall a situation when you used interpersonal skills in order to lead at least one other person. The situation could be in college, work experience, high school, or any extracurricular activity.

Some examples of interpersonal skills are: motivating others, conflict resolution, empathy, perspective taking, goal-setting, creating a strategic vision, delegating, and

listening. Describe the skills that you have used. How did these skills contribute to successful interpersonal relationships and experiences in working with others?

Manipulation Check

The previous scenario described Jordan's leadership _____:
(select the option most similar to the central ideas expressed)

A. Personality
B. Skills
C. Intelligence
D. Roles / Positions
E. Habits
F. None of the above

Appendix B

"Adventure in the Amazon" (Ukens, 1998)

The Situation

You are a volunteer on an expedition to South America to study the tropical flora. Your base camp is a small village near the city of Manaus, Brazil, which is on the Rio Negro, seven miles from its junction with the Amazon. Today is a free day and you and a few other expedition members have decided to visit, unannounced, a mutual friend who is working as a medical assistant in a remote village in the Amazon jungle. Because there is no road, you have hired a small plane to fly over the rain forest to reach your destination and to return. Before you left the airport in Manuas, the pilot filed details of your flight plan with the local authorities, as required. The plane had taken off as soon as the rain stopped earlier this morning.

You have been in the air for more than an hour when the plane begins to experience severe electrical problems--both the engine and the radio shut down. As the engine sputters and stalls, you clutch the seat in terror as the pilot frantically searches for a clearing in which to make an emergency landing. You point out a small area in the jungle where the trees appear to be less dense, and the pilot turns the aircraft in that direction. As the plane breaks through the trees, the wings hit the profuse tangle of leaves and vines. Nevertheless, the pilot is able to land the plane safely on the ground, and it skids to a stop in a thicket of bamboo and coconut palms. Fortunately, no one has been seriously injured.

You cautiously climb down from the plane and survey your surroundings. A layer of fog is turning the scene into a fantastic landscape of intertwining vegetation and other extraordinary flora. You know that the jungle reaches to the city limits of Manaus, nearly 100 miles away, and that there are no roads in that direction. Due to electrical problems and the emergency landing, everyone has lost his or her bearings, but the pilot estimates that you are still at least 80 miles from the village you intended to visit and that the Amazon River is approximately 8 miles southeast of your present location.

The group has among its personal possessions two handkerchiefs, a pocket watch, and several boxes of safety matches. You start to search the aircraft for anything else that might aid your chances for survival.

Individual Task

Do not communicate with anyone else. Your task is to rank the following 15 items that were aboard the airplane and that are available for your use. Place the number "1" next to the item you believe to be the most important to your survival in the jungle, then place a "2" by the second most important item. Rank the entire list, so that the number "15" represents the item that you believe is the least important to your survival.

Group Task

This task is similar to the task you performed individually, but will be shared by your whole group. Assume that your group comprises the survivors of the plane crash. This task will be an exercise in group decision making, and your group will employ the group-consensus method to reach its decision. This means that the final ranking given to each of the 15 items must be agreed upon by every member of the group. In many cases, consensus is difficult to reach. Therefore, not every ranking may meet everyone's complete approval, but each number assigned must be one that every member of the group is willing to accept. Remember that "1" indicates the item most important to survival and "15" indicates the least important item.

Item List

- Aluminum pan
- Can of insecticide
- Canteen of water
- Compass
- First aid kit
- Large knife
- Mosquito netting
- Pack of cigarettes
- Parachutes
- Revolver
- Sack of coconuts
- Safari hats
- Small shovel
- Tallow candles
- Vinyl jackets

Appendix C

Leadership Self-Efficacy

Directions: You will now read 8 statements that indicate an attitude or behavior related to leadership that may or may not be characteristic or descriptive of you. Read each statement carefully and indicate the degree to which you agree with each statement from *1 - Strongly Disagree* to *5 - Strongly Agree* (Murphy 1992).

1. I feel that I know a lot more than most leaders about what it takes to be a good leader.
2. I know what it takes to make a work group accomplish its task.
3. In general, I am very good at leading a group of my peers.
4. I am confident of my ability to influence a work group that I lead.
5. I know what it takes to keep a work group running smoothly.
6. I know how to encourage good work group performance.
7. I feel comfortable allowing most group members to contribute to the task when I am leading a work group.
8. Overall, I believe that I can lead a work group successfully.

Appendix D

Leader Identity

Directions: Please rate the extent to which the following statements describe you, from *1 - Not at all descriptive* to *5 - Extremely descriptive* (Hiller, 2005).

1. I am a leader
2. I see myself as a leader
3. If I had to describe myself to others I would include the word leader
4. I prefer being seen by others as a leader

Appendix E

Team Familiarity

Directions: Please answer the following questions about each of the members of the team you just worked on, not including yourself. Read each question carefully and indicate the frequency with which you have interacted with each team member in that particular context on the following scale from 1 to 7:

1 - Never
2 - Once or twice
3 - One or two times a semester
4 - One or two times a month
5 - One or two times a week
6 - Three to four times a week
7 - Five or more times a week

1. How often do you interact with this team member in an academic setting? (class, tutoring)
2. How often do you interact with this team member in an extracurricular or professional setting? (organized sport or club)
3. How often do you interact with this team member in a social setting? (unorganized activity, getting meals, doing homework, other social events & activities)

Appendix F

Leadership Experience

Directions: You will now respond to a series of questions about your personal experiences. Please consider your own experiences within the past two years OR since your first year at the Claremont Colleges.

Please indicate the number of positions you have held in each of the following categories.

	Participant	Leader	Founder
Extracurricular Activities (club, institute, sport, ...)			
Community Service			
Jobs/Internships (off campus)			
Church/Religious Group			

Appendix G

Implicit Leadership Theory

Directions: Different people prefer different kinds of leaders. We are interested in traits of an ideal leader to you. Please rate how characteristic each of the next 44 traits is of an ideal leader, from “Not at all characteristic” to “Extremely characteristic”. Remember, there are no right or wrong answers (Offerman et. al, 1994).

1. Knowledgeable (I)
2. Domineering (T)
3. Intelligent (I)
4. Sincere (S)
5. Conceited (T)
6. Helpful (S)
7. Educated (I)
8. Motivated (D)
9. Manipulative (T)
10. Clever (I)
11. Hard-working (D)
12. Energetic (C)
13. Strong (ST)
14. Selfish (T)
15. Dedicated (D)
16. Dynamic (C)
17. Male (M)
18. Pushy (T)
19. Understanding (S)
20. Masculine (M)
21. Loud (T)
22. Sympathetic (S)
23. Bold (ST)
24. Goal-oriented (D)
25. Wise (I)
26. Dominant (T)
27. Charismatic (C)
28. Well-groomed (A)
29. Sensitive (S)
30. Intellectual (I)
31. Power-hungry (T)

32. Attractive (A)
33. Inspiring (C)
34. Forgiving (S)
35. Well-dressed (A)
36. Obnoxious (T)
37. Warm (S)
38. Enthusiastic (C)
39. Demanding (T)
40. Classy (A)
41. Compassionate (S)

Scoring:

S = sensitivity
T = tyranny (anti-prototypical)
I = intelligence
D = dedication
C = charisma
ST = strength
M = masculinity (anti-prototypical)
A = attractiveness

Appendix H

Shared Leadership Behavioral Coding Guidelines

Identify the Shared Leadership Behavior as described below. When a participant demonstrates one of these behaviors, indicate the occurrence by adding a tally to the box for that participant in the given behavior.

Directive Statements

Participant gave instructions to other members, made statements of fact or opinion (task-related statements), self-selected to assert themselves.

- Self-volunteering to start reading, taking charge
- Takes the paper/pen and starts writing things down
- Statements of a new opinion or idea
    - Unprompted only
- Initiating action
- Words or phrases that move the group along to the next part, transitions
- "Do you want me to read it out loud?"
- "I interpreted it as ___"
- "My idea was that ___ would work …"
- "I ranked (x item) as #_"
- "But the prompt said/did not say/is not clear about ___"
- "We could run out of X so it might not be the best"
- "I thought of that as a ___"
- "Let's rank that (write it down)"
- "I assumed that it meant ___"
- "So now we are at 10"
- "Can you read us what options are left?"
- "Can you write that down"

Supportive Feedback Statements

Participant provided feedback to another group member that is not demotivating. Does not have to be positive/in agreement, but has to be constructive & not critical of others.

- Has to be more than a single word "yeah" or "me too"
- "Good idea"
- "Yes, I understand"
- "I agree and … (build on someone else's idea // not change to a new idea)
- "That's a good idea but did you consider …"
- "That's true"
- Any "yes, and … "

- "I was also thinking that" + "but then I considered/realized ___"
- "I hesitate on that because ___"
- "That's also what I was thinking"
- "I found that confusing too"
- "That's a really good thought"

Initiating (Stimulating) Collaboration

Participant invited opinions and ideas of other members, asked questions to incorporate other perspectives.

- "What do you think?"
- "Why did you rank X there?"
- "Is everyone okay with that?"
- "What did everyone put as #_?"
- "Maybe we could do ___" (summarizing group ideas)
- "Which do you think is more important/useful?"
- "I want to clarify/check …"
- "What did you guys think that X was?"
- "Should that go next?"

Facilitating Evaluation

Participant called for other members to look at the big picture, consider different consequences, employ a strategy, or take a step back

- "How could we use a ___?"
- "What would it mean if we don't include X?"
- "How will X help us survive?"
- "Let's think about what position / strategy we want to take"
- "How long could we use that for?"
- "Which one would last for longer?"
- "How convenient would it be to use X?"
- "Maybe we could rank one up high and one down at the bottom"
- "How could these items work together?"
- "If we are in this situation, we could use … "
- "If we spend the night, what would we need?"
- Introduce a specific situation: "It's in the evening, so ___"
- "What if …", "Imagine if …"