

LOWERING THE THRESHOLD: HOW AND WHY ENVIRONMENTAL UNCERTAINTY PROMOTES LEADERSHIP ATTRIBUTIONS IN TEAMS

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ABSTRACT

An uncertain environment makes behavior-based leadership attributions very difficult. I proposed and tested a situation-based leadership attribution model where members downplayed the targets' unique behaviors and attributed leadership to several teammates in uncertain environments. I tested this theory through two studies. Study 1 used multi-wave data from student project teams (n = 352 individuals, 46 teams) to show that, when individuals perceive the environment as more uncertain, they adopt more communal leadership schemas and thus are more likely to attribute leadership to multiple members. In Study 2 (n = 397 individuals), I replicated these findings in an experiment where I varied descriptions of the certainty of the environment and then measured changes in communal leadership schemas and attributions of leadership to fictitious team members. This research contributes to the literature by emphasising the role of the situation in shaping communal leadership schemas and informal leadership attributions in teams.

INTRODUCTION

When do team members attribute leadership to several targets? Leadership attribution is defined as the actions people take to bestow leadership onto another person (DeRue & Ashford, 2010). Team members need to act in accordance with the direction of leaders. But before that, they have to notice, endorse, and regard somebody as the leader. Scholars have argued that it is critical to understand on what basis individuals make such attributions (Kulich, Ryan, & Haslam, 2007; Meindl, Ehrlich, & Dukerich, 1985; Meindl, 1995). The literature seems to assume that leadership attributions occur on the basis of members' behaviors (DeRue & Ashford, 2010). However, leadership attribution is unlikely to be based only on changes in the actors' behaviors. I argue that leadership attribution might also be a function of the situation in which observers find themselves. The context changes people's definition of leadership and the meaning of organisational behaviors (Johns, 2006). Moreover, past research also suggests the situational factors might influence people's leadership prototypes (Hanges, Lord, & Dickson, 2000; Lord, Brown, Harvey, & Hall, 2001).

One of the most fundamental problems with which many teams must cope is environmental uncertainty. Environmental uncertainty is defined as group members' perceived inability to understand how the environment will change, the potential impact of those changes and whether the responses to the environment will be successful (Milliken, 1987). When group members perceive that they are not sure how the environment will change and what impacts their responses will have, it is hard to know what behaviors will contribute the most to the group's goals. Therefore, group members would find it very challenging to attribute leadership to their peers based on their behaviors.

I argue that perceived environmental uncertainty would encourage members to attribute leadership to their teammates. First, sharing leadership may be a way to reduce and manage uncertainty. Environmental uncertainty is a key factor that triggers people's psychology of social sharing (Kameda et al., 2003; Kameda, Takezawa, Tindale, & Smith, 2002). Theories in evolutionary psychology argue that sharing is a device to reduce uncertainty is developed from human beings' early life experience (Kaplan & Hill, 1985). By increasing the number of people in the risk-pooling group, the risk of a dearth in the meat supply decreases significantly. Second, when people have incomplete knowledge about how the environment will change, people no longer believe an individual's ability to shape the events (Bandura, 2000). When the power of an individual's agency disappears, people are more likely to turn to a collective agency. Therefore, they may be more likely to conceptualise leadership as a collective phenomenon (Bandura, 2000; Kulich et al., 2007; James R. Meindl et al., 1985) and lower the threshold to attribute leadership.

I conducted two studies to examine how and why perceived environmental uncertainty could affect leadership attributions in teams. I hypothesise that perceived environmental uncertainty activates communal leadership schemas and thus increases informal leadership attributions in teams. I tested these hypotheses in two studies. Study 1 used multi-wave data from student project teams ($n = 352$ individual, 46 teams) to show that, when individuals perceived the environment as more uncertain, they adopted more communal leadership schemas and, thus, were more likely to attribute leadership to multiple members. In Study 2 ($n = 397$ individuals), I replicated these findings in an experimental study where I varied the descriptions of the certainty of the environment, then measured changes in communal leadership schemas and attributions of leadership to fictitious team members.

This research makes several contributions to theories. First, introducing contextual features to leadership emergence research encourages future research to adopt a dynamic or event-based approach. The leadership emergence process does not keep static throughout the group's life span. Instead, the leadership structure may change based on situational requirements. Second, this research sheds light on whether attributions of leadership are driven by the behaviors of potential leaders or potential followers' cognitions about them. While leadership emergence research has traditionally treated members' attributions of leadership to each other as proxies for behaviors – where members who are seen as leaders are doing things to warrant those attributions. However, it may also be the case that the same behavior is interpreted differently, depending on who does it and the circumstances under which it is done.

THEORY AND HYPOTHESES

Perceived environmental uncertainty and communal leadership schemas

I define perceived environmental uncertainty as times when employees find the environment unpredictable, cannot feel the impact of environmental changes, or do not know what responses are available and what the value of the responses might be (Milliken, 1987). Perceived environmental uncertainty is different from perceived risk, which refers to a decision setting when people did not know what a decision outcome would be but did know the possible outcomes associated with a decision and the probability those outcomes would occur (Knight, 1921).

According to Wellman's (2017) leadership relational models, groups vary in the extent to which they develop hierarchical or communal schemas about leadership. A more hierarchical leadership schema builds on authority ranking relational model that would involve implicitly ranking the members against the valued social dimensions. The top-ranking member would take the majority of leadership responsibilities. A more communal leadership

schema is based on communal sharing relational model that would provide multiple group members opportunities to actively engage in leadership behaviors. Empirical research has considered leadership structure beliefs to be a continuum than a precise categorization.

I argue that perceived environmental uncertainty will activate individuals' communal leadership schemas. First, Environmental uncertainty is a key factor that triggers people's psychology of social sharing (Kameda et al., 2003; Kameda, Takezawa, Tindale, & Smith, 2002). Research has found that early human beings' acquisition of vegetables and fruit were stable, but the acquisition of meat was highly variable and uncertain (Kaplan & Hill, 2017). The communal sharing, therefore, emerges as a collective-risk-reduction device. By increasing the number of people in the risk-pooling group, the risk in the meat supply decreases significantly. This psychological process is reinforced through evolved psychological adaptations to recurring problems in the ancestral environment. Kameda and his colleagues (2002) found that uncertainty was a key factor that triggers people's psychology of social sharing, regardless of how much effort people made and whether they would get benefits from sharing.

Another reason is that people do not believe an individual has the capability to deal with the uncertain environment. When people have incomplete knowledge about the effort-outcome relationship, people no longer believe in individual's ability to shape the events (Bandura, 2000). Social cognition theory argues that when direct individual agency and proxy agency are no longer effective, people turn to the collective agency (Bandura, 2000, 2001). People also tend to work together to secure what they cannot accomplish on their own in an uncertain environment. In summary, when people struggle to attribute agency to individuals, they are more likely to attribute agency to collectives, making them more likely to activate their communal leadership schema. Therefore, I propose that:

Hypothesis 1: When people perceive the environment as uncertain, they adopt more communal leadership schemas.

Communal leadership schemas and leadership attributions

Individuals who adopt communal leadership schemas would view leadership as a shared group responsibility and adjust their leadership attributions such that their leadership attributions are consistent with their schemas. Individuals tend to adjust their leadership attribution to reduce its inconsistency with their mental model concerning leadership (Carnabuci et al., 2018). When the leadership pattern is inconsistent with one's communal leadership schema, group members would start to see more actors as leaders. Because they believe that leadership should entail a system of widespread involvement, in which many or all group members frequently engage in leadership behavior. When communal leadership schemas govern team members' behaviors, members will be more likely to attribute leadership to multiple members. Therefore, I propose that:

Hypothesis 2: Individuals who adopt communal leadership schemas will be more likely to attribute leadership to other group members.

Hypothesis 3: Perceived environmental uncertainty will lead to more leadership attributions by increasing people's communal leadership schemas. In other words, communal leadership schemas mediated the relationship between perceived environmental uncertainty and leadership attributions.

STUDY 1

Methods

Research setting and procedure. The sample was 46 student teams composed of 352 third-year undergraduate students in a large university in central China. The average age was

20.67 ($SD = 0.87$ years). 55.7% of the participants are male ($M = 0.46$, $SD = 0.58$).

The participants attended a four-week entrepreneurship program in the summer school. Data were collected from team members through surveys administered at three points in time: a week after the program started when they formed their own teams and started to work as a team to plan their business (Time 1), at midpoint of the program (3 days after teams bought the operating site and started to run the business) (Time 2), and at 2 days before the program completed (Time 3). At Time 1, I measured the baseline of the leadership attributions. At Time 2, I measured the perceived environmental uncertainty. At Time 3, I measured the leadership attributions at Time 3. This approach is consistent with prior work on modeling change in multi-wave data (Bendersky & Hays, 2012; DeRue et al., 2015). The response rates for each survey were above 99% since only a few students dropped out of the program.

Measures

Surveys were conducted by paper-pencil questionnaires. Unless otherwise noted, all the items were assessed on 5-Likert scales (1 = strongly disagree to 5 = strongly agree). I will specify my measures and identify the time period in which each measure was collected.

Perceived Environmental Uncertainty (Time 2). I asked each group member to report his or her perceptions of the environment using Waldman et al.'s (2001) four-item measurement of perceived environmental uncertainty (e.g., "The market I am facing is very rapidly expanding through the expansion of old markets and the emergence of new ones"). I followed back translation procedure to make sure the translation is accurate and there is no issue of comprehension and meaning to the respondent (Douglas & Craig, 2007). The scale showed sufficient internal consistency, $Cronbach's\ \alpha = 0.85$.

Communal Leadership Schema (Time 2). I adapted a five-item scale developed by Wellman et al. (2013) (e.g., "Groups perform best when multiple members of the group take responsibility for leading the group"). The Cronbach's alpha of the scale was 0.85.

Leadership Attributions (Time 3). I used network out-degree centrality (Freeman, Roeder, & Mulholland, 1979) to measure leadership attributions, the degree to which that group members would like to view others as a source of leadership. I asked each group member to rate all group members (excluding self-reports) "to what degree do your team rely on this person for leadership?"

Control Variables. At the individual level, I controlled for gender, group-member familiarity (Time 1), which were found to be related to leadership emergence (DeRue et al., 2015). I also controlled for received leadership (in-degree centrality at Time 1) and leadership attributions (out-degree centrality at Time 1). Participants' initial leadership attributions may account for factors such as liking and familiarity, which might influence the extent one would like to attribute leadership to another person. Moreover, leadership ties are reciprocal (Chrobot-Mason & Gerbasi, 2016; White et al., 2016). When someone is granted leadership by others, he or she would be more likely to grant leadership to others.

Results

I tested my individual-level hypotheses (Hypothesis 1 and 2) via multilevel modeling ("nlme" package in R). When testing Hypothesis 3, I ran a mediation model using PROCESS (Hayes, 2013) that I assumed all the paths (a, b and c') do not differ among groups (A 1-1-1 Individual Mediation Model).

Hypothesis 1 was supported. I used multilevel modeling to test a model where perceived environmental uncertainty predicted the communal leadership schema. Hypothesis 1 was supported. An individual's perception of environmental uncertainty (Time 2) was positively related to his or her communal leadership schema (Time 2) ($\beta = 0.29$, $p < .000$,

Model 1).

In Hypothesis 2, I predicted that an individual's communal leadership schema was positively related to leadership attributions. Communal leadership schema (Time 2) was positively related to an increase in leadership attributions from time 1 to time 3 ($\beta = 0.05, p < .001$; Model 3).

In Hypothesis 3, I predicted that an individual's perceptions of environmental uncertainty influence leadership attributions through an effect on communal leadership schema. On average, individuals who perceived the environment as more uncertain were more likely to hold a communal leadership schema ($B = 0.30, SE = .02, p = .000$). Individuals who hold a communal leadership schema were more likely to grant leadership roles to their team members ($B = 0.04, SE = .02, p = .007$). A formal test of the indirect effect revealed a significant indirect effect of perceived environmental uncertainty on leadership attributions through communal leadership schema ($c' = 0.013$, Sobel test: $Z = 2.47, p = .013$, 95 % bootstrap CI = .004 to .026). There was no direct effect of perceived environmental uncertainty on leadership attributions ($B = -0.01, p = .533$).

As predicted, I found individuals' perceived environmental uncertainty (Time 2) was positively related to communal leadership schemas (Time 2) and leadership attributions (Time 3). Generally, the results supported my theory. However, I am unable to directly demonstrate the causal effect in this correlational study.

STUDY 2

Method

Participants and design. Three-hundred and ninety-seven adults recruited from Amazon's Mechanical Turk (Buhrmester, Kwang, & Gosling, 2011; Paolacci, Chandler, & Ipeirotis, 2010) to take part in the study in exchange for \$0.70. 49.4% of the participants were female. The average mean age is 33.01 years and the standard deviation is 4.82 years.

Procedure and materials. First, participants were asked to complete a survey of their general leadership structure schema (Wellman et al., 2013), their personality (Melrose, Perroy, & Careas, 2015) and their state affect (Watson, Clark, & Tellegen, 1988), which will be described in details below. Then, participants were asked to imagine they were a member of the top management team at a large global corporation. They were randomly assigned to either an uncertain environment or a certain environment. Then, they read descriptions of their team members behaviors. Specifically, participants read:

“One member, Richard Wright, was able to put himself in other members' shoes. He made team members feel comfortable to express what they were thinking and feeling. Another team member, Guy Tremblay, volunteered to write a report to clarify the situation. He took his best shot at compiling a list of things the team does not know as a way to encourage other team members to contribute and plan. Roger Thomas listened carefully while others were talking. He took careful notes during the meeting. Finally, they were required to attribute leadership to their members.”

Measures

The measurements of perceived environmental uncertainty and communal leadership schema were identical to those of Study 1. Leadership attributions were measured in two ways. First, participants were asked to rate “what extent the behaviors above were acts of leadership” based on a 7-Likert scale (from 1 “not at all” to 7 “to a very great extent”). The ratings towards three actors (Richard, Guy, and Roger) are consistent (Cronbach's alpha was 0.80). Thus, I aggregated the participants' ratings of leadership behaviors. Later, I call this measurement as recognizing leadership acts. Second, participants were asked to rate all the top management team members “to what extent does your team rely on this person for

leadership” on a 7-Likert scale (exclude self-reports). This method is commonly used in shared leadership literature (Carson et al., 2007), which captures to what extent team members attribute leadership to a particular member.

Results

Hypothesis 1 was supported. After controlling the communal leadership schema before manipulation, people’s communal leadership schema was higher in uncertain environment condition ($M = 3.75, SD = 1.38$) than in certain environment condition ($M = 3.56, SD = 1.24$), $F(1,394) = 5.00, p = .03, \eta_p^2 = .44$. Therefore, Hypothesis 1 was supported.

Hypotheses 2 and 3 were supported. For the first measurement of leadership attributions, recognizing leadership acts, results indicated that environmental uncertainty was a significant predictor of communal leadership schema, $B = .24, SE = .10, p = .02$, and that communal leadership schema was a significant predictor of recognizing leadership behaviors, $B = .21, SE = .07, p = .00$. Therefore, Hypothesis 2 was supported. The indirect effect was tested using a bootstrap estimation approach with 5000 samples (Shrout & Bolger, 2002). These results indicated the indirect coefficient was significant, $c' = .05, SE = .03, 95\% CI = .01, .09$. Therefore, Hypothesis 3 was supported. For the second measurement of leadership attributions, attributing leadership, the results were consistent with recognizing leadership acts.

DISCUSSION

When members perceive the environment to be more uncertain, they believe that more communal approaches to leadership are appropriate. This communal leadership schema thus increases the likelihood that they will attribute leadership to several teammates. The current study explored one unanswered question of how perceived environmental uncertainty influence leadership attributions. The situational factors play an important role in the leadership emergence processes. I hope that this study motivates organizational scholars to study how contextual features influence leadership dynamics in groups. This is particularly important since the situations that organizations face are becoming more and more complex and dynamic.

REFERENCES

“REFERENCES AVAILABLE FROM THE AUTHOR(S)”