

LEADER CURIOSITY AND TEAM INTELLECTUAL STIMULATION

by

Jonathan B. Evans

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As members of the Dissertation Committee, we certify that we have read the dissertation prepared by Jonathan B. Evans, titled Leader Curiosity and Team Intellectual Stimulation and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

Jerel E Slaughter

Jerel Slaughter

Date: 07-Apr-2020

Nathan P Podsakoff

Nathan Podsakoff

Date: 15-Apr-2020

Sarah Doyle

Sarah Doyle

Date: 16-Apr-2020

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copies of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Jerel E Slaughter

Jerel Slaughter
Dissertation Committee Chair
Management and Organizations

Date: 07-Apr-2020



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ABSTRACT

The purpose of this study is to introduce the concept of leader curiosity displays. Transformational leadership (Bass, 1985) has received considerable attention as an effective form of team-centric leadership (Kozlowski, Mak, & Chao, 2016). However, recent criticisms of the multi-dimensional conceptualization and the conceptual and operational confounding of leader behavior with expected effects (van Knippenberg & Sitkin, 2013) suggest that our understanding is limited. To address these shortcomings, I focus on intellectual stimulation and introduce the concept of leader curiosity displays. Displaying curiosity is a behavior that is conceptually and operationally separate from the proposed effects and is defined as behaviors exhibited to followers that signal an interest in knowledge acquisition, learning, and thinking.

Using data from 371 undergraduate students organized into 67 teams, I tested a model predicting the effects of leader curiosity displays on team performance through curiosity climate, information elaboration, and team conflict. Team leaders were randomly assigned to one of two training conditions – high or low curiosity displays. Changes in leader behavior, along with team climate, team behavior, and performance were measured in a hidden profile task. Overall, the hypothesized model received limited support; however, additional analyses revealed important relationships. For team leaders low in specific curiosity working in teams low in initial levels of information elaboration, the experimental manipulation operated as expected. These effects on leader curiosity displays mediated a positive relationship with curiosity climate and information elaboration, and a decrease in relationship conflict. Increased information elaboration and decreased relationship conflict did not influence team performance, but I did find that leader curiosity displays had a positive influence on team creative performance. Theoretical implications as well as future research directions for leader curiosity displays are discussed.

CHAPTER 1: INTRODUCTION

Curiosity, which is the desire for knowledge and experience that motivates exploratory behavior (Berlyne, 1966; Litman, 2005; Loewenstein, 1994), is an important human drive that has drawn attention from various disciplines and has been regarded by philosophers as a powerful “passion” and “appetite” (Loewenstein, 1994, p. 76). Educators have emphasized the potential for curiosity to motivate students to learn (Dewey, 1910). Scientists consider curiosity an important driving force of discovery (Simon, 2001). In the arts, curiosity stimulates new idea generation, propels the exploration of new techniques, and motivates audience engagement in stories (Knobloch, Patzig, Mende, & Hastall, 2004; Leuba, 1958). Due to the potential for curiosity to motivate the desired behaviors of learning and knowledge acquisition, organizational scholars have identified several benefits of curiosity in the workplace (Harrison, 2011). Highly curious employees tend to adapt better to new jobs (Harrison, Sluss, & Ashforth, 2011), receive higher job performance ratings (Mussel, 2013), and display increased divergent thinking associated with innovation (Celik, Storme, Davila, & Myszkowski, 2016).

One area that has yet to consider the potential benefits of curiosity is team leadership. Research on team leadership considers what makes leaders effective in mobilizing and motivating team members to achievement of team objectives (van Knippenberg, 2017b). Teams, which are groups of people collectively responsible for job or task performance, provide the benefit of combining diverse knowledge and perspectives to generate unique contributions, particularly in information processing tasks (Hinsz, Tindale, & Vollrath, 1997). Within teams, leaders can be an important source of motivation (Chen & Kanfer, 2006; Williams, Parker, & Turner, 2010) and can positively influence team performance with behaviors that are aimed toward achieving a “synergistic threshold, where collective effort accomplishes more than the

sum of individual abilities and efforts” (Zaccaro, Heinen, & Shuffler, 2008, p. 83). However, despite the considerable research on traditional leadership that has focused on how leaders influence individual followers or how leaders “work with the masses” (Peterson & Kim, 2012, p. 28), little is known about the mechanisms that link leader behaviors to team performance (Burke et al., 2006). A recent review of team leadership by Kozlowski et al. (2016) noted that “more studies that examine mediating mechanisms between transformational leadership and team outcomes are needed” (p. 42). My research question is understanding the impact of leader curiosity on team climate, processes, and outcomes. Specifically, I seek to introduce to the concept of leader curiosity displays, which I define as behaviors exhibited by leaders to followers that signal an interest in knowledge acquisition, learning, and thinking. Followers tend to look to leaders as models of context-appropriate behavior (Festinger, 1954; Hardin & Higgins, 1996; Salancik & Pfeffer, 1978) and the contagious nature of curiosity (e.g., Elsbach & Kramer, 1996; Fredrickson, 2001) suggests that leader curiosity is likely to significantly impact follower behavior in several important ways.

Feeling curious is associated with both the positive behaviors of learning and knowledge acquisition as well as the aversive experience of conflicting ideas (Berlyne, 1960; Loewenstein, 1994) and “may be equated with unpleasant feelings of ‘deprivation’ that result from lacking desired knowledge (i.e., ‘uncertainty’)” (Litman, 2005, p. 796). The positive aspects of curiosity suggest that leaders who model curiosity increase team motivation for learning and knowledge acquisition. Based on social information processing theory (Salancik & Pfeffer, 1978), which theorizes that individuals use salient aspects of the social environment to understand behavioral expectations, I argue that leader curiosity will positively impact team curiosity climate and information elaboration. However, leaders are an important source of sensemaking within teams

(Morgeson, DeRue, & Karam, 2010), and leaders who display curiosity are also likely to generate uncertainty among team members and arouse conflict. Theorists seeking to understand the psychological underpinnings of feeling curious have claimed curious people observe incongruities, identify knowledge gaps and uncertainties, and highlight conflicts between expectations and observations (Berlyne, 1960, 1966; Litman, 2005; Loewenstein, 1994). This suggests that leaders who display curiosity are likely to introduce uncertainties and conflicting ideas to the team, which will generate task conflict. In sum, I expect that when leaders display curiosity, teams are likely to experience both the drive for information gathering (i.e., a climate of curiosity) and the conflict of uncertainty (i.e., task conflict).

To understand how team curiosity climate and task conflict may affect team performance, I consider information elaboration and relationship conflict as shown in Figure 1. Information elaboration is communication between team members that includes detailed explanation of ideas, constructive discussion of different perspectives, and knowledge integration (Hoever, van Knippenberg, van Ginkel, & Barkema, 2012), and relationship conflict refers to interpersonal incompatibilities among team members that generate tension and animosity (Jehn, 1995). Information elaboration has consistently shown a positive relationship with team performance (Resick, Murase, Randall, & DeChurch, 2014), while relationship conflict has demonstrated a consistently negative relationship (de Wit, Greer, & Jehn, 2012; de Wit, Jehn, & Scheepers, 2013). Team curiosity climate has the potential to positively influence team performance through increased information elaboration. If team members feel comfortable collaborating and coordinating with other team members, then the drive for information gathering is likely to result in constructive communication. Task conflict also has the potential to positively influence team performance if teams react to disagreements and conflicting ideas with increased exchange of

information and perspectives with team members. However, task conflict may also be detrimental to team performance if these disagreements generate tension, frustration, and increased relationship conflict.

I argue that psychological safety (i.e., the level of respect and trust between team members) will play a critical role in predicting when leader curiosity displays will improve performance through increased information elaboration or harm performance through increased relationship conflict. Psychological safety is a shared perception that it is safe to take interpersonal risks in the work environment. This shared perception is critical for team learning behaviors (Edmondson, 1999); influences the degree to which feeling motivated leads to taking action (Dirks & Ferrin, 2001); and provides an important condition for cooperation (Hwang & Burgers, 1997). The willingness to take risks that accompanies psychological safety suggests that it can create conditions that facilitate increased information elaboration and exchange of different perspectives between team members, which introduces the potential for rejection of team members' ideas and the threat of adopting new and different viewpoints. Similarly, a psychologically safe team context is likely to influence the degree to which task conflict becomes interpersonal in nature and generates increased relationship conflict (Simons & Peterson, 2000). Considering psychological safety as a moderator in the hypothesized model is consistent with the evidence that the construct is most importantly considered as a moderator in team research (Edmondson & Lei, 2014).

By introducing the concept of leader displays of curiosity, I seek to contribute to both leadership theory and team leadership research. In terms of contributions to leadership theory, this investigation will address critical deficiencies in transformational leadership (Bass, 1985; Conger & Kanungo, 1998; Shamir, House, & Arthur, 1993), one of the most actively studied

areas of leadership. Empirical evidence seems to suggest that transformational leadership is a particularly effective form of team leadership (Burke et al., 2006; Stewart, 2006; Wang & Zhu, 2011), but deficiencies in the conceptualization and measurement limit our ability to make valid conclusions (van Knippenberg, 2017b; van Knippenberg & Sitkin, 2013). Specifically, conceptual definitions and measurement items of transformational leadership confound leader behaviors with proposed effects. Consistent with the recommendations for addressing these issues (van Knippenberg & Sitkin, 2013), I focus on one dimension of transformational leadership. Within transformational leadership, one of the most neglected dimensions is intellectual stimulation: challenging norms and causing followers to seek new perspectives and look at problems in new ways. The increasing shift to an information-intensive economy and more knowledge-based job demands (Cascio, 2010) supports the idea that intellectually stimulating leadership is important. However, the definition of intellectual stimulation lacks “a clear description of what a leader actually does to influence the cognitive processes and behaviors of subordinates” (Yukl, 1999, p. 289). With the introduction of leader displays of curiosity, I seek to address this issue by defining a specific type of leadership behavior theorized to increase follower intellectual stimulation and describe the conditions when this will positively influence performance.

I also seek to contribute to the literature on team leadership by responding to calls to address mediating mechanisms that can explain the effects of transformational leadership on team outcomes (Kozlowski et al., 2016). Prior research has indicated that both information elaboration and conflict play important roles in determining team effectiveness (de Wit et al., 2012; Resick et al., 2014). Therefore, focusing on leader displays of curiosity has the potential to not only provide important insights into a neglected dimension of transformational leadership,

but also predict how and when a clearly defined form of leader behavior can influence important team processes and outcomes. Overall, the objective of this investigation is to provide insight into the process of how leaders may be able to intellectually stimulate teams by modeling curiosity to followers, a potentially valuable leadership behavior likely overlooked and neglected (Gino, 2018a, 2018b).

In the next chapter, I develop the overall research model by first introducing the concept of leader curiosity displays. I then review the relevant transformational leadership literature and argue that leader curiosity displays can address specific shortcomings of this literature. Using social information processing theory (Salancik & Pfeffer, 1978), I develop hypotheses regarding the relationship between leader curiosity displays and both team curiosity and task conflict. In the final sections I link the outcomes of team curiosity and task conflict to team performance, through information elaboration and relationship conflict, and argue that psychological safety will moderate these relationships.

CHAPTER 2: MODEL AND HYPOTHESES

Leader Displays of Curiosity

Given the potential benefits of curiosity in the workplace (e.g., Harrison, 2011; Harrison et al., 2011; Mussel, 2013), it is worth considering how curiosity can be fostered. One possibility is for leaders to model curiosity (Gino, 2018a). When leaders focus on asking questions and genuinely listening to responses, concede that they do not have the answer, value the process of exploring new solutions, and signal a preference to think more deeply about tough problems and alternative perspectives, they signal to followers the importance of curiosity. To explore the potential for this leadership behavior to influence team performance, I introduce the concept of leader displays of curiosity, which is defined as behaviors exhibited by leaders to followers that signal an interest in knowledge acquisition, learning, and thinking. These behaviors include interpersonal interaction with followers as well as behaviors only witnessed by followers. For example, when leaders ask questions to acquire information, they are signaling curiosity. These questions may be directed at followers or asked in the presence of followers. A leader may signal a desire to learn through verbal comments (e.g., “I want to learn more about that”) or their actions (e.g., conducting additional analysis before making decisions). A preference for learning can also be indicated by encouraging alternative perspectives, inviting in-depth discussion, or prompting respectful debate. These behaviors most likely involve interaction with others (i.e., information exchange or verbal expressions of curiosity), but behaviors such as the tendency to gather additional information or investigate alternative perspectives prior to making important decisions may not involve specific interactions with others. In addition, third-party knowledge of leaders displaying curiosity may create a reputation for being curious.

This definition specifically focuses on leader behaviors, which is distinct from a focus on the trait or state curiosity of leaders. Trait or state curiosity describes the internal state of a *preference for* information and knowledge acquisition, learning, and thinking (Mussel, 2013). Leaders with high trait or state curiosity are likely to exhibit the behaviors mentioned above that signal to others a “desire to know.” However, trait curiosity may be manifested by introspection or exploratory behaviors and learning activities not witnessed by others (i.e., thinking over new ideas or reading about new scientific discoveries, Litman & Spielberger, 2003). Leader trait curiosity can also motivate behaviors that are interpersonal but do not involve followers (e.g., knowledge acquisition from individuals external to the leader-follower relationship, which may involve activities of which followers are not aware). In addition, leaders may be motivated to refrain from displaying curiosity to followers due to the risk of others concluding that they have gaps in their knowledge and do not “know all the answers.” Given this, leaders who are high in trait curiosity may refrain from displaying these behaviors to followers. On the other hand, leaders may intentionally exhibit behaviors that signal an interest in learning and thinking, even in the absence of genuine curiosity, in order to create specific impressions. Individuals in organizations employ specific strategies to shape how they are seen by others (Bozeman & Kacmar, 1997). Role theory posits that individuals are greatly influenced by their roles such that they experience a great deal of pressure to meet role expectations (Biddle, 2013). As detailed below, there are reasons to believe that leaders may strategically exhibit behaviors to followers that signal a preference for information acquisition and learning, even in the absence of experiencing genuine curiosity.

There is some conceptual overlap between leader curiosity and several types of leader behavior. Among the dimensions of transformational leadership, intellectual stimulation bears

the most similarity. Intellectual stimulation is defined as “behavior on the part of the leader that challenges followers to re-examine some of their assumptions about their work and rethink how it can be performed” (Podsakoff, MacKenzie, Moorman, & Fetter, 1990). Some items used for measuring intellectual stimulation reflect displaying curiosity. The Multifactor Leadership Questionnaire includes the item “seeks differing perspectives when solving problems” (Bass & Avolio, 2004), and a measure developed by Podsakoff et al. (1990) includes “asks questions that prompt me to think.” However, intellectual stimulation measures also include items such as “challenges me to think about old problems in new way” (Rafferty & Griffin, 2004), and there are several ways that leaders may challenge followers to think in new ways that do not involve displaying curiosity (i.e., demanding better solutions or directly providing new ideas or ways of doing things). Additionally, leaders can exhibit curiosity to followers in ways that do not challenge current processes (i.e., when leaders identify knowledge gaps they are interested in resolving), and leader curiosity that is challenging in nature might result in follower frustration and confusion rather than intellectual stimulation. The overlap between leader displays of curiosity and intellectual stimulation is important, and I expand on this relationship in a later section by describing how leader displays of curiosity can contribute to our understanding of transformational leadership.

Another category of leadership behavior that is related to leader curiosity is participative leadership, which is when leaders encourage or promote shared influence and joint decision making with followers (Koopman & Wierdsma, 1998). Leaders who display curiosity may provide followers with an inside perspective on the decision-making process as they seek additional information and explore new ideas, but there are two reasons why leader displays of curiosity are distinct from participative leadership. First, leader curiosity displays can include

leader behaviors that indicate a preference for learning and thinking that does not include learning from followers. For example, followers may witness efforts to learn from sources external to the business unit or organization to acquire important information. Second, the knowledge acquisition behaviors of leaders, even when the search for additional knowledge focuses on gathering information from followers, may not include followers in the decision-making process. Thus, leader curiosity displays are distinct from participative leadership.

Two recent conceptualizations of leader behavior, respectful inquiry and leader humility, are also related to, but distinct from, leader curiosity. Respectful inquiry is defined as a multidimensional construct of asking questions in an open way and subsequently listening attentively (Van Quaquebeke & Felps, 2018). Respectful inquiry is potentially part of leader curiosity displays. Leaders can signal a preference for learning through social interaction characterized as respectful inquiry, but leader curiosity can also be challenging in nature. In addition, leader curiosity displays can include behavior that does not include inquiry (i.e., expressions of excitement about new ideas or unique proposals). Thus, there is some potential overlap between respectful inquiry and curiosity displays, but also some ways they do not overlap. Leader humility is defined as a set of modeling behaviors by leaders that includes being open to new ideas, advice, and feedback (Owens & Hekman, 2016). Openness to new ideas and feedback can be an antecedent condition of a preference towards learning and thinking, but an interest in and preference for learning and thinking goes beyond a willingness to consider new ideas. Curiosity is more agentic than openness (Harrison & Dossinger, 2017).

Managerial openness is another leadership construct with important similarities to and differences from leader curiosity. Openness is defined as followers' perceptions that (a) their boss listens to them, (b) is interested in their ideas, (c) gives fair consideration to ideas presented,

and (d) at least sometimes takes action to address the matter raised (Detert & Burris, 2007). Thus, both concepts include a willingness to learn and gather new information. Managerial openness is characterized by giving serious consideration to good ideas presented by followers and being open to their suggestions. While both concepts focus on the perceptions of followers, it is important to note that managerial openness is a characteristic of the relationship between the leader and the follower whereas leader curiosity characterizes the relationship between the leader and information. A leader high in managerial openness is willing to listen to good ideas from followers. A leader who displays high levels of curiosity is interested in new information from all sources. They signal a desire to know more, regardless of whether the follower is the source. In sum, there are important differences between leader displays of curiosity and these related leader constructs. Table 1 provides an overview of these similarities and differences.

There are a number of reasons why leaders might display curiosity. First, leader traits are likely to lead to the expression of trait relevant behavior (DeRue, Nahrgang, Wellman, & Humphrey, 2011), and leaders high in trait curiosity are likely to naturally display these behaviors. Second, knowledge acquisition is integral to leadership activity. Organizational leaders are required to “gather, integrate, and interpret enormous amounts of data” (Locke, 1991, p. 46). Thus, there may be contextual or organizational influences on curiosity displays. Third, leaders may be motivated to project the image of curiosity to appear leader-like. Gardner and Avolio (1998) proposed that leaders use impression management behaviors to create and maintain a charismatic image. Leaders may also be motivated to project the image of being curious. Competence is one of the most prototypic of all leader characteristics and perceived intelligence is positively related to leadership emergence (Judge, Colbert, & Ilies, 2004; Lord, Foti, & De Vader, 1984). Because curiosity is positively related to intelligence (Mussel, 2010)

some social actors may view curiosity and learning as signals of intelligence. When this is the case, they may be motivated to engage in the deliberate impression management strategy of creating and maintaining the image of being curious. Finally, leaders may be motivated to display curiosity to encourage similar behaviors from their followers. Leader behaviors significantly affect follower behaviors (see Fast & Tiedens, 2010; Owens & Hekman, 2016; Visser, van Knippenberg, van Kleef, & Wisse, 2013). The positional power of leaders suggests that they are an important source of social modeling for followers (Cialdini & Trost, 1998), and leaders may be motivated to display a preference for knowledge acquisition and learning to generate increased follower curiosity, which is associated with adaptation, job performance, and innovation (Celik et al., 2016; Harrison et al., 2011; Mussel, 2013).

There are also reasons why some leaders may avoid displaying curiosity. They may be low on trait curiosity, or they may value taking immediate action over exploring possibilities. Leaders may also be concerned that followers will be confused by the introduction of uncertainty. It is also possible that leaders are concerned about how curiosity might undermine their preferred social image. Although some leaders may associate displays of curiosity and learning with intelligence, other leaders may associate the display of curiosity with a lack of intelligence. The desire to learn or acquire information indicates a condition of (at least) partial ignorance. One pathway for curiosity arousal is the discrepancy between information that is known and unknown, identified in the presence of new stimuli (Litman, 2005). Identifying this “knowledge gap” can motivate learning and information acquisition (Loewenstein, 1994). When leaders display the motivation to learn and acquire information, they are openly admitting the existence of this knowledge gap. Some leaders may fear that this undermines images of competence and confidence. Therefore, in contrast to displaying the image of “I want to know,”

some leaders may be motivated to project the image of confidence and competence with behaviors that indicate “I do know.” Gino (2018a, p. 53) noted the following in making the case for the importance of leaders modeling curiosity:

Why do we refrain from asking questions? Because we fear we’ll be judged incompetent, indecisive, or unintelligent.... Experience and expertise exacerbate the problem: as people climb the organizational ladder, they think they have less to learn. Leaders also tend to believe they’re expected to talk and provide answers, not ask questions.

In summary, leader displays of curiosity represent an important class of leader behaviors, distinct from leader behaviors within the leadership literature, and related to the intellectual stimulation dimension of transformation leadership. The value of examining this category of leader behavior is not only the proposed effects on follower behaviors, but the potential to address critical weaknesses in transformational leadership theory. In the next section, I review the literature on transformation leadership, describe these deficiencies, and outline the potential for leader displays of curiosity to advance our understanding of what can make individuals transformational.

Transformational Leadership

Transformational leadership, along with the closely related concept of charismatic leadership, arguably represents the most actively studied areas of leadership (Day, 2012). Transformational leaders inspire and stimulate followers to exceed normal levels of performance (Bass, 1985). As theorized by Burns (1978), transformational leaders influence followers to transcend short-term goals and focus on higher order needs. This theory has become an important focus of leadership research following the development of a four-dimensional conceptualization by Bass (1985): *charisma* or *idealized influence* (i.e., behaving in admirable

ways that cause followers to identify with leaders in an emotional manner), *inspirational motivation* (i.e., articulating a vision that is appealing and inspiring to followers), *individualized consideration* (i.e., attending to follower needs and acting as a mentor), and *intellectual stimulation* (i.e., challenging norms and causing followers to seek new perspectives and look at problems in new ways). Charismatic leaders are exceptional leaders who use visionary and inspirational messages to produce high commitment to the leader's mission (Shamir et al., 1993). Dating back to early descriptions by Weber (1947) of leaders endowed with exceptional powers of visionary foresight and influence, research on charismatic leadership has sought to understand the leader qualities that cause followers to unconditionally accept the leader's mission and directives (Conger & Kanungo, 1987; House, 1977). Transformational and charismatic leadership share conceptual overlap and have frequently been combined under the label charismatic-transformational leadership (e.g., Hunt, 1999; Kirkpatrick & Locke, 1996; van Knippenberg & Sitkin, 2013). Considerable empirical evidence supports the argument that charismatic-transformational leadership (CTL) generates higher levels of perceived leader effectiveness, group performance, and follower job satisfaction (e.g., Banks et al., 2015; DeRue et al., 2011; Judge & Piccolo, 2004).

Despite the long-standing emphasis on CTL, there are critical weaknesses that limit our ability to make valid conclusions regarding the empirical evidence. As discussed by a number of scholars (e.g., Antonakis, Bastardo, Jacquart, & Shamir, 2016; Antonakis, Bendahan, Jacquart, & Lalive, 2010; van Knippenberg & Sitkin, 2013; Yukl, 1999), CTL suffers from concept definitions and measures that either confound leader behaviors with proposed effects or lack clear descriptions of leader behaviors (see Appendix A). Beginning from the roots of both charismatic (Weber, 1947) and transformational leadership (Burns, 1978), researchers have

defined this leadership primarily in terms of the effects on followers (i.e., shifting motivation from self-interest to collective interest, inspiring and motivating performance beyond expectations, and generating high commitment to leader mission). Without a clear understanding, the field is limited in what can be claimed to constitute effective leadership.

In contrast to clear descriptions of the outcomes of CTL on followers, the description of behaviors purported to cause these outcomes are ambiguous. For example, intellectual stimulation is defined as causing followers to look at problems in new ways and search for innovative solutions. Sample items used to measure this construct include “Has stimulated me to rethink the way I do things” (Podsakoff et al., 1990), “Has ideas that have forced me to rethink some things I have never questioned before” (Rafferty & Griffin, 2004), and “Gets other to look at problems from many different angles” (Bass & Avolio, 2004). Each of these items clearly describes the effects on the follower (i.e., looking at problems in new ways, rethinking the way things are done), but it is not clear what the leader does to generate these effects. How do leaders get followers to look at problems from different angles? What do leaders do to stimulate followers to rethink the way things are done? As presently defined and measured, intellectual stimulation does not address these important questions, and other dimensions of CTL suffer from the same shortcoming. In response to these criticisms, scholars have begun to examine specific elements of CTL, with the objective of developing and testing more conceptually sound definitions of leader behaviors theorized to influence follower performance (e.g., Antonakis et al., 2016; Banks et al., 2015; van Knippenberg & Stam, 2014).

Unsurprisingly, much of this work to advance transformational leadership has focused primarily on charisma and visionary leadership. This is likely because the earliest conceptualizations of CTL emphasized a more heroic and leader-centric perspective on

motivating follower performance. For example, early writings on CTL described the leader as the source for identifying the need to change and the creation of a new vision (Tichy & Devanna, 1986). Charismatic leaders were described as special individuals who produce extraordinary effects “by force of their personal abilities” (House, 1977, p. 4) and their God-given gifts (Weber, 1947). Essentially, effective performance is assumed to depend on the ability of a leader to find the right path and motivate others to take it (Yukl, 1999). However, missing in this focus on the heroic perspective of leadership and emphasis on idealized influence, charisma, and inspirational motivation is a closer look at the dimension of intellectual stimulation and the identification of leader behaviors that might improve follower performance through increased cognitive efforts.

Leader displays of curiosity can potentially address the poor conceptualization of this dimension by providing a clear definition of leader behaviors that are likely to stimulate the cognitive processes of followers. Empirical evidence suggests that followers tend to emulate both the emotions of leaders (Sy, Côté, & Saavedra, 2005; Visser et al., 2013) and their behaviors (Fast & Tiedens, 2010; Owens & Hekman, 2016). This is because “leader behavior ‘models the way’ organizational/group goals should be pursued” (Yaffe & Kark, 2011, p. 809), and followers tend to look to their leaders to understand context-appropriate behaviors (Festinger, 1954; Hardin & Higgins, 1996; Salancik & Pfeffer, 1978). For example, Owens and Hekman (2016) found that leader humility significantly increased follower humility and the emergence of collective humility within teams. They argued that the contagious nature of leader behavior, whereby the behavior of leaders cued similar behaviors among followers, explains this effect. I argue that when leaders display curiosity, these behaviors are likely to impact the cognitive processes of followers in a similar manner. As leaders show fascination with

information, continue to seek additional information to understand, and demonstrate a preference for hearing innovative solutions, they signal appropriate responses to difficult tasks and problems reflecting substantial cognitive effort. Followers are likely to respond with an increased preference for thinking, learning, and knowledge acquisition. Investigating this possibility can help identify specific leader behaviors that cue intellectual stimulation among followers.

There are three reasons why deepening our understanding of leader behaviors that increase followers' intellectual stimulation is important. First, leaders who provide intellectual stimulation are likely to play an increasingly important role in an information-intensive economy with increasing knowledge-intensive job demands (Cascio, 2010). Second, intellectually stimulating leaders are likely to significantly impact organizational performance because innovation and the generation of novel and useful ideas, which are closely related to cognitive activities and information search (Celik et al., 2016; Zhang & Bartol, 2010), are critical requirements for almost any job (Shalley, Gilson, & Blum, 2000; Unsworth, 2001). Third, focusing on leaders who provide intellectual stimulation can draw attention to leadership behaviors with the potential to maximize the benefits of team-based work. As noted above, transformational leadership is characterized by a heroic leadership bias that emphasizes the leader as the ultimate source of vision and motivation (Yukl, 1999). However, one of the primary benefits of team-based work is the potential for the unique contributions and perspectives of team-members to combine in ways that generate outcomes that are greater than the sum of the parts. The source of the benefit is the combination of contributions of the team members. Thus, by focusing on how leaders can stimulate the cognitive efforts and intellectual activities of followers, I highlight an important mechanism for leaders to maximize the benefits of team-based work.

Team Curiosity Climate and Task Conflict

The theory of social information processing suggests that leader displays of curiosity will significantly influence team member attitudes, behaviors, and beliefs. The fundamental premise of social information processing theory is that individuals are adaptive organisms that develop attitudes and behaviors to match the requirements of different circumstances (Salancik & Pfeffer, 1978). The immediate social environment represents one important source of information that provides cues which aid event interpretation and help shape attitudes and beliefs. Salient information from the environment is used to understand expectations, which shapes subsequent behavior. Within the context of teams, leaders are an important source of social information (Berson, Da'as, & Waldman, 2015), and individuals rely upon leaders more than others as an information source for learning role appropriate behavior (Ostroff & Kozlowski, 1992). Thus, team members are likely to adapt their attitudes and behaviors to adhere more closely to behavior displayed by leaders. This can make leader behavior contagious within the team.

Considerable empirical evidence supports the idea that leader behavior is modeled by followers. Expressions of leader mood can have a contagious effect on collective mood and group processes (Sy et al., 2005). The positional power of leaders, which generates emulation from others (Cialdini & Trost, 1998), also contributes to this relationship. For example, individuals tend to shift voice and speech style to more closely match the style of interaction partners who have greater social standing and prestige (Gregory & Webster, 1996). Another study showed that the citizenship behavior of leaders influences the shared beliefs of followers regarding the importance of citizenship behavior as well as the subsequent engagement in such behaviors (Yaffe & Kark, 2011). Leader behavior can also influence beliefs regarding important values and perspectives, such as the importance of growth and improvement (Owens & Hekman,

2012) or the degree to which followers focus on approaching desired goals or minimizing undesired outcomes (Johnson et al., 2017). Overall, leaders play a critical role in shaping the social environment, and team members that observe leader curiosity are likely to share perceptions regarding the importance of curiosity within the team.

Leaders serve as informational nerve centers of organizations (Mintzberg, 1979), and therefore how leaders manage information and the social cues they provide regarding information acquisition is likely to shape perceptions regarding curiosity. If leaders demonstrate a preference for acquiring new information, seeking clarification of uncertainties, and asking questions about topics they do not yet completely understand, they signal to followers both the value of these behaviors as well as a shared attitude regarding information processing. Additionally, curiosity is likely to be particularly contagious in a social context because questions about unfamiliar topics and the identification of deficiencies between current and desired knowledge levels increases curiosity (Loewenstein, 1994). Therefore, leader curiosity displays are likely to both generate increased modeling of the behavior and arouse feelings of curiosity in followers. In contrast, leaders that demonstrate a preference for being the source of answers, become uncomfortable when uncertainties are identified, and refrain from asking questions about or acknowledging the existence of less understood topics signal a very different perspective regarding information processing. These behaviors are likely to cause followers to focus on demonstrating what they know rather than being open to learning something new. They are less likely to value seeking new sources of information or ideas due to concerns regarding how their leader is likely to react.

I propose that when team leaders display curiosity to followers, they will create a team curiosity climate. Team climate refers to shared perceptions between team members of valued

goals or activities (Anderson & West, 1998). Examples of team climates include learning or performance goal orientation climates (Bunderson & Sutcliffe, 2003), competitive or collaborate climates (Zhu, Gardner, & Chen, 2018), and climates oriented towards either exploration or exploitation (Hirst, Van Knippenberg, Zhou, Zhu, & Tsai, 2018). Team curiosity climate describes the shared perception between team members that learning, knowledge acquisition, and inquisitive behaviors are valued within the team. I propose that team curiosity climate reflects shared norms of curiosity and operationalize a referent-shift composition model (Chan, 1998). Team curiosity climate differs from leader displays of curiosity in that the former refers to shared perception of valued behaviors and the internal state of the team and the latter refers to the behavioral pattern of leaders. High team curiosity climate is characterized by a shared preference for exploring unfamiliar subjects, learning new things, and gaining new information. Because a leader's curiosity behaviors are likely to drive both attitudes regarding curiosity as well as increased feelings of curiosity, I hypothesize that leader curiosity displays influence shared perceptions between team members regarding the value of curiosity, which will emerge as a group property (Kozlowski & Klein, 2000). I hypothesize this emergence at the team level as follows:

Hypothesis 1: Leader curiosity displays will be positively related to team curiosity climate.

An important aspect of this first hypothesis is the argument that leaders occupy a position of social influence within teams. This draws upon the concepts of behavioral modeling (Bandura, 1977) and the tendency for individuals to identify with and emulate occupants of important social roles (Katz & Kahn, 1978). A formal position within an organization or social group certainly signals at least a minimum degree of respect and the expectation for others to follow,

but recent conceptualizations of leadership have gone beyond an examination of formal roles to also consider the social construction of leadership (DeRue & Ashford, 2010). This perspective distinguishes between formal and informal leadership positions. A formal leadership position is determined by role assignment, titles, or an established position within an institutionalized hierarchical structure. A team leader position is formally recognized, and an individual is selected to occupy that position. An informal leadership position is determined by relational and social processes that create leader and follower identities, irrespective of positions within an institutionalized hierarchy. An individual is socially recognized as worthy of emulation, and informal leadership is conferred. Distinguishing between formal and informal leadership positions helps explain why some individuals in formal positions (i.e., supervisors) are not seen as leaders (Bedeian & Hunt, 2006) and why some individuals with do not occupy a formal position are seen as leaders (Charan, Drotter, & Noel, 2010; Spreitzer & Quinn, 2001).

The value in distinguishing between formal and informal leadership is the recognition that the social influence of individuals occupying formal leadership positions can be strengthened by their status within the group (Collinson, 2005; Gemmill & Oakley, 1992; Parry, 1998; Uhl-Bien, Marion, & McKelvey, 2007). This suggests that the degree to which team leader behavior influences team climate will be stronger when the team respects and admires the individual occupying a formal leader position. This alignment between a formal and informal role will enhance attention paid to and emulation of leader behavior. Several empirical investigations support the expectation that individuals occupying leadership positions are more influential when followers admire and respect them. In a sample of employees at a communications organization Yaffe and Kark (2011) found that leader citizenship behavior only had a significant influence on group citizenship behavior when the leader was seen by their

group as a highly worthy role model. Similarly, Jaussi and Dionne (2003) used an experimental design and found that leader creative behavior only had a significant influence on follower creativity when the leader was perceived as a creative role model.

To consider the informal and socially constructed aspect of influential leadership, I theorize that leader status will influence the strength of the relationship between leader curiosity displays and team curiosity climate. Specifically, individuals in formal leadership positions are likely to be more influential when they also have high status. Status is defined as the extent to which an individual is respected or admired by others (Magee & Galinsky, 2008). Status tends to be conferred upon individuals who embody desired characteristics (Berger, Berger, Fisek, & Norman, 1977; Blau, 1964; Ridgeway, Boyle, Kuipers, & Robinson, 1998), are members of certain stereotyped groups (Cuddy, Fiske, & Glick, 2007), or have a reputation of expertise and competence (Anderson & Shirako, 2008; Gould, 2002). Status increases social influence (Djurdjevic et al., 2017) and deference from group members (Joshi & Knight, 2015), which suggests that high status leaders are likely to be more influential than low status leaders. Therefore, I hypothesize that the relationship between leader curiosity displays and team curiosity climate will be moderated by leader status. Followers are more likely to pay attention to and seek to emulate the curiosity behaviors of leaders with high status than the same behavior displayed by leaders with low status.

Hypothesis 2: The positive relationship between leader curiosity displays and team curiosity climate will be moderated by leader status; the relationship will be stronger when leader status is high.

Another possibility for how leader displays of curiosity may influence teams is to consider how the negative aspects of curiosity (e.g., uncertainty and ambiguity) are related to the

leadership functions of *sensemaking* and *initiating structure*. These functions are key elements of the functional leadership approach to understanding team leadership (Zaccaro, Rittman, & Marks, 2001), which has sought to identify the critical functional tasks required of leaders to ensure team success. Scholars have proposed several taxonomies to categorize these functions (Morgeson et al., 2010; Peterson & Kim, 2012; Zaccaro et al., 2001). Sensemaking and structuring and planning the work are two commonly included tasks. These functions refer to the task of managing uncertainties and ambiguities.

The sensemaking function of leadership is identifying essential events for the team, interpreting these events, and communicating this interpretation to the team (Morgeson et al., 2010). Higher team performance can be achieved when team leaders help create order and make sense of what occurs (Weick, 1993), provide clarity regarding ambiguous and conflicting information (Marks, Zaccaro, & Mathieu, 2000), or facilitate the meaning and impact of events on team functioning (Smircich & Morgan, 1982). This helps the team develop a shared understanding and coherent framework to understand environmental cues (Zaccaro et al., 2001). Structuring and planning the work refers to determining methods for accomplishing the work, developing performance strategies, and standardizing team processes (Morgeson et al., 2010). This leadership function is similar to the process of initiating structure (Keller, 2006; Powell & Butterfield, 1984). Specifying procedures critical to team effectiveness as well as structuring and planning tasks are key drivers for team success (Henderson & Lee, 1992; Kane, Zaccaro, Tremble, & Masuda, 2002).

It is important to note these particular functions because the common characteristic of both is the reduction in uncertainty and clarification of ambiguities, outcomes that are unlikely to occur when leaders draw attention to knowledge gaps and uncertainties in the environment.

Curiosity includes an interest in novel, complex, or ambiguous stimuli (Litman, 2005; Litman, 2008). For curious individuals, searching the environment for new and interesting possibilities can be rewarding (Spielberger & Starr, 1994), but the effect on others may be disconcerting. Displaying an interest in ambiguities, incongruities, and less understood aspects of the environment is likely to undermine the leadership functions of sensemaking and planning. I expect that this will introduce task conflict, which is disagreement among team members about the tasks being performed and conflicting viewpoints and ideas (Jehn & Bendersky, 2003).

Early scholars focused considerable attention on the aversive nature of curiosity (Berlyne, 1960; Hebb, 1949; Hunt, 1963; Kagan, 1972). This work focused on the idea that curiosity is often driven by observed incongruities. Several types of incongruities were identified: a lack of correspondence between expectations and observations (Hebb, 1949), conflicting or incongruous ideas (Berlyne, 1960), and uncertainties raised by events that are not initially understood (Kagan, 1972). When individuals recognize these uncertainties and the gap in knowledge that they signal, they are motivated to explore and acquire new information to close the gap (Litman, 2005). The arousal of curiosity that results from uncertainties, ambiguities, and gaps in knowledge can be an important outcome at the individual level because it can motivate learning activities. However, because leaders are responsible for making sense of the environment for their followers and for structuring their work, when leaders express curiosity and draw attention to uncertainties and unknowns, this may increase confusion within teams. Rather than providing clarity of direction, clear interpretation of events, and a coherent mental model, leaders who display curiosity and an interest in the unfamiliar and unknown are likely to generate conflicting ideas and differences in viewpoints within the team. Indeed, De Jong, Song, and Song (2013) found that leader openness

and interest in unique thought processes increases team task conflict. This suggests that leader curiosity displays will generate task conflict within teams, and I hypothesize the following:

Hypothesis 3: Leader curiosity displays will be positively related to task conflict.

Information Elaboration, Relationship Conflict, and Psychological Safety

The first portion of the hypothesized model predicts the effects of leader curiosity displays on team climate and the emergent state of task conflict. These proposed effects directly relate to the positive and negative aspects of curiosity. However, to understand the potential benefits of leader curiosity, it is important to investigate how these proximal outcomes might relate to team performance. To consider this possibility, I examine information elaboration and relationship conflict, team variables directly related to performance (de Wit et al., 2012; de Wit et al., 2013). The positive relationship between performance and information elaboration as well as the negative relationship between performance and relationship conflict are well established (de Wit et al., 2012; de Wit et al., 2013; Resick et al., 2014). However, task conflict has a more complicated relationship with team performance. Meta-analyses of the relationship with team performance suggests that task conflict can be either positive or negative (de Wit et al., 2012). A positive link is argued to exist when task conflict leads to increased information exchange regarding team processes, and a negative link is argued to exist when task conflict becomes interpersonal in nature and turns into relationship conflict (e.g., Bradley, Klotz, Postlethwaite, & Brown, 2013; Bradley, Postlethwaite, Klotz, Hamdani, & Brown, 2012).

Thus, the potential for a positive relationship between leader displays of curiosity and team performance likely depends on the degree to which curiosity climate and task conflict increase information elaboration and avoid the negative outcomes of relationship conflict. First, I consider how team curiosity climate is likely to increase information elaboration, and then I

hypothesize conditions likely to strengthen this relationship. I consider the relationship with information elaboration rather than information exchange because information elaboration represents higher quality communication that includes detailed explanations and time spent discussing ideas (Hoever et al., 2012; Homan et al., 2008), whereas information exchange merely represents the degree to which team members share information with each other (Johnson et al., 2006). Curiosity, which is characterized by an interest in learning and thinking, is most closely aligned with more detailed discussion and elaboration. Then, I turn my attention to task conflict and consider when it is likely to increase information elaboration or increase relationship conflict. This will help build a model for why leader curiosity displays can be beneficial or harmful for teams, and the conditions when positive or negative effects are likely.

The expectation that team curiosity climate will increase information elaboration between team members is based on the model of Motivated Information Processing in Groups (MIP-G; De Dreu, Nijstad, & van Knippenberg, 2008). According to MIP-G, information elaboration within teams is increased when epistemic motivation within a team is high (De Dreu, Nijstad, & van Knippenberg, 2008). Epistemic motivation is the willingness to expend effort to achieve a thorough and rich understanding, and has been shown to increase the depth and breadth of information search (Bechtoldt, De Dreu, Nijstad, & Choi, 2010; De Dreu, Nijstad, Bechtoldt, & Baas, 2011). Epistemic motivation is conceptually related to team curiosity climate. Team curiosity climate is the degree to which team members share a perception that knowledge acquisition and learning are valued activities. A willingness to expend effort on extensive information search and inquisitive behaviors is likely to increase when these behaviors are valued within the team. This suggests that teams with high curiosity climate are more likely to engage in information elaboration. In addition, the idea that team climate will influence behavior

is supported by the evidence that when teams have a high motivation for information search and processing they are more likely to engage in information exchange (Gong, Kim, Lee, & Zhu, 2013) and teams characterized by a climate that prizes innovation engage in more creative behaviors (Amabile, 1988). Finally, when teams are comprised of individuals with high need for cognition – a tendency to engage in effortful cognitive endeavors – they exhibit higher levels of information elaboration (Kearney, Gebert, & Voelpel, 2009). This tendency to engage in effortful cognitive endeavors is likely to accompany a team climate that values inquisitive behaviors and information processing. Therefore, I hypothesize that team curiosity climate will increase information elaboration within teams.

Hypothesis 4: Team curiosity climate will be positively related to team information elaboration.

I propose that team psychological safety plays a critical role in strengthening this positive relationship between team curiosity climate and information elaboration. Psychological safety is the shared perception of team members that the work environment is conducive to taking interpersonal risks (Edmondson, 1999). In a psychologically safe environment, team members trust and respect one another and are confident that making mistakes, asking for help or information, or taking risks will not be penalized. When employees feel fearful of sharing information or focus on the risks of speaking up, they tend to remain silent and refrain from making suggestions for improvements or expressing divergent points of view (Detert & Edmondson, 2011; Morrison, See, & Pan, 2015). This is because there is the potential to damage an interpersonal relationship by contradicting the ideas or perspectives of another, and there is the potential that an expressed idea will be rejected by other group members or not respectfully considered. Therefore, if the risk and vulnerability associated with information elaboration is

particularly salient for team members, they may be unwilling to exchange information, even when team curiosity climate is high. Risk and vulnerability are central issues of psychological safety, and the perception that interpersonal risk taking is safe can create a context where team members are comfortable expressing unique perspectives, challenging and elaborating ideas, and integrating information (Martins, Schilpzand, Kirkman, Ivanaj, & Ivanaj, 2013).

Empirical evidence supports the claim that team psychological safety facilitates team learning (Edmondson, 1999). In a field study of technology companies, Collins and Smith (2006) found that psychological safety was positively related to employees combining different ideas and exchanging knowledge. In a sample of 3,149 employees in a restaurant chain, Detert and Burris (2007) found that team psychological safety was related to increased levels of speaking up and offering improvement suggestions. Siemsen, Roth, Balasubramanian, and Anand (2009) looked at four manufacturing and service operation companies and found that psychological safety within teams was positively related to information sharing. While psychological safety has frequently been conceptualized as a mediator that explains team outcomes, a review of the literature by Edmondson and Lei (2014) concluded that the construct likely plays a more important role as a moderator at the group level. This is because psychological safety represents a team climate that facilitates the willingness to contribute ideas. When team members are confident that the behaviors of asking questions, seeking feedback, and experimenting with ideas have a low risk of being interpreted as signals of ignorance or incompetence by team members, there will be a greater willingness to contribute ideas and elaborate on unique perspectives. It is also important to consider whether psychological safety operates as a mediator between leader displays of curiosity and team outcomes because leader behavior has been considered an important antecedent condition of team psychological safety. However, leader influence on

psychological safety, an interpersonal construct, is determined primarily by the quality of the relationship between leader and follower (Edmondson & Lei, 2014). In contrast, leader displays of curiosity are a characteristic of the relationship between the leader and information, not the relationship between leader and follower (see Table 1).

One example of leader behavior that relates to increased psychological safety is a longitudinal study at a large hospital by Hiram, Peng, Carmeli, and Schaubroeck (2012) which found that leader inclusiveness was positively related to psychological safety. Additionally, Carmeli and Gittell (2009) surveyed top management teams and found that relational leadership, as defined by shared goals and mutual respect, is positively related to team psychological safety. Schaubroeck, Lam, and Peng (2011) examined the influence of both servant leadership and transformational leadership on team psychological safety and team potency. The results supported a positive relationship between servant leadership and team psychological safety, whereas transformational leadership was positively related to team potency. Thus, team psychological safety can be an important outcome of leader behavior, but in the current study, it is more likely to operate as a moderator than as a mediating mechanism.

Additional support for the importance of considering psychological safety as a moderator in the model comes from the closely related concept of trust, which is defined as the willingness of a trustor to be vulnerable to the actions of a trustee based on the expectation that the trustee will perform a particular action (Mayer, Davis, & Schoorman, 1995). Both psychological safety and trust describe conditions of a willingness to be vulnerable and take risks, and empirical evidence suggests that trust is an important moderator of the relationship between constructs in teams (Dirks, 1999; Simons & Peterson, 2000). Trust strengthens the effects of variables expected to increase information exchange (Andrews & Delahaye, 2000; Zand, 1972). When

team members trust one other, they will be less concerned about the risk of sharing new information, and the probability that opposing perspectives and ideas will be constructively considered seems more likely. In sum, individuals within a trustful and respectful team climate (i.e., high psychological safety) will feel more comfortable expressing their true self and expect that team members will give them the benefit of the doubt. Thus, the motivation for information acquisition created by team curiosity climate will generate more information elaboration when psychological safety is high. The possibility that new ideas will be understood or respectfully considered will seem more likely. Therefore, I hypothesize that psychological safety will moderate the positive relationship between team curiosity climate and information elaboration.

Hypothesis 5: The positive relationship between team curiosity climate and team information elaboration will be moderated by team psychological safety; the relationship will be stronger when team psychological safety is high.

Studies examining the influence of task conflict on teams have suggested both the potential for the positive outcome of increased information elaboration and the negative outcome of increased relationship conflict (e.g., Bradley et al., 2012; Simons & Peterson, 2000). A positive outcome is argued to occur when disagreements regarding team processes and differing viewpoints and ideas result in more meaningful discussions that challenge the validity of existing beliefs. Accordingly, research has demonstrated that when team psychological safety is high or when team personality composition is characterized by a willingness to consider new ideas, the relationship between task conflict and team performance is positive (Bradley et al., 2013; Bradley et al., 2012). This is because a team climate characterized by trust and respect promotes team learning behavior (Edmondson, 1999), and a safe relational context brings out the exchange of ideas (Dirks & Ferrin, 2001). Although the overall relationship between task conflict and team

performance in the presence of moderators has been empirically tested, I am not aware of any studies that measured the proposed mechanism of information elaboration. Consistent with the arguments made in these studies, I suggest that when team psychological safety is high, task conflict will have a positive relationship with information elaboration. High psychological safety will create a safe space for exchanging ideas (e.g., Gong et al., 2013) and allow different perspectives and opposing ideas associated with team conflict to be discussed openly and constructively. However, when team members do not respect or trust one another, then discussing each other's perspectives and integrating information will be less likely, and the presence of task conflict will have a negative relationship with information elaboration.

Hypothesis 6: Team psychological safety will moderate the relationship between task conflict and information elaboration; the relationship will be (a) positive when psychological safety is high and (b) negative when psychological safety is low.

A potentially negative outcome of task conflict is argued to exist when disagreements about processes and ideas generate frustrations, strains, and animosity between team members (Simons & Peterson, 2000). When cognitive conflict becomes personal, then task conflict will trigger relationship conflict. The presence of differing viewpoints and opposing ideas is subject to the possibility of misattribution. One interpretation of differences of opinion between team members is personal incompatibility that will generate tension, animosity, and annoyance (Jehn, 1995). Another interpretation is that disagreements are rooted in differing ideas that are unconnected to hidden agendas or personal attacks (Amason, 1996; Amason & Sapienza, 1997). Trust, a core element of psychological safety, plays a critical role in the attribution process. Trust includes generalized expectations of group members (Zand, 1972), and these expectations are likely to influence the attribution process (Simons & Peterson, 2000). When psychological safety

is low and team members do not trust one another, then task disagreements are likely to be interpreted negatively and generate relationship conflict. On the other hand, in a context of high psychological safety and trust between team members, team members will hold more positive expectations of one another, and conflicting ideas are less likely to be seen as indicative of interpersonal incompatibilities that generate frustration and strain. Taken together, I hypothesize that task conflict will increase relationship conflict when psychological safety is low.

Hypothesis 7: Team psychological safety will moderate the positive relationship between task conflict and relationship conflict, such that the relationship will be more strongly positive when psychological safety is low (vs. high).

Team Performance

Consistent with calls for charismatic-transformational leadership research in the team context to “draw from well-established team process-mediating mechanisms” (Kozlowski et al., 2016, p. 42), the model that I have developed focuses on two team variables with well-established contributions to team effectiveness. Information elaboration and team conflict have received considerable attention as emergent states and processes that affect team performance (De Dreu & Weingart, 2003; DeChurch, Mesmer-Magnus, & Doty, 2013; Marlow, Lacerenza, Paoletti, Burke, & Salas, 2018; Mesmer-Magnus & DeChurch, 2009; Resick et al., 2014). Information elaboration has consistently shown a positive relationship with team performance and has demonstrated a stronger relationship with performance compared to other forms of team communication (Marlow et al., 2018). When teams exchange, discuss, and integrate ideas about the team’s task, the different areas of expertise and perspectives can be integrated and produce high performance (van Knippenberg, De Dreu, & Homan, 2004). Exchanging ideas and sharing knowledge to tackle complex problems helps generate new ideas, and creative solutions are more

likely (Gong et al., 2013; van Knippenberg, 2017a). In accordance with this research, I expect that information elaboration will positively relate to team performance.

Hypothesis 8: Team information elaboration will be positively related to team performance.

The results of several meta-analyses have demonstrated a consistent, negative relationship between relationship conflict and team performance (de Wit et al., 2012; de Wit et al., 2013; DeChurch et al., 2013). Interpersonal tension and frustrations are detrimental to team performance because negative reactions and uncomfortable feelings inhibit group activity (Amason, 1996; Jehn, 1995). When group members feel animosity toward one another collaborative effort and coordination is reduced (De Dreu, 2006), and more time is spent responding to non-task-related issues (Evan, 1965). Teamwork promises the potential for the unique contributions and activities of team members to combine in ways that generate outcomes greater than the sum of the parts. Teams that combine individual effort to produce collaborative work products without the animosity and tension of relationship conflict are more likely to achieve these benefits. They will be more likely to leverage unique efforts and generate efficient processes compared to teams with high relationship conflict. Thus, I hypothesize that relationship conflict will be negatively related to team performance.

Hypothesis 9: Relationship conflict will be negatively related to team performance.

As depicted in Figure 1, Hypotheses 1 through 9 suggest moderated mediation, such that the indirect effect of leader curiosity displays on team performance is serially mediated via team curiosity climate, team conflict, and information elaboration, with the effects being positive when psychological safety is high and negative when psychological safety is low. These hypotheses also suggest that the indirect effect of leader curiosity displays on team performance

via team curiosity climate and information elaboration is moderated by leader status, such that the effect is stronger when leader status is high versus low. As such, I make the following series of predictions, which are depicted in Figures 2 - 5:

Hypothesis 10: Leader status will moderate the serial indirect positive effect of leader curiosity displays on team performance via team curiosity climate and information elaboration; the effects will be stronger for leaders with high (vs. low) status.

Hypothesis 11: Team psychological safety will moderate the serial indirect positive effect of leader curiosity displays on team performance via team curiosity climate and information elaboration; the effects will be stronger when psychological safety is high (vs. low).

Hypothesis 12: Team psychological safety will moderate the serial indirect effect of leader curiosity displays on team performance via task conflict and information elaboration; the effects will be positive when psychological safety is high and negative when psychological safety is low.

Hypothesis 13: Team psychological safety will moderate the serial indirect negative effect of leader curiosity displays on team performance via task conflict and relationship conflict; the effects will be stronger when psychological safety is low (vs. high).

CHAPTER 3: RESEARCH METHODOLOGY

Study 1: Leader Curiosity Displays Measure Validation

Measures of curiosity are aimed at assessing the degree to which individuals feel curious and are interested in learning and thinking, but leader curiosity displays is defined as behaviors exhibited by leaders to followers. As such, items used to measure curiosity (e.g., “I enjoy exploring new ideas,” “I enjoy pondering and thinking,” and “I feel inquisitive”) only capture an internal state and do not capture observed behaviors that indicate curiosity to others (e.g., asking open-ended questions, seeking additional information to understand problems, and reacting positively to new ideas). Therefore, to measure leader displays of curiosity, a new measure must be developed that includes observed behaviors rather than only assessments of an internal state. To do so, I generated 10 items from existing curiosity scales (Litman, 2008; Mussel, 2013; Naylor, 1981) and items I wrote myself to capture the underlying concept of displaying curiosity as a leader. This measure was validated in three stages. In Study 1a, I generated items from existing curiosity scales and used subject matter experts to evaluate content validity. In Study 1b, I used an item-rating task with a sample of undergraduates to provide further evidence of content validity. In Study 1c, I recruited a sample of full-time employees to provide evidence of discriminant validity. Results of these three studies are included below.

Study 1a. I. To provide initial evidence of content validity (Anderson & Gerbing, 1991), I used an item-sort task with subject matter experts to remove items that were not consistent with the construct definition (Hinkin, 1998). The task was completed by three faculty members and four doctoral students in Management. Each participant worked independently and was given the definitions of four types of leadership (leader curiosity displays, leader humility, participative leadership, and empowering leadership). Participants were asked to place items into one of five

categories: leader curiosity displays, leader humility, participative leadership, empowering leadership, or indeterminant. Participants rated 13 in total: each item of the leader curiosity displays scale, and one additional item from each of the other leadership types. Items were randomly presented, one at a time.

Six items were agreed upon by at least five of the seven participants and were included in the next study. Four of the items failed to meet this minimum agreement and were dropped. In general, items that reflected leader behavior oriented towards providing directions to followers were dropped. For example, the item “Encourages additional analysis” only received support from four participants and was dropped. Based on these results, I went back to existing curiosity scales and generated four additional items that reflect leader behavior that signals an interest in information gathering and learning. For example, I added the items “Is excited to learn about unfamiliar subjects” and “Likes to learn how things work.” This revised list, which is included in Appendix D, was used in the follow-up content validity study.

Study 1b. To provide further evidence of content validity, I completed an item-rating task (MacKenzie, Podsakoff, & Podsakoff, 2011) with a sample of 374 undergraduate students in a business communications course. Participants were given the definitions of four types of leader behavior (leader curiosity displays, leader humility, participative leadership, and empowering leadership) and were presented with a total of 22 items to rate (10 items for leader curiosity displays and 4 each of the remaining three constructs). For each item, participants rated the degree to which the item is consistent with each of the four leadership constructs on a 5-point scale (1 = *not at all consistent* to 5 = *completely consistent*). Items were presented in a matrix format on three separate screens with 6-8 items randomly presented on each screen. Each screen included both leader curiosity display items and items from each of the other three constructs.

Table 2 presents the results of a one-way repeated measures analysis of variance (ANOVA) to assess whether an item's mean rating on leader curiosity displays differed from its ratings on other leadership constructs. The omnibus test was significant for each item, suggesting differences in the rating of consistency with leadership construct definitions. I then conducted planned contrasts to test whether the mean of the rating for the item on leader curiosity displays was higher than the mean rating for this item on all other leadership constructs. As shown in Table 2, six items demonstrated a mean rating on leader curiosity displays higher than the mean rating on all other leadership constructs and were included in the final validation stage. Mean ratings of consistency with construct definitions showed no differences between curiosity displays and participative leadership for three items, and one item showed no differences between curiosity displays and humility.

Using these six items, I followed procedures outlined in Colquitt, Sabey, Rodell, and Hill (2019) to calculate the hinkin tracey correspondence (*htc*) index to test definitional correspondence and the hinkin tracey distinctiveness (*htd*) index to test definitional distinctiveness. To compute *htc*, the average rating of item consistency with the curiosity displays definition across all items is divided by the number of anchors to assess whether items correspond appropriately with the concept definition. The *htc* for leader curiosity displays was .88, which indicates strong definitional correspondence (Colquitt et al., 2019). To compute *htd*, the average of all differences between rated consistency with the intended construct (i.e., curiosity displays) and rated consistency with related constructs (i.e., leader humility, participative leadership, and empowering leadership) is divided by the number of anchors minus one. This represents the degree to which scale items correspond more to the intended construct's

definition than to the definition of related constructs. The *htd* for leaders curiosity displays was .32, which indicates very strong construct distinctiveness (Colquitt et al., 2019).

Study 1c. To provide evidence of discriminant validity, I used Amazon Mechanical Turk (MTurk) to recruit a sample of 138 full-time employees in the U.S. who have an assigned supervisor. Participants rated the behavior of their supervisor on several dimensions of leadership: leader curiosity displays, transformational leadership (15-item scale developed by Rafferty & Griffin, 2004), leader humility (nine-item scale developed by Owens & Hekman, 2016), participative leadership (six-item scale developed by Huang, Iun, Liu, & Gong, 2010), and managerial openness (three-item scale; Detert & Burris, 2007).

Means, standard deviations, and correlations are presented in Table 3. As expected, all leadership constructs are highly correlated with each other. To assess construct distinctiveness, I first conducted a series of confirmatory factor analyses (CFA) as shown in Table 4. The hypothesized model wherein all leadership constructs loaded onto separate dimensions was compared with a series of increasingly parsimonious models. CFA fit was assessed with the comparative fit index (CFI; Bentler, 1990) and the standardized root mean squared residual (SRMR; Hu & Bentler, 1999). CFI provides the best approximation of the population value for a single model, and I considered values $\geq .90$ as an indication of acceptable fit (Medsker, Williams, & Holahan, 1994). SRMR is a measure of the average standardized residual per degree of freedom, and I considered values $\leq .08$ as an indication of acceptable fit (Browne & Cudeck, 1992). The eight-factor solution indicated good fit, $\chi^2(637) = 1,066.17, p < .001, CFI = .92, SRMR = .04$, and provided the best fit to the data.

I also analyzed the data with the Fornell-Larker (1981) test. In this test, distinctiveness is determined by whether the shared variance of leader curiosity displays (average variance

extracted, AVE) is greater than the squared covariance between leader curiosity displays and other leadership constructs from the CFA model fit. Results from the test provided limited support for discriminant validity. The AVE for leader curiosity displays in the eight-factor model was .69, which only exceeded the squared covariance between leader curiosity displays and intellectual stimulation (covariance = .80). To further examine discriminant validity, I conducted a series of CFAs comparing the curiosity displays measure and one of the leadership scales (i.e., intellectual stimulation, humility, participative leadership, and openness). In these analyses, I tested the fit of a two-factor model (e.g., curiosity displays and intellectual stimulation loading onto separate factors) and then tested the fit of the corresponding one-factor model (e.g., curiosity displays and intellectual stimulation loading onto one factor). In all cases the two-factor model fit better than the one-factor model, providing evidence for discriminant validity.

Study 2: Sample and Procedure

Hypothesis testing was completed with a sample of 448 students from two sections of an introductory management course during the Fall 2019 semester at the University of Arizona. Students were assigned into 80 teams, which consisted of five to six members. Team leaders were selected by the teams at the beginning of the semester and randomly assigned to one of two leadership conditions (i.e., high and low leader curiosity), with 40 team leaders assigned to each condition. Team leaders were given 10 points of extra course credit for completing their assignment and participating in training. Team leaders were trained in their assigned leadership style and provided instructions for how to behave in the experimental task. In exchange for participation, all team members earned three points of extra class credit.

Experimental Task. Teams engaged in an adaptation of a Murder Mystery task developed by Stasser and Stewart (1992). The task required teams to act as an investigative team

responsible for identifying the guilty suspect of a murder. Teams read a series of interviews from a homicide investigation that was presented in a case file that included supporting materials, such as a map and newspaper article. The case file included clues that are either incriminating or exonerating for each of three suspects. The clues were distributed unevenly to team members with four unique case files, such that some information was given to all team members and some information was given to only one team member; that is, some information was completely shared, and some information was unique to a single team member. If team members only considered the information they received, each member would likely come to different conclusions regarding the identity of the murderer. However, if all of the evidence was considered, then it would be clear which suspect is the actual murderer. Collectively, teams had all of the necessary information to solve the crime. Materials for the task are included in Appendix B. The task was modified to accommodate different team sizes by providing a case file with no unique clues to team members who were part of teams with more than four individuals who participated in the task.

Procedure. During the semester, teams engaged in several activities and assignments. The experimental task was completed on November 20, 2019. Team leaders received 60 minutes of leadership training on either November 14, 2019 or November 19, 2019. The pre-task survey (Time 1 survey) was completed before November 10, 2019. In this survey, team followers responded to measures of leader status, leader curiosity displays, and leader perceived intelligence. All team members (leader and followers) responded to measures of team psychological safety, team curiosity climate, team conflict (task and relationship), and information elaboration. These measures were used to assess the moderators of the hypothesized

model (i.e., leader status and team psychological safety) and baseline levels of team leader behavior to measure the effectiveness of the leadership training.

Leadership training was completed in small groups. Team leaders were randomly assigned to receive either high or low leader curiosity training. At the conclusion of the training, team leaders were given instructions on how to lead the team during the experimental task. Leaders in the high curiosity condition were trained on the importance of curiosity, how to use questions to generate curiosity within the team, and the value of signaling to team members a desire for information. The main objective of the training was to learn how to project an image of “I want to know” as a leader. Instructions for the Murder Mystery task communicated different questions to ask the team to signal a desire to hear new information and an openness to gather as much information as possible.

Leaders in the low curiosity condition were trained on the importance of displaying that they are knowledgeable and creating the impression that they are an important source of information. Curiosity is a desire for information and a preference for learning, so the low curiosity condition focused on the perception of already having knowledge and being intelligent (i.e., an important source of information). The training emphasized the value of being perceived as knowledgeable and provided an overview of research on how to express knowledge in a way that increases the perception of being intelligent. The main objective of the training was to learn how to project an image of “I do know” as a leader. Instructions for the Murder Mystery task emphasized the need to avoid indicating knowledge gaps and instead focus on appearing knowledgeable. Training materials for both experimental conditions and leadership instructions for the experimental task are included in Appendix C.

After a short introduction on Wednesday, November 20, the case files for each role in the team were provided and team members were given 20 minutes to study the case file and make as many notes about the information in the file as they preferred. At the end of the allotted time to study the case file, the materials were gathered, and each individual completed a worksheet to indicate which suspect they thought was guilty and described the reasoning for their decision. Teams were then given 15 minutes to meet, discuss the case, and make a decision. After completing the task, team members individually completed the post-task survey (Time 2 survey), which was emailed to them immediately before the appointed time to complete the survey. In this final survey, followers responded to measures of leader status, leader curiosity displays, and leader perceived intelligence. All team members (leader and followers) responded to measures of curiosity climate, information elaboration, and team conflict (task and relationship). The sequence of survey measures and tasks is shown in Figure 6. To ensure that participants carefully completed the post-task surveys, all participants were required to individually work on the final survey during an allotted 10 minutes. Participants were instructed that they were required to remain in class for the final concluding remarks to receive credit for participating in the class exercise.

A total of 402 students completed the Time 1 survey, 439 students completed the Time 2 survey, and 77 leaders completed the training. After removing teams with more than one missing team member, the Time 1 sample consisted of 371 students nested in 71 teams, and the Time 2 sample consisted of 434 students nested in 79 teams. In the final sample, I included all teams that were in both the Time 1 and Time 2 samples and had a team leader who completed both surveys and the training. This resulted in 371 students nested in 67 teams. The average age of the final sample was 20.74 years ($SD = 2.23$), 42% were female, 97% were in their junior year, and 87%

spoke English as their native language. The ethnicity of the sample was 75% white, 21% Hispanic, 11% Asian/Pacific Islander, 2% Middle Eastern/West Asian, and 2% Black (total exceeds 100% due to participants who indicated multiple ethnicities). The sample of team leaders was 45% female. The gender composition of teams was one team with five females, four teams with four females, 16 teams with three females, 31 teams with 2 females, 13 teams with one female, and two teams with no females. Forty teams had 6 members, and 27 teams had five members.

Study 2: Measures

Unless otherwise noted, all measures were assessed on a 7-point scale (1 = *completely inaccurate* to 7 = *completely accurate*). All measures are included in Appendix D. The instructions for the Time 1 survey asked participants to reflect on the behavior of the leader or team during the semester up to that point. The instructions for the Time 2 survey asked participants to reflect on the behavior of the leader or team during the exercise that day.

Leader status. Team leader status was measured by asking team members to respond to a five-item scale developed by Yu, Hays, and Zhao (2019). Sample items include, “The team leader has a good reputation among the team members” and “The team leader is highly respected by the team members.” The alpha reliability for this measure was .96 in both the Time 1 and Time 2 surveys.

Leader curiosity displays. Leader displays of curiosity was measured with the six-item scale validated in Study 1. Participants were asked to rate the degree to which each statement accurately described the team leader behavior. Sample items include, “Seeks new sources of information” and “Asks open-ended questions.” The alpha reliability for this scale was .92 in the Time 1 survey and .94 in the Time 2 survey.

Leader perceived intelligence. The degree to which team members perceived the leader to be intelligence was measured with a three-item scale developed by Murphy (2007). The items are “The team leader is competent,” “The team leader is bright,” and “The team leader is smart.” The alpha reliability for this scale was .96 in the Time 1 survey and .93 in the Time 2 survey.

Psychological safety. Team psychological safety was assessed with a seven-item scale developed by Edmondson (1999). Sample items include, “Members of this team are able to bring up problems and tough issues” and “I am able to count on my team members for help if I have difficulties with my job.” The alpha reliability of this scale was .82 in the Time 1 survey and .80 in the Time 2 survey.

Team curiosity climate. To measure team curiosity climate I adapted the state curiosity scale developed by Naylor (1981) to reflect a referent shift consensus model. The scale includes 11 items. Sample items include, “The team felt curious about what was happening” and “The team wanted more information.” The alpha reliability of this scale was .96 in both the Time 1 and Time 2 surveys.

Team conflict. Task and relationship conflict were measured with a six-item scale developed by Jehn and Mannix (2001). The items asked team members to report the frequency of conflict on the team on a five-point scale (1 = none, 2 = rarely, 3 = sometimes, 4 = a moderate amount, 5 = a lot). Three items assessed task conflict, and three items assessed relationship conflict. A sample item for task conflict is “How often were there conflicts of ideas in your team during this task?” A sample item for relationship conflict is “How often was there relationship tension in your team during this task?” The alpha reliability for task conflict was .84 in the Time 1 survey and .86 in the Time 2 survey. The alpha reliability for relationship conflict was .87 in the Time 1 survey and .88 in the Time 2 survey.

Information elaboration. Team information elaboration was measured with a three-item scale developed by Homan et al. (2008). Sample items include, “Team members contributed a lot of information during the group task” and “During the group task, we tried to use all available information.” The alpha reliability of this scale was .88 in the Time 1 survey and .87 in the Time 2 survey. As an additional measure of information elaboration, the post-task survey included a questionnaire asking group members to identify clues that were shared in the group discussion. It included all of the shared and unshared clues. The instructions emphasized that participants should only check off clues that they actually discussed, not ones that they had merely read. Items identified by a minimum of two team members were included.

Performance. Team performance was a dichotomous measure determined by comparing the suspect identified by the team with the correct suspect.

CHAPTER 4: RESULTS

Prior to examining the experimental manipulation, I tested for construct distinctness with a series of multilevel CFAs (MCFA; Dyer, Hanges, & Hall, 2005; Muthén, 1994). Three measures only had responses from team followers (i.e., leader curiosity displays, perceived leader intelligence, and leader status) and were analyzed separately from the five measures that were gathered from all team members (i.e., curiosity climate, task conflict, relationship conflict, psychological safety, and information elaboration). I assessed fit with the comparative fit index (CFI; Bentler, 1990) and the standardized root mean squared residual (SRMR; Hu & Bentler, 1999). To compare models, I examined the Akaike Information Criterion (AIC) and considered the best-fitting solution to be the model with lower AIC (Burnham & Anderson, 2004).

The results of the MCFA for Time 1 responses are presented in Table 5, and the results for Time 2 responses are presented in Table 6. In both samples the 3-factor solution for variables assessing team leaders exhibited a good fit of the model to the data, $\chi^2(174) = 483.27, p < .001$, CFI = .94, SRMR_{within} = .04, SRMR_{between} = .08 for Time 1, and $\chi^2(174) = 380.89, p < .001$, CFI = .96, SRMR_{within} = .03, SRMR_{between} = .07 for Time 2. In addition to this three-factor model of measures gathered from followers, I also examined a two-factor model wherein leader status loaded on a separate factor, and a one-factor model. Each of these alternative models exhibited a worse fit in both the Time 1 and Time 2 survey compared to the three-factor model, as shown by the higher AIC. The five-factor solution for variables assessing the entire team exhibited a reasonable fit of the model to the data in both samples, $\chi^2(358) = 647.47, p < .001$, CFI = .94, SRMR_{within} = .05, SRMR_{between} = .15 for Time 1, and $\chi^2(358) = 610.45, p < .001$, CFI = .95, SRMR_{within} = .05, SRMR_{between} = .18 for Time 2. The SRMR_{between} is slightly higher than conventional standards (e.g., < .10; Kline, 2016), which may be a result of the small number of

teams included in the sample. However, the other fit indices indicate good fit, and West, Taylor, and Wu (2012) recommend basing model fit decisions on an entire set of fit indices rather than one in isolation. I also examined a four-factor model wherein task and relationship conflict were combined to load on a single factor; a three-factor model wherein the two conflict measures loaded on a single factor, curiosity climate and team psychological safety load on a single factor, and information elaboration loads on a single factor; a two-factor model wherein only information elaboration loaded on a separate factor; and a one-factor model. Each of these more parsimonious models exhibited a worse fit in both the Time 1 and Time 2 surveys compared to the five-factor model. Thus, the results of the MCFA supported the hypothesized separation of study variables.

Next, I considered aggregation of variables to the team level. Following the recommended practice of setting a priori cutoff values for aggregation suitable to the research question and study context (Lebreton & Senter, 2008), I determined the appropriateness of aggregating variables to the team level based on published empirical research that used student teams of similar size to this study (e.g., Bradley et al., 2013; Bradley et al., 2012; Hofmann & Jones, 2005; Owens & Hekman, 2016). Strong interrater agreement was determined by $r_{WG(j)}$ values greater than .70 (Lebreton & Senter, 2008). A strong group effect was determined by ICC(1) scores above .10. Due to the small group size, which can lead to lower ICC(2) values (Bliese, 1998), I considered ICC(2) values greater than .40 acceptable for aggregating to the team level.

Team level aggregation statistics are shown in Table 7. Interrater agreement ($r_{WG(j)}$) scores ranged from .46 to .86. Most variables indicated strong interrater agreement on either one or both surveys, as determined by $r_{WG(j)}$ values greater than .70 (Lebreton & Senter, 2008). The

one exception is psychological safety, which failed to reach strong interrater agreement on either survey ($r_{WG(j)} = .46$ for Time 1, $r_{WG(j)} = .48$ for Time 2). ICC(1) values ranged from .06 to .33. Curiosity climate, task conflict, and information elaboration indicated a strong group effect (i.e., ICC[1] values above .10) on only one of the two surveys, but all other variables indicated a strong group effect on both surveys. ICC(2) values ranged from .24 to .68, and similar to the results of the other aggregation statistics, on either one or both surveys, all variables indicated a strong group effect (i.e., ICC[2] values above .40). Taken together, the results of the team level aggregation statistics suggested that variables indicated a reasonably strong group effect, with only team psychological safety indicating a low level of interrater agreement. Accordingly, I aggregated variables to the team level.

Manipulation Check

To examine the effectiveness of the leadership training, I compared Time 1 and Time 2 survey responses to the curiosity displays measure for each condition. Consistent with expectations, leader curiosity displays increased from Time 1 ($M = 5.77$, $SD = 0.53$) to Time 2 ($M = 6.10$, $SD = 0.45$) in the high curiosity training condition, $t(35) = 3.52$, $p = .001$, $d = .34$. However, contrary to expectations, leader curiosity displays also increased from Time 1 ($M = 5.52$, $SD = 0.62$) to Time 2 ($M = 5.99$, $SD = 0.69$) in the low curiosity training condition, $t(30) = 4.28$, $p < .001$, $d = .47$. Because curiosity displays increased in both conditions, the difference between experimental conditions was not significant, $t(65) = 0.78$, $p = .437$, $d = .11$. Thus, the leadership training manipulation did not function as expected.

To consider additional effects of the leader training, I examined Time 1 and Time 2 responses to the following leader variables, as evaluated by the team: curiosity displays, perceived intelligence, transformational leadership, and status. The five dimensions of

transformational leadership in the Rafferty and Griffin (2004) scale and shown in Appendix A were included in both the Time 1 and Time 2 surveys. The results of this analysis are shown in Table 8. In support of random assignment to training conditions, none of the Time 1 variables were significantly different between conditions. However, none of the Time 2 variables differed between conditions either, suggesting that the training did not differentially alter leader behavior. I also examined differences between the Time 1 and Time 2 variables for each condition. Curiosity displays and perceived intelligence, variables intended to serve as manipulation checks, increased from Time 1 to Time 2 in both the high and low curiosity training conditions. Only visionary leadership suggested potentially successful differences between conditions. Ratings of visionary leadership increased from Time 1 ($M = 5.63$, $SD = 0.70$) to Time 2 ($M = 5.90$, $SD = 0.55$) in the low curiosity training condition, $t(30) = 2.29$, $p = .030$, $d = .27$. However, in the high curiosity training condition, visionary leadership did not increase from Time 1 ($M = 5.86$, $SD = 0.56$) to Time 2 ($M = 5.74$, $SD = 0.44$), $t(35) = -1.02$, $p = .313$, $d = -.12$.

In addition to analyzing differences between conditions, I also considered significant moderators of training effectiveness. Using PROCESS model 1 (Hayes, 2013) with a Monte Carlo approach and 10,000 bootstrap resamples, I ran a series of separate models to estimate effects of leader training on curiosity displays with several different moderators. I considered variables assessing the leader to examine whether the training differentially affected specific types of leaders, and I considered variables assessing the team to examine whether training differentially affected specific types of teams. This last category is important because the manipulation check measures were provided by the teams, which introduces the possibility that certain types of teams would differentially assess post-training leader behavior. Leader variables included measures of specific and diverse curiosity (Litman, 2008), leader gender, and Time 1

measures of curiosity displays, status, and perceived intelligence. Team variables included Time 1 measures of psychological safety, curiosity climate, task conflict, relationship conflict, and information elaboration.

Table 9 presents the results of the interaction between experimental condition and different moderators predicting Time 2 curiosity displays. The interaction between experimental condition and leader specific curiosity was a significant predictor of team-rated leader curiosity displays ($B = -.33$, $SE_B = .18$, $p = .049$). The effect of the training on curiosity displays was marginally significant for leaders low in specific curiosity ($B = .40$, $SE_B = .23$, $p = .078$) and not significant for leaders high in specific curiosity ($B = -.20$, $SE_B = .21$, $p = .334$). In a separate model, the interaction between experimental condition and information elaboration significantly influenced curiosity displays ($B = -.74$, $SE_B = .36$, $p = .038$). The effect of the training on curiosity displays was marginally significant for teams low in information elaboration ($B = .41$, $SE_B = .22$, $p = .055$) but was not significant for teams high in information elaboration ($B = -.21$, $SE_B = .18$, $p = .243$).

Table 10 presents the results of the interaction between experimental condition and different moderators predicting Time 2 perceptions of leader intelligence. The expectation of the experimental conditions was that the high curiosity training would increase curiosity displays, and the low curiosity training would increase perceived leader intelligence. The interaction between experimental condition and Time 1 curiosity displays was a significant predictor of team-rated leader intelligence ($B = -.40$, $SE_B = .18$, $p = .029$). Consistent with expectations, the effect of the training on perceived intelligence was significantly negative for leaders high in Time 1 curiosity displays ($B = -.27$, $SE_B = .10$, $p = .009$). Whereas, the training was not significant for leaders low in Time 1 curiosity displays ($B = .20$, $SE_B = .17$, $p = .231$). In a

separate model, the interaction between experimental condition and Time 1 curiosity climate significantly influenced perceived leader intelligence ($B = -.59, SE_B = .27, p = .029$). The effect of the training was significantly negative for teams high in curiosity climate ($B = -.29, SE_B = .14, p = .037$), but the effect was not significant for teams low in curiosity climate ($B = .29, SE_B = .18, p = .119$).

To further examine the potential that the training effectively influenced curiosity displays as predicted for leaders low in specific curiosity and low in information elaboration, I used PROCESS model 2 (Hayes, 2013) to predict the effects of the training on curiosity displays, moderated by both specific curiosity and information elaboration. I modeled two 2-way interactions between experimental condition and each moderator, with no 3-way interaction between both moderators and experimental condition. Figure 7 depicts the effects of the training on curiosity displays at different levels of leader specific curiosity when team information elaboration is low, and Figure 8 depicts the effects when team information elaboration is high. As is evident from Figures 7 and 8, the conditional effect of the training on curiosity displays was only significant when both specific curiosity and information elaboration were low ($B = .64, SE_B = .22, p = .005$) and when specific curiosity was at the mean and information elaboration was low ($B = .40, SE_B = .20, p = .049$). These results suggest that the experimental manipulation was effective primarily for teams that did not share much information with each other and had a leader low in specific curiosity. It is important to note the comparison between Figure 7 and Figure 8 for leaders low in specific curiosity and assigned to high curiosity training. The mean level of Time 2 curiosity displays was quite similar for low information elaboration (see Figure 7, $M = 6.13$) and high information elaboration (see Figure 8, $M = 6.25$). One possibility is that

the effective training manipulation for low specific curiosity and low information elaboration was driven primarily by a decrease in curiosity displays in the low curiosity training condition.

Even though the leader training may have effectively manipulated curiosity displays for a subset of leaders of specific types of teams, the complexity of the hypothesized model prevented me from using the moderators of training effectiveness to test the hypotheses. Given this restraint, I conducted hypothesis testing using the Time 2 measure of curiosity displays while controlling for Time 2 measures of transformational leadership. Following these tests of the hypotheses, I conducted additional analyses to further examine the conditional effects of the training. These additional analyses are reported below.

Analytical Strategy

In testing the hypotheses, I ran regression analyses testing the five models depicted in Figures 1-5. Model 1 (see Table 12) includes all hypothesized relationships, and I used Mplus Version 8 (Muthén & Muthén, 1998-2017) to estimate effects with a Monte Carlo approach that uses 10,000 bootstrap resamples. I entered the Time 2 measure of leader curiosity displays as the independent variable and each dimension of transformational leadership (vision, inspirational communication, intellectual stimulation, supportive leadership, and personal recognition) as control variables. Time 2 measures of curiosity climate, task conflict, information elaboration and relationship conflict were entered as mediators with Time 1 measures of leader status and team psychological safety as moderators as shown in Figure 1.

Models 2-5 (see Tables 13-16) depict the conditional indirect effects predicted in Hypotheses 10-13. To test these models, I used PROCESS models 83 and 91 (Hayes, 2013). For each model, I entered Time 2 measures of curiosity displays as the independent variable with transformational leadership as control variables, Time 2 measures of the mediators, and Time 1

measures of the hypothesized moderator. Model 2 (see Table 13) includes curiosity climate and information elaboration as mediators, with status moderating the relationship between curiosity displays and curiosity climate. Model 3 (see Table 14) includes curiosity climate and information elaboration as mediators, with psychological safety moderating the relationship between curiosity climate and information elaboration. Model 4 (see Table 15) includes task conflict and information elaboration as mediators, with psychological safety moderating the relationship between task conflict and information elaboration. Model 5 (see Table 16) includes task conflict and relationship conflict as mediators, with psychological safety moderating the relationship between task conflict and relationship conflict. Regression analyses used maximum likelihood logistic regression due to the dichotomous measure of performance.

Results

Means and standard deviations for each experimental condition as well as correlations are presented in Table 11. Contrary to expectations, there were no differences between the low and high curiosity conditions for Time 2 measures of curiosity displays, $t(65) = .78, p = .439$, curiosity climate, $t(65) = .43, p = .667$, task conflict, $t(65) = .72, p = .474$, information elaboration, $t(65) = .36, p = .720$, or relationship conflict, $t(65) = 1.01, p = .318$. Consistent with the random assignment of leaders to training conditions, there were no differences between conditions for Time 1 measures of leader status, $t(65) = 1.55, p = .127$, or team psychological safety, $t(65) = .36, p = .723$.

Regression results for the test of Model 1 (all hypothesized relationships) are shown in Table 12, and regression results for the tests of Models 2-5 are shown in Tables 13-16. Hypothesis 1 predicted a positive relationship between leader curiosity displays and team curiosity climate. As shown in the results testing Model 1, the coefficient predicting curiosity

climate was not significant ($B = .48, SE_B = .56$). Thus, H1 was not supported in the full model. However, I did find evidence for a positive relationship between leader curiosity displays and team curiosity climate in both the correlation table ($r = .70, p < .01$) and the results testing Model 3 as shown in Table 14 ($B = .39, SE_B = .15, p = .013$).

Hypothesis 2 predicted that the positive effect of curiosity displays on curiosity climate is strengthened by leader status. The interaction between curiosity displays and status predicting curiosity climate was not significant in the results testing Model 1 ($B = -.01, SE_B = .11$), nor the results testing Model 2 as shown in Table 13 ($B = -.01, SE_B = .10$). Thus, H2 was not supported.

Hypothesis 3 predicted a positive relationship between leader curiosity displays and task conflict. I examined the results for the test of Model 1 and found that the coefficient for curiosity displays predicting task conflict was not significant ($B = -.16, SE_B = .15$). I also examined the correlation between curiosity displays and task conflict and found no support for a significant relationship ($r = -.06, ns$). In addition, the results testing both Model 4 (Table 15) and Model 5 (Table 16) did not indicate a significant relationship ($B = -.16, SE_B = .19$). Thus, I found no support for H3.

For Hypothesis 4, which predicted a positive relationship between curiosity climate and information elaboration, I examined the coefficient for curiosity climate predicting information elaboration in the results testing Model 1. The coefficient was not significant ($B = .83, SE_B = 1.04$). Thus, H4 was not supported in the full model. However, the relationship was significant in both the correlation table ($r = .81, p < .01$) and the results of the test of Model 2 ($B = .56, SE_B = .09, p < .001$).

Hypothesis 5 predicted that the positive relationship between curiosity climate and information elaboration is strengthened by psychological safety. The interaction between

curiosity climate and psychological safety predicting information elaboration was not significant in the results testing Model 1 ($B = -.05, SE_B = .18$). I also examined the results for the test of Model 3, and this interaction term was again not significant ($B = -.07, SE_B = .16$). Thus, I found no support for H5.

For Hypothesis 6, which predicted that the relationship between task conflict and information elaboration is positive when psychological safety is high and negative when psychological safety is low, I examined the results of the tests of both Model 1 and Model 4. The interaction between task conflict and psychological safety predicting information elaboration was not significant in Model 1 ($B = .02, SE_B = .17$) nor was it significant in Model 4 ($B = .01, SE_B = .21$). Thus, H6 was not supported.

Hypothesis 7 predicted that the positive relationship between task conflict and relationship conflict will be stronger when psychological safety is low. Results from the test of Model 1 indicated that the interaction between task conflict and psychological safety predicting relationship conflict was not significant ($B = -.12, SE_B = .24$). In addition, the results from the test of Model 5 indicated a non-significant relationship ($B = -.09, SE_B = .17$). Thus, H7 was not supported. However, consistent with the expectation of H7 that task conflict and relationship conflict have a positive relationship, the correlation was significant ($r = .56, p < .001$).

Hypothesis 8 predicted a positive relationship between information elaboration and performance, and Hypothesis 9 predicted a negative relationship between relationship conflict and performance. The results of the test of Model 1 showed a marginally significant relationship between information elaboration and performance ($B = .40, SE_B = .22, p = .069$), but the predicted negative relationship for relationship conflict was not supported ($B = .31, SE_B = .23$). Thus, H8 was partially supported, but H9 was not supported.

Hypothesis 10 predicted that leader status moderates the indirect effect of leader curiosity displays on performance through curiosity climate and information elaboration such that the indirect effect would be stronger when status was high, and the regression results testing Model 2 examine this prediction. As shown in Table 13, the index of moderated mediation, which tests for differences between indirect effects (Preacher, Rucker, & Hayes, 2007), was not significant, $B = -.00$, $SE_B = .46$, $CI [-.24, .26]$. Thus, H10 was not supported.

Hypothesis 11 predicted that psychological safety moderates the indirect effect of curiosity displays on performance through curiosity climate and information elaboration. I examined the index of moderation mediation in the results testing Model 3 as shown in Table 14 and found no evidence of differences between indirect effects, $B = -.01$, $SE_B = .15$, $CI [-.44, .13]$. Thus, H11 was not supported.

Hypothesis 12 predicted that psychological safety moderates the indirect effect of curiosity displays on performance through task conflict and information elaboration. The index of moderation in the results testing Model 4 shown in Table 15 was not significant, $B = -.00$, $SE_B = .13$, $CI [-.31, .21]$. Thus, I found no evidence of differences between indirect effects, and H12 was not supported.

Hypothesis 13 predicted that psychological safety moderates the indirect effect of curiosity displays on performance through task conflict and relationship conflict. As shown in the results testing Model 5 in Table 16, the index of moderated mediation was not significant, $B = .01$, $SE_B = .12$, $CI [-.20, .23]$. Thus, H13 was not supported.

Table 17 includes a summary of hypothesis support.

Additional Analyses

Overall, the hypothesized model received limited support. However, to further examine the significant effect of the training manipulation for teams that were low in information elaboration and had a leader low in specific curiosity, I analyzed four separate models with each of the four mediators included in Figure 1 as outcome variables. Specifically, I used PROCESS model 9 (Hayes, 2013) to test the conditional effects of the training on team curiosity climate, information elaboration, task conflict, and relationship conflict. In each model, leader specific curiosity and Time 1 team information elaboration were entered as moderators (two 2-way interactions), with Time 2 leader curiosity displays as the mediator. The results are shown in Figures 9-12. In each model, the interaction between the experimental condition and information elaboration was significant ($B = -.69$, $SE_B = .31$, $p = .032$). However, the interaction between the experimental condition and specific curiosity was not significant ($B = -.24$, $SE_B = .15$, $p = .127$). Consistent with the experimental manipulation training analysis above, the effect of the experimental condition on curiosity displays was significant and positive when both information elaboration and specific curiosity were low ($B = .64$, $SE_B = .22$, $p = .005$).

Figure 9 depicts the results with team curiosity climate as the outcome variable. Curiosity climate was significantly related to the mediator, leader curiosity displays ($B = .60$, $SE_B = .08$, $p < .001$). The direct effect of the experimental condition on curiosity climate was not significant, $B = .02$, $SE_B = .09$, CI [-.20, .16], but the indirect effect through curiosity displays was significant when both specific curiosity and information elaboration were low, $B = .38$, $SE_B = .16$, CI [.09, .71]. The results with Time 2 information elaboration as the outcome variable are shown in Figure 10. Information elaboration was significantly related to the mediator, leader curiosity displays ($B = .53$, $SE_B = .07$, $p < .001$). The direct effect of the experimental condition on

information elaboration was not significant, $B = -.04$, $SE_B = .08$, CI [-.21, .13], but the indirect effect through curiosity displays was significant when both specific curiosity and information elaboration were low, $B = .34$, $SE_B = .15$, CI [.08, .67]. The results predicting task conflict are shown in Figure 11. Task conflict was unrelated to curiosity displays ($B = -.05$, $SE_B = .09$, $p = .568$). Figure 12 displays the model with relationship conflict as the outcome variable. The coefficient for curiosity displays predicting relationship conflict was significantly negative ($B = -.16$, $SE_B = .07$, $p = .025$). The direct effect of the experimental condition on relationship conflict was not significant, $B = -.03$, $SE_B = .08$, CI [-.19, .12], but the indirect effect was significant and negative when both specific curiosity and information elaboration were low, $B = -.10$, $SE_B = .05$, CI [-.22, -.00].

It is noteworthy that the conditional effects of the training through curiosity displays, as rated by team members, significantly influenced three of the four mediators in the hypothesized model. For team leaders low in specific curiosity who were leading teams low in information elaboration, the effect of the training, through displays of curiosity, was an increase in team curiosity climate and information elaboration, and a decrease in relationship conflict.

CHAPTER 5: DISCUSSION

Transformational leadership has received considerable attention in leadership research. Despite this effort, little is known about the specific behaviors that are likely to produce the theorized outcomes of being transformational. In addition to a lack of clarity regarding what defines transformational leadership behavior, little scholarly attention has been given to the dimension of intellectual stimulation. This shortcoming is critical given the potential for intellectually stimulating leaders to improve the cognitive efforts of individuals and teams. The primary purpose of this study was to understand what leader behaviors can be intellectually stimulating for teams by introducing the concept of curiosity displays. Introducing this construct to the literature on leadership has the potential to address critical shortcomings and provide a clear description of effective leader behavior to individuals who act in these roles. While none of the hypothesized relationships were supported in the test of the full model, I did find supporting evidence for the argument that curiosity displays can be a valuable addition. The results from both studies helped accomplish some important objectives of this project. In the sections that follow, I first discuss potential explanations for the lack of hypothesis support and describe three key objectives accomplished by this study. I then address theoretical and practical implications as well as limitations and directions for future research.

Hypothesis Support and Study Objectives

In general, the theoretical model shown in Figure 1 received little empirical support. None of the hypothesized relationships were supported in the test of the full model, and only two of the hypothesized relationships were supported in models testing conditional indirect effects. The support I did find suggests that leader curiosity displays has the potential to increase team curiosity climate, and team curiosity climate is associated with higher levels of information

elaboration. However, task conflict received no support as either an outcome of leader curiosity displays or a predictor of team information elaboration. A second characteristic of the model to consider is that none of the results demonstrated significant interactions for leader status or team psychological safety. Finally, it is worth noting that neither information elaboration nor relationship conflict were significantly related to team performance. I will now address potential explanations for each unsupported component of the model.

Task conflict is a critical aspect of my arguments for the potential of curiosity displays to influence team behavior. The functional leadership approach to understanding team leadership suggests that team leaders are tasked with managing uncertainties and ambiguities through sensemaking and initiating structure (Morgeson et al., 2010; Zaccaro et al., 2008). I expected that leaders who display curiosity by drawing attention to knowledge gaps and uncertainties would undermine this function and generate conflict in the team regarding the task. One possible explanation for these results is to consider the context of the experimental task, which may have prevented the generation of conflict that I expected. It is likely that team members did not expect that the team leader was positioned to provide clarity and a coherent overview of the crime they were tasked to investigate. The team leader received a case file and time to review the details of the case in the same manner as all other team members. Thus, there was no indication that the team leader occupied a unique position with any significant expectation for making sense of the case. Team members, therefore, likely did not look to the team leader for a clear interpretation of events, making it unlikely that leaders who focus on uncertainties and missing knowledge would generate conflict. In the task, there was no expectation that the team leader was responsible for creating order (Weick, 1993), providing clarity (Marks et al., 2000), or developing a shared understanding (Zaccaro et al., 2001). Therefore, it is possible these relationships in my model

require a context where leader sensemaking responsibilities are heightened, such as when the leader has more experience, is occupying a position higher in a formal organizational hierarchy, or is leading an intellectually demanding task wherein the leader has unique expertise.

Another possibility to consider regarding task conflict is a potential mismatch between the theoretical argument and the concept definition. The argument for the importance of this variable in the model is the generation of conflicting ideas within the team. Highlighting uncertainties, ambiguities, and observed incongruities tends to generate curiosity and an exploration for answers (Berlyne, 1960; Hebb, 1949). My expectation was that leader curiosity displays highlight uncertainties and confusing aspects of the task, which in turn would increase information sharing within the team to reduce these conflicts. However, it is possible that highlighting uncertainties and unknowns does not generate *conflict* about ideas and opinions, which measures of task conflict assess (Jehn & Mannix, 2001). Rather, it *generates uncertainty* about ideas and *reduces clarity* regarding the task. This suggests that an alternative outcome of the negative side of curiosity to consider is the team's shared mental model (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000), which is a shared understanding of the task, environment, and task component relationships. It is possible that leaders who display curiosity reduce shared understanding, which may trigger increased information sharing within teams where individuals feel safe to take interpersonal risks. Additionally, as discussed in the limitations below, it is also possible that the relatively short length of the task, along with the high degree to time urgency, reduced the opportunity for a conflict of ideas to emerge.

It is important to consider explanations for the lack of support for H2, which predicted that leader status would moderate the relationship between curiosity displays and curiosity climate. One possibility is that the structure of the experimental task eliminated any differences

in the influence of team leaders. The argument for a significant interaction between displays of curiosity and leader status is that the behavior of more highly respected leaders is likely to be more influential. However, the task required that team leaders utilize their computer to record team decisions and output. Placing the leader at the center of this activity for all teams may have eliminated any differences in the degree to which high and low status leaders are influential. All team leaders were responsible for typing team responses and recording ideas, irrespective of the status of the team leader.

Another important aspect of the model is the hypothesized role of team psychological safety. H5-H7 predicted that team psychological safety would moderate the relationship between the first stage mediators (curiosity climate and task conflict) and the second stage mediators (information elaboration and relationship conflict). There are two potential explanations for the lack of support for these hypotheses. One possibility is related to a limitation of the experimental task. In the task, individual team members were given 20 minutes to review the case file, and teams were provided 15 minutes to discuss the details of the case and decide on a guilty suspect. Following this decision, teams were provided an additional 20 minutes to generate alternative theories for what happened and create a list of next steps for the investigation. The limited time available for teams to complete these tasks likely generated a high level of time urgency. It is possible that the argued moderated effects of psychological safety require a task with sufficient reason for team members to be concerned about expressing new ideas and challenging the ideas of others. If team members were keenly focused on the need to efficiently complete the task and their motivation was dominated by the desire to succeed and earn a monetary prize, then they probably had few concerns over whether the team was a safe place to disagree and express conflicting ideas. Another possibility is that the low levels of team member agreement regarding

psychological safety is reflective of a lack of agreement about whether it was safe to take risks within the team. If team members did not share the same perspective regarding psychological safety, then this would reduce the possibility that psychological safety would moderate any relationships. It is also possible that psychological safety in the task was sufficiently different than the psychological safety measured at Time 1. For example, while psychological safety at Time 1 did not moderate the relationship between task conflict and relationship conflict in the experiment ($B = -.15$, $SE_B = .16$, $p = .360$), psychological safety measured at Time 2 did moderate this relationship ($B = -.32$, $SE_B = .15$, $p = .040$).

The lack of any significant relationships with team performance is puzzling. The murder mystery task has been used in numerous studies to test the effects of team information elaboration on performance (e.g., Galinsky & Kray, 2004; Kessel, Kratzer, & Schultz, 2012; Stewart & Stasser, 1998). However, in this study neither team-rated information elaboration, nor the measure of clue sharing, was significantly related to whether or not teams identified the correct murder suspect ($r = .06$ for information elaboration, $r = .14$ for clue sharing). It is worth noting that the task was designed for groups of four, and I adapted this task for groups of five or six individuals. I adapted the task by including a case file with no unique information to accommodate the extra one or two team members. This may have altered the task in a critical way because team size was a marginally significant moderator of the relationship between clue sharing and team performance ($B = .30$, $SE_B = .17$, $p = .082$). For teams with five members ($N = 27$), the effect of clue sharing on performance approached significance ($B = .23$, $SE_B = .13$, $p = .063$), but the relationship was not significant for teams with six members ($B = -.06$, $SE_B = .11$, $p = .594$). Therefore, it is possible that altering the task weakened the relationship between clue sharing and performance for larger teams.

Despite the numerous unsupported hypotheses, there were at least three important objectives accomplished by this project. First, the results from Study 1 provide a valid measure of curiosity displays. Both a panel of subject matter experts and a large sample of business school students rated the content of the final measure as consistent with the definition of curiosity displays and less consistent with the related leadership constructs of humility, participative leadership, and the flawed measure of intellectual stimulation. This supports the claim that the developed measure of curiosity displays accurately reflects the behaviors of signaling to others a desire for information and knowledge. In support of both convergent and discriminant validity, the results from Study 1c demonstrate that the measure of curiosity displays is related to other measures of leadership behavior but distinct in important ways. It is a noteworthy concern that the measure of curiosity displays was highly correlated with both leader humility ($r = .87$) and managerial openness ($r = .89$). However, this issue seems to be a characteristic of nearly all leadership constructs measured in this study. For example, humility and supportive leadership were correlated at $r = .90$, and participative leadership was correlated with managerial openness at $r = .88$. Clearly, participants struggled to carefully distinguish between these leadership constructs. This is a limitation of the study that I expand upon below and provide recommendations for how to address in future studies. Despite this shortcoming, multiple CFAs demonstrated that loading items measuring curiosity displays on a separate factor consistently provided the best fit for the data, and tests of the hypothesized models showed that curiosity displays can predict team behavior beyond a commonly utilized measure of transformational leadership.

Second, the results of the leadership training provided some interesting insights into the potential to alter the degree to which leaders display curiosity. In the absence of a control

condition where team leaders did not receive any training, it is difficult to determine whether the increase in curiosity displays from the Time 1 to Time 2 survey was a result of the training or the Murder Mystery task. However, the significant effects of training leaders who are low in specific curiosity and operating in teams low on information elaboration suggest conditional benefits of the training. Training leaders on the importance of being curious, showing a desire to learn new information, and being inquisitive and interested in discussing ideas can potentially alter the behavior of certain leaders operating in specific types of teams. Both specific curiosity and team information elaboration are related to the central idea of curiosity – an interest in information. Thus, it is noteworthy that the effects of the training were only significant for teams with leaders who generally lacked a desire to find specific pieces of information and operated in teams that engaged in lower levels of information sharing. One potential implication of this finding is that curiosity training might be most effective for teams that do not value the process of information acquisition. The results of the training provided limited evidence for a successful manipulation of leader behavior, but it is important to note that these were teams that had developed routines over the course of several weeks in the semester and it can be difficult to make adjustments in how individuals interact once patterns and expectations have been established.

Third, the results of the experimental task support the claim that leaders who display curiosity can influence team climate and behaviors in important ways. One of the key characteristics of the hypothesized model is that the proposed mediators of information elaboration and team conflict have received considerable empirical support as critical mediators explaining team performance (DeChurch et al., 2013; Kozlowski et al., 2016; Marlow et al., 2018). The limited support found for the hypotheses suggests that leader curiosity displays had a positive influence on team information elaboration through an increase in team curiosity climate.

In additional evidence presented in Chapter 4 that supports this claim, I also examined this effect using PROCESS model 4 (Hayes, 2013) with curiosity climate mediating the effect of curiosity displays on information elaboration, controlling for transformational leadership. The direct effect of curiosity displays on information elaboration was not significant, $B = .06$, $SE_B = .59$, CI $[-.16, .27]$, and the indirect effect through curiosity climate was significant, $B = .26$, $SE_B = .07$, CI $[.11, .39]$, suggesting full mediation (Baron & Kenny, 1986; Zhao, Lynch Jr, & Chen, 2010).

In addition to the results of models that consider the effect of assessments of curiosity displays while controlling for transformational leadership, the conditional effects of the curiosity training suggest that training leaders to display curiosity can significantly influence information elaboration and team conflict. In four separate models I examined the conditional effects of the leader training on each of the mediators of the hypothesized model and found significant effects with three of the mediators. For teams low in information elaboration with leaders low in specific curiosity, the training had a positive effect on curiosity climate and information elaboration and a negative effect on relationship conflict. This suggests that for certain types of leaders and teams, the training can increase information elaboration and decrease relationship conflict. To further examine the conditional effects of the training, I also considered clue sharing as an outcome variable, in a similar manner shown in Figures 9-12. The conditional effects of the training on curiosity displays remained the same, and curiosity displays had a significant effect on the number of clues shared between team members, $B = 2.24$, $SE_B = .74$, CI $[.77, 3.71]$. The direct effect of experimental condition on clue sharing was not significant, $B = -.27$, $SE_B = .85$, CI $[-1.97, 1.43]$, and the indirect effect through curiosity climate was only significant when both leader specific curiosity and the initial level of team information elaboration was low, $B = 1.43$,

$SE_B = .84$, CI [.08, 3.33]. In sum, the results suggest that curiosity displays relate to both information elaboration and conflict in important ways.

Theoretical and Practical Implications

The general lack of significant relationships in the hypothesized model introduces a number of questions about the theoretical arguments and methodological approaches in this study, and these issues are addressed in the next section. However, there are important theoretical and practical implications that can be drawn from this study. These results can contribute to the literature on leadership, teams, and curiosity. Most importantly, curiosity displays seems to be a distinct form of leader behavior that can provide specific prescriptions for what makes leaders intellectually stimulating. The core idea of intellectually stimulating leaders is that some individuals are capable of generating increased cognitive efforts in others. Although transformational leadership is silent on what behaviors might contribute to this benefit, the results of this study suggest that leaders who seek additional sources of information, show fascination with new information, and show an excitement for learning how things work are able to increase both the epistemic motivation of teams and the amount of information shared within teams.

One potential benefit of leaders displaying curiosity that was not addressed with a formal hypothesis is the possibility that increasing the elaboration of information between team members can improve team creative output. Creativity is defined as the generation of novel and useful ideas (Zhou & Shalley, 2011), which can potentially result from the exchange of knowledge and ideas between team members that generates new combinations and new knowledge (Gong et al., 2013; Nahapiet & Ghoshal, 1998; Smith, Collins, & Clark, 2005). To explore this possible outcome of leader curiosity displays, teams were required to develop an

investigative plan after finalizing their decision regarding the guilty suspect. This investigative plan included alternative theories of what happened and an outline of the next investigative tasks. To measure creativity, two raters, blind to the experimental condition, coded each element of the investigative plans for both novelty and usefulness. The procedures for this aspect of the task and details for coding creativity are included in Appendix E.

I analyzed the conditional effects of the leader training on creative performance through curiosity displays in a manner similar to models shown in Figures 9-12. As expected, the conditional effects of the training on curiosity displays was the same, and curiosity displays had a significant effect on creative performance, $B = 3.65$, $SE_B = 1.02$, $CI [1.62, 5.69]$. The direct effect of experimental condition on creative performance was not significant, $B = .66$, $SE_B = 1.18$, $CI [-1.69, 3.01]$, but the indirect effect through curiosity displays was significant when both leader specific curiosity and the initial level of team information elaboration was low, $B = 2.33$, $SE_B = 1.09$, $CI [.48, 4.66]$. This was the only significant conditional effect. Thus, while I failed to find support for significant relationships with performance, as measured by identifying the correct murder suspect, I did find that team creative performance improved through an increase in leader curiosity displays. Future research should consider how dimensions of performance are differentially affected by intellectually stimulating leadership. In addition, the mediating mechanism between curiosity displays and creative performance deserves additional research attention. I considered several team climate and behavior measures as mediators between leader curiosity displays and creative performance, and none of these results were significant. Thus, I am unable to explain what is happening within teams with leaders displaying curiosity to improve creative performance.

In addition to considering different dimensions of performance as an outcome of curiosity displays, it would be beneficial to examine the outcomes specifically identified in transformational leadership theory within the dimension of intellectual stimulation. As specified by Bass (1985), intellectually stimulating leaders cause followers to challenge norms, seek new perspectives, and look at problems in new ways. Measures of intellectual stimulation (e.g., Podsakoff et al., 1990; Rafferty & Griffin, 2004) also identify rethinking basic assumptions and suggesting new ways to complete tasks as follower behaviors associated with intellectual stimulation. The results of this study provide evidence that leader curiosity displays increase the desire of followers to probe deeply into things, explore possibilities, contribute unique information, and use all available information, which are related to the behaviors of seeking new perspectives and looking at problems in new ways. However, future studies should consider the possibility of a clearer connection between displaying curiosity and the theorized outcomes of intellectual stimulating leaders by more closely examining how assumptions and perspectives are challenged and potentially changed. This could help strengthen the argument that one way that leaders can be intellectually stimulating is through displaying curiosity.

These results also contribute to leadership research by considering the differences between leader personality and leader behavior. Both leader traits and behaviors have long received attention in research seeking to understand effective leadership. The relative effectiveness of trait and behavioral theories of leadership was addressed by DeRue et al. (2011) with an integrative model wherein behaviors mediate the relationship between leader traits and effectiveness. A central argument of this model is that leader traits are manifested in specific leader behaviors that relate to critical effectiveness measure such as group performance, follower job satisfaction, and satisfaction with the leader. However, a different perspective on leader

behavior is the dramaturgical view suggested by impression management research (Goffman, 1959). The core idea of this perspective is that individuals act in roles and consider role-appropriate behavior when considering how to behave. It is noteworthy that other-rated curiosity displays was unrelated to both self-rated measures of specific curiosity ($r = .15, p = .229$ for Time 1 measure of curiosity displays; $r = -.04, p = .741$ for Time 2) and diverse curiosity ($r = -.02, p = .851$ for Time 1; $r = .06, p = .627$ for Time 2). These results suggest that, at least in the domain of curiosity, leader behavior may be guided more by individual judgments of how to behave in a leadership role than the expression of stable personality traits. It is possible that implicit theories of leadership, personal experience, or the nature of the task guides the expression of curiosity more than trait curiosity. Thus, research examining the antecedents of leader curiosity displays would help understand which leaders are likely to engage in this behavior.

The results of this study can also contribute to the literature on curiosity. As described in Chapter 1, the experience of feeling curious is associated with a number of positive outcomes, and several books have sought to broaden the understanding of this benefit and advocate for being more curious in life (Kashdan, 2009; Leslie, 2014). The results of this study suggest that the benefits of curiosity extend beyond the experience of being curious. Displaying a desire for knowledge and information, even when not feeling genuinely curious, might be an important behavior. Within the student teams in Study 2, leaders who displayed curiosity were associated with teams who shared more information and had lower levels of relationship conflict, despite the fact that these behaviors were unrelated to trait levels of curiosity within these leaders. One important implication of this finding is that displaying curiosity may provide benefits that would be overlooked if the experience of feeling curious is only considered. This study focused on

leaders displaying curiosity because of the tendency of others to look to leaders for behavioral expectations (Berson et al., 2015; Ostroff & Kozlowski, 1992). However, there is also the possibility that curiosity displays by individuals who are not acting in the role of leader can also significantly influence others. Curiosity is considered a powerful passion or appetite (Loewenstein, 1994), and there is some evidence that suggests curiosity can be contagious in social settings (Elsbach & Kramer, 2003). Thus, curiosity research may benefit from expanding beyond the effects of feeling curious to consider the effects of displaying curiosity to others.

An additional direction to consider regarding the effects of curiosity displays is to examine the effects on the leader themselves. Positive effects that are likely for leaders who seek additional information from followers and pursue the acquisition of new knowledge include increased learning and new perspectives. When leaders focus on the ideas and insights offered by followers, they may learn things that would not be possible if they only focused on communicating their vision to the group and generating a cohesive group perspective. On the other hand, viewing this behavior from the perspective of self-regulation theory (Muraven & Baumeister, 2000), suggests potential negative outcomes. When leaders are depleted of their self-regulatory resources, they have a reduced capacity to behave ethically and avoid abusive supervision (Christian & Ellis, 2011; Lin, Ma, & Johnson, 2016). Therefore, if displaying curiosity is depleting for leaders, which might be most likely for individuals who are not naturally curious, then there may be an increased level of undesired leader behaviors.

The practical implications of these results are clear. For individuals tasked with leadership roles, the measure that was developed provides clear guidance on specific behaviors that display curiosity to others. Leaders who desire to display curiosity should seek additional sources of information, show fascination with new information, react positively to new ideas,

show excitement to learn about unfamiliar subjects, and demonstrate a desire to learn how things work. In addition to providing clear prescriptions for displaying curiosity, these findings also demonstrate the value of displaying curiosity. Leaders who are concerned that signaling a lack of knowledge by identifying knowledge gaps and showing an interest in acquiring missing information may undermine their effectiveness as a leader can be encouraged by the idea that doing so can increase team curiosity climate and information elaboration and reduce relationship conflict. These are important outcomes for the team, and leaders can benefit from understanding this relationship. While future research should consider potential harmful effects for displaying curiosity as a leader, it is noteworthy that follower-rated curiosity displays was positively correlated with follower-rated leader status ($r = .86$ for Time 1, $r = .79$ for Time 2) and perceived intelligence ($r = .75$ for Time 1, $r = .77$ for Time 2). I also tested the conditional effects of the leader training on leader status at Time 2 through curiosity displays in a manner similar to models shown in Figures 9-12. Curiosity displays had a significant effect on leader status, $B = .74$ $SE_B = .07$, $CI [.59, .88]$, and the indirect effect of the training through curiosity displays was significant when both leader specific curiosity and the initial level of team information elaboration were low, $B = .47$, $SE_B = .19$, $CI [.10, .85]$.

For organizations, these results highlight the potential for curiosity training to increase the level of information sharing within teams. One possible conclusion to draw is that organizations can benefit by identifying leaders low in curiosity and teams low in information elaboration and training those leaders on the importance of displaying curiosity. This may improve team functioning and creative performance.

Limitations and Directions for Future Research

As highlighted above, the results of this study should consider a number of limitations, which highlight useful directions for future research. The general lack of support for the hypotheses suggest a number of weaknesses in both the theoretical arguments and the study design. I will highlight three areas of concern that suggest future directions to consider.

First, evidence from Study 1 suggests concerns regarding discriminant validity between the leader curiosity displays measure and similar leadership constructs. As shown in Table 3, the measure of curiosity displays is highly correlated with leader humility ($r = .87$) and managerial openness ($r = .89$). These high correlations explain why the newly developed measure failed the Fornell-Larker (1981) test for all constructs except for intellectual stimulation. As noted above, this issue is not specific to the measure of curiosity displays, and it is important to note that the items of this measure demonstrated significant content validity in Study 1a and indicated very strong definitional distinctiveness in Study 1b. One explanation for this struggle to find evidence of discriminant validity is provided by implicit leadership theory, which posits that individuals hold simplified characterizations of what it means to be a leader (Lord, Epitropaki, Foti, & Hansbrough, 2020). One outcome of these underlying categorical structures is the introduction of rating errors, wherein raters automatically apply central aspects of a category when rating an object that belongs to that category (Martell & Evans, 2005). Thus, when individuals rate someone who is labeled as a leader, they are more likely to respond by indicating that their behavior was consistent with being a leader, even when that behavior was not specifically observed. One potential future direction to address this weakness would be to utilize procedures to reduce the gap-filling tendency. For example, future studies could train participants who are asked to rate a leader to monitor the source of their memory and distinguish between detailed

recollections and feelings of familiarity, as demonstrated by Martell and Evans (2005). This could help improve rating accuracy and provide a better test of discriminant validity.

The difficulty in establishing discriminant validity of curiosity displays also suggests that future studies investigating the effects of curiosity displays should carefully consider the experimental design. If participants struggle to overcome the gap-filling tendency generated by implicit leadership theories and accurately report leader behavior, then field samples may struggle to differentiate the effects of leader behavior. To carefully ensure that curiosity displays are isolated, future studies should consider using confederates that are trained to behave in accordance with the experimental conditions. This approach has been used to study the effects of expressing leader traits such as extraversion (Grant, Gino, & Hofmann, 2011) and leader humility (Owens & Hekman, 2016). In these studies, confederates were trained to display high or low levels of specific personality traits to test the effects on follower behavior. In a similar manner, a study design could include conditions of confederates trained to be either high or low in one of several different leader behaviors (e.g., humility or curiosity displays). Participants could then rate the leader on the manipulated construct and engage in a team task to test whether the manipulated behaviors lead to different outcomes.

A second set of limitations concerns the shortcomings of my leadership training. There are a number of potential explanations for why the leadership training failed to produce the intended effects. Leaders were trained to behave in specific ways at the end of the semester. This timing corresponded with the end of the lifecycle of these teams. By that time, interpersonal routines and expectations were established. One potential improvement to the design would be to provide leadership training prior to teams completing any tasks and working with the leaders during the semester to reinforce the leadership training through self-coaching and reflection

exercises (e.g., Tews & Tracey, 2008). This may allow more opportunities for leaders to change behavior and effectively incorporate the training into team interaction patterns. An additional limitation of the training design is the absence of an experimental condition wherein leaders receive no training. Leaders in both conditions were rated as displaying more curiosity during the Time 2 survey compared to the Time 1 survey. One explanation is that both forms of training increased displays of curiosity. An alternative explanation is that the Murder Mystery task, rather than the training, increased ratings of curiosity displays. To address this limitation, it may be possible to both boost the sample size and add a condition wherein leaders receive no training during a future semester of the same class.

There are also limitations associated with the experimental task. As explained above, teams had a limited amount of time to complete the task, which likely generated a high level of time urgency. This may have both made it difficult for the effects of leaders displaying curiosity to take effect and generate sufficient variation in leader behavior. Time pressure induces a “closing of the mind” that tends to produce shallow, rather than thorough thinking (Kruglanski & Freund, 1983). Within teams and groups, this tends to reduce critical probing and systematic information processing (De Dreu, 2003; Mohammed & Harrison, 2013). A more appropriate test of the hypotheses may have been to monitor team behaviors and outcomes over the course of a semester. This would allow team leaders to reflect on their behavior and implement principles emphasized in the training. Additionally, this may allow team members sufficient time to be influenced by leader behavior. In addition to the potential for time urgency to overshadow the effects of leader behavior and interfere with a deliberate approach to leadership, participants were incentivized with a cash prize awarded to the top two teams in each section. This cash incentive was implemented to increase participant engagement and attention, but it is possible

that the incentive overpowered the potential for leader behavior to influence team behavior. If team members were focused on the need to finish the task within the allotted time and more motivated to earn the cash prize, then they may have been less influenced by the actions of the leader. Once again, measuring team behaviors and performance over the course of a semester may allow sufficient opportunity for processes to unfold as hypothesized.

Conclusion

The purpose of this project was to introduce the concept of curiosity displays to the leadership literature. Curiosity is a powerful human drive with the potential to generate important benefits. In an effort to explain his great mental accomplishments, Albert Einstein said near the end of his life, “I have no special talents, I am only passionately curious” (Isaacson, 2008). Leaders may also be able to benefit from this insight. Even if leaders lack unique solutions or innovative answers, showing a desire to learn and acquire knowledge can provide important benefits for teams. Leaders who display curiosity can increase information elaboration, decrease relationship conflict, and improve creative performance. Perhaps becoming a good leader is less about having special talents and more about showing passionate curiosity.

Table 1: *Summary of Leader Displays of Curiosity and Related Leadership Constructs*

Leadership construct	Representative behaviors	Overlap	Key distinctions
<p>Leader displays of curiosity: Behaviors exhibited by leaders to followers that signal an interest in knowledge acquisition, learning, and thinking</p> <p>Representative behaviors: Seeking new sources of information Asking open-ended questions Showing fascination with new information Continuing to search for additional information to understand problems Demonstrating excitement to learning about unfamiliar subjects</p>			
<p>Managerial openness: Subordinate perceptions that their boss listens to them, is interested in their ideas, gives fair consideration to the ideas presented, and at least sometimes takes action to address the matter raised (Detert & Burris, 2007)</p>	<p>Giving serious consideration to good ideas from followers Fairly evaluating suggestions made by followers Being open to suggestions</p>	<p>Both concepts include a willingness to consider new ideas</p>	<p>Leader curiosity is more active than managerial openness Leader curiosity includes information gathering and learning from sources other than followers Managerial openness is about the relationship between the leader and the follower; leader curiosity is about the relationship between the leader and information</p>
<p>Leader humility: Modeling to followers the behaviors of admitting mistakes and limitations, spotlighting follower strengths and deflecting</p>	<p>Actively seeking feedback, even if it is critical Admitting when he or she does not know how to do something</p>	<p>Both concepts include a willingness to learn Both concepts include a willingness to admit not knowing</p>	<p>Leader curiosity does not include attitudes about the strengths or weaknesses of the leader and follower Leader humility focuses on learning from others; leader</p>

Leadership construct	Representative behaviors	Overlap	Key distinctions
praise to others, and being teachable—open to new ideas, advice, and feedback (Owens & Hekman, 2016)	<p>Taking notice of others' strengths</p> <p>Complimenting others on their strengths</p> <p>Showing appreciation for the unique contributions of others</p> <p>Showing a willingness to learn from others</p>	Both include the behavior of asking questions	<p>curiosity focuses on learning from any source</p> <p>The underlying constructs of humility (being modest about oneself) and curiosity (being interested in information and learning) are not equivalent</p>
<p>Respectful inquiry:</p> <p>Asking questions in an open way and subsequently listening attentively (Van Quaquebeke & Felps, 2018)</p>	<p>Inviting someone to share their thoughts on a subject</p> <p>Using open-ended questions</p> <p>Signaling listening behaviors, both verbally and nonverbally</p>	Both include the behavior of asking questions	Leader curiosity includes a broader set of information gathering behaviors
<p>Participative leadership:</p> <p>Encouraging and promoting shared influence and joint decision making with followers (Koopman & Wierdsma, 1998)</p>	<p>Encouraging followers to express ideas</p> <p>Listening to the ideas and suggestions of followers</p> <p>Using the suggestions of followers to make decisions that affect the group</p> <p>Giving all followers a chance to express their opinions</p>	Both concepts include listening to the ideas of followers	<p>Leader curiosity does not require leaders to include followers in the decision-making process</p> <p>Leader curiosity includes information gathering from sources other than followers</p>

Table 2: *Item Sort Task Results*

Item	F (3, 1134)	Curiosity <i>M</i> (<i>SD</i>)	Humility <i>M</i> (<i>SD</i>) F (1, 1134)	Participative <i>M</i> (<i>SD</i>) F (1, 1134)	Empowering <i>M</i> (<i>SD</i>) F (1,1134)
Seeks new sources of information.	163.34***	4.47 (0.85)	3.25 (1.21) 264.57***	3.08 (1.16) 143.29***	3.04 (1.20) 82.14***
Asks open-ended questions.	45.22***	3.98 (1.05)	3.03 (1.20) 131.34***	3.48 (1.12) 0.16	3.36 (1.18) 4.16*
Shows fascination with new information.	202.27***	4.57 (0.79)	3.15 (1.20) 334.59***	2.90 (1.10) 202.90***	3.01 (1.15) 69.33***
Continues to seek for additional information to understand problems.	101.50***	4.33 (0.96)	3.50 (1.14) 107.40***	3.04 (1.13) 157.10***	3.21 (1.19) 40.10***
Reacts positively to new ideas.	20.00***	3.95 (1.09)	3.82 (1.12) 2.43	3.39 (1.16) 48.47***	3.51 (1.19) 9.08**
Shows excitement for learning about unfamiliar subjects.	157.45***	4.41 (0.86)	3.23 (1.25) 210.31***	2.80 (1.14) 210.44***	3.01 (1.18) 51.61***
Shows a desire to learn how things work.	138.54***	4.44 (0.90)	3.36 (1.23) 172.81***	2.96 (1.12) 177.03***	3.04 (1.23) 65.76***
Demonstrates a preference for hearing innovative solutions.	26.40***	4.05 (1.01)	3.40 (1.21) 62.70***	3.61 (1.14) 2.44	3.43 (1.19) 14.08***
Looks for new solutions.	79.87***	4.31 (0.95)	3.30 (1.20) 157.21***	3.22 (1.09) 70.64***	3.38 (1.21) 11.77***
Shows little interest in existing solutions.	13.59***	2.49 (1.38)	1.93 (1.13) 39.98***	2.18 (1.14) 0.20	2.26 (1.24) 0.60

Note. $N = 379$. Planned comparison results for each comparison construct are shown below the mean and standard deviation. Items in bold indicated significant differences between each of the other leadership constructs and were included in final scale.

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3: Means, SDs, and Correlations for Study 1c Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Curiosity displays	5.21	1.22							
2. Vision	5.02	1.20	.70**						
3. Inspirational communication	5.25	1.23	.82**	.70**					
4. Intellectual stimulation	4.89	1.35	.69**	.40**	.69**				
5. Supportive	5.18	1.37	.79**	.61**	.85**	.69**			
6. Humility	5.17	1.43	.87**	.68**	.89**	.71**	.90**		
7. Participative	5.11	1.02	.80**	.64**	.82**	.65**	.81**	.82**	
8. Openness	5.34	1.24	.89**	.74**	.87**	.65**	.84**	.89**	.88**

Note. *N* = 138.

** $p < .01$.

Table 4: *Fit Statistics for Study 1c*

Model	χ^2	$\Delta\chi^2$	CFI	SRMR
All study constructs				
8 factor	$\chi^2 (637) = 1,066.17^{***}$		.92	.04
5 factor	$\chi^2 (655) = 1,171.30^{***}$	$\Delta\chi^2 (18) = 105.13^{***}$	.90	.05
4 factor	$\chi^2 (659) = 1,192.24^{***}$	$\Delta\chi^2 (22) = 126.07^{***}$	.90	.05
3 factor	$\chi^2 (662) = 1,273.61^{***}$	$\Delta\chi^2 (25) = 207.45^{***}$	.88	.05
2 factor	$\chi^2 (664) = 1,286.21^{***}$	$\Delta\chi^2 (27) = 220.05^{***}$	.88	.05
1 factor	$\chi^2 (665) = 1,340.31^{***}$	$\Delta\chi^2 (28) = 274.15^{***}$	.87	.05
Curiosity and intellectual stimulation				
2 factor	$\chi^2 (26) = 43.84^{***}$		.98	.04
1 factor	$\chi^2 (27) = 98.37^{***}$	$\Delta\chi^2 (1) = 54.53^{***}$	.92	.07
Curiosity and humility				
2 factor	$\chi^2 (89) = 154.84^{***}$		.97	.03
1 factor	$\chi^2 (90) = 220.13^{***}$	$\Delta\chi^2 (1) = 65.29^{***}$	.94	.04
Curiosity and participative leadership				
2 factor	$\chi^2 (53) = 58.22^{***}$		.99	.03
1 factor	$\chi^2 (54) = 117.24^{***}$	$\Delta\chi^2 (1) = 59.02^{***}$	.95	.04
Curiosity and openness				
2 factor	$\chi^2 (43) = 82.61^{***}$		.97	.03
1 factor	$\chi^2 (44) = 93.11^{***}$	$\Delta\chi^2 (1) = 10.50^{**}$	.96	.03

Note. $N = 138$. CFI = comparative fit index. SRMR = standardized root mean squared residual. For models assessing all study constructs, 8 factor = all items loaded onto separate factors; 5 factor = items for dimensions of transformational leadership were combined into one factor; 4 factor = items for participative and openness were combined into one factor; 3 factor = items for humility, participative, and openness were combined into one factor; 2 factor = curiosity displays combined into one factor, all other items combined into second factor.

** $p < .01$

*** $p < .001$

Table 5: *Fit Statistics for Nested Models (Time 1 survey)*

Model	χ^2	CFI	SRMR _{within}	SRMR _{between}	AIC
Leader assessment variables					
3 factor	$\chi^2 (174) = 483.27^{***}$	.94	.04	.08	9,944.22
2 factor	$\chi^2 (178) = 990.52^{***}$	.83	.08	.09	10,450.59
1 factor	$\chi^2 (180) = 1,338.47^{***}$	.76	.09	.09	10,691.95
Team assessment variables					
5 factor	$\chi^2 (358) = 647.47^{***}$	.94	.05	.15	19,218.33
4 factor	$\chi^2 (366) = 957.53^{***}$	.89	.06	.15	19,424.28
3 factor	$\chi^2 (372) = 2,152.27^{***}$	.66	.07	.22	19,450.87
2 factor	$\chi^2 (376) = 1,704.77^{***}$	.74	.10	.54	19,706.50
1 factor	$\chi^2 (378) = 2,195.24^{***}$	.65	.13	.28	20,164.91

Note. $N = 371$ team members, nested in 71 teams. CFI = comparative fit index. SRMR = standardized root mean squared residual. For variables assessing leaders, 3 factor = all items loaded onto separate curiosity displays, intelligence, and status factors; 2 factor = items for curiosity displays and intelligence were combined into one factor. For variables assessing teams, 5 factor = all items loaded onto separate curiosity climate, information elaboration, task conflict, relationship conflict, and psychological safety factors; 4 factor = task conflict and relationship conflict combined into one factor; 3 factor = task conflict and relationship conflict combined into one factor, curiosity climate and information elaboration combined into one factor; 2 factor = curiosity climate and information elaboration combined into one factor, all other items combined into second factor.

*** $p < .001$

Table 6: *Fit Statistics for Nested Models (Time 2 survey)*

Model	χ^2	CFI	SRMR _{within}	SRMR _{between}	AIC
Leader assessment variables					
3 factor	$\chi^2 (174) = 380.89^{***}$	.96	.03	.07	9,602.19
2 factor	$\chi^2 (178) = 614.82^{***}$	.91	.06	.74	9,944.93
1 factor	$\chi^2 (180) = 870.58^{***}$	.77	.07	.16	10,303.37
Team assessment variables					
5 factor	$\chi^2 (358) = 610.45^{***}$	.95	.05	.18	21,946.77
4 factor	$\chi^2 (366) = 1,123.40^{***}$	.86	.07	.19	22,347.77
3 factor	$\chi^2 (372) = 1,393.07^{***}$	.81	.08	.39	22,551.46
2 factor	$\chi^2 (376) = 2,147.04^{***}$	.67	.11	.61	22,925.90
1 factor	$\chi^2 (378) = 2,454.22^{***}$	.62	.12	.69	23,408.44

Note. $N = 434$ team members, nested in 79 teams. CFI = comparative fit index. SRMR = standardized root mean squared residual. For variables assessing leaders, 3 factor = all items loaded onto separate curiosity displays, intelligence, and status factors; 2 factor = items for curiosity displays and intelligence were combined into one factor. For variables assessing teams, 5 factor = all items loaded onto separate curiosity climate, information elaboration, task conflict, relationship conflict, and psychological safety factors; 4 factor = task conflict and relationship conflict combined into one factor; 3 factor = task conflict and relationship conflict combined into one factor, curiosity climate and information elaboration combined into one factor; 2 factor = curiosity climate and information elaboration combined into one factor, all other items combined into second factor.

*** $p < .001$

Table 7: Team Level Aggregation Statistics

Variable	$r_{WG(j)}$	F ratio	ICC(1)	ICC(2)
Leader assessment variables				
1. Perceived leader intelligence (Time 1)	.79	2.08***	.20	.52
2. Perceived leader intelligence (Time 2)	.83	1.41*	.17	.48
3. Leader curiosity displays (Time 1)	.68	1.74**	.15	.43
4. Leader curiosity displays (Time 2)	.78	1.78***	.15	.44
5. Leader status (Time 1)	.72	3.10***	.33	.68
6. Leader status (Time 2)	.80	1.55**	.11	.36
Team assessment variables				
7. Curiosity climate (Time 1)	.74	1.35*	.06	.26
8. Curiosity climate (Time 2)	.85	2.03***	.16	.51
9. Task conflict (Time 1)	.85	2.08***	.17	.52
10. Task conflict (Time 2)	.76	1.48**	.08	.32
11. Information elaboration (Time 1)	.72	1.31†	.06	.24
12. Information elaboration (Time 2)	.78	1.84***	.13	.46
13. Relationship conflict (Time 1)	.86	2.93***	.27	.66
14. Relationship conflict (Time 2)	.86	1.63**	.10	.39
15. Psychological safety (Time 1)	.46	1.81***	.13	.45
16. Psychological safety (Time 2)	.48	1.76***	.12	.43

Note. Time 1, $n = 371$, nested in 71 teams. Time 2, $n = 434$, nested in 79 teams. Mean r_{WG} is reported.

† $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

Table 8: *Training Effectiveness Analysis*

Variable	Time 1 Differences Between Conditions	Time 2 Differences Between Conditions	High Curiosity Training Time 2 – Time 1 Differences	Low Curiosity Training Time 2 – Time 1 Differences
Curiosity Displays	$t(65) = 1.73\ddagger, d = .24$	$t(65) = 0.78, d = .11$	$t(35) = 3.52^{***}, d = .34$	$t(30) = 4.28^{***}, d = .47$
Perceived Intelligence	$t(65) = 1.68\ddagger, d = .22$	$t(65) = 0.66, d = .07$	$t(35) = 2.59^*, d = .21$	$t(30) = 4.31^{***}, d = .36$
Vision	$t(65) = 1.51, d = .23$	$t(65) = -1.31, d = -.16$	$t(35) = -1.02, d = -.12$	$t(30) = 2.29^*, d = .27$
Inspiration	$t(65) = 1.02, d = .14$	$t(65) = 1.29, d = .18$	$t(35) = 2.04^*, d = .19$	$t(30) = 1.32, d = .15$
Intellectual Stimulation	$t(65) = 1.40, d = .20$	$t(65) = 0.75, d = .12$	$t(35) = 6.77^{***}, d = .55$	$t(30) = 4.58^{***}, d = .63$
Supportive	$t(65) = 0.91, d = .13$	$t(65) = 1.30, d = .16$	$t(35) = 3.19^{**}, d = .24$	$t(30) = 1.76\ddagger, d = .22$
Recognition	$t(65) = 0.30, d = .04$	$t(65) = 1.39, d = .22$	$t(35) = 0.74, d = .07$	$t(30) = -0.70, d = -.10$
Status	$t(65) = 1.55, d = .27$	$t(65) = 0.87, d = .11$	$t(35) = 3.79^{***}, d = .37$	$t(30) = 4.74^{***}, d = .52$

Note. $N = 67$ teams. Time 1 and Time 2 differences between conditions were calculated as high curiosity training minus low curiosity training.

$\ddagger p < .10$

$* p < .05$

$** p < .01$

$*** p < .001$

Table 9: *Training Effectiveness Moderator Analysis, Predicting Curiosity Displays*

Moderator	Interaction term predicting curiosity displays	Simple slope at high level of moderator (+1 SD)	Simple slope at low level of moderator (-1 SD)
Leader variables			
Specific curiosity	$B = -.33^* (.18)$	$B = -.20 (.21)$	$B = .40^\dagger (.23)$
Diverse curiosity	$B = -.06 (.16)$	$B = .03 (.23)$	$B = .16 (.22)$
Gender	$B = .21 (.30)$	$B = .22 (.20)$	$B = .01 (.22)$
Curiosity displays (Time 1)	$B = -.36 (.21)$	$B = .20 (.21)$	$B = -.21 (.13)$
Status (Time 1)	$B = -.26 (.18)$	$B = .21 (.22)$	$B = -.16 (.14)$
Perceived intelligence (Time 1)	$B = -.28 (.28)$	$B = -.13 (.16)$	$B = .15 (.21)$
Team variables			
Psychological safety (Time 1)	$B = -.43 (.31)$	$B = -.14 (.19)$	$B = .32 (.24)$
Curiosity climate (Time 1)	$B = -.32 (.37)$	$B = -.10 (.21)$	$B = .21 (.20)$
Task conflict (Time 1)	$B = .44 (.49)$	$B = .27 (.28)$	$B = -.09 (.21)$
Relationship conflict (Time 1)	$B = .27 (.38)$	$B = .18 (.23)$	$B = -.07 (.24)$
Information elaboration (Time 1)	$B = -.74^* (.36)$	$B = -.21 (.18)$	$B = .41^\dagger (.22)$

Note. $N = 67$ teams. Standard errors are in parentheses.

$^\dagger p < .10$

$^* p < .05$

Table 10: *Training Effectiveness Moderator Analysis, Predicting Perceived Intelligence*

Moderator	Interaction term predicting perceived intelligence	Simple slope at high level of moderator (+1 SD)	Simple slope at low level of moderator (-1 SD)
Leader variables			
Specific curiosity	$B = -.17 (.14)$	$B = -.09 (.19)$	$B = .22 (.15)$
Diverse curiosity	$B = -.04 (.13)$	$B = .01 (.20)$	$B = .09 (.15)$
Gender	$B = -.34 (.23)$	$B = -.11 (.15)$	$B = .23 (.17)$
Curiosity displays (Time 1)	$B = -.40^* (.18)$	$B = -.27^{**} (.10)$	$B = .20 (.17)$
Status (Time 1)	$B = -.29 (.15)$	$B = -.23^* (.10)$	$B = .19 (.17)$
Perceived intelligence (Time 1)	$B = -.34 (.25)$	$B = -.21^\dagger (.12)$	$B = .16 (.19)$
Team variables			
Psychological safety (Time 1)	$B = -.41^\dagger (.22)$	$B = -.17 (.10)$	$B = .27 (.19)$
Curiosity climate (Time 1)	$B = -.59^* (.27)$	$B = -.29^* (.14)$	$B = .28 (.18)$
Task conflict (Time 1)	$B = .33 (.36)$	$B = .19 (.22)$	$B = -.08 (.14)$
Relationship conflict (Time 1)	$B = .27 (.30)$	$B = .14 (.21)$	$B = -.11 (.14)$
Information elaboration (Time 1)	$B = -.54^* (.25)$	$B = .16 (.10)$	$B = .29^\dagger (.18)$

Note. $N = 67$ teams. Standard errors are in parentheses.

$^\dagger p < .10$

$^* p < .05$

$^{**} p < .01$

Table 11: Means, SDs, and Correlations for Study 2 Variables and Experimental Conditions

Variable	1	2	3	4	5	6	7	8	9
Followers only									
1. Perceived leader intelligence (Time 1)	(.96)								
2. Perceived leader intelligence (Time 2)	.54**	(.93)							
3. Leader curiosity displays (Time 1)	.75**	.57**	(.92)						
4. Leader curiosity displays (Time 2)	.36**	.77**	.48**	(.94)					
5. Leader status (Time 1)	.77**	.59**	.86**	.41**	(.96)				
6. Leader status (Time 2)	.47**	.85**	.55**	.79**	.58**	(.96)			
Leader and followers									
7. Curiosity climate (Time 1)	.62**	.43**	.72**	.29**	.65**	.33**	(.96)		
8. Curiosity climate (Time 2)	.24**	.64**	.28*	.70**	.23	.54**	.29*	(.96)	
9. Task conflict (Time 1)	-.13	-.30*	-.30*	-.29*	-.26*	-.38**	-.30*	-.14	(.84)
10. Task conflict (Time 2)	.17	.07	.17	-.06	.22	-.03	-.00	-.07	.10
11. Information elaboration (Time 1)	.55**	.47**	.65**	.36**	.60**	.42**	.82**	.36**	-.45**
12. Information elaboration (Time 2)	.16	.54**	.20	.67**	.15	.49**	.23	.81**	-.16
13. Relationship conflict (Time 1)	-.23	-.29*	-.32*	-.21	-.39**	-.32**	-.39**	-.15	.72**
14. Relationship conflict (Time 2)	-.05	-.25*	-.06	-.26*	-.02	-.18	-.17	-.38**	.37**
15. Psychological safety (Time 1)	.39**	.42**	.47**	.28*	.50**	.41**	.69**	.30*	-.59**
16. Psychological safety (Time 2)	.15	.47**	.24	.38**	.27*	.40**	.34**	.44**	-.47**
17. Performance	.02	-.01	-.06	-.05	-.05	.01	.08	.08	.25*
Descriptive statistics, <i>M (SD)</i>									
	6.14 (0.55)	6.42 (0.44)	5.65 (0.58)	6.05 (0.57)	5.69 (0.72)	6.12 (0.53)	5.53 (0.48)	6.09 (0.49)	2.35 (0.42)
Low leader curiosity condition									
	6.02 (0.58)	6.38 (0.53)	5.52 (0.62)	5.99 (0.69)	5.54 (0.82)	6.06 (0.70)	5.45 (0.41)	6.06 (0.53)	2.37 (0.39)
High leader curiosity condition									
	6.24 (0.50)	6.45 (0.34)	5.77 (0.53)	6.11 (0.46)	5.81 (0.60)	6.18 (0.34)	5.59 (0.53)	6.11 (0.46)	2.32 (0.44)

Note. $N = 67$ teams. α reliability coefficients appear on the main diagonal in parentheses.

Table 11: Means, SDs, and Correlations for Study Variables and Experimental Conditions (Continued)

Variable	10	11	12	13	14	15	16	17
Followers only								
1. Perceived leader intelligence (Time 1)								
2. Perceived leader intelligence (Time 2)								
3. Leader curiosity displays (Time 1)								
4. Leader curiosity displays (Time 2)								
5. Leader status (Time 1)								
6. Leader status (Time 2)								
Leader and followers								
7. Curiosity climate (Time 1)								
8. Curiosity climate (Time 2)								
9. Task conflict (Time 1)								
10. Task conflict (Time 2)	(.86)							
11. Information elaboration (Time 1)	-.05	(.88)						
12. Information elaboration (Time 2)	-.16	.32**	(.87)					
13. Relationship conflict (Time 1)	.08	-.51**	-.18	(.87)				
14. Relationship conflict (Time 2)	.56**	-.32**	-.47**	.43**	(.88)			
15. Psychological safety (Time 1)	-.08	.74**	.29*	-.68**	-.28*	(.82)		
16. Psychological safety (Time 2)	-.32**	.44**	.44**	-.58**	-.57**	.63**	(.80)	
17. Performance	-.01	.14	.06	.17	.16	-.06	-.21	
Descriptive statistics, <i>M</i> (<i>SD</i>)	2.36 (0.43)	5.92 (0.42)	6.22 (0.45)	1.72 (0.46)	1.51 (0.34)	5.67 (0.53)	5.82 (0.48)	0.46 (0.50)
Low leader curiosity condition	2.40 (0.50)	5.92 (0.44)	6.19 (0.43)	1.83 (0.48)	1.55 (0.39)	5.64 (0.53)	5.84 (0.48)	0.45 (0.51)
High leader curiosity condition	2.32 (0.37)	5.93 (0.41)	6.24 (0.47)	1.63 (0.44)	1.47 (0.30)	5.69 (0.53)	5.80 (0.50)	0.47 (0.51)

Note. $N = 67$ teams. α reliability coefficients appear on the main diagonal in parentheses.

Table 12: *Regression Results for Effects of Leader Curiosity Displays (Model 1)*

Predictors	First stage mediators				Second stage mediators				Performance	
	Curiosity climate		Task conflict		Information elaboration		Relationship conflict		B	SE _B
	B	SE _B	B	SE _B	B	SE _B	B	SE _B		
Vision	.17	.12	-.12	.15	.13	.12	-.09	.09	-.13	.15
Inspiration	.15	.23	.09	.27	.04	.14	-.15	.18	-.77	.25
Stimulation	.08	.15	.30†	.18	.04	.13	.08	.09	.16	.18
Support	-.19	.20	-.20	.21	-.10	.14	-.13	.14	.21	.25
Recognition	.05	.15	-.04	.18	.13	.12	.15	.10	.25	.18
Curiosity displays	.48	.56	-.16	.15						
Leader status (Time 1)	.04	.64								
Curiosity displays × Status	-.01	.11								
Curiosity climate					.83	1.04				
Task Conflict					-.23	1.01	1.06	1.37		
Psychological safety (Time 1)					.23	1.23	.12	.56		
Curiosity climate × Psychological safety					-.05	.18				
Task conflict × Psychological safety					.02	.17	-.12	.24		
Information elaboration									.40†	.22
Relationship conflict									.31	.23

Note. $N = 67$ teams.

† $p < .10$

Table 13: *Moderated Mediation Analysis: Effects of Leader Curiosity Displays on Performance Through Curiosity Climate and Information Elaboration, Moderated by Leader Status (Hypothesis 10, Model 2)*

Predictors	First Stage Mediator: Curiosity Climate		Second Stage Mediator: Information Elaboration		Performance	
	<i>B</i>	<i>SE_B</i>	<i>B</i>	<i>SE_B</i>	<i>B</i>	<i>SE_B</i>
Curiosity displays	.48	.54	.09	.12	.13	1.07
Leader status (Time 1)	.04	.61				
Curiosity displays × Status	-.01	.10				
Curiosity climate			.56***	.09	1.31	1.08
Information elaboration					.37	1.14
Direct and indirect effects	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI
Direct effect of curiosity displays	.48 (.54)	[-.61, 1.57]	.09 (.12)	[-.14, .33]	.13 (1.07)	[-1.96, 2.23]
Indirect effect of curiosity displays			.22 (.10)	[.02, .41]	.08 (3.86)	[-.54, 1.30]
Conditional effects of curiosity displays						
High leader status	.39 (.20)	[.09, .69]				
Low leader status	.41 (.15)	[.02, .74]				
Conditional indirect effects through curiosity climate and information elaboration						
High leader status					.08 (4.02)	[-.56, 1.35]
Low leader status					.09 (3.57)	[-.56, 1.26]
Index of moderated mediation					-.00 (.46)	[-.24, .26]

Note. $N = 67$ teams. Model contains the following control variables: visionary leadership (Time 2), inspirational communication (Time 2), intellectual stimulation (Time 2), supportive leadership (Time 2), and personal recognition (Time 2).

*** $p < .001$

Table 14: *Moderated Mediation Analysis: Effects of Leader Curiosity Displays on Performance Through Curiosity Climate and Information Elaboration, Moderated by Psychological Safety (Hypothesis 11, Model 3)*

Predictors	First Stage Mediator: Curiosity Climate		Second Stage Mediator: Information Elaboration		Performance	
	<i>B</i>	<i>SE_B</i>	<i>B</i>	<i>SE_B</i>	<i>B</i>	<i>SE_B</i>
Curiosity displays	.39*	.15	.09	.12	.13	1.07
Curiosity climate			.94	.90	1.31	1.08
Psychological safety (Time 1)			.44	1.00		
Curiosity displays × Psychological safety			-.07	.16		
Information elaboration					.37	1.14
Direct and indirect effects	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI
Direct effect of curiosity displays	.39 (.15)	[.09, .70]	.09 (.12)	[-.15, .34]	.13 (1.07)	[-1.96, 2.23]
Indirect effect of curiosity displays			.21 (.08)	[.03, .36]	.08 (.41)	[-.54, 1.08]
Conditional indirect effects of curiosity displays						
High psychological safety			.20 (.09)	[.03, .37]		
Low psychological safety			.23 (.09)	[.04, .41]		
Conditional indirect effects through curiosity climate and information elaboration						
High psychological safety					.08 (.38)	[-.57, .99]
Low psychological safety					.08 (.47)	[-.52, 1.25]
Index of moderated mediation					-.01 (.15)	[-.44, .13]

Note. $N = 67$ teams. Model contains the following control variables: visionary leadership (Time 2), inspirational communication (Time 2), intellectual stimulation (Time 2), supportive leadership (Time 2), and personal recognition (Time 2).

* $p < .05$

Table 15: *Moderated Mediation Analysis: Effects of Leader Curiosity Displays on Performance Through Task Conflict and Information Elaboration, Moderated by Psychological Safety (Hypothesis 12, Model 4)*

Predictors	First Stage Mediator: Task Conflict		Second Stage Mediator: Information Elaboration		Performance	
	<i>B</i>	<i>SE_B</i>	<i>B</i>	<i>SE_B</i>	<i>B</i>	<i>SE_B</i>
Curiosity displays	-.16	.19	.30*	.15	.40	1.06
Task conflict			-.21	1.19	.03	.68
Psychological safety (Time 1)			.01	.51		
Task conflict × Psychological safety			.01	.21		
Information elaboration					1.19	.92
Direct and indirect effects	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI
Direct effect of curiosity displays	-.16 (.19)	[-.53, .21]	.30 (.15)	[.00, .60]	.40 (1.06)	[-1.67, 2.47]
Indirect effect of curiosity displays			.02 (.03)	[-.02, .11]	.02 (.11)	[-.05, .31]
Conditional indirect effects of curiosity displays						
High psychological safety			.02 (.04)	[-.02, .12]		
Low psychological safety			.02 (.05)	[-.04, .16]		
Conditional indirect effects through task conflict and information elaboration						
High psychological safety					.02 (.11)	[-.05, .31]
Low psychological safety					.03 (.16)	[-.10, .47]
Index of moderated mediation					-.00 (.13)	[-.31, .21]

Note. $N = 67$ teams. Model contains the following control variables: visionary leadership (Time 2), inspirational communication (Time 2), intellectual stimulation (Time 2), supportive leadership (Time 2), and personal recognition (Time 2).

* $p < .05$

Table 16: *Moderated Mediation Analysis: Effects of Leader Curiosity Displays on Performance Through Task Conflict and Relationship Conflict, Moderated by Psychological Safety (Hypothesis 13, Model 5)*

Predictors	First Stage Mediator: Task Conflict		Second Stage Mediator: Relationship Conflict		Performance	
	<i>B</i>	<i>SE_B</i>	<i>B</i>	<i>SE_B</i>	<i>B</i>	<i>SE_B</i>
Curiosity displays	-.16	.19	-.10	.12	.80	.96
Task conflict			.87	1.00	-.56	.77
Psychological safety (Time 1)			.04	.43		
Task conflict × Psychological safety			-.09	.17		
Relationship conflict					1.05	1.01
Direct and indirect effects	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI
Direct effect of curiosity displays	-.16 (.19)	[-.53, .21]	-.10 (.12)	[-.35, .15]	.80 (.96)	[-1.09, 2.68]
Indirect effect of curiosity displays			-.06 (.06)	[-.20, .06]	-.06 (.15)	[-.41, .18]
Conditional indirect effects of curiosity displays						
High psychological safety			-.05 (.06)	[-.21, .05]		
Low psychological safety			-.07 (.07)	[-.24, .06]		
Conditional indirect effects through task conflict and relationship conflict						
High psychological safety					-.06 (.14)	[-.41, .15]
Low psychological safety					-.07 (.18)	[-.48, .22]
Index of moderated mediation					.01 (.12)	[-.20, .23]

Note. $N = 67$ teams. Model contains the following control variables: visionary leadership (Time 2), inspirational communication (Time 2), intellectual stimulation (Time 2), supportive leadership (Time 2), and personal recognition (Time 2).

Table 17: *Summary of Hypothesis Support*

Hypothesis	Summary	Supported in test of full model?	Additional support?
1	Positive relationship between curiosity displays and curiosity climate	No	<ul style="list-style-type: none"> • Positive correlation (Table 9) • Significant relationship in Model 3 (Table 12)
2	Positive relationship between curiosity displays and curiosity climate is stronger when leader status is high	No	
3	Positive relationship between curiosity displays and task conflict	No	
4	Positive relationship between curiosity climate and information elaboration	No	<ul style="list-style-type: none"> • Positive correlation (Table 9) • Significant relationship in Model 2 (Table 11)
5	Positive relationship between curiosity climate and information elaboration stronger when by psychological safety is high	No	
6	Task conflict positively (negatively) related to information elaboration when psychological safety is high (low)	No	
7	Positive relationship between task conflict and relationship conflict stronger when psychological safety is low	No	<ul style="list-style-type: none"> • Positive correlation (Table 9)

Table 17: *Summary of Hypothesis Support (Continued)*

Hypothesis	Summary	Supported in test of full model?	Additional support?
8	Positive relationship between information elaboration and team performance	Marginally significant	
9	Negative relationship between relationship conflict and performance	No	
10	Indirect effects of leader curiosity displays on performance through curiosity climate and information elaboration is moderated by leader status	No	
11	Indirect effects of leader curiosity displays on performance through curiosity climate and information elaboration is moderated by psychological safety	No	
12	Indirect effects of leader curiosity displays on performance through task conflict and information elaboration is moderated by psychological safety	No	
13	Indirect effects of leader curiosity displays on performance through task conflict and relationship conflict is moderated by psychological safety	No	

Figure 1: Hypothesized model (Model 1)

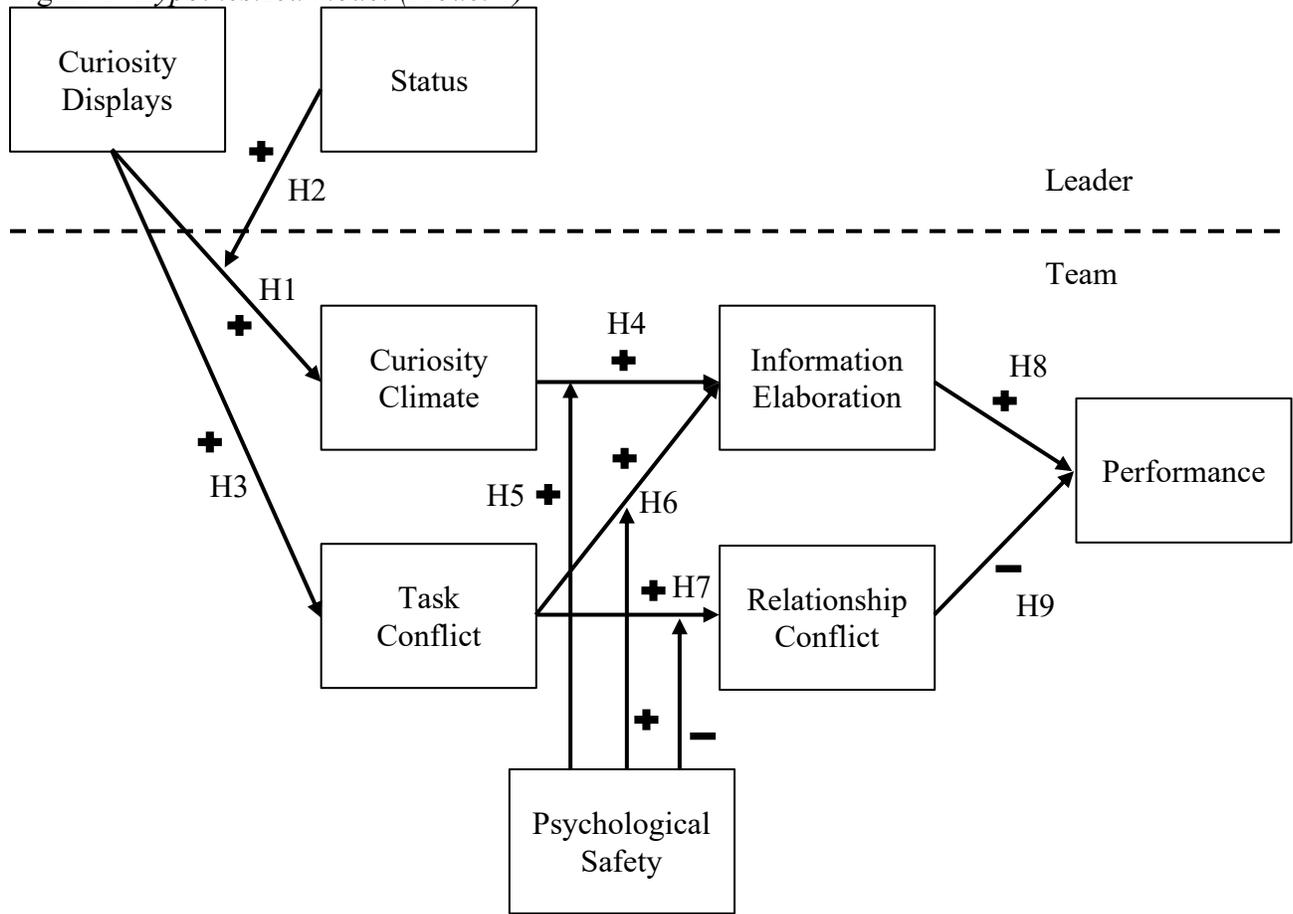


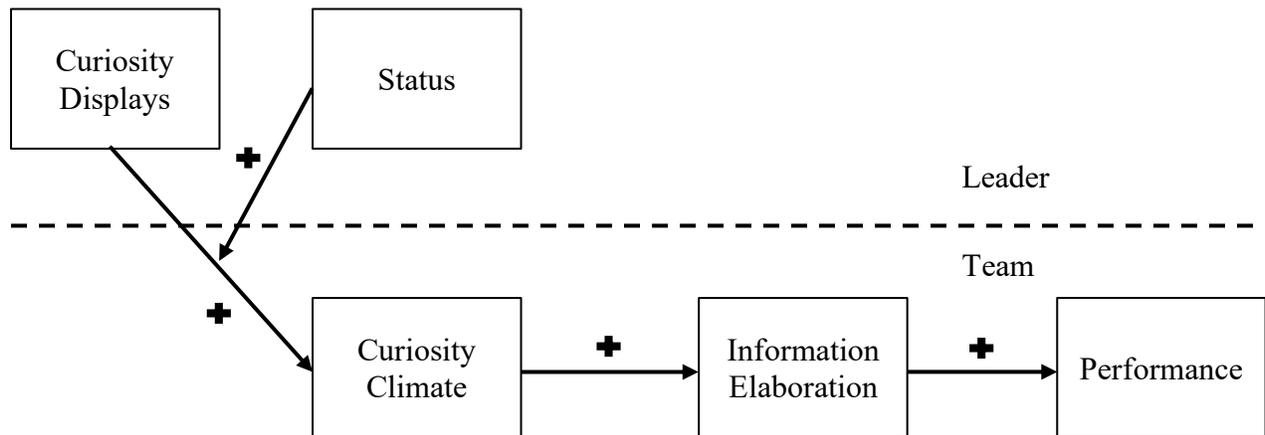
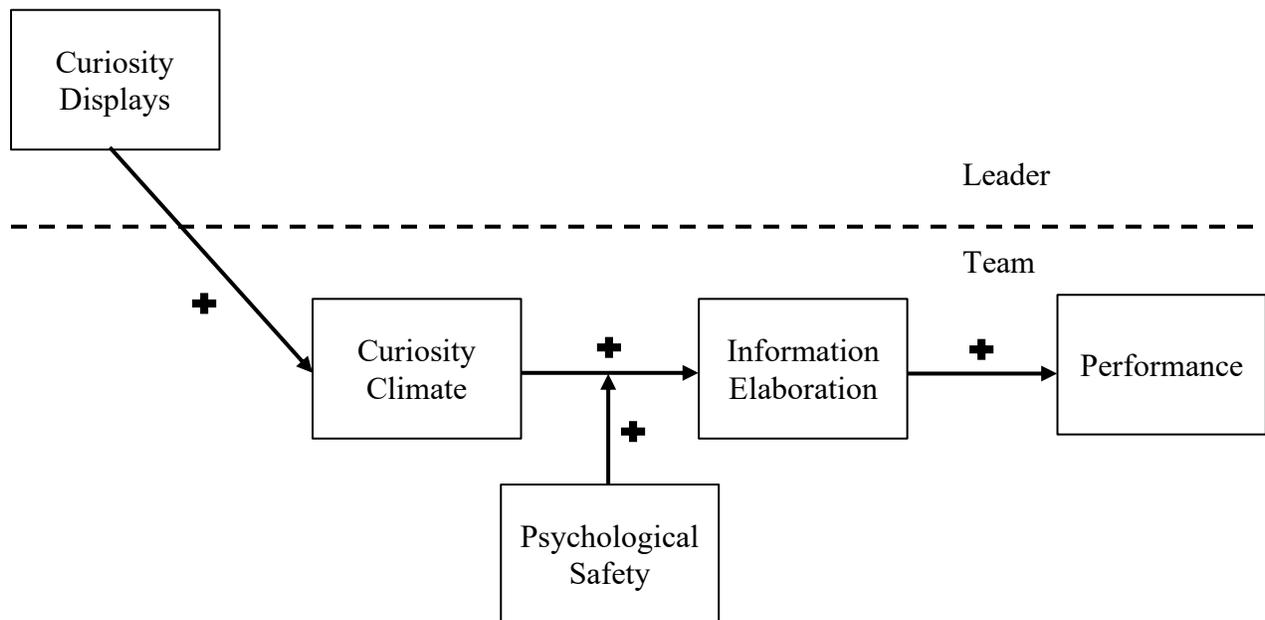
Figure 2: *Model of Hypothesis 10 (Model 2)*Figure 3: *Model of Hypothesis 11 (Model 3)*

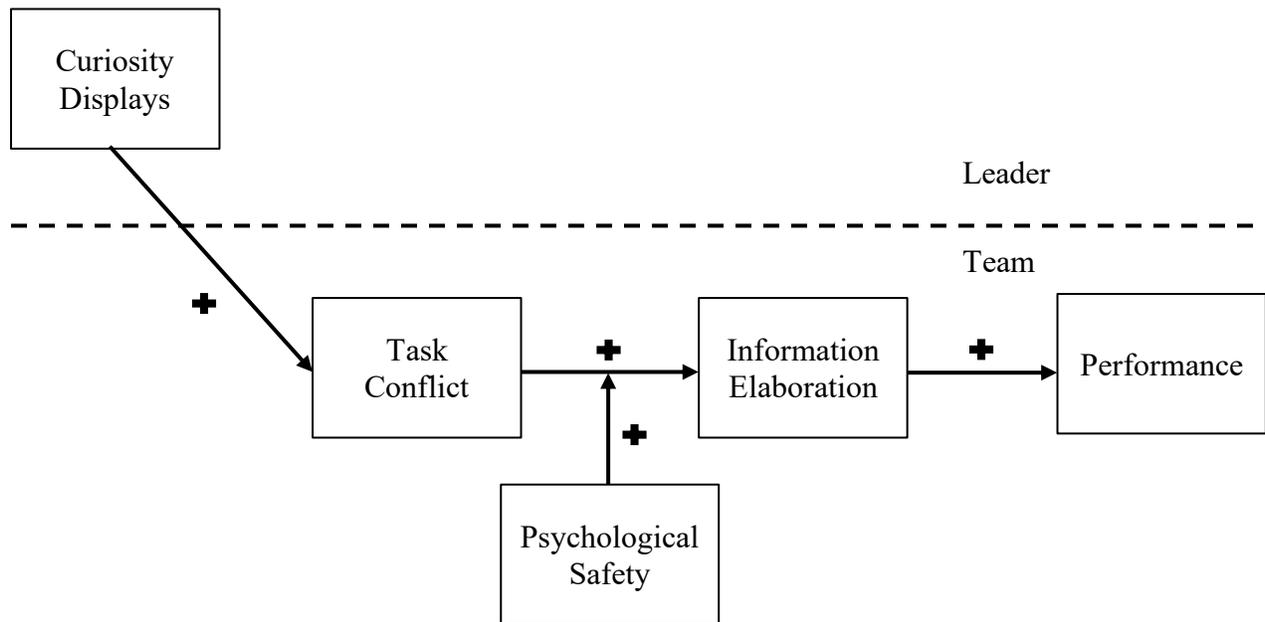
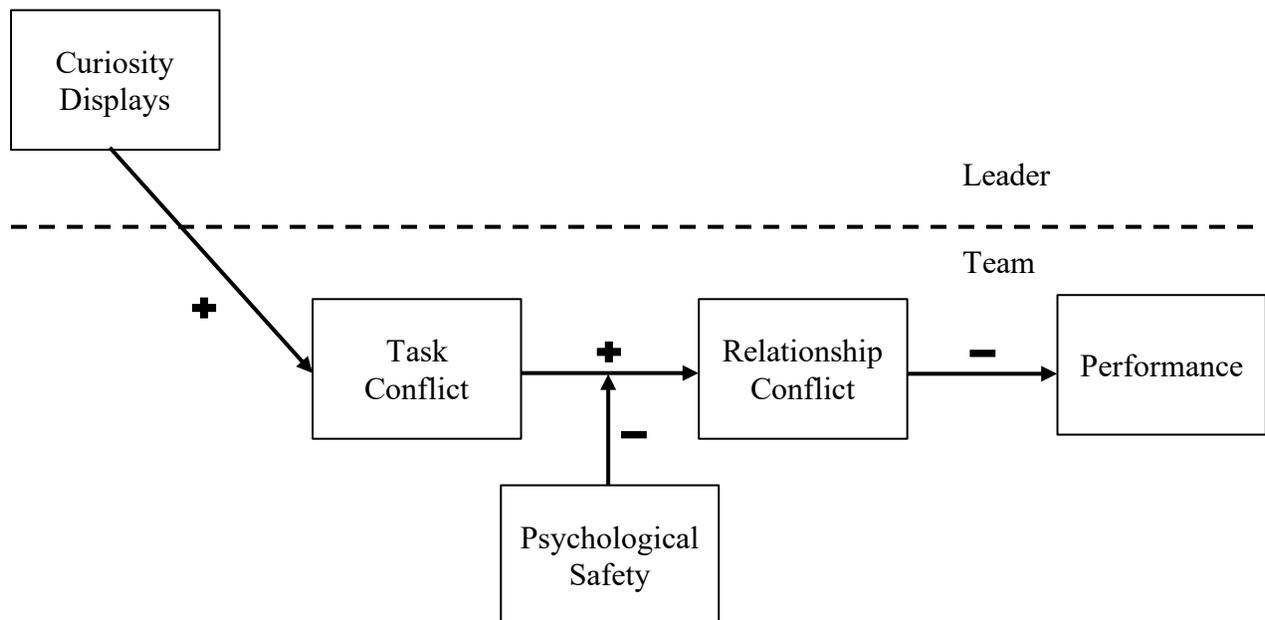
Figure 4: *Model of Hypothesis 12 (Model 4)*Figure 5: *Model of Hypothesis 13 (Model 5)*

Figure 6: *Schedule of Experimental Procedure*

		Wed, 13 Nov.		Wed, 20 Nov.		
<i>Team</i>	Time 1 survey: <ul style="list-style-type: none"> • Psychological safety • Curiosity climate • Conflict (task, relationship) • Information elaboration 	Instructions: <ul style="list-style-type: none"> • Task overview • Importance of being prompt • Required to remain for entire task 		Individual work: <ul style="list-style-type: none"> • Case file review • Decide guilty suspect • Provide reasoning 	Team decision: <ul style="list-style-type: none"> • Discuss case file evidence • Decide guilty suspect • Provide reasoning 	Time 2 survey: <ul style="list-style-type: none"> • Psychological safety • Curiosity climate • Conflict (task, relationship) • Information elaboration
<i>Leader</i>	Training: <ul style="list-style-type: none"> • High curiosity • Low curiosity 		Instructions: <ul style="list-style-type: none"> • Task behavior reminder 			
<i>Follower</i>	Time 1 survey: <ul style="list-style-type: none"> • Leader curiosity • Leader intelligence • Leader status 					Time 2 survey: <ul style="list-style-type: none"> • Leader curiosity • Leader intelligence • Leader status

Figure 7: *Training Effectiveness for Teams Low in Information Elaboration*

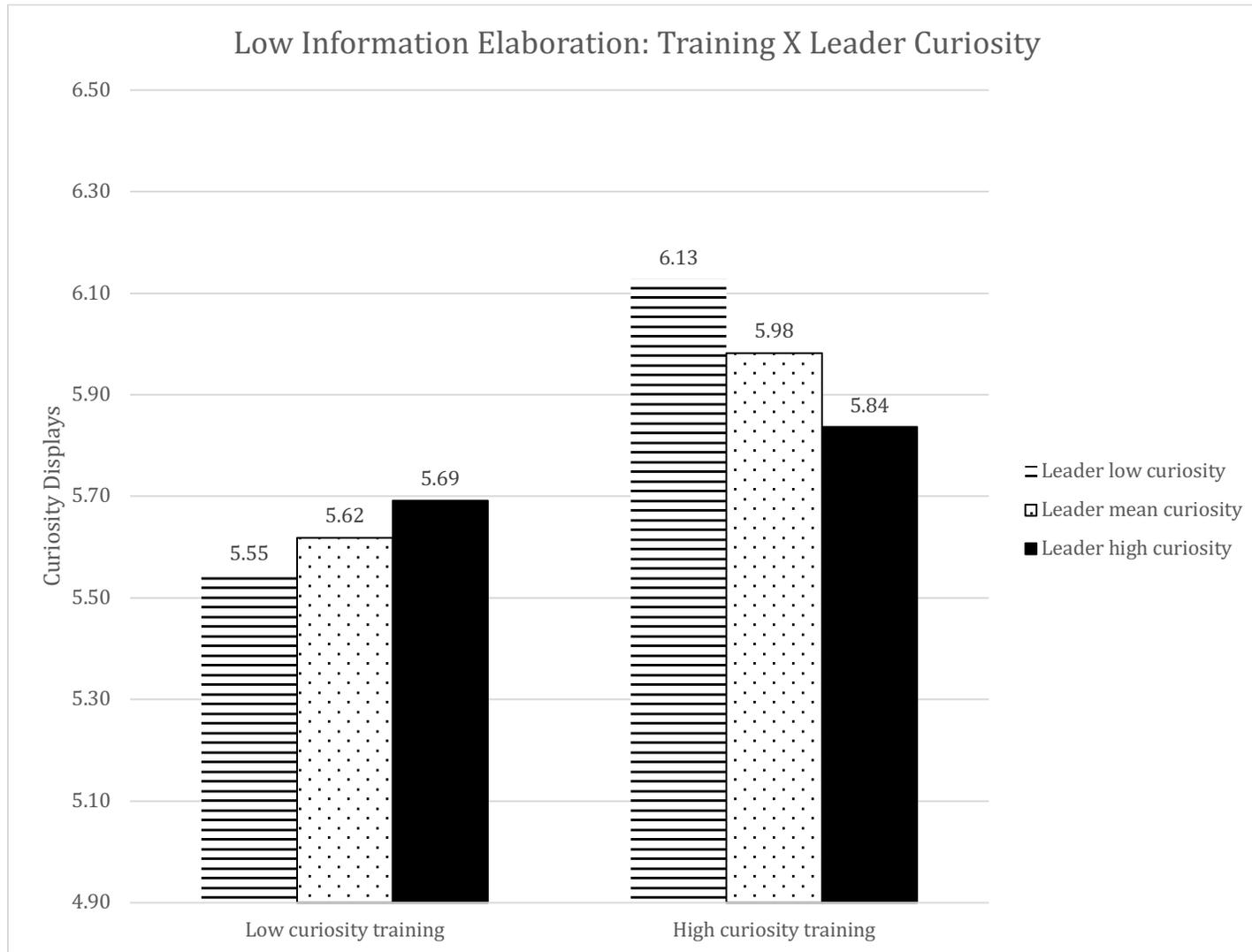


Figure 8: *Training Effectiveness for Teams High in Information Elaboration*

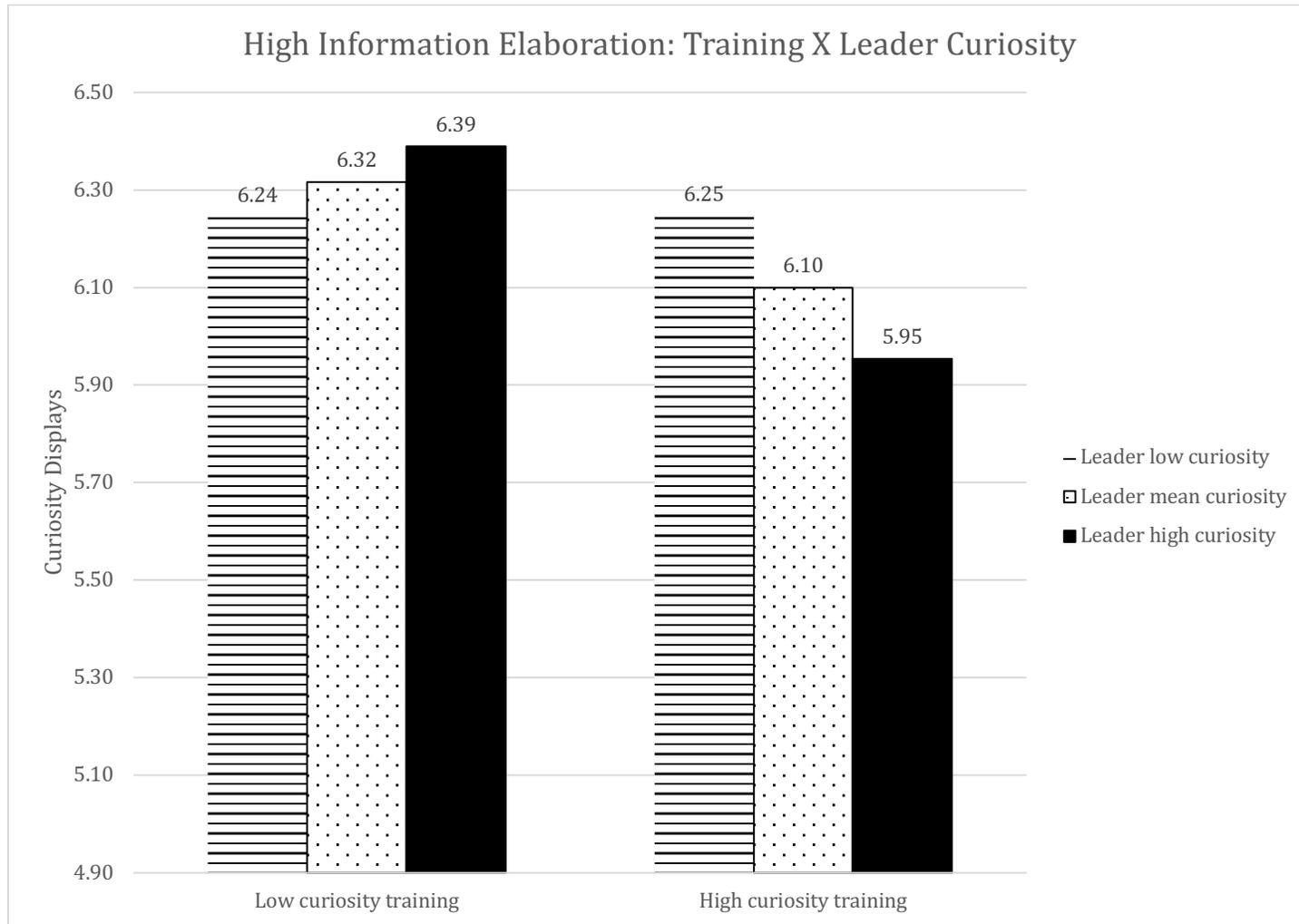


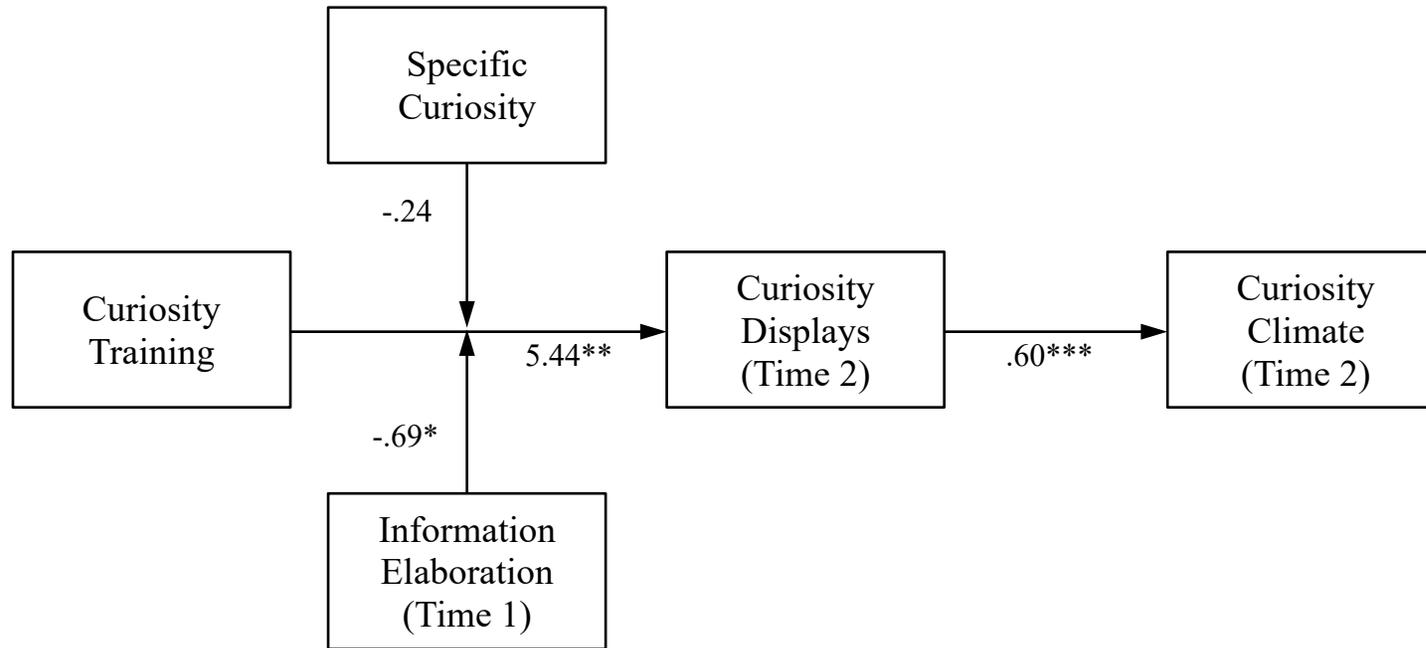
Figure 9: *Effects of Curiosity Training on Curiosity Climate*

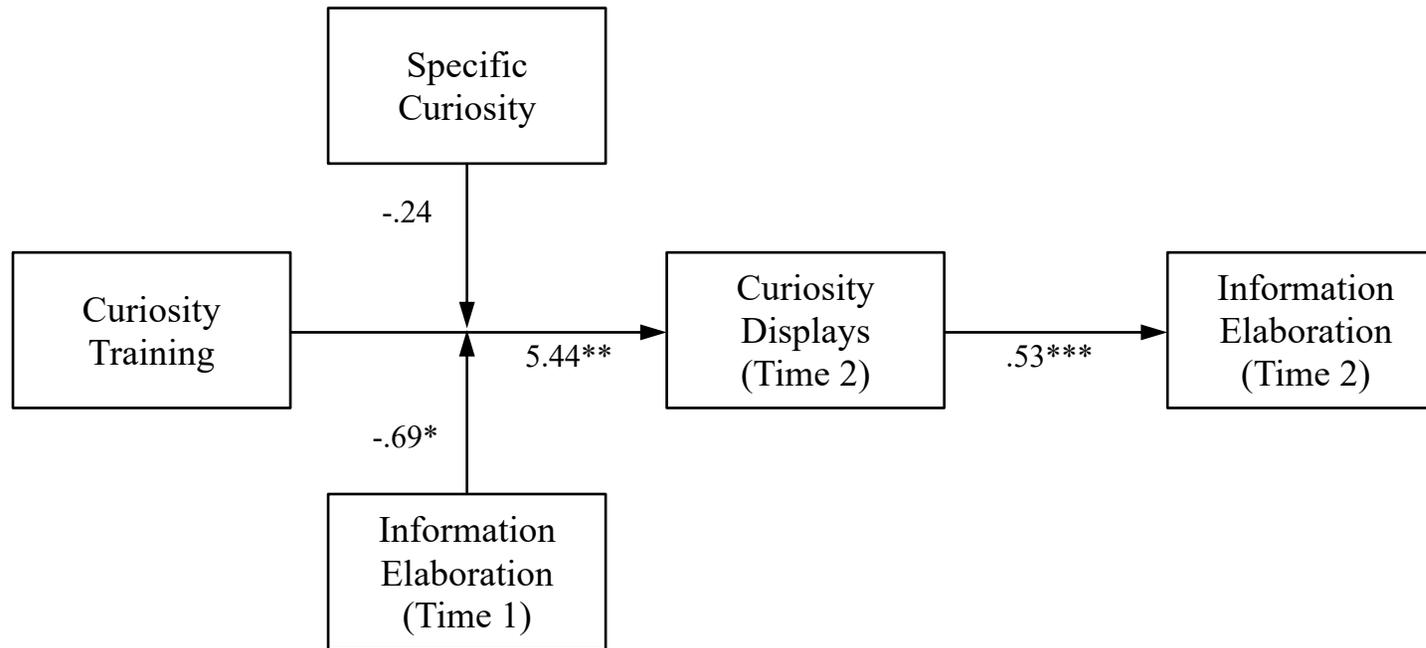
Figure 10: *Effects of Curiosity Training on Information Elaboration*

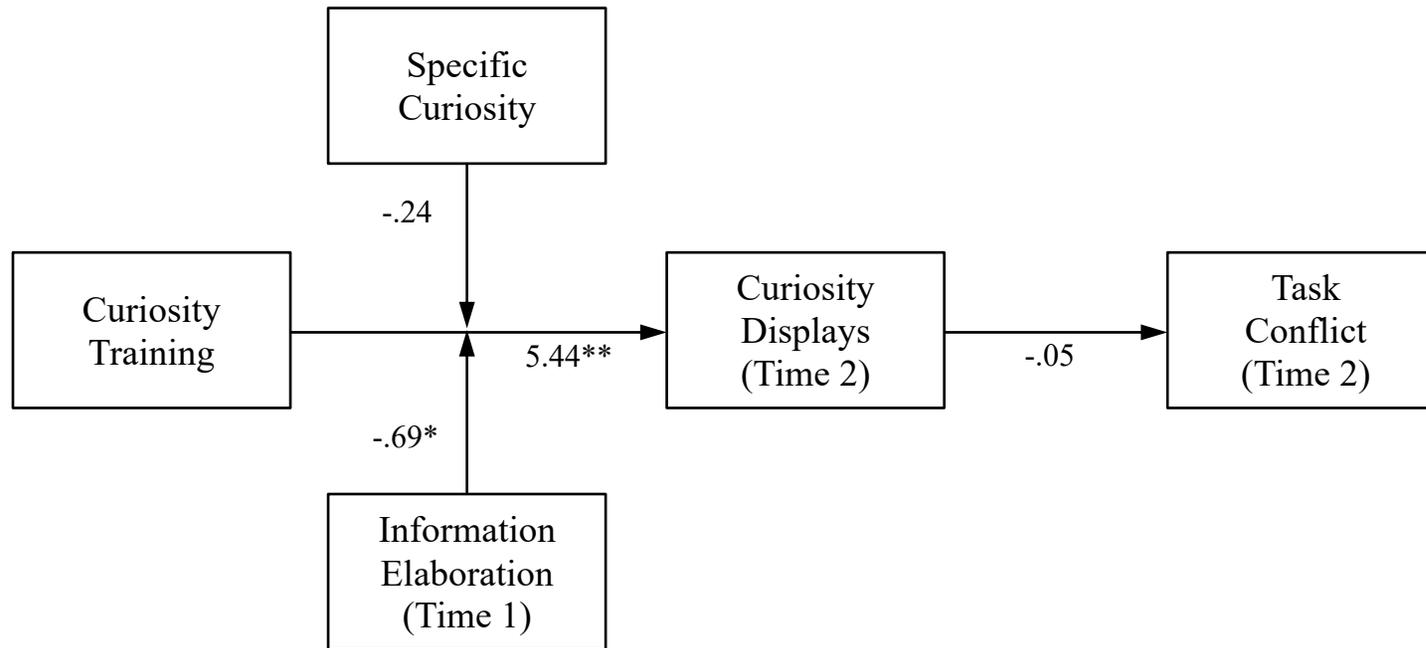
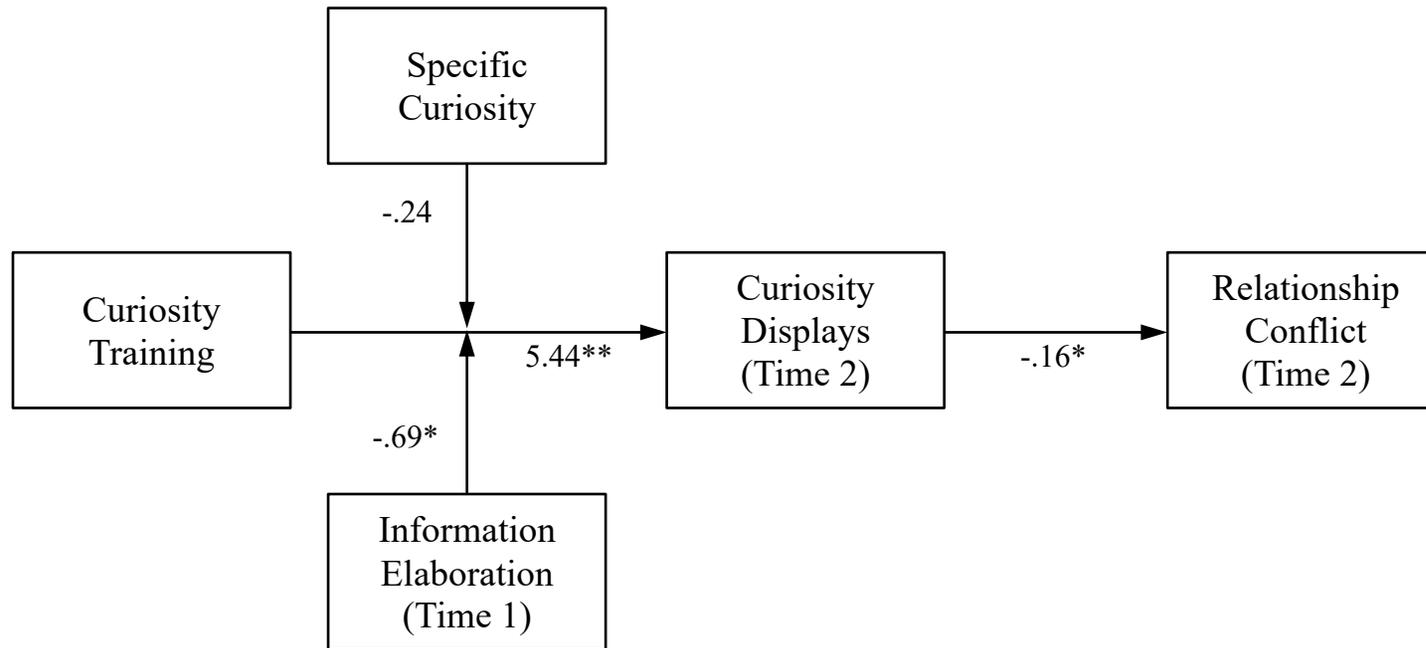
Figure 11: *Effects of Curiosity Training on Task Conflict*

Figure 12: *Effects of Curiosity Training on Relationship Conflict*

APPENDICES

Appendix A: Transformational Leadership Scales

Transformational Leadership Behaviors (Podsakoff et al., 1990)

Articulate a vision:

1. Has a clear understanding of where we are going.
2. Paints an interesting picture of the future for our group.
3. Is always seeking new opportunities for the organization.
4. Inspires others with his/her plans for the future.
5. Is able to get others committed to his/her dream.
6. Provide appropriate model.
7. Leads by "doing," rather than simply by "telling".
8. Provides a good model for me to follow.
9. Leads by example.

Foster acceptable goals:

10. Fosters collaboration among work groups.
11. Encourages employees to be "team players".
12. Gets the group to work together for the same goal.
13. Develops a team attitude and spirit among employees.

High performance expectations:

14. Shows us that he/she expects a lot from us.
15. Insists on only the best performance.
16. Will not settle for second best.

Individual support:

17. Acts without considering my feelings.
18. Shows respect for my personal feelings.
19. Behaves in a manner thoughtful of my personal needs.
20. Treats me without considering my personal feelings.

Intellectual stimulation:

21. Challenges me to think about old problems in new ways.
22. Asks questions that prompt me to think.
23. Has stimulated me to rethink the way I do things.
24. Has ideas that have challenged me to reexamine some of basic assumptions about my work.

Subdimensions of Transformational Leadership (Rafferty & Griffin, 2004)

Vision:

1. Has a clear understanding of where we are going.
2. Has a clear sense of where he/she wants our unit to be in 5 years.
3. Has no idea where the organization is going (R).

Inspirational communication:

4. Says things that make employees proud to be part of this organization.
5. Says positive things about the work unit.
6. Encourages people to see changing environments as situations full of opportunities.

Intellectual stimulation:

7. Challenges me to think about old problems in new ways.
8. Has ideas that have forced me to rethink some things that I have never questioned before.
9. Has challenged me to rethink some of my basic assumptions about my work.

Supportive leadership:

10. Considers my personal feelings before acting.
11. Behaves in a manner which is thoughtful of my personal needs.
12. Sees that the interests of employees are given due consideration.

Personal recognition:

13. Commends me when I do a better than average job.
14. Acknowledges improvement in my quality of work.
15. Personally compliments me when I do outstanding work.

Multifactor Leadership Questionnaire (Avolio & Bass, 2004)

Idealized influence – attributes:

1. Instill pride in others for being associated with me.
2. Go beyond self-interest for the good of the group.
3. Act in ways that build others' respect for me.
4. Display a sense of power and confidence.

Idealized influence – behaviors:

5. Talk about my most important values and beliefs.

6. Specify the importance of having a strong sense of purpose.
7. Consider the moral and ethical consequences of decisions.
8. Emphasize the importance of having a collective sense of mission.

Inspirational motivation:

9. Talk optimistically about the future.
10. Talk enthusiastically about what needs to be accomplished.
11. Articulate a compelling vision of the future.
12. Express confidence that goals will be achieved.

Intellectual stimulation:

13. Re-examine critical assumptions to question whether they are appropriate.
14. Seek differing perspectives when solving problems.
15. Get others to look at problems from many different angles.
16. Suggest new ways of looking at how to complete assignments.

Individual consideration:

17. Spend time teaching and coaching.
18. Treat others as individuals rather than just as a member of the group.
19. Consider each individual as having different needs, abilities and aspirations from others.
20. Help others to develop their strengths.

Appendix B: Murder Mystery Task

The Murder Mystery task will be completed in class. The main outcome of the task is a team decision regarding the guilty suspect of a murder. Teams will make their decision based on information provided about the crime and three primary suspects. Each team member will receive both information common to all team members and unique information that is not provided to any other team members. The sequence of events will be as follows: (1) 20-minute case file review as individuals and submission of individual decisions, (2) 20-minute team decision-making meeting, (3) 15-minute team meeting to generate investigative plan, (4) 10 minutes to complete the post-task (Time 2) survey, and (5) five-minute class debrief.

The instructional materials have been adapted from an experimental task developed by Stasser and Stewart (1992). The information about the murder will be distributed to team members at the start of the class. Each team member will be assigned a role. The team leader role is assigned at the beginning of the semester, and the remaining three members will be assigned the roles labeled as *Blue*, *Green*, and *Red*. The task presents three suspects (Eddie, Billy, and Mickey) and provides both implicating and exonerating evidence for each. Each team member is likely to come to different conclusions regarding the guilty individual based on the unique evidence provided in the case file. However, when all available information is shared, the correct decision regarding the guilty individual is clear (i.e., exonerating evidence is presented for Billy and Mickey and no exonerating evidence is presented for Eddie). Table B1 indicates the implicating and exonerating evidence for all suspects and the degree to which each piece of information is distributed within the team. Table B2 summarizes information presented to each team member and indicates the predicted primary suspect, based on the partial information.

Table B1: *Murder Mystery Evidence Summary*

<i>Suspect</i>	<i>Implicating Evidence</i>	<i>Exonerating Evidence</i>	<i>Distribution</i>
<i>Eddie</i>	<i>Daughter's argument with victim and possible affair</i>		<i>Red only</i>
	<i>Hearing problems</i>		<i>Red only</i>
	<i>Mary did not see Eddie's truck in carport at 6:40</i>		<i>Red only</i>
	<i>Eddie habitually locks up tools</i>		<i>All team members</i>
	<i>Eddie knew that victim always left around 6:30</i>		<i>All team members</i>
	<i>Eddie left his crowbar out for several hours</i>		<i>All team members</i>
<i>Billy</i>	<i>Problems with money and gambling</i>		<i>All team members</i>
	<i>No wallet on body; wallet later found with no money</i>		<i>All team members</i>
	<i>Eddie reported hearing Billy's car around 7</i>		<i>All team members</i>
	<i>Fingerprints on crowbar</i>		<i>All team members</i>
	<i>Lied about being at victim's house Saturday morning</i>		<i>All team members</i>
	<i>Tire tracks made Saturday morning match Billy's</i>		<i>All team members</i>
		<i>Mary confirmed borrowing money</i>	<i>Blue only</i>
		<i>Billy's story about moving the crowbar</i>	<i>Blue only</i>
		<i>Car that dropped the wallet was quiet</i>	<i>Blue only</i>
<i>Mickey</i>	<i>Business feud with victim</i>		<i>All team members</i>
	<i>Argued with victim on phone Saturday morning</i>		<i>All team members</i>

<i>Suspect</i>	<i>Implicating Evidence</i>	<i>Exonerating Evidence</i>	<i>Distribution</i>
	<i>Would have arrived at victim's house about 6:40</i>		<i>All team members</i>
	<i>Wallet found on route from victim to golf course</i>		<i>Team leader only</i>
	<i>Note from victim to Mickey</i>		<i>Team leader only</i>
	<i>Victim continued refusal to accept Mickey's offer</i>		<i>Team leader only</i>
		<i>Arrived at golf course before 7:00</i>	<i>Green only</i>
		<i>Car dropped wallet at 7:00</i>	<i>Green only</i>
		<i>Tried to resolve disagreement after murder</i>	<i>Green only</i>

Table B2: *Evidentiary Support for Predicted Primary Suspect*

	<i>Eddie</i>		<i>Billy</i>		<i>Mickey</i>		<i>Predicted Primary Suspect</i>
	<i>Implicating Evidence</i>	<i>Exonerating Evidence</i>	<i>Implicating Evidence</i>	<i>Exonerating Evidence</i>	<i>Implicating Evidence</i>	<i>Exonerating Evidence</i>	
<i>Team Leader</i>	3	0	6	0	6	0	<i>Billy or Mickey</i>
<i>Red</i>	6	0	6	0	3	0	<i>Eddie or Billy</i>
<i>Blue</i>	3	0	6	3	3	0	<i>Eddie or Mickey</i>
<i>Green</i>	3	0	6	0	3	3	<i>Billy</i>

The following section presents the information to be made available to team members in what will be labeled as the case file. Unshared information is colored according to which team member receives that information, with information shared with only the team leader highlighted in bold. Team members will be given 20 minutes to review the materials, make as many notes as they prefer, and make their decision as an individual. The case files will be returned, and teams will be asked to meet together to discuss the case and decide who is guilty.

Murder Mystery Case File

Major Characters

Robert Gill:	The victim
Mary Gill:	The victim's wife
Lt. Mark Moody:	Detective in charge of the investigation
Sgt. Cassini:	Police officer assisting in the investigation
**Eddie Sullivan:	Handyman who worked for the Gills
**Billy Prentice:	Yardman who worked for the Gills
**Mickey Malone:	Owner of MM Auto Parts; business associate of the victim
Sam Nietzel:	Parts manager for Gill Automotive
Dave Daniels:	Owner of Dave's Quick Stop in the Eastwood Shopping Center

** The ONLY SUSPECTS under consideration are Eddie, Billy, and Mickey

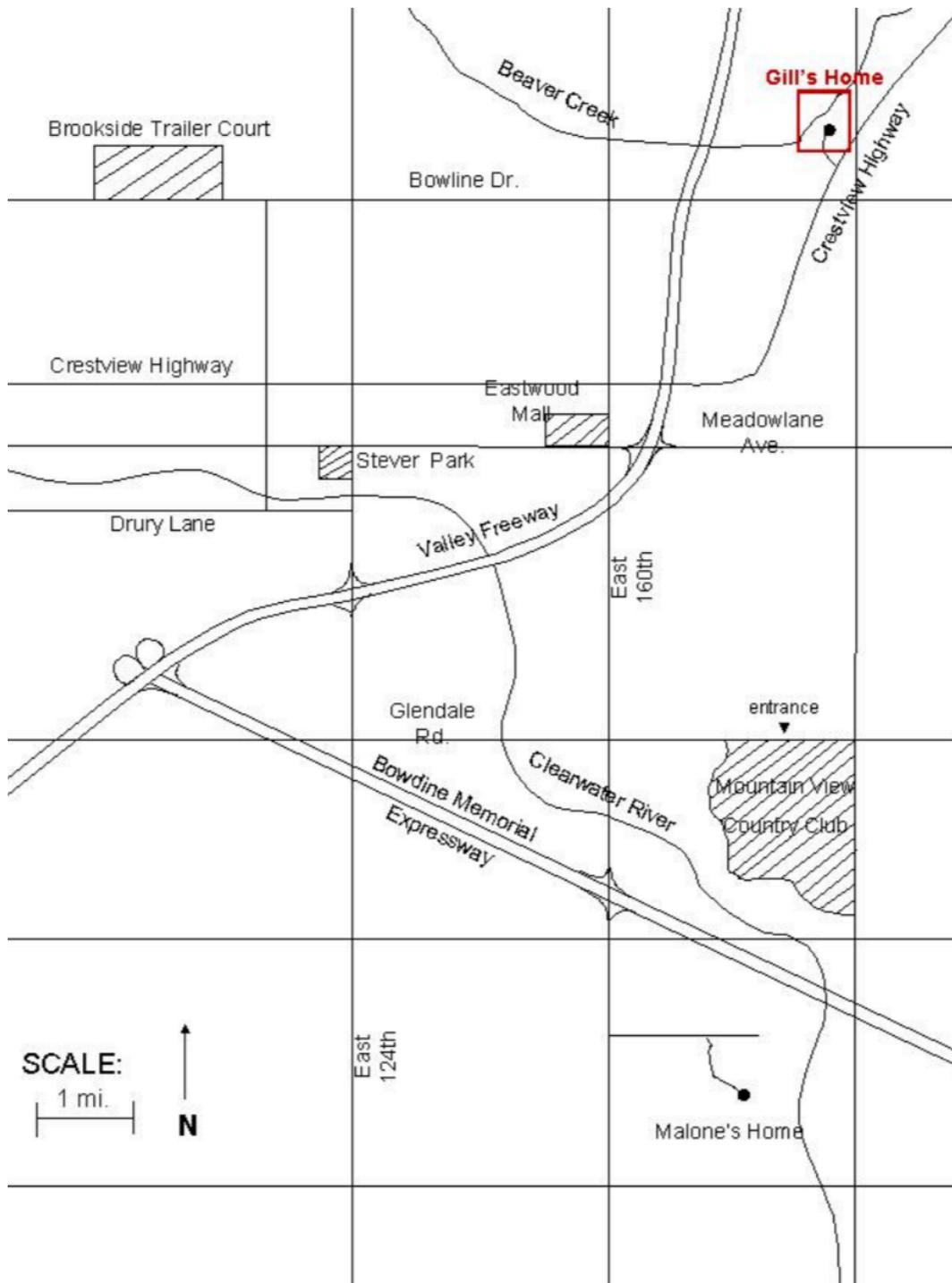


Figure B1: Map of Area for Murder Mystery Case File

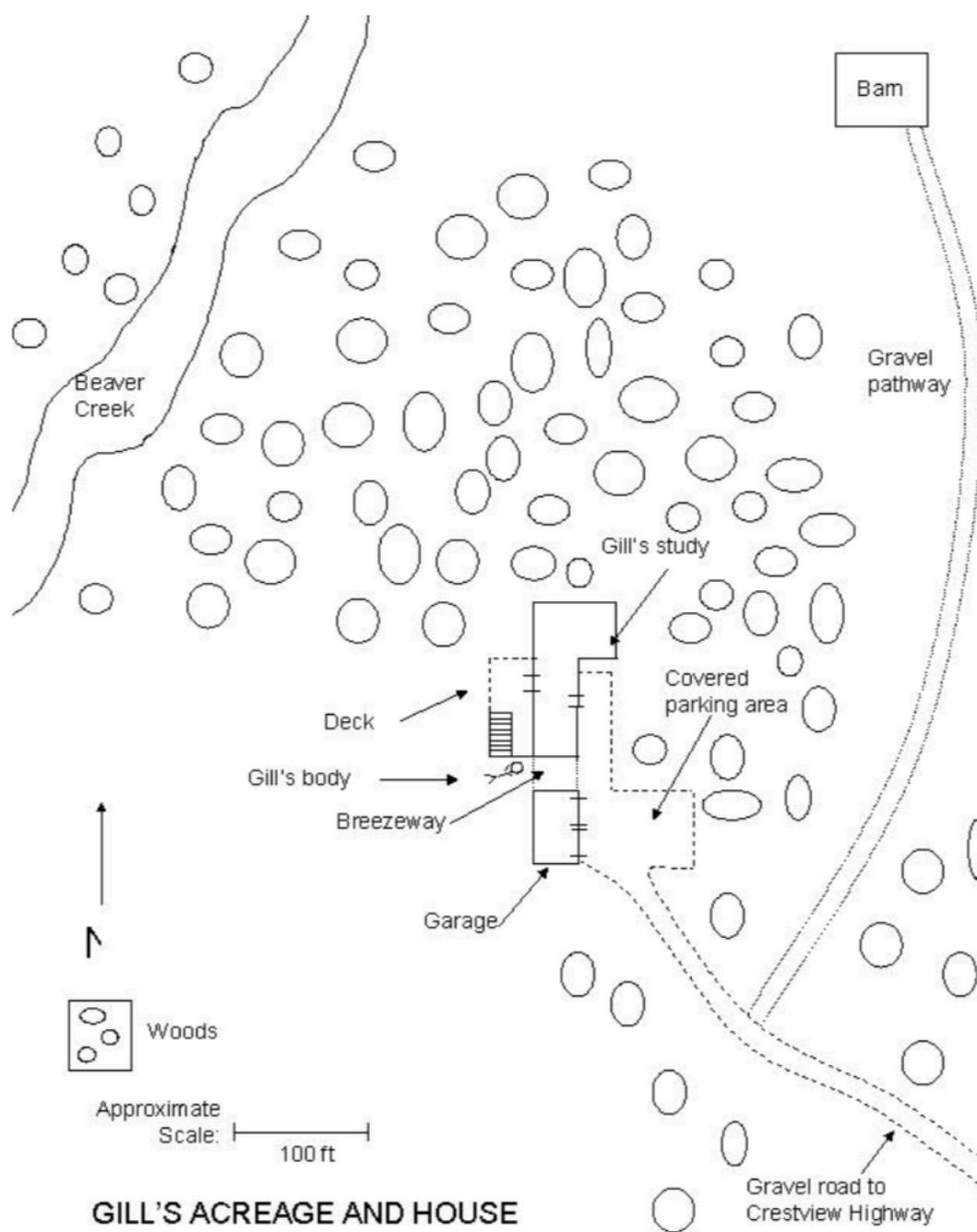


Figure B2: Map of Crime Scene for Murder Mystery Case File

Excerpts from Article in Local Newspaper

Robert Gill, a prominent local businessman was found dead behind his Crestview home yesterday morning. Detective Lt. Mark Moody of the Hilltown precinct reported that Mr. Gill had apparently been assaulted when leaving his home to play golf early that morning. He was struck on the head over the left eye and fell down a flight of stairs leading from a second story deck at the rear of the house.

The preliminary coroner's report concluded that death was caused by injuries sustained from the fall and not from the blow to the head. The report estimated that Mr. Gill's death occurred between 6:30 and 7:00 AM. Lt. Moody would neither confirm nor deny rumors that Mr. Gill had been robbed. "We're following all leads. That's all I have to say for now," said Lt. Moody.

Excerpts from Lt. Moody's (Lt. M) interview of Mary Gill (Ms. G)

Lt. M: Mrs. Gill, I know this isn't going to be easy, but I need you to answer some questions for me.

Ms. G: It's okay. It has to be done. And please call me Mary.

Lt. M: Okay... Mary... tell me what you remember about Saturday morning.

Ms. G: Well, I always sleep in on Saturdays. I got up around 9 or 9:15 and did aerobics from 9:30 to 10. After that I showered and was drying my hair when I heard a knock at the patio door. It was Eddie Sullivan, our handyman.

Lt. M: That was about 10:30?

Ms. G: Yes, I think so... I'm not absolutely sure.

Lt. M: You are sure about the times that you got up and did aerobics?

Ms. G: Yes, I'm fairly sure of those times. You see, I watch an aerobics program on TV; it's on every morning from 9:30 to 10.

Lt. M: So, when Mr. Sullivan told you that your husband was hurt, what did you do?

Ms. G: He did not actually tell me that it was Bob... not at first. He just said that there had been an accident and that I should call an ambulance... I remember feeling scared, but it didn't occur to me that it might be Bob.

Lt. M: This was the first time that you knew that something had happened?

Ms. G: Yes, Bob always plays golf on Saturday morning; he always leaves early and doesn't return until 11 or so. I thought he was at the country club.

Lt. M: You said that you were scared. Did you suspect the Mr. Sullivan wasn't telling you everything?

Ms. G: Not really... I suppose that I was just reacting to the urgency in Eddie's voice.

Lt. M: Do you know if Mr. Gill ever left the house during the morning?

Ms. G: No, I'm not sure. All I remember is that he was talking on the phone in the study... it's across the hall from the bedroom. I remember it was light outside... must have been around 6. Next thing I knew, I heard voices, or a voice... shouting... I'm not sure. I was still half-asleep. It sounded like it was coming from outside.

Lt. M: Where is the bedroom located?

Ms. G: At the back of the house, on the northwest corner. Anyway, I thought it was Bob. I thought maybe he was yelling at the cat. She sometimes runs out the patio door when he's leaving, and it infuriates him. But then I heard what sounded like a groan... and something fall. This woke me up completely. I went to the window and looked out but didn't see anything.

Lt. M: Can you see the deck from your window?

Ms. G: No, not very well. I remember looking at the clock. It was about 6:40. I thought, "Bob is usually gone by now." Then I heard a car on the gravel driveway. I went to the study window at the front of the house but didn't see anyone.

Lt. M: Did you think it was a car leaving?

Ms. G: Yes, I thought so. I saw Bob's pickup in the carport, and I assumed that he took the Mercury out of the garage. Sometimes he takes the pickup. I remember thinking that the noise I heard must have been the garage door closing. It always comes down with such a bang.

Lt. M: Can you see under the carport from the study window?

Ms. G: Oh... yes, I can see under it completely.

Lt. M: So, you suspected nothing until Mr. Sullivan came to the patio door?

Ms. G: That's right. I thought it was unusual that he was at the back door. He usually comes to the front door. And he looked upset. He opened the door partway when he saw me and shouted, "Call an ambulance. There's been an accident." Or something like that. He made it sound very urgent.

Lt. M: So, what did you do?

Ms. G: I called for an ambulance like he said... Then I went out... on the deck (bursts into tears).

Lt. M: I know that this is hard Mary... but we're just about through.

Ms. G: I can't go on.

Lt. M: I know you are upset, but please try to continue. It's very important... now when did you realize that it was your husband?

Ms. G: When I got out on the deck... I looked down over the railing... I was stunned... Eddie looked up at me and shook his head. Then I could tell that it was Bob, and somehow, I knew that he was... gone (sobbing). I fell apart. I couldn't stand looking at him. I went back inside...I stayed there until the ambulance came. Eddie came up and asked if there was anything he could do. I think I asked him to call my sister. Anyway, she got here just before the ambulance.

Lt. M: Mary, there was no wallet or identification on your husband. Did he ordinarily carry a wallet?

Ms. G: Yes, he always does.

Lt. M: Did he carry a lot of money?

Ms. G: Not a large amount. Usually no more than \$50.

Lt. M: Do you mind if we see if he left his wallet somewhere in the house on Saturday?

Ms. G: No, go ahead.

Lt. M: Thank you for your help Mary. Take care.

[Lt. Moody and Mary Gill searched the house but did not find the wallet.]

Excerpts from Sgt. Cassini's (Sgt. C) Interview of Eddie Sullivan (Ed. S)

Sgt. C: Mr. Sullivan, you said that you arrived at Mr. Gill's about 6 Sat. morning. You were tearing down a barn for him, I believe.

Ed. S: Yeah... about 6... the sun was just coming up. I like to get my work done early before it gets real hot.

Sgt. C: Did you notice anything unusual when you arrived?

Ed. S: No... The light was on in Mr. Gill's study, but that wasn't unusual. He is always up when I get there in the morning. He was a hard worker. He earned his money; it wasn't given to him.

Sgt. C: How did you happen to notice Mr. Gill's body?

Ed. S: I went back to my truck to get my crowbar. I left it lying next to the truck. When I got there, the crowbar was gone. I looked around... that's when I saw Mr. Gill laying in the grass through the breezeway. At first, I thought it was Billy... you know Billy... ah ... Prentice, he cuts the grass on Saturdays. He's always there bright and early and I thought maybe he had hurt himself. Anyway, I ran back there. I was shocked to see Mr. Gill. I didn't think he was even there 'cause he plays golf on Saturday morning. He leaves at 6:30, regular as clockwork, and is never back till about noon.

Sgt. C: Okay, so you ran over to Mr. Gill...

Ed. S: Yeah, like I said I was shocked. He looked really bad... blood on his head and laying there real awkward. I ran up the stairs and pounded on the patio door. I started to open it and then I saw Mrs. Gill coming in from the living room. I thought I shouldn't alarm her too much, so I just said, "Call an ambulance. There's been an accident." She started to run past me like she knew it was bad, but I stopped her and said, "It's alright, just call the ambulance." I never told her it was Mr. Gill. I didn't know he was dead till I got back down the stairs.

Sgt. C: Did you ever find the crowbar?

Ed. S: What?... Oh... no. I never did. I never looked again. I was real upset. I didn't even go back to the barn. I just left after the ambulance came. By that time, Mrs. Gill's sister and her husband were there. I didn't figure that I could do anything.

Sgt. C: You said at first you thought it was Billy Prentice lying there in the grass instead of Mr. Gill. Was Billy there Saturday morning?

Ed. S: You know I don't know... come to think of it his car wasn't there and none of the yard tools, or the lawn mower, was out. But I thought I heard his station wagon earlier.

Sgt. C: When was that?

Ed. S: I can't say for sure. I just remember hearing a car with a loud muffler and thinking, "That's Billy." None of Gill's cars would ever sound like that. I'd guess around 7.

Sgt. C: Did you hear anything else? Did you hear anything like a fight or, perhaps, Mr. Gill falling?

Ed. S: No, can't say I did. You know the barn is quite a ways from the house... probably 200 or 300 yards. And there's woods between there too.

Sgt. C: You said you went back to pick up your crowbar by your truck. Where was your truck?

Ed. S: It was in the carport beside Gill's pickup.

Sgt. C: Why didn't you drive it down to the barn where you were working?

Ed. S: Well... it had rained the night before, and I didn't want to get it stuck down there. There's a gravel path but it's not wide enough. Besides Mr. Gill didn't want me making ruts in the grass.

Sgt. C: Eddie, did you and Mr. Gill get along?

Ed. S: Yeah... I always liked him... He was real fair when it came to business... paid well... easy to work for.

Sgt. C: Your daughter worked at Gill's car dealership, didn't she? How did they get along?

Ed. S: Yeah... She was his bookkeeper for several years. All of a sudden, she quit. I didn't ask her about it. She seemed upset, but I figured that that was their business. You know what I mean?

Sgt. C: Sure, if you think of anything else that I should know, give me a call. I'll be in touch.

Excerpts from Lt. Moody's (Lt. M) Interview of Mickey Malone (M. M.)

Lt. M: Mr. Malone, I have to ask you some hard questions. It's well known that you and Mr. Gill go back a long way, but things were kind of rough between the two of you lately.

M. M.: We had some differences.

Lt. M: Did you call Mr. Gill Saturday morning?

M. M.: Yes.

Lt. M: Why?

M. M.: Well... we always play golf with two other fellows on Saturday mornings... a foursome, you know. Well... the last 2 weeks things had been awkward... downright nasty at times. I told him we either put this thing behind us or else... or else either he or I should drop out of the foursome. It just wasn't fair to the others... to ruin their golf.

Lt. M: The other 2... Rick Rooney and Jim Townsend, I believe.

M. M.: Yeah. Anyways, I wanted to clear things up before we got to the country club.

Lt. M: You play at Mountain View?

M. M.: Yeah.

Lt. M: What did Mr. Gill say when you called him?

M. M.: Bob told me to stuff it. I told him, "If you're playing golf, I'm not!" He said, "Fine, do what you want."

Lt. M: What did you do?

M. M.: My first impulse was to drive over to his place and work this out face-to-face. I go to the Crestview turnoff and thought to myself, "This is silly. We'll just end up fighting," so I turned around and headed straight to the golf course. Just 'cause Bob wanted to be a horse's rear didn't mean I had to ruin my day.

Lt. M: What time did you leave home?

M. M.: 6:30 ... 6:40... I don't know... somewhere around then.

Lt. M: How long does it take to get to Crestview from your house?

M. M.: I don't know. Maybe... it's about a mile north of Meadowlane... that's about 9 miles then... probably 15 minutes.

Lt. M: And then you turned around and went to the golf course?

M. M.: Right.

Lt. M: It's about 6 miles from Crestview to Mountain View golf course?

M. M.: Yeah... about.

Lt. M: So, you left home somewhere around 6:30 or 6:40. **Fifteen minutes to Crestview and perhaps another 10 minutes back to Mountain view...** Let's see... That should have put you at the golf course around 7, give or take 5 minutes. Is that about right?

M. M.: Sounds right... yeah, I got there a bit before 7, actually, when we usually meet.

Lt. M: You did not go to Gill's place on Saturday morning?

M. M.: No, I didn't.

Excerpts from Lt. Moody's (Lt.M) interview of Billy Prentice (B.P.)

Lt. M: Billy, I need to talk to you about Mr. Gill's death. You did hear about it didn't you?

B. P.: Yes, sir. It was awful, wasn't it?

Lt. M: Yeah, it was. Were you at Mr. Gill's place on Saturday morning?

B. P.: No, sir.

Lt. M: Don't you usually cut the grass on Saturday?

B. P.: Yes, sir... usually..., but not last Saturday.

Lt. M: Why not?

B. P.: Uh... I just cut it the week before.

Lt. M: But this time of year... don't you usually cut it every week?

B. P.: Yeah, but ... I wasn't feeling good last Saturday morning. Besides it rained Friday night and the grass was probably wet.

Lt. M: But I mowed my grass last Saturday morning. By 9:30, the sun had dried the grass out. Remember, it was clear and hot. Didn't it occur to you that the grass would be dry later in the morning?

B. P.: I guess so... but by then I figured I wouldn't have time to get it done before my ball game.

Lt. M: Billy, what time was your ball game?

B. P.: Noon.

Lt. M: How long does it usually take you to cut the grass?

B. P.: A couple of hours, but I had other things I needed to do out there.

Lt. M: Couldn't you have done those other things while the grass was drying and still been able to make it to your ball game?

B. P.: I suppose so... I don't know... I like to get to the game early... Besides I said I wasn't feeling so good in the morning.

Lt. M: Billy, I should tell you right out... Mr. Sullivan... You know Mr. Sullivan don't you?

B. P.: You mean Eddie, the carpenter? Yes, sir, I know him.

Lt. M: Well, Mr. Sullivan heard your car at Gill's on Saturday morning. How do you explain that?

B. P.: How'd he know it was my car? When?

Lt. M: He just said that he heard your car about 7 Saturday morning. He said that he recognized the loud muffler.

B. P.: No, he couldn't have. I wasn't there at 7 on Saturday.

Lt. M: Billy, come on. We know that your car was at Gill's place. We picked up fresh tire tracks along the edge of the gravel near the carport. They match your tires, Billy, and we know they weren't a week old.

B. P.: Okay... Okay... I was there Friday to ask Mr. Gill for an advance. I was a little short on money. He gave it to me.

Lt. M: What time on Friday?

B. P.: Around 4:00, just before ball practice. I was broke and he always helps me out.

Lt. M: So, you borrow money a lot? What do you need the money for?

B. P.: Ah... yeah, I suppose so... for my car. I work on my car a lot, fixing it up, keeping it in good shape.

Lt. M: Okay, Billy, that's all for now. We'll talk later.

B. P.: Sir... you know I didn't hit Mr. Gill... You know I wouldn't hurt him... He was always good to me.

Lt. M: Sure, Billy, I know... See you around.

Excerpts from Lt. Moody's (Lt. M) Interview of Rick Rooney (R.R.)

Lt. M: I'd like to ask some questions about Mickey Malone.

R. R.: I'll be glad to help if I can.

Lt. M: You play golf with Mr. Malone on Saturday morning. Right?

R. R.: Yes, I do. We have a regular foursome.

Lt. M: Can you tell me anything about his relationship with Mr. Gill?

R. R.: They were always good friends... until these last few weeks. They had some sort of business disagreement. Mickey wouldn't say a whole lot about it, though. They've had problems in the past, but it's never been this bad.

Lt. M: What time did Mr. Malone arrive at the golf course last Saturday?

R. R.: Well, I got there around 7, but he was already there and had picked up our golf cart. So, I'm not exactly sure, but it must've been at least 10 minutes before 7. There's always a line for carts on Saturday morning.

Lt. M: Okay, I appreciate your help.

Excerpts from Sgt. Cassini's (Sgt. C) Interview of Dave Daniels (D. D.)

Sgt. C: Dave, when you called Saturday morning, you said that you found a wallet behind your store. Where did you find it?

D. D.: It was lying beside the dumpster in the back... next to some boxes that I had stacked out there.

Sgt. C: What did the wallet look like?

D. D.: It was a nice one. It looked new... and expensive... so I thought it was strange that someone would throw it away.

Sgt. C: Did it have any money in it?

D. D.: No, in fact it was empty. All that I found were Mr. Gill's credit cards inside the dumpster.

Sgt. C: You never found any money or a driver's license?

D. D.: No, just 3 credit cards.

Sgt. C: What time did you find the wallet?

D. D.: Probably about 7 AM. Yeah, I remember because I got to the store just before 7 and was checking some stock in the back room right before I found the wallet.

Sgt. C: What made you go outside?

D. D.: I heard a car pull up in back and then speed away. I went out to see what was going on, but the car was gone by the time I got out there. That's when I saw the wallet.

Sgt. C: So, you heard a car right before you went out and saw the wallet. Are you sure it was a car?

D. D.: No... not really. I assumed it was a car because it ran really quiet. I probably wouldn't have heard it, but the tires squealed when it left. Like I said, I didn't see it.

Sgt. C: Could it have been a pickup?

D. D.: I suppose so.

Sgt. C: Are you sure the wallet wasn't there earlier?

D. D.: Pretty sure, I walked right past there when I came in just a little earlier and I don't know how I would have missed it if it was there.

Sgt. C: Thanks, Dave. If you think of anything else, call me.

Excerpts from Lt. Moody's (Lt. M) Interview of Sam Nietzel (S. N.)

Lt. M: Mr. Nietzel, I need to ask you some question in regard to Gill's connection with MM Auto parts. Were Gill and Malone having difficulties?

S. N.: Yes, I suppose so. We've done business with Malone for years. In fact, he started supplying parts for us when he was still operating out of the barn on the old Malone place.

Lt. M: I've heard that Malone got his real start by being a supplier for Gill and they were friends for years.

S. N.: Yes, that's right... They've been friends way back... but they had their ups and downs... They always worked things out before... until this last thing. It seems that Malone started giving Gill substandard parts, which really steamed Bob because he is very concerned about giving his customers quality service. He even told me to stop ordering from Malone.

Lt. M: What was wrong with the parts?

S. N.: Well, some of them didn't fit; some seemed to wear out and break easily. My guess is that they were either rebuilt or after-market parts.

Lt. M: When did you realize this was going on?

S. N.: About 2 months ago... It's been a mess around here since.

Lt. M: So, would you like to go back to MM Parts?

S. N.: No, and I especially wouldn't do it without Mr. Gill's 'Okay'. And he was dead-set against it... Wouldn't even talk about it! Mr. Gill was a proud and stubborn man.

Lt. M: Another matter... Do you know anything about Ms. Sullivan's leaving the firm?

S. N.: That would be Sue Sullivan, the bookkeeper?

Lt. M: Yes, Sue Sullivan.

S. N.: No, I don't really know anything in particular.

Lt. M: Nothing out of the ordinary happened before she left?

S. N.: Well, maybe... I didn't know there was a problem until I overheard them arguing in his office. I didn't mean to hear, but I couldn't help it. I was going in to talk to Mr. Gill about something. Next thing I knew she was leaving... I mean leaving for good, packing up her things.

Lt. M: Did you hear what they were arguing about?

S. N.: No, they sounded really mad, but I couldn't make out what they were saying... They stopped when they saw me coming.

Lt. M: Had they argued like that before?

S. N.: No, not that I know of. They always seemed to get along really well. Maybe ... well, I don't know. Mr. Gill was a stand-up guy.

Lt. M: Do you know if Mr. Gill had any enemies or dissatisfied customers?

S. N.: Not really. Mr. Gill treated his customers like royalty. He always said, "The customer is always right... always!" He not only said it, he lived by it.

Lt. M: Thanks, Sam, for your time. If you think of anything else, give me a call. You've been a great help.

S. N.: Glad to be... Want to get this mess sorted out.

Excerpts from Lt. Moody's (Lt. M) Follow-up Interview of Mary Gill (Ms. G)

Lt. M: Mary, I need your help to clear up a couple of matters if you don't mind.

Ms. G: Sure.

Lt. M: Billy Prentice claims that he came by on Friday to ask your husband for an advance. Do you know anything about this?

Ms. G: Why... yes, he did come by... in the afternoon, I believe.

Lt. M: Did your husband give him any money?

Ms. G: Yes, he did. I'm not sure how much, but I remember he said, kind of jokingly, "I wonder if I'll ever get to pay Billy AFTER he does the work."

Lt. M: Do you know exactly what time it was on Friday when he came by?

Ms. G: No, I'd only be guessing... late afternoon, I'd say.

Lt. M: Billy Prentice seems to have problems handling his money. Does he borrow... or ask for advances on his wages... often?

Ms. G: Yes... quite often.

Lt. M: Do you have any idea what he uses the money for?

Ms. G: Well... I'm not sure, but I think he has been involved with gambling.

Lt. M: What makes you say that?

Ms. G: Well, I know he plays poker with some friends of his, and Bob and I ran into him once at the racetrack. We've only been there a few times, but I always like to go just to watch the horses. I think they're beautiful. Anyway, Bob and I never bet more than a few dollars. But when we saw Billy there, he had quite a stack of betting slips in his hand. He noticed us just then and seemed really nervous and quickly walked away from the betting window. After this incident, Bob said he would keep an eye on Billy.

Lt. M: How long ago did this happen?

Ms. G: Hmm... about... it was soon after he started working for us. Probably 2 years ago.

Lt. M: One other thing, was Billy here anytime on Saturday morning?

Ms. G: No, I can't say that he was, come to think of it. I guess with everything else I never gave it a thought, but he didn't show up... At least, he never mowed the lawn.

Lt. M: As I recall, you heard a car on the gravel out front about 6:40. You thought at the time that it was your husband driving away. Could it have been Billy or someone else driving up the drive?

Ms. G: Maybe... but, no. It couldn't have been anyone driving up... If it had been it seems that I would have seen them. The only thing that I saw was Bob's pickup in the carport... nothing else.

Lt. M: Did Mickey Malone come by anytime Saturday?

Ms. G: No... I don't think so... Melissa, Mickey's wife, called early Saturday afternoon. She said that they had just heard on the radio and wanted to know if there was anything that they could do.

Lt. M: They didn't come over at any time?

Ms. G: Not on Saturday. They stopped by briefly on Sunday to offer their condolences.

Lt. M: One other matter... Is it true that Eddie Sullivan has a hearing problem?

Ms. G: Yes, he is very hard of hearing. Sometimes when he gets a phone call, I have to call him. I've tried calling to him from the deck, but he never hears me. I have to walk right up to him before I can get his attention.

Lt. M: Doesn't he have a hearing aid?

Ms. G: He has one, but he doesn't wear it while he is working. He says that it doesn't fit well. It's one of those tiny ones and he's afraid he will lose it.

Lt. M: I think that's all, Mary. Thanks for your patience. I hope I don't have to bother you again with these details.

Excerpts from Sgt. Cassini's (Sgt. C) Follow-up Interview of Billy Prentice (B. P.)

Sgt. C: Billy, since you talked with Lt. Moody, some new things have come up. I remind you, Billy, that you don't have to answer my questions if you don't want to.

B. P.: Sir, I don't mind. I have nothing to hide.

Sgt. C: Very well. You said that you went to Gill's on Friday night, not Saturday morning... Right?

B. P.: Yes, sir... Well, actually I went there Friday afternoon, not Friday night.

Sgt. C: To borrow some money, I think you said.

B. P.: Yes, that's right.

Sgt. C: Was this money to pay off gambling debts, Billy?

B. P.: No. No, sir.

Sgt. C: Is it true that you are an excessive gambler?

B. P.: No! I mean... well, I gamble as much as the next guy... you know, poker with the boys... racetrack every now and then. I used to do it a lot more a couple years back, but I've really cut down. I don't have a problem with it sir... really!

Sgt. C: Okay, so you were there on Friday and not on Saturday?

B. P.: Yes, sir, that's what I said!

Sgt. C: Those tire tracks that Lt. Moody told you about... Billy, those tracks were almost certainly made after Friday night's rain. And, as you know, it rained from about 10 to midnight.

B. P.: But... [long pause]... I...

Sgt. C: Billy are you sure that there is nothing that you want to tell me?

B. P.: Alright, sir... I was there... I went to do some work. I saw Mr. Gill just lying there. I went over to him. It was awful.

Sgt. C: Billy, why didn't you say something before?

B. P.: Nobody's going to believe me. I thought I'd just better get out of there and act like I didn't know nothing.

Sgt. C: So, you ran.

B. P.: I sure did. I almost hit Mr. Sullivan's truck when I was pulling out of the carport. I couldn't get out of there fast enough. I swerved... that's probably when I went off the road.

Sgt. C: While you were at Gill's did you see a crowbar?

B. P.: What? A crowbar? ... yeah, I did now that you mention it.

Sgt. C: Where did you see it?

B. P.: It was laying in front of the garage door, the side door where I get the mower out. I remember moving it to the side so I could get the mower out.

Sgt. C: That's all? You just moved it over to the side?

B. P.: Yes, sir.

Sgt. C: Anything else you remember about that?

B.P.: Well, I remember thinking that it must be Mr. Sullivan's 'cause Mr. Gill didn't have any tools to speak of around the place... excepting some garden tools. But then I thought that that was odd 'cause Mr. Sullivan always makes this big thing about keeping his tools locked up when he's not around. And I didn't see him anywhere... just his truck.

Sgt. C: Billy, the crowbar was found in the bushes south of the garage... with your fingerprints on it. Can you explain that?

B. P.: No, Sarg, I swear... If I did pick it up, why would I throw it in the bushes?

Sgt. C: That's what I'd like to know... Okay, let's go on. What time would you say that you were at Gill's on Saturday?

B. P.: I don't rightly recall. It was late. Maybe 8, I'd guess. Like I said, I wasn't feeling so good.

Sgt. C: Did you take Mr. Gill's billfold?

B. P.: No, sir. You gotta believe me. When I saw he was dead, I just got out of there!

Sgt. C: How did you know that he was dead?

B. P.: I don't know... He looked dead... He didn't move when I yelled... he wasn't laying there natural like.

Sgt. C: Did you go over to him? Did you check his pulse? Didn't you even try to get help? Maybe call Mrs. Gill or something?

B. P.: No, I just got out of there. I didn't think there was anything I could do. Sgt. C: Okay, thanks Billy. That'll be all for now.

Excerpts from Sgt. Cassini's (Sgt. C) Follow-up Interview of Eddie Sullivan (Ed. S)

Sgt. C: Eddie, since we last talked, we found your crowbar in the bushes south of Gill's garage. At least, we think it's yours: it has "ES" stamped on it.

Ed. S: Yeah, all of my tools are stamped. You can't be too careful. People borrow them and forget they're yours. You know what I mean?

Sgt. C: Do you have any idea how it got in the bushes?

Ed. S: No... Can't say I do.

Sgt. C: We're trying to get some things about last Saturday sorted out. You said you got to the Gill's about 6 in the morning and went straight to the barn. Then about 7 you heard a car... with a loud muffler. Mrs. Gill thought you came to the patio door around 10:30. Is that about the time that you discovered Mr. Gill's body?

Ed. S: I'm not sure about that. It could have been around then. I really don't remember.

Sgt. C.: Okay, Eddie, if you think of anything else, give me a call.

Excerpts from Lt. Mood's (Lt. M) Follow-up Interview of Mickey Malone (M. M.)

Lt. M: Mr. Malone, I need to double-check some things that you told me the other day. Did Mr. Gill write this note to you?

[Copy of note on following page.]

GILL AUTOMOTIVE

From the desk of

ROBERT GILL

President

Mickey,

I am very upset about the substandard parts I have been receiving from you. I know we've had our problems in the past, but I never thought you would go this far. I am a man of integrity and will not tolerate such maneuverings from business colleagues.

Needless to say, I will have to notify my customers and other dealers about the quality of MM auto parts.

Bob

M. M.:Ah, yeah, he did.

Lt. M: When did you receive the note?

M. M.:I think it was last Thursday. When I read that he was going to ruin my business with other customers, I offered him the best terms I could. I was even willing to sell him parts at cost to try and patch things up. I mean... if I lost the business, I don't know what I would do. But he can be so stubborn. That's why I called him Saturday morning. I just thought it was time to work this out, one on one.

Lt. M: Well, is it true that you gave defective parts to Mr. Gill?

M. M.:I'd never knowingly give Bob bad parts. But I have recently hired a part-time sales guy – Louie Brown - to help out. He has also been doing some of the purchasing for me.

Lt. M: Is it possible Mr. Brown could be using a different supplier without your knowledge?

M. M.:That actually occurred to me after I cooled down a little on Saturday. I placed a call to him after the golf game to try to figure it out, but I got his machine. Still haven't heard from him.

Lt. M: What time did you call him?

M. M.:Right after our golf game – around noon.

Lt. M: I see. Okay, Mr. Malone, that's all for now.

Excerpts from Lt. Moody's (Lt. M) Interview of Louie Brown (L.B.)

Lt. M: I'd like to ask you a few questions if you don't mind.

L. B.: Sure. What can I do for you?

Lt. M: I understand that you do some work for Mickey Malone's auto-parts supply?

M. S.: That's right. I've been doing a bit of this and that for MM Auto Parts for several weeks now.

Lt. M: And have you been able to help the business out?

L. B.: Well, I'm happy to say I think I've been able to improve his profit margins.

M. S.: Where were you last Saturday?

L. B.: The wife and I took the kids to the amusement park.

Lt. M: Did you receive any messages while you were gone?

L. B.: As a matter of fact, I did. From Mr. Malone. He wanted to know if we had recently changed any of our suppliers. Mentioned something about one of his larger clients complaining about sub-standard parts, and he wanted to get it cleared up.

Lt. M: And... have you changed suppliers?

L. B.: Look, what's this all about, now? Am I under arrest or something?

Lt. M: Please relax Mr. Brown, I'm merely trying to corroborate some information. Do you know what time Mr. Malone called?

L. B.: Okay, well, it was around noon – the message on the answering machine has a timestamp. It's still there if you want to hear it.

Lt. M: That won't be necessary. Thanks for your time.

Post-case file review worksheet:

Who do you think is guilty?

Provide a brief justification for your decision:

Team decision:

Who does the team think is guilty?

Provide a brief justification for the team decision:

Appendix C: Leadership Training Materials

High Curiosity Training

The leader curiosity training required 60 minutes. Leaders were trained in small groups, and the training included one primary exercise for practicing the principles. The exercise was a question-storming exercise where participants learned about how to generate better questions and the value of questions (Rothstein & Santana, 2011). The first half introduced transformational leadership, with particular attention drawn toward intellectual stimulation. After discussing different types of curiosity as well as the benefits of curiosity, the training discussed how to project curiosity and help generate curiosity in others. The training included specific examples of leader displays of curiosity and the proposed benefits. The question storming exercise was the culmination of the training, and the training concluded with the daily curiosity checklist shown in Table C1 and an overview of the instructions for how to lead the Murder Mystery task.

The following is the general outline and script of the training:

- Introduction to transformational leadership

The training today is focused on leadership. Does anyone have a good definition of leadership? Those are good ideas. We are going to define leadership as the “process of social influence through which an individual enlists and mobilizes the aid of others in attainment of a collective goal.” So, with that definition in mind, the natural question, which we will address today is how does a leader “enlist and mobilize the aid of others?”

As an answer to that question, we are going to utilize the considerable amount of research on the effectiveness of transformational leadership. Transformational leadership is defined as “a set of behaviors that leaders use to transform, or change, their organizations or individuals for the better.” Transformational leadership is comprised of four dimensions of behavior that

are intended to capture this form of leadership. The first is charisma of vision. Charismatic or visionary leaders are leaders who arouse strong followership through inspirational vision and/or compelling personal attributes. They have extreme self-confidence, are willing to take risks, and communicate vision through powerful imagery, symbolism, and metaphor. I am sure that you can think of leaders that can be considered visionary or charismatic. Barack Obama, whether you agree with his political positions or not, clearly aroused strong followership with inspirational vision, powerful imagery, and charismatic communication. Steve Jobs is another example you might consider. It was said that Jobs knew what the customer wanted before they knew what they wanted. That's vision. People speak of his "reality distortion field" where he could get others to see things as he saw them.

The second dimension is inspirational motivation. An inspiring leader is someone who says things that makes group members proud to be a part of the team. They say positive things about the group, encourages seeing challenges as opportunities, and talk optimistically about the future. They express confidence that goals will be accomplished and are enthusiastic about the success they are confident will happen. Perhaps you can think of a sports coach giving a half-time or pre-game speech. They are enthusiastic, inspiring, and expressing confidence about the success that is right in front of the team for the taking.

The third dimension is individual consideration. These are leaders that spend time teaching and coaching. They treat others as individuals rather than just members of the group. They consider that each individual has different needs, abilities, and aspirations than others. They commend you when you do good work, and they show respect for your individual needs and personal feelings. Perhaps you can think of a teacher that was particularly good at this. You were only one individual in a large class they were teaching,

but this teacher was able to make you feel that your specific development and needs were valued and important.

The final dimension, and the type of leadership that we are going to focus on, is intellectual stimulation. Intellectual stimulation is defined as leader behaviors that increase follower interest in and awareness of problems and develops their ability and propensity to think about problems in new ways. The idea behind intellectual stimulation is that these leaders can increase the ability of followers to analyze problems, rethink the way they do things, challenge assumptions, and see different perspectives on how to do things.

- Focus on intellectual stimulation

As I mentioned we are going to focus our efforts in this training on intellectual stimulation. The challenge in becoming an intellectually stimulating leader is specifying exactly what a leader should do to increase follower awareness of problems and develop their ability to think about problems in new ways. How do you help others rethink the way they do things, challenge their assumptions, and consider different perspectives? Well, we are going to focus on a clear set of behaviors to accomplish this: being a curious leader. A curious leader is a leader who displays curiosity to their followers as they interact together. They signal to followers an interest in knowledge acquisition, thinking, and learning. The key is that how leaders behave influences how followers and team members behave. Your behavior as a leader tends to establish patterns for how members of your team are expected to behave. If you demonstrate curiosity and signal that you value knowledge acquisition and thinking, then it will be more likely that your team members will do the same.

- Types of curiosity

Before we spend some time discussing specific behaviors you can engage in with your team in order to signal curiosity (spoiler alert – we are going to spend time talking about exactly how you can do this during the class exercise your team will complete during the leadership section of the class), we need to spend some time talking about curiosity, what it is, and how it can be beneficial. Let's talk about three types of curiosity. The first is empathic curiosity. This is being curious about the thoughts and feelings of other people. Wanting to understand their experiences and what it is like to see things from their perspective. A good example of this type of curiosity is Roger Ebert and what he thought about movies. Does anyone know who Roger Ebert is? This is what he said about movies: "For me, movies are like a machine that generates empathy." Ebert liked how movies allowed him to learn about people, what they experience, and how they feel and think. This is empathic curiosity.

A second type of curiosity is specific curiosity. Specific curiosity is the search for concrete pieces of information or detail to solve a problem. You identify some missing information, and you are highly motivated to find that missing piece and understand what is going on. A good example of this is JJ Abrams and his mystery box approach to movie making. Does anyone know who JJ Abrams is? He once promoted a movie by releasing a trailer that showed some random destruction in NY, the head of the statue of liberty being tossed across a random street, and then the release date of the movie. He didn't even provide the movie title! Why did he do this? Because he wanted to generate curiosity that would motivate potential movie goers to find out the answer to these mysteries.

The third type I want to introduce is diverse curiosity. Diverse curiosity is the search for novel and new combinations or ideas to find unique solutions. Some people have suggested that there are never any new ideas. There are only new combinations of ideas. One of the

most famous scholars researching innovation in business has a popular book called “The Innovator’s Dilemma.” In this book, he makes the argument that one of the dangers of large companies is that they become too comfortable in what they know, and they no longer search for new and crazy ideas that might disrupt the current knowledge. Being a disruptive innovator includes finding new combinations no one has considered or looking for solutions in unexpected locations. So, when Southwest Airlines wanted to learn how to more quickly unload and load their airplanes so that they could put them back into use transporting passengers more quickly, where did they look to learn something new? They looked at Formula 1 race pit crews. They learned some important techniques to reduce that turnaround time and reduce the number of airplanes they needed to buy. This is diverse curiosity.

- Benefits of curiosity

So, what are the benefits of being curious. What does the research say about this? Let’s first consider academic achievement. Of course, many researchers have looked into the question of what contributes to better achievement at school. And, unsurprisingly, both intelligence and effort matter. If you are smart, you tend to do well in school. If you put in effort, you tend to do well in school. What about the comparison? What do you think is a stronger predictor of academic achievement? Intelligence or effort? Unfortunately, it’s intelligence. I say unfortunately because your intelligence is not quite as controllable as your effort. Your intelligence is mostly influenced by your genetics. What is encouraging is if we consider curiosity. The effect of curiosity on academic achievement is about the same as the effect of effort, and most importantly, the combination of curiosity and effort has a greater effect than intelligence. So, two things you can control (effort and curiosity) can be more influential than the thing that you have little control over (intelligence).

Let's consider curiosity in the workplace. Researchers have looked at curiosity among telemarketers and they found that diverse curiosity increases job adaptation and positive framing. Individuals who searched for novel combinations and looked for unique ideas were able to adapt to difficult jobs and see things in a more positive light. This led to better job performance. Another set of researchers looked at sample of 380 employees and found that curious employees were more proactive, which led to greater job satisfaction and reduced emotional exhaustion. And, the final research finding I want to emphasize is some work looking at employees in an industrial company. Those researchers found that curiosity predicted job performance over and above IQ and personality.

- How to project curiosity to others

So, now that we've talked about what curiosity is and the evidence that suggests it can be beneficial, let's begin to shift to considering curiosity in the context of leadership. One of the characteristics of leaders is that followers tend to emulate and copy behaviors and attitudes of leaders. A group leader is an important source of information that followers tend to look towards to understand how they should behave. In fact, the research shows that not only do followers tend to emulate their leaders, they even tend to reflect similar moods as the leader. The values and beliefs of the leader are contagious and affect the values and beliefs of followers and the whole team. So, if this is true, then when you feel curious and display that curiosity to followers, then they are likely to also feel curious and begin to value information gathering the learning activities. Hopefully, I have already convinced you of the value of curiosity. So, how can you display curiosity? Let's focus on three ideas that have kind of a unique relationship with curiosity. They have an inverted-U-shaped relationship with

curiosity. In other words, a little bit of these things increases curiosity, and too much reduces curiosity.

The first is information, studies have shown that a little bit of knowledge about a subject can increase curiosity. When you don't know anything about something, you don't even know what questions to ask or what information to search out. However, when you receive a little bit of information, you become curious to learn more and find more answers. However, there is a point where you have gained so much information about a subject that you no longer see the areas that you don't know, and you no longer feel compelled to learn more. This is important because you can use a little bit of information to prime the pump and get others curious about learning more, and you must be cautious about the trap of thinking you or your team members have sufficient knowledge and you stop searching for new information. How can you use this idea in your leadership role? You can seek out new sources of information. You can show fascination with new information. You can continue to seek for additional information to understand ideas. This focus on gathering new information can be used to generate new ideas and curiosity about learning more from followers.

Another variable that has this relationship with curiosity is surprise. If the situation or problem is not surprising, then there is no motivation to gather information and be curious and try to learn something new. On the other hand, if you are somewhat surprised by something unexpected or new, then you become curious about figuring out the unexpected event or issue. However, there is a danger of being too surprised. If things are too surprising or unexpected, individuals tend to experience fear and concern rather than curiosity and a desire to explore. So, what does this mean as a leader? It means that you should try to present some things that are surprising or point out some unexpected occurrences to help generate

curiosity and the desire to gather more information, but you should be careful about generating so much surprise that curiosity is replaced by fear. You can apply this idea both to yourself as you seek to maintain your curiosity and leadership as you try to generate curiosity in others. You can show that you are excited to learn about something unfamiliar. You can point out something unexpected or new. You can react positively to uncertainties and things that might be ambiguous and deserve some exploration.

The third variable that works this way is confidence. Of course, confidence is a good thing, and some initial confidence can help people take the risky step of admitting a lack of knowledge and risking mistakes by exploring new ideas and opportunities. It would be difficult to seek learning and new information if you did not feel confident that you could obtain that information or that you would benefit from the effort. However, there is a danger to carefully avoid. Overconfidence can reduce curiosity. If you are completely sure that you know what you are doing or that the plan is going to work out perfectly, then there is no motivation to seek additional information or consider different perspectives. So, when it comes to you and your team, a little bit of confidence can help encourage more curiosity and knowledge exploration, but overconfidence can become a problem. So, what can you do? You can confidently show interest in innovative suggestions. You can confidently take the risk of reacting positively to new ideas. You can confidently express that you do not know, and you are interested in learning something new.

- Leader curiosity

Ok, so now we have fully transitioned into the idea of leader displays of curiosity. We are going to define leader displays of curiosity as “behaviors exhibited by leaders to followers that signal an interest in knowledge acquisition and thinking.” What does this look like?

Well, leaders can display curiosity to followers in a number of ways. Leaders can seek new information, especially from team members or when interacting with team members. Leaders can ask open-ended questions, and we will do an exercise together to work on how to ask good questions. Leaders can show fascination with new information. This is in contrast to just relying upon or focusing on information you already have. Leaders can continue to seek additional information to understand problems, rather than just assuming that you understand. Leaders can react positively to new ideas, especially new ideas presented by your team members. Leaders can show excitement about unfamiliar subjects. This takes a little confidence, but it can signal to followers that it is alright to admit that you do not yet know something. Leaders can show a preference towards innovative solutions, even if they seem a little crazy at first, rather than just relying upon known solutions or procedures. And, leaders can show that they like to learn new things. Again, it is beneficial to the team to see that the leader can admit that they have something they need to learn, and they are willing to go and learn that thing.

So, how might these behaviors be beneficial to the team? What ideas do you have? Some benefits I would like you to consider are how projecting the image “I want to know” can help your team perform better. Followers tend to emulate the behaviors of leaders. That is kind of the core of the relationship. If the leader is clearly an “I want to know” kind of person (think about the contrast, the “Hey, I already know” kind of person), then the followers will tend to do the same. They are more likely to be open to learning new things and incorporating new ideas into their work. The opposite seems less likely to benefit the team, right? If your team members see you project an image of “I know” and have no need to learn new things, then

they are less likely to present new ideas. They are less likely to seek new information, because new information is not really valued within the team.

Let me give you an example of how this might work. I will remove the identities of those individuals involved in this story, but when I read this account, I thought it was a great example of leader curiosity. The team was a top management team in a large, multi-national organization. In this meeting a senior board member expressed a strong opinion about a particular course of action to be taken. He provided convincing reasons for this course of action. He demonstrated considerable knowledge in the area. And, he expressed very compelling arguments for the proposed action. A junior board member spoke up and expressed that he agreed with the basic course of action, but he was concerned about the proposed timing. So, how might the senior board member have reacted? He was clearly more senior. He had already deeply considered the proposal. There really was no reason why he should have given the junior board member's comment any additional attention. However, that is not what he did. He responded by saying, "Would you please help me understand your reservation about the timing?" That's a nice open-ended question that signaled curiosity, right? He signaled a desire to know, a willingness to learn, and a motivation to seek additional knowledge. As the junior board member expressed his concerns, the senior board member listened intently. Again, nice display of curiosity, right? He reacted with openness and fascination with new information. After the junior board member finished expressing his concerns, the senior board member said, "The point you have made is important. I had not considered fully the timing implications of this action in the way you have, and I am persuaded that the proposal should be reworked based on what we have learned in this discussion."

What a powerful exchange, right? What kind of example was set? How much more likely will team members be to express additional ideas that can improve what the team is doing? Clearly, learning new things, and learning in general, was signaled as a highly valued activity within this team.

- Value of questions

Ok, we've talked about curiosity as a leader. We have discussed some ways in which curiosity can be increased, and why curiosity can be beneficial. And, I hope that I have provided a good description of what a curious leader looks like. Now, let's do a little exercise to learn how to be better at using questions. Questions can be a powerful tool. Let me give you an example. General Stanley McChrystal was previously the commander of U.S. forces in Afghanistan. This is what he said about how the questions they were asking about their job changed: "When we first started, the question was, 'Where is the enemy?' That was the intelligence question. As we got smarter, we started to ask, 'Who is the enemy?' And we thought we were pretty clever. And then we realized that wasn't the right question, and we asked, 'What's the enemy trying to do?' And it wasn't until we got further along that we said, 'Why are they the enemy?'" Can you see how the thinking of this leadership team changed as the questions got better? Asking 'where is the enemy?' is a simple question that doesn't generate a lot of thinking, innovative ideas, or learning. But, 'why are they the enemy?' stimulates a much different conversation. It makes you think. It is likely to cause you to consider different perspectives and learn something new. So, let's do an exercise to learn how to ask better questions.

- Question Storming Exercise:

This is like brain storming, except the idea is just to generate questions. The first step is that I will present a topic, which we will call the “QFocus,” the focus of our questions. You’ll produce as many questions about the QFocus as you can, then we will work to improve the questions, and then we will prioritize the questions and discuss what the next steps might look like. The question generation rules are (1) ask as many questions as you can, (2) do not stop to answer, discuss, or judge the questions, (3) write down every question as it is stated, and (4) change any statement into a question. Here is your QFocus topic: Parking at the University of Arizona is insufficient. Please start asking as many questions as possible.

Ok, good. What were some of the best questions? Now, let’s do a little exercise to improve your questions. We are going to change questions from open to closed and back and forth. First, let’s make sure we understand what open and closed questions are. What is an open-ended question? What are the advantages of open-ended questions? What are the disadvantages? Good. What is a closed-ended question? What are the advantages of closed-ended questions? What are the disadvantages? So, both can be beneficial. It can also be beneficial to take questions and change them from open to closed and back. Let me give you an example

Suppose you asked, “Why is my mother-in-law difficult to get along with?” Is that open or closed? Ok, let’s try to close it. That would probably be, “Is my mother-in-law difficult to get along with?” Do you see how basic assumptions begin to come into focus when you do this? Perhaps the answer to this question is that plenty of other people get along with your mother-in-law just fine. So, you try opening the question again, and you ask, “Why is my mother-in-law difficult for me to get along with?” This is a much different question, right? By opening and closing the question, we exposed the underlying assumption of the first

question and started to learn something. The last question leaves us in a place to really start seeing new things and learning. So, your next step is to take all of the questions you wrote down and open the closed-ended questions and close the open-ended questions.

Ok, what did you learn by doing that? Anything particularly interesting? Good. Now, the next step, if you were doing this exercise as a team, would be to prioritize your questions. You could choose the three most important questions. You could choose the three questions you need to answer first. You could choose the questions that require immediate attention. There are many criteria you could use to prioritize the questions. We won't do this for the exercise, but I hope you are starting to see how developing the quality of your questions can help change how your team thinks about things. And then, you can use this type of experience within the team to improve your thinking and identify specific areas that require more information acquisition.

- Conclusion

Ok, let's now transition to your role as team leader. When we get to the leadership module in in this class, your teams will be required to complete a murder mystery task in class. In this exercise, you and each of your team members will review a case file of an unsolved murder. Following the review of the case file, you will meet as a team and decide who you think is guilty, and why you think that person is guilty. After determining who is guilty, based on the case file, the final task in this exercise will be to generate a plan for the next steps of the investigation. So, how do you display curiosity with this exercise? Here are the instructions.

One final thing I have for you is a daily curiosity checklist. The purpose of this checklist is to consider how you might be able to increase your curiosity. We have talked a lot about

the value of curiosity, and perhaps you are thinking that you could benefit from increased curiosity in your life. Well, sometimes it is helpful to be deliberate in efforts to improve something. You can use this checklist to reflect on what you've done in a given day and consider how you might be able to increase your curiosity for the next day. If you are looking for motivation to use this checklist, then think about the research I discussed earlier.

Curiosity and effort have a greater effect on academic achievement than intelligence. And, curious employees are better at adapting to their jobs, have greater job satisfaction, and higher performance ratings.

Thank you for your attention. Are there any questions?

Table C1: *Daily Curiosity Checklist*

The Daily Curiosity Checklist

Progress	Setbacks
Which 1 or 2 events today demonstrated my curiosity?	What are 1 or 2 missed opportunities to demonstrate my curiosity today?
<h3 style="text-align: center; border-bottom: 1px solid black; margin: 0;">Attitude of exploration</h3> <ul style="list-style-type: none"> <input type="checkbox"/> Did I try learning about something I don't understand? <input type="checkbox"/> Did I explore the root cause of an identified problem before suggesting a solution? <input type="checkbox"/> Did I seek out new sources of information rather than my usual sources? <input type="checkbox"/> Did I try to see a subject I thought I understood from a different perspective? 	<h3 style="text-align: center; border-bottom: 1px solid black; margin: 0;">Questions as a tool</h3> <ul style="list-style-type: none"> <input type="checkbox"/> Did I use open-ended questions to learn something new? <input type="checkbox"/> Did I ask questions without knowing the answer to the question? <input type="checkbox"/> Did I utilize the question-storming or open-close-open or five-why's techniques? <input type="checkbox"/> Did I spend enough time asking questions before suggesting a solution?
<h3 style="text-align: center; border-bottom: 1px solid black; margin: 0;">Find what's novel</h3> <ul style="list-style-type: none"> <input type="checkbox"/> Did I ask for or consider new solutions or suggestions? <input type="checkbox"/> Did I find something novel or interesting today? <input type="checkbox"/> Did I challenge any existing solutions or assumptions? 	<h3 style="text-align: center; border-bottom: 1px solid black; margin: 0;">Experiment with the new</h3> <ul style="list-style-type: none"> <input type="checkbox"/> Did I try out a new idea, even though I wasn't sure it would work? <input type="checkbox"/> Was I open to considering a new solution or idea, even if it was difficult? <input type="checkbox"/> Did I encourage others to express a new solution or idea, even if it wasn't perfect?
<h3 style="margin: 0;">Action Plan</h3>	
What can I do tomorrow to increase my curiosity?	What can I do tomorrow to encourage the curiosity of others?

Task Instructions for High Curiosity Leaders

As the team leader in this task, your assignment is to demonstrate to your team that you are curious and interested in obtaining new information. You should do the following as a leader:

1. Seek new sources of information.
2. Ask open-ended questions.
3. Show that you are interested in new information.
4. React positively to new ideas.
5. Be interested in learning about unfamiliar areas of the investigation.
6. Demonstrate preference for innovative suggestions.
7. Look for new solutions.
8. Show that you are uninterested in existing solutions.

In this exercise, you should focus on asking questions of your team members to gain as much information as possible. Demonstrate to your team that you want to hear new information that challenges assumptions. You should also spend time questioning any premature conclusions about who is guilty. You can do this by asking your team if they have any new information that contradicts any assumptions or conclusions. Show your team that you are willing to consider new ideas and listen to their unique perspectives. During the task where you generate a plan for the next steps in the investigation, focus on showing interest in unique perspectives and new ideas. Show that you want to learn new ways of thinking about the case that you hadn't considered before. The key is to project the image "I am a leader who wants to learn and know more."

Note: Do not to share these instructions with your team members.

Low Curiosity Training

The training for low leader curiosity required 60 minutes. Leaders were trained in small groups, and the training included one primary exercise for practicing the principles. The exercise was a speech delivery exercise where participants practiced the principles of appearing intelligent to others (Murphy, 2007). The first half introduced implicit leadership theory, with particular attention drawn toward appearing intelligent to followers. After discussing different types of intelligence as well as the benefits of intelligence, the training discussed how to project intelligence and help others see the leader as an important source of information. The training included specific examples of leader intelligence and the proposed benefits. The speech delivery exercise was the culmination of the training, and the training concluded with the speech delivery checklist shown in Table C2 and an overview of the instructions for how to lead the Murder Mystery task.

The following is the general outline and script of the training:

- Introduction to implicit leadership theory

The training today is focused on leadership. Does anyone have a good definition of leadership? Those are good ideas. We are going to define leadership as the “process of social influence through which an individual enlists and mobilizes the aid of others in attainment of a collective goal.” So, with that definition in mind, the natural question, which we will address today is how does a leader “enlist and mobilize the aid of others?”

As an answer to that question, we are going to utilize the considerable amount of research on implicit leadership theory. The main idea of implicit leadership theory is that individuals and members of teams have a preconceived idea of the traits and characteristics of the ideal leader. These are referred to as implicit theories of leadership. So, when followers interact

with appointed leader and those individuals seem to possess the traits and characteristics of the ideal leader, then they are more likely to consider them to be effective leaders and are more likely to join behind the leader in the accomplishment of group goals. In other words, when leaders adhere to the ideal prototype of what is expected of a leader, then their efforts to influence followers and mobilize their efforts to the accomplishment of group goals is more likely to be accepted and followed.

Unsurprisingly, quite a bit of research has sought to understand what these implicit theories are. In other words, researchers have sought to understand what the prototypical leader is. In general, there are four dimensions of what constitutes the ideal leader in the eyes of others. The first is sensitivity. A sensitive leader is someone who gives consideration for the needs of followers and supports them. These are leaders that spend time teaching and coaching. They treat others as individuals rather than just members of the group. They consider that each individual has different needs, abilities, and aspirations than others. They commend you when you do good work, and they show respect for your individual needs and personal feelings. Perhaps you can think of a teacher that was particularly good at this. You were only one individual in a large class they were teaching, but this teacher was able to make you feel that your specific development and needs were valued and important.

The second dimension is dedication. A dedicated leader is an individual who is motivated and hard-working. They are committed to team goals and are willing to make sacrifices to accomplish those goals. They are committed to the group, encourage seeing challenges as opportunities, and talk optimistically about the future. They express confidence that goals will be accomplished, are enthusiastic about the success they are confident will happen, and work hard to ensure goals are achieved. Perhaps you can think of a sports team and there is

one player who is showing up early to practice and staying late. They work hard at improving and ensure the team is going to be successful. They are enthusiastic, inspiring, and expressing confidence about the success that is right in front of the team for the taking.

The third dimension is dynamism. A dynamic leader is someone who is bold, strong, energetic, and charismatic. Charismatic leaders arouse strong followership through inspirational vision and/or compelling personal attributes. They have extreme self-confidence, are willing to take risks, and communicate vision through powerful imagery, symbolism, and metaphor. I am sure that you can think of leaders that can be considered visionary or charismatic. Barack Obama, whether you agree with his political positions or not, clearly aroused strong followership with inspirational vision, powerful imagery, and charismatic communication. Steve Jobs is another example you might consider. It was said that Jobs knew what the customer wanted before they knew what they wanted. That's vision. People speak of his "reality distortion field" where he could get others to see things as he saw them.

The final dimension, and the type of leadership that we are going to focus on, is intelligence. The intelligent leader is clever, knowledgeable, educated, and wise. Followers see them as particularly intelligent and as an important source of information and answers for how to accomplish the task. The idea behind the intelligent leader is that followers who see their leader as possessing wisdom and knowledge are more likely to follow their direction and commit to the direction provided.

- Focus on leader intelligence

As I mentioned we are going to focus our efforts in this training on leader intelligence. Of course, the challenge is that you may be concerned about whether or not you are perceived as

intelligent by others. Perhaps you are concerned that maybe you don't possess the necessary level of intelligence to be seen as a leader from others. Well, I have good news for you. Even if you have concerns about whatever your intelligence level is, it is possible to increase the degree to which others see you as intelligent. And, that is the goal of this training. We are going to review and then practice specific impression management strategies that will increase the likelihood of others seeing you as intelligent. And, we have evidence from the research that the relationship between the perception of being intelligent and leadership effectiveness is stronger than the relationship between actual intelligence and leadership effectiveness.

- Types of intelligence

Before we spend some time discussing specific behaviors you can engage in with your team in order to signal being intelligent (spoiler alert – we are going to spend time talking about exactly how you can do this during the class exercise your team will complete during the leadership section of the class), we need to spend some time talking about intelligence, the different measures of intelligence, and how they can be beneficial. Let's talk about three types of intelligence. The first is general intelligence. General intelligence is a measure of analytical ability. This is the ability to solve problems and is commonly measured by standardized tests that we often see in schools. Typically, a person with high general intelligence is good at solving problems that have a correct solution. I'm sure you can readily think of someone who tends to score well on tests. This is general intelligence.

A second type of intelligence is what we might call practical intelligence. This is the idea of common sense. A person with high levels of practical intelligence has action-oriented, tacit knowledge. I'll give you an example. Think about a garbage collector in a large city

where the city-issued trash container is kept in the backyard. Trash collectors collect the container from the backyard, haul it out to the truck on the street, and then drag the empty container back. That's a lot of walking back and forth. And, what about the general intelligence level of garbage collectors? Probably not very high, right. Well, an observer noticed that the routine changed one day when an older man joined the crew. The change was that they stopped thinking that each household had to retain the same garbage container. The new routine was to take the empty container from the last house to the back when going to get the full container. In one trip the garbage collector can bring out the full container and leave behind an empty container. This cut the work in half! That is practical intelligence.

The third type I want to introduce is creative intelligence. Creative intelligence is the ability to generate novel and useful ideas. Individuals who are high on creative intelligence are able to generate new ideas and tend to think divergently. They use their imagination to write stories, paint artwork, or create an advertisement. In other words, they do very well with open-ended questions where there are many possible answers. This is creative intelligence.

- Benefits of intelligence

So, what are the benefits of being intelligent. What does the research say about this? Let's first consider academic achievement. Of course, many researchers have looked into the question of what contributes to better achievement at school. And, unsurprisingly, both intelligence and effort matter. If you are smart, you tend to do well in school. If you put in effort, you tend to do well in school. What about the comparison? What do you think is a stronger predictor of academic achievement? Intelligence or effort? Well, the answer is intelligence. Individuals who can think analytically, solve problems, and find the correct

solution tend to do well in school. This is one of the things I liked about my degree in engineering. I always felt confident that if I understood the principles, then when it came time to take the exam, I could think through the problem and work out the solution, even if it was a problem that I had not studied in advance.

Ok, let's consider intelligence in the workplace. Researchers have done a lot of work to determine how to predict which candidates for a job are most likely to do well. As you can imagine learning how to select the best employee is something companies and managers care a lot about. And, there are many things that employers can look at. There is the résumé that lists the work experience of the candidate. There are references that an employer can call to learn about the potential employee. Some companies measure different aspect of personality. Other companies, depending on the type of job they are trying to fill, can even check work samples as a way to predict future job performance. So, what do you think is the best predictor? I know, the fact that I am asking this question in this training should make it easy to predict. It's general mental ability. Intelligence is the most consistent predictor of job performance. A lot of evidence points to the effectiveness of general intelligence as a predictor, but practical intelligence has also shown a lot of promise as an additional predictor.

- How to project intelligence to others

So, now that we've talked about what intelligence is and the evidence that suggests it can be beneficial, let's begin to shift to considering projecting intelligence in the context of leadership. Of all of the characteristics that researchers of implicit theories of leadership have examined such as honesty, charisma, and kindness, intelligence is the most prototypical of being a leader. It is seen by others as the most critical feature that must be possessed by all leaders. Leaders are typically responsible for developing strategies, solving problems,

motivating employees, and monitoring the environment. In fact, one of the critical functions of team leaders is to make sense of the situation. Team members look to the leader to understand how to frame the problem and what the solution should look like. So, naturally, these functions of leadership can be most effectively accomplished when followers view the leader as particularly intelligent. So, how can you display intelligence? What are the keys to being viewed by others as intelligent? Let's focus on two categories of impression management behaviors: nonverbal behaviors and verbal behaviors.

First, let's talk about nonverbal behaviors. There are a number of ways that you can signal intelligence that do not involve anything you say. I want to emphasize that these ideas I am sharing with you are a result of some pretty cool research that examined a number of ways in which individuals can alter how intelligent they are perceived by others. The first non-verbal behavior is eye contact. You should look at the individuals you are addressing while you are talking and look at the individuals who are talking while you are listening. What does it signal when you are trying to make a point and you keep looking away? What does it signal when someone is talking and you are not looking at them? Eye shifts are another important non-verbal cue. When individuals make fewer eye shifts, they are seen as more intelligent. Nodding, pausing when delivering a message, and having a more upright posture are also important.

Ok, let's talk about verbal cues. What are some verbal cues you can incorporate into your interactions that can signal intelligence? The first is self-assured expressions. What I mean by this is that it is important to refrain from openly identifying your gaps in knowledge. Leaders are expected to know answers, have information, and be able to make sense of the task and problems to be solved. To project this confidence and knowledge, you need to be careful

about areas of uncertainty or ambiguity. This can create confusion about the task and begin to undermine the expectation that the leader is capable of guiding the team through the process and achieving success together. The second form of verbal expression is using a clear speech style. This can be a common misconception about appearing smart. Have you ever seen someone who tried to appear smart by using large words or saying things in a more complicated manner? Do you find that this makes the person appear smarter? Perhaps it can in some situations, but the research shows that this strategy is actually quite ineffective. I am actually quite amused by the study that demonstrated that because the authors must have had quite the sense of humor. Here is the title of the article: “Consequences of erudite vernacular utilized irrespective of necessity: Problems with using long words needlessly.” Two other verbal characteristics that help increase the appearance of intelligence are increased number of words (remember to maintain a clear speech style!) and longer speaking time. A person who calmly speaks and confidently expresses their ideas is seen as more intelligent. Speaking too quickly, not pausing, or adding filler words like “uh” and “umm” gives the impression that the individual does not know what they are talking about.

- Leader intelligence

Ok, so now we have fully transitioned into the idea of leader displays of intelligence. We are going to define leader displays of intelligence as “behaviors exhibited by leaders to followers that signal intelligence and knowledge.” Essentially, you are projecting the image, “I am intelligent and know the answer.” What does this look like? Well, leaders can display intelligence to followers in a number of ways. Let the team know that you have a clear understanding of what needs to be done. Demonstrate by your discussions and the things you say to the team that you have a clear sense of what you want the group to accomplish. It is

really important to refrain from giving others the idea that you might have doubts or might be confused. In other words, as you identify gaps in your knowledge, you know, differences between what you do know and what you need to know, you should refrain from openly sharing these issues with the team. Ambiguity and uncertainty can be confusing and make the task difficult to complete. The team needs to have confidence that the direction you are proceeding has been carefully considered and you are confident that the team will be successful. So, you should inspire the team with your vision of team success. You can display a sense of power and confidence and use the non-verbal and verbal cues we just discussed to clearly communicate your ideas. Related to the issue of avoiding ambiguous or uncertain aspects of the task, be self-assured in your expression of ideas. To the extent possible, let others know that as the leader you have unique information to aid the team. Again, it is beneficial to the team to see that the leader understands the task, knows how success can be achieved, and is intelligent.

So, how might these behaviors be beneficial to the team? What ideas do you have? Some benefits I would like you to consider are how projecting the image “I do know” can help your team perform better. Followers look to leaders for direction. That is kind of the core of the relationship. If the leader is clearly an “I do know” kind of person, then the team members are more likely to follow their direction.

Let me give you an example of how this might work. I will provide an example of a top management team in a large, multi-national organization. In a meeting a senior board member expressed a strong opinion about a particular course of action to be taken. He provided convincing reasons for this course of action. He demonstrated considerable knowledge in the area. And, he expressed very compelling arguments for the proposed

action. A junior board member spoke up and expressed that he agreed with the basic course of action, but he was concerned about the proposed timing. So, how might the senior board member have reacted? He could have identified that the question of timing introduced new ideas that he had not considered. He could have shown little respect for the input of the junior member. He was a senior board member. He had no obligation to listen to the ideas of a junior board member. However, that is not what he did. He responded by calmly saying, “I appreciate your comment and concern regarding the timing of the action, and I will gladly provide a little more background on why the proposed timing is best.” That’s a nice comment that displayed confidence in the work that has been put into the proposal, right? He signaled respect to the junior officer and did not undermine his intelligence by suggesting that there was a gap in the planning. So, the senior member proceeded to explain the various timing options that were considered the logic of the choice made. His response was self-assured, used clear communication, and the senior board member provided a thorough explanation while maintaining respectful eye contact. After the senior board member finished expressing his thinking behind the plan, the junior board member said, “Thank you for your thoughtful answer. I had not considered fully the timing implications of this action in the way you have, and I am persuaded that the proposal you have provided is the best course of action.”

That’s a good way to express intelligence while maintaining a respectful relationship, right? What kind of example was set? How much more likely will team members be to have confidence that the senior board member thoroughly thinks through issues and has an intelligence plan for proceeding? Clearly, the other team members will have increased confidence in the ability of this board member to lead the team.

- Appearing Smart Exercise:

Alright, let's put these ideas into practice. We are going to practice developing and giving a short speech. We will divide into pairs, and each person will individually prepare a speech. I'll introduce the scenario for the speech shortly. After you have each been given time to prepare your speech, you will take turns giving the speech and providing feedback. Are there any questions? To help your speech preparations, I'm going to now provide you one of the key takeaways from this training. It is a project leader intelligence checklist. You can use this checklist to review the key points of the training and work on integrating them into your interactions as a team leader.

Ok, here is the scenario: "Imagine that you are a manager of a division of a multinational company. You have just been informed by your senior leadership that drastic and unprecedented action must be taken to relocate your team to a new city. This will be a very difficult relocation for the members of your team. Many of them have families, and this relocation will be extremely disruptive for them. Many of them enjoy your current location. Your task is to provide a speech to announce this news to your team. You need to get your team motivated to support this move. It is critical that every member commits to the relocation. It will be an uncomfortable experience for many of them, and you need to convince them that the transition will ultimately be rewarding. Try to prepare a 3-minute speech." Are there any questions?

Now that you have had some time to prepare your speeches. Let's take turns delivering the speech. Choose who will go first and deliver the speech. The one listening should evaluate the speech based on the checklist I provided.

Let's talk about the first speech. What are some positive things you saw and heard? Now, for those who gave the speech, what was challenging? Ok, let's switch and have the other person give their speech.

Good. What did you learn this time? Ok, now I want to take it to the next level. Decide together who will deliver their speech to the entire group. You can make changes and improvements based on your first experience.

Thank you for volunteering. As a group, let's talk about how it went, and what you learned from seeing another person deliver the speech. What was something you learned? What was one way that the speech could be improved?

- Conclusion

Ok, let's now transition to your role as team leader. When we get to the leadership module in in this class, your teams will be required to complete a murder mystery task in class. In this exercise, you and each of your team members will review a case file of an unsolved murder. Following the review of the case file, you will meet as a team and decide who you think is guilty, and why you think that person is guilty. After determining who is guilty, based on the case file, the final task in this exercise will be to generate a plan for the next steps of the investigation. So, how do you display intelligence with this exercise? Here are the instructions.

The last thing I want to emphasize to you is the projecting intelligence as a leader assessment. The purpose of this assessment is not only for the class exercise that we did today, but I want you to consider how you might be able to project intelligence as a leader. We have talked a lot about the value of displaying intelligence perhaps you are thinking that you could benefit from applying these ideas to other leadership roles you have. Well,

sometimes it is helpful to be deliberate in efforts in improve something. You can use this assessment to reflect on what you've done in a given leadership role and consider how you might be able to improve.

Thank you for your attention. Are there any questions?

Table C2: *Projecting Leader Intelligence Assessment*

<p>Instructions: Please complete this survey based on a self-assessment of your performance in professional contexts. This may include employment, volunteer activities, clubs, or student teams for group projects. Please answer every question and total your score at the bottom. Please use the following scale:</p> <p>1 – Almost Never (0-10% of the time) 2 – Seldom (11-39% of the time)</p> <p>3- Sometimes (40-60% of the time) 4 – Usually (61-80% of the time)</p> <p>5 – Almost Always (81-100% of the time)</p>					
Behavior	Scale				
	N e v e r	Sometimes			A l w a y s
1. Uses self-assured expressions	1	2	3	4	5
2. Looks at the audience when speaking	1	2	3	4	5
3. Looks at the speaker when listening	1	2	3	4	5
4. Uses a clear style of speech	1	2	3	4	5
5. Has an upright posture	1	2	3	4	5
6. Uses an expressive voice	1	2	3	4	5
7. Uses gestures to signal confidence and power and draw attention to the message	1	2	3	4	5
8. Pauses when speaking	1	2	3	4	5
9. Takes time to speak clearly and deliberately	1	2	3	4	5
10. Nods when listening to others	1	2	3	4	5
11. Uses a pleasant voice	1	2	3	4	5
12. Responds to conversation partner and the expressions of others	1	2	3	4	5
13. Refrains from drawing attention to ambiguities and uncertainties	1	2	3	4	5
14. Does not readily identify gaps in current knowledge	1	2	3	4	5
15. Provides three-part lists to distill messages into key takeaways	1	2	3	4	5
16. Expresses understanding with a subtle smile	1	2	3	4	5

Task Instructions for Low Curiosity Leaders

As the team leader in this task, your assignment is to demonstrate to your team that you are intelligent and have a clear understanding of what needs to be done. You should do the following as a leader:

1. Let the team know that you have a clear understanding of what needs to be done.
2. Demonstrate that you have a clear sense of what you want the group to accomplish.
3. Refrain from giving others the idea that you might have doubts or might be confused.
4. Inspire others with your vision of team success.
5. Display a sense of power and confidence.
6. Clearly communicate your ideas.
7. Be self-assured in your expression of ideas.
8. Let others know that as the leader you have unique information to aid the team.

In this exercise, you should focus on using the strategies for appearing intelligent to confidently win over your team members to your ideas. Remember that intelligence is the most important characteristics to be seen by others as a leader. You have unique information. Use what you understand of the case to guide the thinking of the team. Show your team members that you are confident and have a clear idea of how to succeed in this task. The key is to project the image “I am an intelligent and knowledgeable leader.”

Note: Do not to share these instructions with your team members.

Appendix D: Study Measures

Demographics

What is your age (in years)?

What is your gender? (Male, female, prefer not to answer)

What year in school are you? (Freshman, sophomore, junior, senior)

What is your race? (Asian, Black/African American, Latino/Hispanic, Native American, White/Caucasian, Pacific Islander, Middle Eastern, Other/Multiracial)

Note: As indicated below, present tense will be used for Time 1 survey, and past tense will be used for Time 2 survey.

Leader status, adapted from Yu et al. (2019)

Time 1 survey instructions: Please rate the degree to which the following statements accurately describe your team leader ***so far this semester***.

Time 2 survey instructions: Please rate the degree to which the following statements accurately describe your team leader ***during this exercise in class today***.

Scale: 1 = completely inaccurate, 7 = completely accurate.

1. Team members often seek/sought the opinion of the team leader because they respect him/her.
2. The team leader has a good reputation among the members of the team.
3. The team leader is highly respected by other team members.
4. Team members look/looked up to the team leader because he/she is good at his/her job.
5. The team leader is admired by the team because he/she is/was seen as competent in his/her work.
6. Team members trust/trusted the judgment of the team leader.

Leader curiosity displays

Time 1 survey instructions: Please rate the degree to which the following statements accurately describe your team leader ***so far this semester***.

Time 2 survey instructions: Please rate the degree to which the following statements accurately describe your team leader ***during this exercise in class today***.

Scale: 1 = completely inaccurate, 7 = completely accurate.

1. Seeks/sought new sources of information.
2. Asks/asked open-ended questions.
3. Shows/showed fascination with new information.

4. Continues/continued to seek for additional information to understand problems.
5. Reacts/reacted positively to new ideas.
6. Shows/showed excitement for learning about unfamiliar subjects.
7. Shows/showed a desire to learn how things work.
8. Demonstrates/demonstrated a preference for hearing innovative suggestions.
9. Looks/looked for new solutions.
10. Shows/showed a lack of interest in existing solutions.

Perceived leader intelligence (Murphy, 2007)

Time 1 survey instructions: Please rate the degree to which the following statements accurately describe your team leader ***so far this semester***.

Time 2 survey instructions: Please rate the degree to which the following statements accurately describe your team leader ***during this exercise in class today***.

Scale: 1 = completely inaccurate, 7 = completely accurate.

1. The team leader is competent.
2. The team leader is bright.
3. The team leader is smart.

Team psychological safety (Edmondson, 1999)

Time 1 survey instructions: Please rate the degree to which the following statements accurately describe your team ***so far this semester***.

Time 2 survey instructions: Please rate the degree to which the following statements accurately describe your team ***during this exercise in class today***.

Scale: 1 = completely inaccurate, 7 = completely accurate.

1. If you make a mistake on this team, it is often held against you.
2. Members of this team are able to bring up problems and tough issues.
3. People on this team sometimes reject others for being different.
4. It is safe to take a risk on this team.
5. It is difficult to ask other members of this team for help.
6. No one on this team would deliberately act in a way that undermines my efforts.
7. Working with members of this team, my unique skills and talents are valued and utilized.

Team curiosity climate, adapted from Naylor (1981)

Time 1 survey instructions: Please rate the degree to which the following statements accurately describe your team ***so far this semester***.

Time 2 survey instructions: Please rate the degree to which the following statements accurately describe your team *during this exercise in class today*.

Scale: 1 = completely inaccurate, 7 = completely accurate.

1. The team feels/felt curious about what is/was happening.
2. The team wants/wanted to probe deeply into things.
3. The team curiosity is/was aroused.
4. The team feels/felt interested in things.
5. The team feels/felt inquisitive.
6. The team feels/felt like asking questions about what is/was happening.
7. The team feels/felt like seeking things out.
8. The team feels/felt like searching for answers.
9. The team wants/wanted to explore possibilities.
10. The team wants/wanted more information.
11. The team wants/wanted to enquire further.

Team conflict (Jehn & Mannix, 2001)

Time 1 survey instructions: Please respond to the following questions regarding your team experiences *so far this semester*.

Time 2 survey instructions: Please respond to the following questions regarding your team experiences *during this exercise in class today*.

Scale: 1 = none, 2 = rarely, 3 = sometimes, 4 = a moderate amount, 5 = a lot.

Task conflict

1. How often were there conflicts of ideas in your team during this task?
2. How frequently did you have disagreements within your work group about the task?
3. How often did people in your work group have conflicting opinions about the task?

Relationship conflict

4. How often was there relationship tension in your team during this task?
5. How often did people get angry while working in your team?
6. How much emotional conflict was there in your team?

Information elaboration (Homan et al., 2008)

Time 1 survey instructions: Please rate the degree to which the following statements accurately describe your team *so far this semester*.

Time 2 survey instructions: Please rate the degree to which the following statements accurately describe your team *during this exercise in class today*.

Scale: 1 = completely inaccurate, 7 = completely accurate.

1. Team members contribute a lot of information during group tasks.
2. Team members contribute unique information during group tasks.
3. During group tasks, we try to use all available information.

Clue sharing (Galinsky & Kray, 2004)

Instructions: The following is a list of clues available in the case files. Please indicate whether each clue was discussed in the team meeting. Note: ***Only check off clues that your team actually discussed, not ones that you merely read.***

1. Eddie's daughter had an argument with the victim.
2. Eddie had a hearing problem.
3. Mary did not see Eddie's truck in the carport at 6:40.
4. Eddie habitually locks up his tools.
5. Eddie knew that the victim always left around 6:30.
6. Eddie left his crowbar out for over several hours.
7. Billy had problems with money and gambling.
8. No wallet was found on the body; wallet was later found without money.
9. Eddie reported hearing Billy's car around 7:00.
10. Billy's fingerprints were found on crowbar.
11. Billy lied about being at the victim's house on Saturday morning.
12. Tire tracks made Saturday morning matched Billy's.
13. Mary confirmed borrowing money from the victim.
14. Billy had an explanation for why he moved the crowbar.
15. The car that dropped the wallet was quiet, and Billy's car is not.
16. Mickey had a business feud with the victim.
17. Mickey argued with the victim on the phone Saturday morning.
18. Given the time Mickey left home, he would have arrived at the victim's house at 6:40.
19. The wallet was found near the route that Mickey would have taken from the victim's house to the golf course.
20. Note from the victim to Mickey.
21. The victim's continued refusal to accept Mickey's offer.
22. Mickey arrived at the golf course before 7:00.
23. The car dropped the wallet at 7:00.
24. Mickey was still trying to resolve the disagreement with the victim after his death.

Appendix E: Creative Performance

Given the potential for team curiosity and information elaboration to generate creative solutions (Gong et al., 2013), I also measured team creativity by requiring teams to generate a plan for the next steps of the investigation. Following the team decision regarding the guilty suspect, teams were given 20 minutes to generate and submit a plan for the next steps in the investigation. The main objectives of the plan were (1) identify alternative theories of what happened to ensure that alternative reasonable explanations are eliminated, and (2) determine the next investigative steps to ensure successful prosecution. Instructions for the investigative plan that were provided to teams is included below.

Creativity is defined as the generation of novel and useful ideas (Zhou & Shalley, 2011), and the creativity of the investigative plan was coded for both novelty and usefulness. To assess novelty, each plan was divided into the constituent parts, and two independent coders rated each idea included in the plan on a seven-point scale (0 = *not novel at all*, 6 = *very novel*). The order of ideas was randomly presented to the coders. The overall novelty score is calculated as an average of the novelty scores for all ideas included. The same set of coders coded the usefulness of the plans, which were presented in a random order. Because different ideas can jointly affect usefulness (e.g., it is more useful to recommend additional investigative tasks that directly relate to alternative theories regarding the guilty suspect than it is to recommend numerous investigative tasks that are unrelated to alternative theories), the entire plan was coded on a seven-point scale (0 = *harmful* to 6 = *very useful*). Usefulness was assessed with regard to the main objectives of the plan, as described above. The novelty and usefulness assessments were multiplied to generate an overall creativity measure (Hoever et al., 2012; Zhou & Oldham,

2001). Table E1 and Table E2 include the description and example statements for each level of novelty and usefulness.

Investigative plan instructions

It is now time to think more broadly about this murder mystery investigation. Thus far, we have asked you to review the case file and consider only three suspects: Eddie, Billy, and Mickey. You have been asked to review the evidence gathered to this point in the investigation. However, a common flaw in crime investigation is the decision to prematurely eliminate suspects and move too quickly to an established theory of what happened. This can result in merely looking for evidence that fits a preconceived notion of what happened, while ignoring evidence that can identify the individual who is actually guilty.

Your final task in this exercise is to generate a plan to combat this tendency and avoid making this error. To do so, your team is required to produce a plan consisting of the following elements:

1. Alternative theories for what might have happened. Your team has already made a decision on the guilty party based on the instructions to focus on three suspects and a review of the case file. However, you must now consider other theories for what might have happened. You are not restricted to the list of suspects provided nor the evidence in the case file for generating your list of alternative theories.
2. Additional investigative tasks to conduct. The decision your team made was based on investigative work already completed (e.g., interviews, letters, etc.). You now need to determine what additional investigative tasks should be completed in order to eliminate suspects or alternative theories of what happened. You are free to broaden

the categories of evidence to gather beyond the type of evidence included in the case file.

As you generate your plan, you must take into consideration the need to ensure a successful prosecution. The role of the investigative team is to determine what happened. The next step is to provide this evidence to the district attorney (DA) for criminal prosecution. The DA will not be able to successfully prosecute this case unless your team provides sufficient evidence to convict. Your plan should consider the need to ensure a successful conviction.

For each element of the plan, please provide a list of bullet points that summarizes the thinking of your team. Your team has 15 minutes to brainstorm and type up the plan.

Table E1: *Grading Rubric for Novelty of Investigative Plan*

Not novel at all 0	Very low novelty 1	Low novelty 2	Moderately novel 3	Novel 4	High novelty 5	Very high novelty 6
Idea that doesn't require any thinking or is very vague	Idea that is fairly obvious and requires little thinking	Idea that is fairly obvious but requires a little thinking	Idea that is fairly original and requires a little thinking	Original idea that demonstrates good thinking	Idea that is unique and includes interesting thinking	Idea that is very unique and uses creative thinking to explain
“One of the other suspects did it” “Gather more evidence”	“Someone we don't know did it” “Do another interview”	“The wife did it for the money” “Go interview the daughter and ask about the argument”	“It was Eddie and Billy acting together” “Have an investigator drive the route to test the timing of events”	“Sam set it up to look like Mickey was guilty so he could take over the auto parts market” “Examine the financial records of the wife”	“It was actually a suicide” “He fell and hit his head; no one is guilty” “Use Columbo-style questioning to pretend to know nothing and obtain a confession from the guilty suspect”	“It was actually Lt Moody, who is bored with being a small-town cop and wants to use the notoriety of the case to get a job in a bigger city” “Consult the FBI to obtain a psychological profile assessment”

Table E2: *Grading Rubric for Usefulness of Investigative Plan*

Very harmful 0	Harmful 1	Somewhat harmful 2	Neither harmful nor useful 3	Somewhat useful 4	Useful 5	Very useful 6
Plan recommends unnecessary actions and suggests useless theories that will prevent a successful prosecution. The overall plan is disjointed, and ideas are not related to the objective.	Plan recommends actions and suggests theories that will undermine the ability to successfully prosecute. Theories and planned actions have minimal overlap.	Plan recommends actions and suggests theories that are not overly harmful, but they do waste time; there is very little connection between theories and planned next steps.	Recommended actions and suggested theories provide little to no substance; there is no clear direction for the next steps. It is not clear how the ideas work together.	Recommended actions and suggested theories have a small likelihood of improving the chance to successfully prosecute. Theories and planned next steps are somewhat related.	Recommended actions are related to alternative theories and will help support a successful prosecution. Theories and next steps generate a coherent plan.	Recommended actions clearly connected to the alternative theories and would certainly lead to a successful prosecution. Theories and plans are clearly linked together.
“Use ‘enhanced interrogation’ to force a confession” “Maybe he’s still alive”	“Consult psychics regarding what happened” “Maybe some random person did it”	“Offer a reward for anyone with additional information” “It might have been Billy; Conduct another interview with the wife”	“Conduct some additional interviews” “Consider suspects not in the case file”	“Consult with DA office to determine additional evidence needed” “Review report from coroner”	“Gather more evidence to eliminate __ as a suspect” “Gather evidence of affair by __”	“Hire a forensics expert to provide support for theory of crowbar” “Eliminate __ as a suspect by __”

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