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# Masters, showoffs, and slackers : the effects of goal orientation congruence and similarity on positive and negative contributions to team success.

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# MASTERS, SHOWOFFS, AND SLACKERS: THE EFFECTS OF GOAL ORIENTATION CONGRUENCE AND SIMILARITY ON POSTIVE AND NEGATIVE CONTRIBUTIONS TO TEAM SUCCESS

by

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PH.D. THESIS

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To my father, who always encouraged me to learn new things.
To my advisor, who taught me that patience is a virtue.

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# CHAPTER I: INTRODUCTION

The title of this manuscript refers to three different dimensions of goal orientation (GO), which is defined as "the stable pattern of cognition and action that results from the chronic pursuit of mastery-approach, performance-approach, or performance-avoid goal in different situations over time" (DeShon & Gillespie, 2004; p. 114). Individuals who motivated through learning or mastery goals ("masters"), individuals who are motivated through performance goals ("showoffs") and individuals who are motivated by a desire to avoid failing at their set performance goals ("slackers") will all interact on teams with varying results and degrees of goal accomplishment. This variety in GO has implications for how they interact with the other members of their team. Studying how GO influences cognition, behavior and attitudes in a team context are becoming increasingly popular (i.e., Porter, 2008), but conceptualizing GO in terms of congruence among the members has received little attention. This is surprising, given past research on person-environment (P-E) fit suggesting that person-team congruence effects can have powerful influences on subsequent psychological and behavioral outcomes. This study addresses this lack of attention by more explicitly examining how congruence on GO, a deep-seated underlying motivational process, can impact how effectively an individual is able to work with their team. Further, as an extension of congruence to the team level, this study also examines how similarity in GO among team members can influence team-level processes and outcomes.

The use of teams in modern organizations is a well-documented phenomenon with important implications for how individuals on these teams learn, exchange information, and interact with others (Guzzo & Dickson, 1996; Turner, 2001). GO has emerged as a tool to understand how and why individuals behave in teams because, at their core, work teams present a learning, performance, and achievement context for employees (Porter, 2008). As such, developing a deeper understanding of how GO

influences the situated behaviors of individuals on teams represents an important step in developing more effective teams. In addition, I can extend researchers' theoretical understanding of specific instantiations of goal-directed behaviors (DeShon & Gillespie, 2004) situated within a team context. While some studies have examined the effects of the mean GO on team outcomes (Porter, 2005; Porter, 2010) or how GO influences individual reactions to team-related phenomena (i.e., Dierdorff & Ellington, 2012), many questions remain open as to the effects of GO, such as 1) how congruence between an individual's GO and that person's teammates influences subsequent goal-directed behavior, and 2) how GO similarity among team members influences subsequent team processes and performance.

In the first case, while individuals may have a particular level of a GO that encourages them to adopt particular goals, engage in certain types of performance, or pursue certain learning strategies, members of that individual's team may have dissimilar GOs. Learning and performance GOs can lead individuals to develop either competitive or cooperative behaviors (Darnon, Harackiewicz, Butera, Mugny, & Quiamzade, 2007) as well as influence the intent to cooperate with others (Poortvliet & Darnon, 2010). Further, the GO of other team members can influence an individual's motivation and ability to learn (Deierdorff & Ellington, 2012). As such, the GO of an individual member may interact with the GO of that individual's teammates to affect the degree to which that person can cooperate with their team members. Answers to such questions can provide valuable insight on the development of effective project teams as well as answering important theoretical questions about GO and situated behavior.

In the second case, a handful of studies regarding the effects of team GO, defined as the mean GO of the team members, have demonstrated that team goal orientation can influence cooperative behaviorsbehaviors and commitment in teams (Porter, 2005), adaptation to changing learning environments (LePine, 2005) management of slack resources in adapting to environments (Porter et al., 2010), and the effective use of

feedback (DeShon et al., 2004). Two studies have also examined how GO diversity, defined as the standard deviation or other measure of difference, influence team outcomes. Pieterse, van Knippenberg & van Ginkel (2011) demonstrated that GO diversity interacts with the reflexivity of teams to influence performance, while Russo (2012) showed that the effect of GO diversity on team performance was mediated through the elaboration of task-relevant information. In both cases, it is clear that the GO of team members has important effects on team outcomes.

Growing literature on person-environment (P-E) and person-group (P-G) fit suggest that similarity on psychological characteristics including goals (Vancouver & Schmitt, 1991; Edwards & Cable, 2009), values (Boxx, Odom, & Dunn, 1991; Chapman, 1991) as well as traits and work attitudes (Bretz & Judge, 1994) can influence individual's attitudes, behaviors, and participation in a team's fundamental task processes. Past research has also demonstrated that has shown that self-other congruence can contribute to increased satisfaction and reduced turnover (Vancouver & Schmitt, 1991) and influences positive contributions to team success (Kristof-Brown & Stevens, 2001). Although many of these studies have examined relationships between values or goals congruence, no studies have examined the relationship of GO congruence. Given that research has demonstrated that a) team GO can influence cooperative behaviorsbehaviors (Porter, 2005); individual GO influences behavior and performance in teams (DeShon et al., 2004), and that team GO may influence the relationship between individual GO and other outcomes (DeShon et al., 2004; Dierdorff & Ellington, 2012), GO congruence can to be prove to be useful lens through which to investigate how and why individuals fit a group and more effectively contribute to teams. Further, while some research has examined the effects team-level GO on individual outcomes or the effects of individual GO on team behaviors (Porter, 2005; Porter et al., 2010; Porter, 2008), no study to date has examined the effects of GO congruence.

To address these issues, I extend prior research on individual GO and team GO by examining how GO congruence (when an individual and his or her team members have the same level of GO) and GO similarity (when team members all share a similar GO level) influences individual-level or team-level helping behaviors, learning, and team process. To develop my hypotheses, I use two theoretical frameworks at the individual level—similarity-attraction theory (Byrne, 1971) and motivated action theory (DeShon & Gillespie, 2005)—and one at the team level—the categorization-elaboration model (van Knippenberg et al., 2004). I empirically test these hypotheses across three GO dimensions using a sample of students in project teams, examining the mediating effects that represent each explanation and the relative strengths of the mediating mechanisms across the different GO dimensions. To test the effects of congruence at the individual level, I use polynomial regression (Edwards, 2008), rather than difference scores or profile similarity indices to permit greater flexibility and precision in specifying and testing different formations of congruence across the different GO dimensions and outcomes. The individual-level model is specified in Figure 1, and the team-level model in Figure 2.

This dissertation makes multiple contributions to research on GO. First, from a theoretical standpoint, I develop a comprehensive model that integrates and extends existing research on the effects of GO congruence in teams on individual-level outcomes. . Such a framework is a step forward in understanding both the interpersonal implications of GO and the motivational mechanisms that link GO to variety of important individual behaviors such as cooperative behaviorsbehaviors (Porter, 2005), psychological adaptation (LePine, 2005) and knowledge sharing (Wang & Noe, 2010). Past research has focused on the self-regulatory aspects of GO and its influence on learning outcomes (Payne et al., 2007; Ford, Smith, Weissbein, Gully, & Salas, 1998) and performance outcomes (van Yperen & Janssen, 2004), or the trajectory of these outcomes (Yeo & Neal, 2004; Chen & Mathieu, 2008) at both the individual level, the group level, or a

cross-level combination of the two. Little to no research in organizational psychology has discussed the interpersonal effects of GO, despite the growing presence of such research in educational and social psychology. Rather, past research has drawn on theories of learning and the psychological mechanisms that underpin those theories, such as self-efficacy and metacognition (e.g. DeShon et al., 2004; Dierdorff & Ellington, 2012), and left uninvestigated the possible effects of GO on interpersonal processes such as trust, attraction, and communication. By using both self-regulatory processes and interpersonal affiliation processes as mediators of the effects of GO congruence, I hope to more fully contextualize the effects of GO on individual-level outcomes in teams.

Second, this paper answers calls in the research to take a multilevel perspective of both the GO of a team and the GOs of a team's members (Porter, 2008; Gully & Phillips, 2005). Answering these calls can provide insight regarding the importance of GO congruence at the individual beyond the more direct effects of goal congruence on individual outcomes (i.e., Kristof-Brown & Stevens, 2001) or GO similarity at the team level beyond goal importance congruence (i.e., Colbert, Kristof-Brown, Bradley, & Barrick, 2008). Third, this dissertation takes advantages of methodological advances to model interactions between individual and team GO using polynomial regression with response surface modeling (RSM). Although past research has effectively used multilevel modeling to assess the cross-level effects of team GO (e.g., Porter, 2011; Bunderson & Sutcliffe, 2003), including interactions between team-level and individual-level GO (Dierdorff & Ellington, 2012), the use of RSM can provide a more fine-grained examination of how and why GO congruence matters to team outcomes.

Multiple studies have confirmed that goal congruence is important to team survival (Ancona, 1990), how much an individual contributes to that team's success (Kristof-Brown & Stevens, 2001), and even organizational-level outcomes for TMTs (Colbert et al., 2008). Harvard Business Review's Answer Exchange, an online forum where managers exchange information about different problems, offered that the most

common cause of problems with teams was the absence of team identity, or that "[m]embers may not feel mutually accountable to one another for the team's objectives. There may be…*conflict between team goals and members' personal goals*" (http://hbr.org/answer-exchange). But what if this lack of goal congruence problem is not rooted in the proximal goals individuals hold, but to the degree to which different types of GOs motivate individuals at a more basic psychological level? This study attempts to address the underlying basis for goal congruence by investigating the motivational mechanisms of GO, or how GOs motivate individuals to behave. As such, this study can help scholars to better understand how teams can better manage goal congruence to improve team outcomes, as well as to improve the experience of individuals on teams. .

# CHAPTER II LITERATURE REVIEW

This study stems from an integration of three distinct areas of research. Broadly outlined, these areas are 1) the robust and growing literature on the effects of individual and team GO on team members' learning outcomes, behavioral activities, and self-regulatory processes; 2) research on P-G fit that examines how similarity on psychological characteristics including traits, attitudes, and goals influence subsequent satisfaction and behavior; and 3) the growing literature in educational and social psychology regarding the social underpinning of achievement goals and interpersonal behaviors. In this chapter, I will outline past research in each of these streams and how the connection between the three pertains to the current study.

## Goal Orientation

Goal orientation (GO), a measure of individuals' dispositional motivations for setting goals, has created a window into the motivational processes that drive individuals' goal formation at work (Button, Mathieu, & Zajac, 1986; Vandewalle, 1997). Research has generally indicated that GOs are a useful as a predictor of behavior and performance in achievement situations such as work or school, as opposed to non-achievement situations (Bunderson & Sutcliffe, 2003; Payne, Youngcourt, & Beaubien, 2007).

Though much research treats GO at a stable individual difference (e.g., Janssen & van Yperen, 2004), other research has shown that individual state GOs can developed through situational cues (Button et al., 1996; Kozlowski et al., 2001; VandeWalle et al., 1999). As such, GO is best described as a "quasi-trait," (DeShon & Gillespie, 2004), meaning that while GO dimensions have a dispositional component that is stable across time and situation, situational cues can also lead to transient, state-based orientations that differ from an individual's dispositional tendencies. Arguments for state-based GOs focus on cues such as leadership and authority, task characteristics, and social characteristics as key factors that influence the development of individual GOs (Ames,

1992; Nicholls, 1984; Roeser, Midgley, & Urdan, 1996; Turner et al., 2002). However, meta-analytic research also demonstrates that trait GOs are the most robust predictors of state-based GOs (Payne et al., 2007). Further, more past research has shown that dispositional GO dimensions directly impact individual outcomes even when social characteristics that influence the development of state-based GO are controlled (Ames & Archer, 1988; Ryan, Gheen, & Midgley, 1998; Turner et al., 2002; Schneider, 1983).

This study models GO as a stable dispositional trait for two reasons. First, past research has demonstrated that dispositional GO has important outcomes on team-level outcomes and individual outcomes in a team setting (Porter, 2005; Porter, 2008). Second, the goal of this research is to examine how initial interactions between individuals with differing GO influence subsequent self-regulatory and social attraction processes. Developing hypotheses and testing these effects requires the measurement of an individual's initial, dispositional GO before team situational cues, including the GOs of other team members, might influence the state-based GO an individual develops while working with team members. It is possible that situational cues from the team influence an individual's state-based GO over time. To address the research questions this study poses—how the GO of other team members influences the relationship between an individual's dispositional GO and outcomes—requires measuring GO dimensions before situational cues can trigger the development of state-based GOs.

VandeWalle (1997) states that GO is best described as a disposition toward developing or demonstrating ability in achievement situations (Dweck, 1986). This study will focus on three dimensions of GO described in (VandeWalle, 1997) and Button et al.'s (1996) work: learning GO (LGO), performance-prove GO (PPGO), and performance-avoid GO (PAGO).

First, VandeWalle (1997) describes a learning GO as a dispositional preference for goals that seek to develop competence by acquiring new skills and mastering new situations. Vandewalle (1997) specifically defines LGO as follows: "a desire to develop

the self by acquiring new skills, mastering new situations, and improving one's competence" (p.1000). In addition, Nicholls (1975) describes learning orientation as having an internal motivational reference. Primary and meta-analytic results have shown that LGO has direct relationships with learning outcomes and job performance that is mediated through self-regulatory processes such as self-efficacy and metacognition (Payne et al., 2007; DeRue & Wellman, 2009). For this study, individuals with high levels of learning orientation are the "masters:" their goal is comprehensive mastery of material, not (necessarily) high performance outcomes.

Second, VandeWalle (1997) describes a performance-prove orientation as a dispositional preference towards goals that demonstrate ability and competence to others. Vandwalle (1997) defines it specifically as "the desire to prove one's competence and gain favorable judgments about it" (p.1000). Nicholls (1975) describes performance-prove orientation as having an external motivational reference. Although some research has suggested that performance orientations can inhibit learning (Dweck, 1986; Elliott & Dweck, 1988), more recent research (Midgley, Kaplan, and Middleton, 2001; Butler, 1993) notes that performance orientations can be valuable in learning contexts when external performance expectations and standards are designed to include and require learning. Butler (1993) suggests that individuals high in PPGO are likely to use the performance and achievements of others as external reference points to determine if they are meeting achievement goals. In addition, Elliot, Shell, Henry, & Maier (2005) suggests that high-PPGO individuals use others' learning as a check point for whether they are learning enough. These external referents imply that under some circumstances high-PPGO individuals will seek out and create situations where there is less cognitive interference in order to engage in or demonstrate more effective performance (Payne et al., 2007). Similar arguments are made by Bell & Koszlowski (2008) and Martocchio & Hertenstein (2003). In this study, these individuals are the "showoffs." Individuals high

in PPGO will seek out external feedback and engage in comparison of their work to others to demonstrate effectiveness and high performance.

Third, the performance avoid orientation (PAGO) is considered the "dysfunctional branch" of the GO constructs (Brophy, 2005; Payne et al., 2007). Vandewalle (1997) defines PAGO as "the desire to avoid the disproving of one's competence and to avoid negative judgments about it" (p. 1000). Individuals with high levels of PAGO will engage in defensive behaviors if a task is perceived as likely to create a negative evaluation from others (Button et al., 1996) and negatively influences perceptions of self-competence. This produces anxiety which can interfere with cognitive and motivational mechanisms of learning and meaningful social interaction, as well induce individuals into engaging in withdrawal behaviors (Middleton & Midgley, 1997; VandeWalle, 1997). These individuals report fewer positive experiences in achieving developmental goals if they try to engage in tasks or are put in situations where their ability to perform well could be questioned (VandeWalle, Cron, & Slocum, 2001). In this study, these are the "slackers," who choose to engage in tasks only when they believe that can succeed easily, and who react with anxiety and defensive behaviors when asked to engage in more difficult tasks. As such, all three aspects of GO have value in examining goal-directed behavior, and in particular, the use of goal-directed behavior in a team context.

## GO in Teams

Although the original use of GO was to examine academic achievement in classroom settings (Dweck, 1986), more recent use of GO theory has increasingly broadened its network of concerns and applications to professional and work contexts (Deshon & Gillespie, 2004). Examples include the role of GO in leadership development (DeGeest & Brown, 2011; DeRue & Wellman, 2009; Dragoni, Tesluk, & Oh, 2009), the development of mastery-avoidance GO constructs (Van Yperen, Elliot & Anseel, 2009),

and the relationship between GO and cultural norms (Rogers & Spitzmueller, 2009). Expansions of GO have also included the development of cross-level and multilevel contexts to study the effects of GO in within-persons designs (e.g., Yeo et al., 2009) and team models (Hirst, Van Knippenberg & Zhou, 2009), as multilevel analysis has become more germane to organizational research (Chan, 1998; Bliese, 2000). However, aside from a few exceptions (e.g., DeShon et al., 2004; Dierdorff & Ellington, 2012), few studies have used team contexts as a contextual factor that changes the relationship between an individual's GO and its network of related outcomes. Thus, a pressing need in the literature on GO remains in examining the relationship of GO dimensions with behavioral and attitudinal outcomes in team contexts, as learning has important social contextual factors (Dierdoff & Ellington, 2012).

Recent research has demonstrated that GO matters in team contexts and can be operationalized in multiple ways in these settings (Porter, 2008). As such, when scholars refer to "team GO," they may be referring to one of three different conceptualizations. Although each conceptualization of team GO has distinct value, each approach must be tailored to the specific needs and research questions to be addressed. In addition, each conceptualization will have different foci in terms of its criteria, meaning that different conceptualizations will impact the type of multilevel analysis used. I review these three conceptualizations to arrive at the operationalization most relevant for this study.

First, team GO may refer to a *collective* GO (e.g., Bunderson & Sutcliffe, 2003; DeShon et al., 2004). This conceptualization of GO assumes it is a shared, team-level perception that emerges over time (Gully & Phillips, 2005). Further, it assumes that GO is not a compositional model of the individual GO dispositions of its members. A prototypical question that a study with this approach would ask is "if a team develops a shared belief or perception regarding the team's learning, performance-prove or performance-avoid GO, how do these orientations effect subsequent processes and outcomes for that team?" The emergence of a team or group GO can occur via a number

of processes that can include either top-down (e.g., supervisor's GO, reward systems, culture) or bottom-up (e.g., team members' GOs, fit perceptions, individual goals) influences. Regardless of how collective GO develops, this form of GO is always modeled as a shared perception among team members and treated similarly to climate (Porter, 2008). An excellent example of this approach comes from Bunderson & Sutcliffe (2003), which examined the effects of collective learning orientation among senior management teams on that team's business unit outcomes. This study found that a senior management team's collective learning orientation had positive but curvilinear effects on team performance for both target profitability and actual profitability for that team's business unit. Additionally, they found that prior performance moderated the effects of team collective learning orientation on future performance such that low-performing groups benefited more than high-performing teams from having a learning orientation.

Second, team GO may refer to GO as a team *composition* variable. When taking this approach, team GO is modeled as an aggregate descriptive measure of the individual-level GOs of the members of the team (Porter, 2005; 2008). This approach is comparable to approaches toward team personality (e.g., Barrick, Stewart, & Mount, 1998), which describe a team's personality (e.g., extraversion or conscientiousness) with some form of aggregation of the individuals' levels of those traits. A prototypical question for this type of research would ask, "How does the aggregate mean of individual-level dispositional GO to the team level influence team processes and outcomes?" Although Koszlowski & Klein (2000) argues that compositional models assess team-level phenomena in a relatively simplistic manner, this approach has demonstrated considerable value in predicting group and team behavior in both the GO (LePine, 2005; Porter, 2005; Porter, 2010) and personality literatures (Barrick et al., 1998). Chan (1998) has suggested that such operationalizations are valid to the extent to which they can demonstrate predictive validity. Compositional models assume that GO emerges via bottom-up processes to represent the GO of the team. This assumption suggests that members' dispositional GO

can meaningfully represent the collective pool of dispositional GO the team has at its disposal (Porter, 2008).

An example of this type of work is Porter (2005), which demonstrated that team learning orientation, defined as the mean level of learning GO on the team, was positively related to team-level cooperative behaviorsbehavior, collective efficacy beliefs, and mean team commitment. In addition, Porter (2005) also found that performance orientation had a complex relationship with team outcomes such that it was positively associated with commitment when teams performed well but less so when teams performed poorly. This study demonstrated that contextual factors such as prior task performance are crucial to understanding how performance orientations influence outcomes. This approach of compositional GO has proven valuable in understanding how the GO of individuals in a group interacts to produce effects on critical work and team outcomes. It does not, however, explain how and why the GO of an individual and his or her teammates may interact to influence individual-level outcomes.

The third approach to team GO is a cross-level conceptualization of GO. Cross-level models assume that the relationships of individual-level dispositional GO dimension to constructs in its nomological net may be influenced by team-level phenomena (i.e., team-level process variables, team climate, team-level inputs, social conditions on a team) and in turn relate to individual-level outcomes in learning outcomes, skill acquisition, task performance, or affective evaluations. In essence, this third approach asks the question, "Do the established relationships between dispositional GOs and their typical outcomes (i.e., self-efficacy, task performance, and learning outcomes) change when examined in a team context?" As Porter (2008) notes, the vast majority of research on GO has focused on GO of individuals with little focus or regard for social, team and other contextual and environmental factors that might alter, modify, or otherwise influence established relationships between GOs and outcomes.

Two notable exceptions to this paradigm are DeShon et al. (2004) and Dierdorff & Ellington (2012). In the case of DeShon et al. (2004), the dispositional GO of members and the GO of the team were measured in three-person teams working on a radar-tracking task. A key finding was that individuals with a higher performance orientation were less committed to their personal goals when the feedback they received was directed towards the team. This finding suggests that the link between dispositional GO dimensions and their typical outcomes may change based on team-level phenomena. In a similar vein, Dierdorff and Elligton (2012) investigated the degree to which an individual's GO interacted with the mean GO of the other members of that team to predict individual self-regulatory outcomes. Their results showed that the mean GO of team members moderated the effects of individual-level GO such that growth in self-efficacy and metacognition was stronger when teams had a higher mean LGO. This result demonstrates that the mean GO of other team members represents an important contextual factor that can influence the established relationship of an individuals' GO with self-regulatory activity.

An important consideration left largely under-developed in this research is that teams provide a context in which social comparisons can be readily made among team members (Porter et al., 2003; Ellington & Dierdorff, 2012). Porter (2008) notes that more research in this domain is needed to better understand both how individual-level GO influences individual outcomes in a team context and how team characteristics can influence GO-outcome relationships. Because team and work group units are proximal to individuals than organizational-level or industry-level units, team-level effects are likely to be more salient. As Porter (2008, p. 159) directly states, "We currently know very little about how group and team phenomena may impact the effects of dispositional GO." This social context likely influences the effects of all three GO dimensions. In the case of LGO, the presence of others with similar GOs is likely to impact social behaviors, given evidence that LGO is linked to cooperative behaviors with learning partners (Darnon et

al., 2007). In the case of PPGO and PAGO, the presence of others with similar GOs is also likely to influence social behaviors and intensify the social comparison process, given the external, social comparison focus of these two dimensions.

## Individual Team Members' GO

Past research has implicitly examined how complementary GO between people, or the degree to which dyads who work together have similar and differing levels of GO, can have effects on learning and development. For example, Dragoni, Tesluk, and Oh (2009) and Dragoni (2005) investigate how managers in mentoring or coaching relationships with junior managers can influence the development of state GOs and outcomes in mentees and followers. Dragoni (2005) develops a theoretical model which shows how the GO of a leader can influence the state-based GO of followers.

Although there has been an increase in research on the effects of team GO on team processes and performance, these studies remain distinct from research on the effects of GO within teams. This has resulted in a surprising lack of research on how the various GOs of team members interact to influence their personal behavior. This is surprising, because research has demonstrated that complementary GO between mentors and mentees can have effects on learning and development (Dragoni, 2005; Dragoni, Tesluk & Oh, 2009). Thus, there appears to be value in examining how the GOs of team members effect and influence the relationship between and individual's GO and their joint relationship with individual-level outcomes.

## P-E Fit and P-G Fit Research

Person-group (P-G) fit, defined as the degree of interpersonal compatibility between individuals and their immediate work groups or teams (Judge & Ferris, 1992; Kristof, 1996), is the most nascent of all types of fit research (Kristof-Brown et al., 2005). P-G fit research falls into the broader category of person-environment (PE) fit studies, which seek to investigate the compatibility between an individual and their surroundings

when personal and environmental characteristics are matched (Kristof-Brown et al., 2005; Schneider, 2001). The largest and most popular subset of research on P-G fit research focuses on demographic similarity among coworkers (e.g., Riordan, 2000). However, more recent research has examined how psychological compatibility among coworkers influences individual outcomes. Examples of this type of research include research on goal compatibility (Kristof-Brown & Stevens, 2001), and value congruence and compatibility (e.g., Adkins, Ravlin, & Meglino, 1996; Adkins, Russel, & Werbel, 2006; Becker, 1992; Good & Nelson, 1971). Research has also begun to examine P-G fit with respect to personality traits or affective dispositions (Barsade, Ward, Turner, & Sonnenfeld, 2000; Hobman, Bordia, & Gallois, 2003; Kristof-Brown, Barrick, & Stevens, 2005; Slocombe & Bluedorn, 1999; Strauss, Barrick & Connerley, 2001).

Most research on P-G fit examines the an individual's characteristics, compares those characteristics to the members of the team, and then models how these similarities or differences influence individual-level outcomes such as job performance, job attitudes, or other related phenomena. However, there are multiple ways in which P-G fit research is conducted, and two major forms of P-G fit that studies typically seek to address. Specifying which type(s) of P-G fit are most relevant to this project is helpful. Further, P-G fit research also draws an important distinction between complementary and supplementary fit. Supplementary fit occurs when elements share common qualities or are similar in some way, while complementary fit occurs if elements have distinct or heterogeneous qualities that have supportive or mutually reinforcing effect (Muchinsky & Monahan, 1987). In the context of this study, we will be examining the effects of both supplementary and complementary fit. For example, it could be the case that some dimensions of GO produce a supplementary effect, wherein being around individuals with similar GOs provides a beneficial effect on individual outcomes. Conversely, dissimilarity on dimensions of GO could produce a complementary effect on individual or team level outcomes such that differences in motivation may provide an individual or a

team a variety of skills or motivations needed for effective team or individual performance.

The broader literature on P-E fit has shown that similarity on a variety of psychological attributes such as goals (Vancouver & Schmitt, 1991), values (Boxx, Odom, & Dunn, 1991), and germane to this paper, personality and attitudes (Bretz & Judge, 1991) can improve attitudes and performance in collective activities. Cable and Judge (1996) state that individual perceptions of congruence link more directly to outcomes than does actual congruence, or that perceived fit is often more proximal to individual-level outcomes than more objective measures of fit. As an example of this phenomenon, Kristof-Brown, Zimmerman, and Johnson (2005) note that goal congruence is an important form of person-organization (P-O) fit, and Kristof-Brown & Stevens (2001) showed that perceptions of goal congruence (an individual's own goals as compared with the perceived goals of other team members) can have positive influences on task contributions and attitudes toward the team. In fact, Colbert, Kristof-Brown, Bradley, & Barrick (2008) examined the effects of goal importance congruence directly, finding that goal importance congruence between credit union VP's and their supervisors had influences on the attitudes of the credit union vice-presidents as well the financial performance of that VP's credit union. Other research has shown that the adoption of group-centric along with individual-oriented goals can have positive effects on task performance (Mitchell & Silver, 1990; Crown & Rosse, 1995).

P-G fit matters in organizations because many jobs require interpersonal interactions with group members, and depend on an employee's ability to develop and sustain high-quality interpersonal interactions with other team members (Werbel & Johnson, 2001). In particular, this is an important point for team-based work, where social skills may be as or even more important than job knowledge or technical skills for job performance (Montgomery, 1996). Both supplementary and complementary factors can fuel P-G fit. In the case of supplementary fit, shared values or similarities in goals

and motivational strivings can lead to shared beliefs or commitments that become established group norms (Werbel & Johnson, 2001), with group acceptance of these norms leading to more positive attitudes at work (Ostroff & Kozlowski, 1992). For complementary fit, group performance becomes improved because the deficiencies of one team member can be buttressed via the strengths of another member or members. Scholars argue that both types of fit may be necessary for effective teams to develop cohesiveness and productive social norms, or supplementary fit, and for teams to have a sufficient breadth of personal knowledge, skills, abilities and resources to meet individual-level and team-level performance standards, or complementary fit (Cable & Edwards, 2004; Humphrey, Hollenbeck, Meyer & Ilgen, 2007; Kristof-Brown & Jansen, 2005).

P-G fit may also positively influence motivational strivings that lead to more effective individual and team-level outcomes. For example, peer influence can be a motivational force that drives individual to pursue goals in order to achieve the respect of their peers and prestige within a group (Ferris & Mitchell, 1987). In addition, P-G fit can increase effortful strivings as individuals seek to develop collegial relationships with colleagues (Werbel & Johnson, 2001) and promote synergy and cooperation within a group (Werbel & Gilliand, 1999). In fact, Werbel and Johnson (2001) suggest that the prime criterion related to P-G fit are maintenance behaviors such as cooperation and cohesion. This is particularly the case when members of a group accept the goals of that group. Further, supplementary P-G fit has also been shown to influence group attractiveness such that individuals are more likely to find a group with similar values and interests more appealing, increasing the desire to remain with the group or organization (Edwards & Cable, 2009). In contrast, complementary fit influences the degree to which different members of a team are able and motivated to engage in boundary-spanning behaviors that are central to the decision-making process of a team and its implementing

chosen courses of action. In short, both supplementary and complementary fit influence individual outcomes that lead to individual effectiveness (Cable & Edwards, 2004).

As noted above, psychological compatibility and goals are key determinants of motivational strivings within a team. However, little research has directly addressed whether GO may be a trait on which P-G fit could influence individual and team outcomes. Kristof-Brown and Stevens (2001) marks an important development in P-G fit research, because it was the first study to consider the way in which team members' differences on achievement goals can influence attitudinal and behavioral outcomes for individual team members. Using polynomial regression, they assessed whether the performance and mastery goals set by members of MBA case analysis teams interacted with the goals set by their team members to influence individual attitudes and performance contributions to the team. Although GO was not directly measured, its role in the formation of tactical goals is discussed. Kristof-Brown and Stevens (2001) state directly: "Discrepancies in perceived self-team performance goals may lead to similarly debilitating patterns. For example, members who perceive that their own performance goals are lower than those of the team may withdraw effort, leading to team conflict and lower individual satisfaction" (p. 1085). They also note that incongruence in perceptions of mastery goals may lead to adverse effects on outcomes by producing too much pressure or inadequate support for learning. Differences between an individual's and the group's goals can lead to process conflict as an individual is engaged in different levels of meta-cognition and seeks alternate learning strategies. Results for this study showed that congruence on personal and perceived team performance goals had a positive effect on individual attitudinal and behavioral outcomes. In addition, congruence in personal and perceived team mastery goals was associated with greater interpersonal contributions. Kirstof-Brown & Stevens (2001) state that perceiving that others share one's desire to learn is likely to create more constructive interpersonal exchanges. The study notes, however, that more research is needed to replicate this congruence finding

and elucidate the exploratory mechanisms that link mastery goal and performance goal congruence to outcomes. Studies such as Kristof-Brown & Stevens (2001) highlight the need for alternative evaluations of goals and goal directed behavior in understanding P-G fit, in particular because a team's other members represent an important component of the achievement context for each individual on that team.

Other research has suggested that interactions between an individual's GO and the GO of fellow team member can influence self-regulatory processes. For example, in Dierdorff & Elligton (2012), results showed that when Further, past research has made clear that congruence (or incongruence) among the GOs of individual team members can influence their self-regulatory processes (Dierdorff & Ellington, 2012). Specifically, Dierdorff & Ellington showed that in a team context, the degree to which LGO is associated with positive growth in metacognition over time is strengthened when an individual is on a team where the mean LGO of the other team members is high, while high-PPGO individuals on high-PPGO teams are less likely to display positive changes in self-efficacy over time. Similarly, the high-PAGO individuals on high-PAGO teams engaging in lower rates of metacognition. While Dierdorff & Ellington (2012) do not discuss the implications of P-G fit in their study directly, they functionally the degree to which congruence between an individual's GO and the mean GO of an individual's teammates influence changes in that individual's self-regulatory processes over time. However, this study noted in its limitations that it was not able to measure the degree to which this congruence influenced individual-level contributions or learning outcomes and suggests this type of research as a future avenue for exploration. As such, further study of GO congruence with respect to individual-level learning and behavioral outcomes could have positive benefits for developing P-G fit research.

## Achievement Goals, Social Interactions and Interpersonal Behaviors

Kristof-Brown & Stevens (2001) noted that mastery goal congruence in project teams could positively influence interpersonal interactions, including information exchange and social collaboration. Aside from a few exceptions (i.e., Janssen & van Yperen, 2004), the role of GO in information exchange and other social exchange processes has received little attention. This lack of research matters because although congruence on achievement goals can be treated as central to the motivational strivings that matter in P-G fit, there is virtually no research that links GO to P-G fit through social exchange processes. To overcome this shortcoming, we turn to recently developed research in the educational and social psychological literature that has indicated that both achievement goals and GOs do influence social interactions among people who must work together and exchange information.

GO has received some attention as a predictor of interpersonal and social behaviors, particularly as they relate to learning (Lepine, 2005; Porter, 2005; Porter 2010). Porter (2005) and LePine (2005) both note that cooperative behaviorsbehaviors, helping behaviors, and adaptive behaviors are all important to the learning process in a group setting. All of the studies cited above have assessed outcomes at the team level. No studies have examined this relationship between GO in teams and individual-level interpersonal outcomes. This gap is important, because bottom-up processes of interpersonal facilitation can influence team-level outcomes such as the productivity and cohesion of a team (Koszlowski & Klein, 2000; LePine, 2005; Porter, 2010). GO is a precursor to the development of specific and tactical achievement goals (DeShon & Gillespie, 2004).

In the educational and social psychological literature, achievement goals have begun to receive attention as predictors of interpersonal behaviors. Much of this research is germane to the workplace, as workgroup environments represent an important

achievement context for individuals who must work with others to accomplish organizational directives. GOs influence the adoption of specific and targeted tactical goals (DeShon & Gillespie, 2004). For this reason, substantial research in the social psychology literature has investigated the degree to which these types of goals influence social behaviors and interaction. This connection between achievement goals and social behaviors implies that GOs, which are the precursor to these more specific achievement goals, will also be linked to similar types of social behaviors and interactions. Two streams of research in this field are most pertinent to this research: the link between goals and information exchange and the relationship of achievement goals to the management and regulation of conflict.

Achievement goals reflect an individual's pursuits and self-regulatory strategies (Harackiewicz & Sansone, 1991; Poortvliet et al., 2007) and influence the referent (self or other) that an individual uses to determine if they are effectively progressing toward completion and achievement of a goal (Dweck, 1986; Nicholls, 1984). Individuals who pursue mastery or learning goals predominately compare their current performance to their previous personal performances, developing an internal, self-referenced focus. In contrast, individuals with performance goals predominately compare their current performance with those of others, developing an external, other-referenced focus. This disparity in focus leads to distinct perceptual-cognitive frameworks that determine how individuals approach and construct information exchanges with others (Dweck, 1986). Poortlivet et al. (2007) argue that achievement goals influence how individuals treat the norm of reciprocity with regard to information exchange (Gouldner, 1960; Deutsch, 1975; Kahneman, 1992) and how individuals regard their exchange partners. For individuals with high levels of mastery goals, the norm of reciprocity in information exchange becomes salient. They acquire a reciprocity orientation, which Poortlivet et al. (2007) defines as the confidence an individual has in the exchange of valuable information. This norm serves as a mechanism to establish information exchange

(Bowling, Beehr, & Swader, 2005; Eisenberger, Cotterell & Marvel, 1987) and reduces hesitancy in starting and continuing such exchanges (Gouldner, 1960).

Whereas learning goals encourage individuals to develop a reciprocity orientation, high performance goals function differently. Exchange partners are more likely to be viewed as rivals, and individuals may attempt to exploit the knowledge and talent of others instead of exchanging in mutual information exchange. As such, individuals with a high performance goal are more likely to develop an exploitation orientation, defined as the tendency to provide partners in an information exchange with as little information as possible as well as not wanting to profit from one's own information (Poortlivet et al., 2007, p.1437). This orientation develops because individuals with higher performance goals develop a greater focus on their own concerns and less on those of their information exchange partners, because they uses others as reference for performance or outperforming others.

Past research has also confirmed that goals and GOs can lead to cooperative or exploitative attitudes and cognitions. For example, Levy, Kaplan & Patrick (2004) demonstrated that learning goals were positively associated with intent to cooperate with peers; whereas, students with performance goals demonstrated a low willingness to cooperate with others (Midgley, Kaplan, & Middleton, 2001). Research in sport psychology has even shown that learning or mastery goals of athletes are related to sportsmanship attitudes and morally constructive team norm perceptions, whereas performance goals were associated with lower levels of these attitudes and perceptions (e.g., Ommundsen, Roberts, Lemyre, & Treasure, 2003). Further, Poortlivet et al. (2007) found that learning goals encouraged a cooperative social value orientation, while a performance goal encouraged a competitive one. Essentially, this stream of research confirms that goals, and by extension GOs, influence social dynamics: whereas, mastery or learning goals encourage the elaboration of information exchange with others, performance goals increase a hesitancy to share that information and distrust of others.

Achievement goals have also been shown to influence the degree to which individuals on teams can manage and elaboration information processing and conflict. Most importantly, GO has demonstrated links to sociocognitive conflict (Darnon, Muller, Schrager, Pannuzzo, & Butera, 2006), defined as conflict in which there is doubt both about the solution or content of a task,, as well as social confrontation between multiple people and doubt regarding each other's relative competence (Butera & Mugny, 2001; Limon, 2001). There is substantial conceptual overlap between sociocognitive conflict and team-level task and relationship conflict as defined in the management literature, as both type of conflict occur in situations where teams must both work together and deliberate over a complex problem-solving. Importantly, both sociocognitive conflict and team conflict can threaten perceptions of self-competence (Butera & Mugny, 2001; Butera, Mugny, & Tomei, 2000; Kauffeld, 2006; Darnon, Doll, & Butera, 2007). Specifically, conflict and disagreement regarding the completion of a task or solving a problem can undermine an individual's perception that they are competent to complete a task or correct in their understanding of a situation. This disagreement about the most effective course of action can lead individuals to question their initial decisions and reactions to a problem, leading to self-doubt and the threat of feeling or appearing incorrect or incompetent. Further, goals may also influence the degree to which individuals can effectively manage interpersonal disagreements or conflict with others. For example, Darnon, Butera, & Harackiewicz (2007) demonstrated that learning goals can improve learning when an individual is in disagreement with a partner, whereas individuals with a performance goal achieve better learning outcomes when in agreement with a partner. As such, GOs in so far as they determine, specific, tactical goals set, are also likely to influence the degree to which an individual can navigate social conflict to produce desired outcomes.

A limited amount of research in management and applied psychology has demonstrated that within a workgroup or team, interactions between individual and team

GO can influence individual-level outcomes. Perhaps the most notable example of this type of research is the previously mentioned Dierdorff & Ellington (2012), which demonstrated that individual-level growth in self-efficacy and metacognition were generally stronger when the individual-level learning GO of a member was similar to the average level of LGO on the team. However, several studies have demonstrated that goals or goal importance congruence among dyads, teams or work groups also influence lower-level or individual-level outcomes. For example, Kristof-Brown & Stevens (2001) studied the effects of goal similarity in project teams and found a congruence effect such that individuals were most satisfied and provided more individual contributions when both individual and team were high on performance goals.

## GO Similarity and Team Outcomes

Traditional P-G fit research examines individual-level outcomes that result from the interaction of individuals with their environments. Research on team composition takes the concept of individuals situated in teams and extends it to the team level, by examining the effects of team homogeneity (e.g, Stewart & Barrick, 2000) or aggregate individual-level fit to unit-level outcomes (e.g. Ostroff, Shin, & Kinicki, 2005). I propose that the analogous concept of GO congruence (i.e., fit) at the individual level is GO similarity at the team level. If P-G fit on GO can be described as the difference *between* the individual's GO and the team's mean GO, then GO similarityis the difference in GO *among* the team members. Two studies have examined how GO similarity influences team level outcomes. Pieterse, van Knippenberg, & van Ginkel (2011) examined GO diversity and found that GO diversity interacted with team reflexivity, or the extent to which the team reflect upon and communicate about the group's objects strategies, and processes, to predict team performance. The forms of the interactions suggested that low diversity in LGO and PPGO combined with low reflexivity produced the highest performance; however, more reflexive groups with high

PPGO diversity were more efficient. The study notes that more research should be conducted on the effects of differences in GO among team members, noting that GO is more than an intra-psychic phenomenon but also that differences in GO among members have important effects on groups in terms of information elaboration and team social processes. Russo (2012) expanded this work with a study of 24 teams, finding that GO diversity generally had positive effects on performance, and that this effect was mediated through information elaboration; however, this information elaboration was subject to moderation by the team environment such that diversity's negative effect occurred only when teams were less supportive and allowed members less voice. Again, the authors called for further research on how differences among GO in team members influenced both social processes and information sharing processes.

Thus, little research has examined how GO can aggregate to a group level of analysis and influence group level outcomes and processes. Such research would be an extension of the basic argument—congruence on GO among team members matters to individual-level outcomes—to the team level. This extension has important implications for research on GO and P-G fit, because it represents a necessary next step in the multilevel examination of GO in teams.

# CHAPTER III: HYPOTHESIS DEVELOPMENT

GO congruence at the individual level is best described as "the degree to which the GO of a team member is similar to the other members of that team." To understand how GO congruence can influence individual-level outcomes, I first establish how the effects of each dimension of GO can influence individual main effects outcomes. Second, I describe how the environment of other team members can amplify or mitigate the effects of an individual's GO on outcomes. Finally, I discuss in specific detail the mechanisms that link GO to outcomes and propose specific mediation hypotheses regarding these effects.

There are two theoretical frameworks that I use to develop my hypotheses regarding the effects of GO congruence on individual-level outcomes. First, I focus on similarity-attraction theory (Byrne, 1971), which stipulates that individuals who are around similar others will be drawn to and more positively evaluate people who are like them. This effect can occur when individuals share either high or low levels of a particular characteristic, including values, personality, and goals. In turn, this attraction to individuals who are similar can also lead individuals to engage in behaviors that help or support individuals that are similar to them (e.g., Chatoopadhyay, 1999; Lankau, Riordian, & Thomas, 2005). If individuals are similar, they have similar expectations regarding how they will be treated by others and may share similar assumptions and expectations about interpersonal interaction and communication (Lankau, Riordian, & Thomas, 2005; Basu & Green, 1995), which can influence the degree to which they are willing to work together and contribute to each other's mutual benefit.

Second, motivated action theory (MAT; DeShon & Gillespie, 2005) is a motivational theory specifically tied to goals and GO. Motivated action theory has two important tenents. First, goals are organized hierarchically and interdependently such that a given GO will lead individuals to set proximal goals and engage in motivational

processes (e.g., planning and goal-striving) consistent with their higher-order goals. Second, the MAT provides a theoretical apparatus to explain interactions between individual differences in goals and situational effects. The MAT's approach to situational influences on goals is based on the theory of structural alignment (Goldstone, 1994; Markman & Gentner, 1993), which states individuals respond positively to and are keenly aware of similarities between reference objects, including themselves and their environment. The MAT notes that the same objective situation (i.e., being on a team) can be perceived differently by individuals because of their GO. To understand individual action, one must understand how a people's goal structures effect their perception of a situation and how this perception activates the self-regulatory processes of those goals, which lead to subsequent behavior. In the context of this study, the GO of other team members serves as an environmental cue that that increases the activation if that GO in an iterative manner. In this case, the team members' GO activates the self-regulatory processes associated with a GO. Once these goals are activated, a reciprocal, iterative process occurs such that individual goals affect the perception of the situation, and the features of the present situation result in increased activation for those goals.

In the application of these theories to this study, there are two factors specific to GO that allow for a link between GO congruence and outcomes. First are the base effects of GOs on learning, process, and behavioral outcomes. GO dimensions are directly related to a number of important outcomes in learning and achievement situations (Payne, Youngcourt, & Beaubien, 2007). In the theoretical literature on GO, including the MAT, the relationship between goal orientation largely due to the effect of GO on an individual's *adaptive response pattern*, or a unique set of cognitions, behaviors, and attitudes that individuals develop in response to achievement situations as a means to pursue their goals (e.g., DeShon et al., 2004; Payne, Youngcourt & Beaubien, Vandewalle, 1997; Dweck, 1986). MAT suggests that these adaptive response patterns

linked to GO can be amplified or nullified depending on the contextual cues present for an individual.

Second is the type of social interactions and self-regulatory actions that GO promotes at the individual level. In this case, both MAT and similarity-attraction theory suggest that the effects of GO on these outcomes may be amplified by contextual cues, be they a congruent situation or similar others who individuals like and either mimic or support as a result of that liking. The mean GO of other team members promotes specific types of social interactions and self-regulatory process (Poortvliet & Darnon, 2010; Pintrich, 2000; Porath & Bateman, 2006). As such, congruence effects may occur because the social environment produced by the mean level of the other team members' GO activates the GO of an individual, increasing or decreasing the GO-outcome relationship by encouraging cognitions and response patterns that help or hinder the development of goal-relevant outcomes as predicted in MAT or cue similarity-attraction processes because individual respond more strongly to social cues from similar others. In each of the following sections, I will use these three factors to explain how GO congruence on each dimension can influence individual-level outcomes.

## Hypotheses related to GO Congruence and cooperative behavior

As previously established, LGO describes the degree to which individuals desire to develop themselves by acquiring new skills, mastering new situations, and improving competence (Vandewalle, 1997). Further, individuals with higher levels of LGO tend to use internal motivational referents as measures of skill acquisition. Further, higher levels of LGO are associated with the adoption of specific, tactical mastery goals, which lead individuals to develop a reciprocity orientation in regards to interactions with others (Poortvliet, Jannsen, Yperen, & Vliert, 2007). This type of a reciprocity orientation leads to positive and social interactions with collaborators or fellow team members (Poortvliet

et al., 2007), including the sharing of helpful information and engaging behaviors that support collaborators. This occurs because the pursuit of mastery goals and the subsequent adoption of a reciprocity orientation leads individuals to perceive collaborators or teammates as *allies*. Exchanging knowledge and skills with others are viewed as a way to facilitate the accomplishment of goals that individuals have for developing their own competence and successfully mastering tasks. Further, learning goals can lead individuals to have strong intentions to engage in task-related collaboration with peers (Poortvliet et al., 2009). As such, a positive relationship should exist between an individuals' LGO and their helping or cooperative behaviors. This occurs because individuals with higher levels of LGO develop a reciprocity orientation toward collaborators and perceive fellow-group members as being helpful allies in achieving their own mastery goals (Poortvliet et al., 2007).

Being on a team with a group of high-LGO individuals should intensify the relationship of LGO with individual cooperative behavior. Porter (2005) provides a theoretical rationale for why higher mean LGO within a team encourages cooperative behaviorsbehaviors, defined as behaviors with express intent to support or aid other team members. First, because high-LGO individuals are less concerned with looking foolish while developing competence, they are willing and able to ask for assistance when needed. Second, cooperative behaviorsbehaviors are consistent with the type of adaptive response pattern (Dweck, 1989) linked to LGO. This response pattern includes seeking feedback, asking for help, and exchanging helpful information that leads to learning. Most importantly, Porter (2005) suggests that members of the team will proactively help other team members to complete their own goals, suggesting that the mean level of LGO in the team creates an environmental condition in which individuals receive assistance and support as they develop adaptive response patterns in the pursuit of their mastery goals.

The logic of similarity-attraction theory (Byrne, 1997) suggests that when teammates are similar to each other, they will respond by feeling a stronger identity and bond with other members. In the context of LGO, this reaction can occur at both high and low levels of LGO. When high-LGO individuals are on teams with other high-LGO individuals, they will respond positively to the reciprocity orientation of others on their team. This encourages the development of helping behaviors. In addition, the high level of reciprocity orientation among team members encourages positive cooperative norms such that behaviors to assist other team members will be reciprocated. As such, they are more likely to be willing to cooperate with individuals who want to cooperate with them. When individual and team-level LGO are congruent but low, individuals will still engage in higher levels of knowledge sharing and cooperative behaviorsbehaviors in a team context than when incongruence occurs. This effect occurs because, according to similarity-attraction theory (Byrne, 1971), team members develop similar expectations about interpersonal interactions and the amount of help they can reasonably expect from others due to similar reciprocity orientations. Even though both individual and team LGO are low, and thus both individual and team reciprocity orientations are low, individuals have similar expectations regarding reciprocity. Individuals expect lower levels of initial helping behaviors and knowledge sharing from teammates and get it. Because expectations are met, the person experiences fewer negative emotions and less psychological distress than if their expectations about helping behaviors were not met (Walster, Walster, & Bersceid, 1978). Meeting expectations encourages a sense of equity and a willingness to engage in future knowledge sharing and helping behaviors directed toward other team members (Bowling, Beehr, & Swader, 2005). Therefore, there should be a congruence effect between an individual's LGO and the team's mean LGO in predicting helping behaviors, such as cooperative behaviorsbehaviors and knowledge sharing behaviors. However, when both individual and team LGO are low, there will be

an overall lower level of this type of behavior because the main effect of LGO on cooperative behaviorsbehaviors will be lower (Porter, 2005).

Alternatively, incongruence between an individual's LGO and the team's LGO should produce lower levels of helping behaviors from that individual than any case of LGO congruence. If individuals are high in LGO but on a team with a low mean LGO, they will be less likely to engage in helping behaviors because they view team members, who have low mean LGO and consequently lower reciprocity orientation, as being less willing to engage in reciprocity. Further, they are less likely to receive helping behaviors because the other members are less likely to proactively provide or seek out support. There, the efficacy of reciprocity exchanges of mutually beneficial support will be very low. Conversely, a low-LGO individual on a team with a high mean LGO may receive proactive support from other members, but is less likely to reciprocate because he or she is less likely to see other individuals as cooperative allies and may question the motives behind their helping behaviors. As such, congruence between an individual and a team's LGO will lead to that person engaging in more helping behaviors (i.e., knowledge sharing and cooperative behaviorsbehaviors) because of a positive feedback loop that results from perceiving others as helpful allies in achieving mastery. Incongruence will not provide such a loop and instead may promote distrust and low efficacy for helping.

*H1: LGO congruence with team members will lead to an individual having higher levels of (a) knowledge sharing and (b) cooperative behaviorsbehaviors than LGO incongruence, and (c) this effect will be stronger for high-high LGO configurations as opposed to low-low configurations.*

A performance-prove GO (PPGO) describes the degree to which individuals desire to be perceived as competent and to demonstrate their ability to others (Vandewalle, 1997). Individuals with a higher level of PPGO tend to use external motivational referents to measure the degree to which they are accomplishing goals, which is a logical extension of the desire to be perceived as competent and capable. In

fact, some research suggests that PPGO and the adoption of performance goals implies a motivational desire not to just demonstrate competence but superiority with respect to these external referents or peers (Poortvliet, Jannsen, Yperen, & Vliert, 2007). Further, higher levels of PPGO are associated with the adoption of specific, tactical performance goals, which can lead to an exploitation orientation in interpersonal interactions (Poortvliet, Jannsen, Yperen, & Vliert, 2007). An exploitation orientation encourages the view that collaborators and team members are *rivals*. In this case, individuals with high PPGO have to reconcile two separate cognitions: they are interested in cooperating with their other team members in order to achieve a high level of performance, but they may also see their other team members as rivals who they are unwilling to help. Furthermore, high-PPGO individuals may be reluctant to engage in helping behaviors because they believe others share their exploitation orientation and will seek to exploit them. As Poortvliet et al. (p. 1437, 2007) says, "[G]iving others as little information as possible while strongly profiting from their information is a logical strategy when pursuing a performance goal." As such, high-PPGO individuals are likely to engage in fewer helping behaviors to teammates than will low-PPGO individuals.

Being on a team with a high mean PPGO can present a high-PPGO individual with two contradictory cognitions regarding helping behaviors. A high-PPGO team will more quickly establish norms and routines that emphasize the demonstration of personal accomplishment and superiority (Porter, Webb, & Gogus, 2010), yet the desire for high team performance can encourage individuals to help others in order to meet the high team performance level desired. At the team level, seeking out helping behaviors is likely to be viewed as an expression of incompetence. Because team norms make this expression less desirable, individuals may be less likely to engage in helping behaviors towards other team members because fellow team members refuse to ask for assistance. However, team norms would also encourage individuals to do whatever it takes (including helping each other) in order to achieve desired levels of performance. This will be particularly true if

the team members believe a task is to difficult or complex to complete alone. As such there are good reasons for a high-PPGO context to both encourage or inhibit helping behaviors.

Despite these contradictory pulls, based on MAT, I expect there will be a congruence effect between an individual's PPGO and the team's mean PPGO in predicting helping behaviors. When high-PPGO individuals are on a team with a high mean PPGO, they will respond to the social norms in play that encourage focus on the desired levels of performance and the valence of of high team performance over the desire to demonstrate competence or superiority over other team members. This congruence effect will occur more often in situations where the task to complete is complex and requires effective coordination and teamwork, because team members will see helping behaviors as more instrumental to achieving desired performance levels. Even though high-PPGO individuals will tend to view each other as rivals as opposed to allies, the reward attached to maintaining desired levels of team performance will focus on individuals on coordinating to achieve desired team performance levels. In effect, this focus on performance and its importance in PPGO-congruence situation will allow for these individual view teammates as begrudging allies as opposed to rivals and use helping behaviors instrumentally to improve overall team effectiveness. As such, individuals will be more willing to cooperate with their fellow team members as they see their fellow team members as instrumental to meeting a goal of demonstrating performance and competence.

When both individual and team PPGO are low, individuals will still engage in relatively high levels of knowledge sharing and cooperative behaviorsbehavior. This will also because expectations of performance are similar between the individual and team members, leading to similarity and a sense of shared identity and commitment among team members that will lead team members to provide help to similar others. This will also occur because when both the team and individual are low on PPGO, the similarity

between the person and situation will still activate these performance-prove orientation goals, which will lead individuals engaged in difficult, interdependent teamwork to engage in helping behaviors as a way to achieve the desired level of performance, even if that overall level of performance is relatively low. Again, this effect will be lower for low-low PPGO congruence, as the valence is lower for a high performance level and thus the motivational response pattern of using helping behaviors to instrumentally improve performance will be less salient.

In the case of incongruence, the similarity-attraction principle will produce less positive evaluations of other teammates because of their differences. In other words, individuals will have adverse reactions to discrepancies between their PPGO and the team's PPGO. When a low-PPGO individual is on a high-PPGO team or a high-PPGO individual is on a low-PPGO team, there will be disparity in exploitation orientations. For high-PPGO individuals on a low-PPGO team, members of the team will regard that individual as being overly exploitative and not willing enough to engage in reciprocal helping behaviors. In contrast, a low-PPGO individual on a high-PPGO team will have an orientation that runs counter to the more exploitative behaviors of other members. These discrepancies in orientations will cause individuals to view themselves as different from the other team members in terms of how much they are willing to help and what their expectations are regarding receiving this help. Because expectations regarding reciprocity and exploitation are left unmet, individuals will be less likely to provide helping behaviors to other members.

*H2: PPGO congruence with team members will lead to an individual having higher levels of (a) knowledge sharing and (b) cooperative behaviorsbehaviors than PPGO incongruence, and (c) this effect will be stronger for high-high PPGO configurations as opposed to low-low configurations.*

A performance-avoid GO (PAGO) describes the degree to which individuals desire to demonstrate competence to others by avoiding situations in which their

effectiveness is not guaranteed. Like individuals high in PPGO, individuals high in PAGO also tend to use external motivational referents a measures of the degree to which they can avoid displays of incompetence. Further, higher levels of PAGO are associated with the adoption of specific, tactical avoidance goals, which like other performance goals, can lead individuals to develop an exploitation orientation in regards to interactions with others. Individuals who have a high PAGO will avoid interactions where they are not certain they can demonstrate competence and will be hesitant to help others who appear to be failing because they are unsure of their own abilities. Further, being on a team with a high mean PAGO will encourage a group norm of avoiding helping behaviors, as they are an ambiguous opportunity that could cause an individual to demonstrate incompetence.

Based on the MAT, (DeShon & Gillespie, 2005), I expect to observe an inverse congruence effect such that when both the individual and the team are high on PAGO that individual will engage in fewer helping behaviors. According to the MAT, when there is structural similarity between an individual's goals and the context of those goals, the effects of those goals are activated and enhanced because the situation's alignment with the individual's GO causes that GO to become more salient. When both the team and individual are high on PAGO, individuals will be prone to self-defeating and negative adaptive patterns that do not support helping behaviors. Other team members will encourage those patterns. In cases where both team and individuals are low on PAGO, individuals will still reinforce and active each other's detrimental adaptive responses, even if the overall level of these detrimental adaptive responses will be somewhat lower than if individuals were all high on PAGO.

When PAGO incongruence occurs, there is no structural alignment between the individual's GO and the team environment. Because of this incongruence, individuals are more likely to be able to break the negative cycle of maladaptive response patterns that can occur over time. As a consequence, there are more opportunities for individuals on a

team to observe different types of adaptive response patterns. Further, when PAGO incongruence occurs, there will be differing expectations regarding the level of necessary risky interpersonal interaction, such as sharing ideas or information that is not common to all team members. When some individuals demonstrate the ability to take risks and share knowledge, they can in engage in more helping behaviors than a team in which the norms regarding avoidance goals would make such risk tasking difficult and less common.

*H3: PAGO congruence with team members will lead an individual to lower levels of (a) knowledge sharing and (b) cooperative behaviorsbehaviors than PAGO incongruence, and this effect will be stronger for high-high PAGO configurations as opposed to low-low configurations.*

## Hypotheses related to GO Congruence and Process Outcomes

In addition to influencing cooperative behaviors among group members, GO congruence may also be related to other cognitive and affective evaluations of group phenomena. I focus on three important types of group phenomenon—commitment to the team, perceptions of conflict, and perceptions of psychological safety—for three reasons. First, different studies have demonstrated that an individual's GO or the GO of team members can influence commitment to that team (Porter, 2005; DeShon et al., 2004; Payne et al., 2007). Thus, they are likely to interact as well. Second, I focus on conflict because ample evidence suggests that task and relationship conflict are central to understanding how teams function effectively (e.g., DeDreu & Weingart, 2003), and evidence suggests that heterogeneity or homogeneity on personal characteristics are a key determinant of of conflict (Stewart, 2006; Webber & Donahue, 1991; Stewart, 2003; Barry & Stewart, 1997). Thus, conflict perceptions seem a probable outcome of GO congruence. Third, GOs have been found to influence sociocognitive conflict regulation and the management of perceived disagreement with others (Darnon et al., 2007; Darnon

et al., 2006), which is also related to the degree to which individuals see the group as a safe place to take interpersonal risks (Edmondson, 1999).Thus, psychological safety perceptions seem a probable outcome of GO congruence.

*Commitment.* Commitment is a central concept in psychology (Morrow, 1993), best defined as a willingness to persist in a course of action (Cooper-Hakim & Viswesvaran, 2005). When this concept is applied in a team context, it refers to the relative strength of an individual's identification with and involvement in the team (Bishop, Scott, & Burroughs, 2000), and that individual's willingness to persist in courses of action that directly or indirectly benefit the team. Research has shown that many benefits of teams are directly related to the degree of commitment among team members (Becker, 1992; Bishop & Scott, 1997; Neininger et al., 2010).

*Conflict.* Conflict among team members is a key process variable that determines outcomes for teams, including performance, satisfaction and cohesion (De Dreu & Weingart, 2003). As past research has noted, although small amounts of conflict may be helpful in terms of deliberation regarding team assignments or through devil's advocacy to promote discussion (Schwenk, 1990), this positive effect breaks down when conflict becomes less structured or more intense (Carnevale & Probst, 1998). This perspective reflects an information-processing perspective: too much conflict shuts down information processing, impeding team performance (De Dreu & Weingart, 2003). Jehn (1995) proposed a perspective on two types of conflict—task conflict and relationship conflict—as a way to delineate what types of conflict can either enhance or impede performance. However, recent meta-analytic research has suggested that in general, any type of conflict has negative effects on team functionality and team member satisfaction (De Dreu & Weingart, 2003). As such, investigating determinants of conflict can help to elucidate the processes linking team characteristics to outcomes for a team.

*Psychological Safety*. Psychological safety is defined as a belief that an environment is safe for interpersonal risk tasking (Edmondson, 1999). Psychological

safety has been investigated in both a team context (e.g., Edmondson, 1999) as well as broader work contexts (e.g., Walumbwa & Schaubroeck, 2009; Nembard & Edmondson, 2006; Kahn, 1990). In the context of this hypothesis, I refer to psychological safety not as a shared belief among team members, but an individual team member's perception that the team environment is safe for interpersonal risk taking. Believing a team is a safe allows people take risks and complete challenging tasks necessary for the effective functioning of a team. As such, an individual's belief in the team's psychological safety serves as an important mechanism that facilitates the completion of individual task assignments in a team.

According to similarity-attraction theory (Byrne, 1971), individuals who are similar will form stronger bonds than individuals who are more similar to them and experience lower levels of stressful and difficult cognitions when interacting with them. For both LGO and PPGO, I anticipate a congruence effect such that when there is congruence between the individual's level of GO and the team's mean level of GO, individuals will feel a stronger sense of commitment and reduced levels of conflict. When congruence occurs on the LGO dimension, a shared belief exists that individuals support and foster similar adaptive response patterns. In this case, the congruence between an individual and their team encourages commitment to the team members and their goals because of similarity between individuals and their team's perceived goals (Kristof-Brown & Stevens, 2001). MAT also supports these hypotheses. Past research has demonstrated the adoption of similar goals or the prioritization of similar goals can also stimulate an increased sense of satisfaction and commitment to a team and its members (Colbert et al., 2008; Kristof-Brown & Stevens, 2001; Witt, 1998; Vancouver et al., 1994; Vancouver & Schmitt, 1991).

According to similarity-attraction theory, commitment and similar types of attachments lead to greater commitment and less conflict with individuals who are similar, and a stronger desire to maintain group affiliation (Lincoln & Miller, 1979;

Wharton & Baron, 1987). Because high-LGO individuals foster cooperative norms, they are more likely to respond to challenges by expressing commitment and a willingness to cooperate with other teams members. When congruence occurs on the PPGO dimension, having individuals direct energy toward similar performance goals can lead to a sense of equitable distribution of tasks as well as satisfaction with and commitment to the team's priorities and task strategies. In addition, congruence between individual and team PPGO can foster agreement on specific, tactical goals set for the team, foster less task and relationship conflict among members as teams work together.

According to similarity-attraction theory, incongruence produces lower levels of commitment and higher levels of conflict because individuals perceive situations differently and have different expectations regarding interactions with others. In the case of LGO and PPGO incongruence, incongruence could produce dissimilar expectations about the performance and learning level of a team as well as the values espoused by other team members. When this occurs, individuals are less likely to feel committed to the team. Similarly, LGO and PPGO influence how individuals approach and solve problems in complex or difficult tasks. When an individual is incongruent with his or her team, he or she may view a problem differently or want to solve a problem facing the team in a way fundamentally different from the other team members, leading that team member to feel less committed to the team and experience greater conflict with his or her team in resolving complex or difficult task-related work for the team. As such, I hypothesize the following:

*H4a: LGO congruence will lead to higher levels of commitment as compared to LGO incongruence.*

*H4b: LGO congruence will lead to lower levels of conflict perceptions as compared to LGO incongruence.*

*H5a: PPGO congruence will lead to higher levels of commitment as compared to PPGO incongruence.*

*H5b: PPGO congruence will lead to lower levels of conflict perceptions as compared to PPGO incongruence.*

Although similarity-attraction theory suggests that individuals who are similar to each other find greater degrees of commitment and satisfaction among team members, when traits are maladaptive, individuals may find that they have too much of a bad thing. Past research has shown that similarity on traits such as negative affectivity and dissatisfaction can increase the frequency of conflict and absenteeism in teams (Barsade et al., 2000). I argue that congruence on the PAGO dimension elicits similar responses. In this case, MAT would also suggest that when both the team and the individual are similar in goal-avoidant behavior, this creates less willingness to engage with other individuals and makes the formation of meaningful bonds among members more difficult. When individuals and the team are congruent on goal-avoidance motivation, even when that motivation is relatively low, individuals will experience less motivation to engage with other individuals on the team, decreasing their commitment to other members, and be more disengaged in team activities, leading to greater conflict among members.

When there is incongruence on PAGO dimensions, MAT suggests that the negative aspects of PAGO will be less likely to surface because the incongruence between the person and the team means that the negative effects of PAGO congruence are less likely to surface (DeShon & Gillespie, 2005). In this case, incongruence between individual and team PAGO allows for individuals to engage in more effective response patterns and communication because the avoidant goals of PAGO are not activated, which allows for individuals to form bonds with other team members.

*H6a: PAGO congruence will lead to lower levels of commitment as compared to PAGO incongruence.*

*H6b: PAGO congruence will lead to higher levels of conflict perceptions as compared to PAGO incongruence.*

GO dimensions should be related to perceptions of psychological safety based on the types of social exchange orientations associated with each dimension. In the case of LGO, a reciprocity orientation is supported (Darnon et al., 2007), suggesting that individuals will develop perceptions of psychological safety because they see other team members as helpful allies, who will support risk taking on the team. In the case of PPGO, high-PPGO individuals are more likely to have an exploitation orientation, suggesting that they expect others to also be willing to exploit them, resulting in low levels of perceived safety. In the case of PAGO, individuals will likely perceive low levels of psychological safety, both because they have an exploitation orientation in regards to their peers and because they seek to avoid interpersonally risky situations that may result in demonstrating incompetence.

Applying similarity-attraction theory to the GO-psychological safety relationship, GO congruence should enhance and reinforce the perceptions of psychological safety (or lack thereof), because interactions with similar team members creates a cycle of reinforcement and belief validation regarding that psychological safety belief. For example, high-LGO individuals on a high-LGO team will find that their risky interpersonal interactions in the pursuit of team goals will result in positive reciprocity from other team members, facilitating the development of psychological safety. In further, support of this theory, MAT suggests that this type of congruence reaction will also occur in low-low congruence situations because even if these goals are relatively low, the congruence between the person and the situation will cause the self-regulatory and motivational processes related to LGO to trigger and become relevant, increasing the positive effects of LGO on individuals' beliefs about a psychologically safe environment (DeShon & Gillespie, 2005). When PPGO congruence occurs, individuals will find that the competitive and exploitative orientation they have is matched by team members, making interpersonal interactions more risky and reducing an individual's perception of psychological safety. Similarly, high-PAGO individuals on a high-PAGO team will find

that that their avoidance strategy regarding the completion of tasks and interpersonal interactions will be met with similar avoidance reactions from team members, reinforcing the higher psychological safety beliefs of the high-PAGO individual.

In the case of incongruence, there is a structural misalignment between the motivational processes of an individual with his or her fellow team members. This misalignment leads to misunderstandings and a lack of connection between the individual and the team in terms what constitutes psychological safety. For example, a low-LGO person on a high-LGO team may find that his or her team asks that individual to take too many interpersonal risks, which can lead to a decreased sense of psychological safety for that individual. Conversely, a high-LGO person may find that they are more willing to engage in behaviors that lie outside the norm of the other group members, leading that individual to feel lower levels of psychological safety. As such, I hypothesize the following:

*H7: LGO congruence will lead to higher levels of individual psychological safety perceptions.*

*H8: PPGO congruence will lead to lower levels of individual psychological safety perceptions.*

*H9: PAGO congruence will lead to lower levels of individual psychological safety perceptions.*

## Hypotheses related to GO Congruence and learning outcomes

GO dimensions have been established in the literature to support the development of adaptive and maladaptive response patterns that influence the completion of learning and tasks (Dweck, 1986; DeShon & Gillespie, 2005). Further, the MAT suggests that when situations are structurally aligned with an individual's GO, the self-regulatory and motivational mechanisms associated with that GO dimension will be activated,

amplifying the positive or negative effects of that GO on outcomes. In the case of LGO congruence, individuals will sustain effort and persist in learning tasks and contributions to team processes. Further, a high-LGO individual on a high-LGO team will find that others are supportive of his or her motivational persistence, and will find direct or indirect support for mastery motivations in the face of difficult circumstances. In the case of PPGO congruence, individuals will gear self-regulatory activity towards the demonstration of competence at the cost of learning, perhaps by choosing tasks that are easy over tasks that would require the individual to learn new knowledge. Further, these individuals will find that their team context supports of their focus on meeting performance goals set within the team. As such, PPGO congruence will create a negative feedback loop for learning but a positive one for performance through task contributions. These individuals will find that the team context bolsters both their types of goal-setting processes and motivational adaptations that discourage learning but promote the meeting of performance approach goals. In the case of PAGO congruence, individuals will develop both a maladaptive learning response pattern and avoid difficult tasks set before them, including the completion of challenging or unknown tasks. As such, PAGO congruence will lead to lower levels of both individual learning and individual contributions to the team.

According to MAT (DeShon & Gillespie, 2005), structural misalignment between person and situation is less effective in activating the motivational processes associated with a goal. When LGO incongruence occurs, the structural misalignment predicted in MAT means that the motivational processes associated with learning are less activated. Compared to an LGO-congruent situation, individuals in LGO-incongruent situations are less likely to develop adaptive response patterns and to persist in the face of difficulty. As such, their levels of individual contributions to the team and learning will be lower. When PPGO incongruence occurs, structural misalignment has two effects. First, individuals are less likely to be motivated to achieve high performance goals in the form of

individual contributions to the team because the motivation to demonstrate competence to others is less salient. Second, the inhibitory effects of PPGO on learning are also less likely to be activated; meaning learning will be higher in a PPGO-incongruent situation as compared to a congruent one. Finally, when there is incongruence between individuals on PAGO, individuals are less likely to see their avoidance goals as salient, meaning the negative motivational effects of PAGO on learning and performance are less likely to occur. As such, I predict the following:

*H10: LGO congruence will lead to higher levels of (a) learning and (b) individual contributions to the team.*

*H11: PPGO congruence will lead to lower levels of (a) learning but higher levels of (b) individual contributions to the team.*

*H12: PAGO congruence will lead to lower levels of (a) learning and (b) individual contributions to the team.*

## Mediation Hypotheses

One of the primary purposes of this study is to further develop and understand the degree to which different sets of mediators—interpersonal affiliation processes and self-regulatory processes—may mediate the relationship between GO congruence and outcomes. According to similarity-attraction theory (Byrne, 1971), individuals who find themselves surrounded by similar others should experience cognitions that increase interpersonal affiliation processes, which can lead to higher levels of outcomes because individuals feel that they can understand, bond with, and communicate more effectively with similar others. Examples of these interpersonal affiliation processes include trust, attraction, and communication (Edwards & Cable, 2009). In addition, according to MAT (DeShon & Gillespie ,2005), when individuals are in situations that are aligned with their GO, that GO dimension will become more salient to an individual, and the motivational and self-regulatory processes associated with that GO dimension will be more activated.

Examples of the self-regulatory processes associated with GO include metacognition and self-efficacy (Payne, Youngcourt, & Beaubien, 2007; DeShon & Gillespie, 2005).

Research in the OB/HR and educational psychology literature has clearly established that GO has direct effects on self-regulatory processes, such as self-efficacy and metacognition (Ford et al., 1988). In addition, research in educational and social psychology has increasingly demonstrated that GO also has effects on interpersonal affiliation processes (Poortvliet et al., 2007; 2009). Yet these processes have not been studied simultaneously, or in the context of congruence. As such, it is important to study how congruence can amplify the effects of the mechanisms that link GO to outcome relationships, particularly in the context of well-established theories that can clearly specify the types of congruence relationships I expect to observe.

*Interpersonal Processes: Trust, Attraction, and Communication*

*Trust.* Trust is a person's willingness to be vulnerable to the actions of another person with the expectation that those actions will not harm oneself (Hosmer, 1995; Mayer, Davis, & Schoorman, 1995; Williams, 2001). Past research has indicated that shared perceptions about the world, including values and goals, promote the development of trust (Christiansen, Villanova, & Mikulay, 1997; Jehn & Mannix, 2001; Lau, Liu, & Fu, 2007). Similarly, congruence on reciprocity beliefs, such as those that are developed via GO, have also been shown to foster trust among coworkers (Edwards & Cable, 2009). GO congruence can foster trust because trust is likely to develop and persist when people value similar beliefs and goals (Elangovan & Shapiro, 1998; Jones & George, 1998; Mayer et al., 1995; McAllister, 1995; Sitkin & Roth, 1993; Williams, 2001). GO congruence can also foster trust by promoting perceptions of fairness among teammates, meaning that they believe their team follows acceptable principles (Mayer et al., 1995) and shares similar assumptions about the "right way" to complete assigned work (Jones & George, 1998; Sitkin & Roth, 1993). Similarly, GO incongruence leads to disagreements about the right way to complete assigned work, decreasing the degree to

which everyone agrees on how to approach problems. Trust also has roots in predictability, such that other teammates are more likely to be viewed as trustworthy when their behavior is consistent, reliable, and able to be anticipated (Butler, 1991; Mayer et al., 1995; Sitkin & Roth, 1993; Zucker, 1986). An individual on a team with similar GOs will be better able to predict and anticipate his or her teammates' behavior, promoting trust. Similarily, when individuals are on a team with dissimilar GOs, that individual will be less able to predict and anticipate his or teammates' behavior, leading to less trust. As such, I expect that trust will mediate the effects of LGO and PPGO congruence on interpersonal outcomes and process outcomes:

*H13: Trust will mediate the effects of LGO congruence on (a) interpersonal outcomes such as knowledge sharing and cooperative behaviorsbehaviors and (b) process outcomes such as commitment, conflict and psychological safety perceptions.*

*H14: Trust will mediate the effects of PPGO congruence on (a) interpersonal outcomes such as knowledge sharing and cooperative behaviorsbehaviors and (b) process outcomes such as commitment and conflict perceptions.*

In the case of PAGO congruence, the mediation effect is less clear. According to similarity-attraction theory, individuals will prefer to interact with individuals similar to them, increasing trust for those individuals in congruent situations and decreasing it in incongruent situations. However, the MAT would offer a different prediction for PAGO because it is an avoidant orientation, and sometimes similarity on negative or avoidant traits can lead to distrust or withdrawal from a group (e.g., Barsade et al., 1997). According to MAT, PAGO congruence would activate avoidant behaviors which could lead others to distrust that person. For example, because individuals who are high in PAGO avoid risky situations, and trusting others is inherently risky, MAT would suggest that individuals in PAGO-congruence situations would be more motivated to avoid taking risks, such as trusting others. Because the two theoretical perspectives offer differing

positions on the effects of PAGO congruence on trust, I ask the following research question:

*RQ1: Will trust will be negatively related to PAGO congruence and mediate its effects on (a) interpersonal outcomes such as knowledge sharing and cooperative behaviorsbehaviors and (b) process outcomes such as commitment, conflict and psychological safety perceptions?*

*Attraction*. Within the realm of similarity-attraction theory, attraction is often discussed as a mechanism though which congruence can affect outcomes (Jehn, 1994; Jehn, Chadwick, & Thatcher, 1997; Jehn, Northcraft, & Neale, 1999;Kalliath, Bluedorn, & Strube, 1999; Meglino, Ravlin & Adkins, 1998; van Vianen, de Pater, Kritsof-Brown, & Johnson, 2004; van Vianen, 2000). According to similarity-attraction theory, interactions with similar individuals are attractive because they affirm one's own beliefs. In the context of this study, attraction refers to the degree to which an individual perceives liking and friendship toward other teammates (Berscheid, 1985). GO congruence is conducive to attraction because agreement on goal and the way to achieve it promotes harmony and cooperation among team members (Nemeth & Staw, 1989). Further, the positive feelings from those interactions are ascribed to the similar teammates who are the source of affirmation (Byrne, 1971; Newcomb, 1956). Similarly, GO incongruence implies that individuals have fundamentally different perceptions on the relative importance of task-specific goals and how to promote harmony and effective group processes. This lack of agreement regarding what is important can lead individuals to find each other less attractive as teammates. As such, I anticipate that the effects of LGO and PPGO congruence on outcomes will be mediated through attraction.

*H15: Attraction will mediate the effects of LGO congruence on (a) interpersonal outcomes such as knowledge sharing and cooperative behaviorsbehaviors and (b) process outcomes such as commitment and conflict perceptions.*

*H16: Attraction will mediate the effects of PPGO congruence on (a) interpersonal outcomes such as knowledge sharing and cooperative behaviorsbehaviors and (b) process outcomes such as commitment and conflict perceptions.*

In the case of PAGO congruence, the mediation effect is again unclear. According to social-attraction theory, individuals will be more attracted to individuals similar to them, increasing attraction for those individuals in congruent situations and decreasing it in incongruent situations. However, MAT would suggest that because PAGO is an avoidant orientation, its effects will differ from those of LGO and PPGO such that and sometimes similarity on negative or avoidant traits activates avoidant behaviors or negative behaviors that make individuals less attractive as teammates. Such behaviors would include refusal to take on difficult or complex tasks, frequent procrastination, and cognitive distraction. Working with such a teammate could prove unattractive, even if you do this yourself. Because the two theoretical perspectives offer differing positions on the effects of PAGO congruence on trust, I ask the following research question:

*RQ2: Will attraction be negatively related to PAGO congruence and mediate its effects on (a) interpersonal outcomes such as knowledge sharing and cooperative behaviorsbehaviors and (b) process outcomes such as commitment and conflict perceptions?*

*Communication.* In this study, communication refers to refers to the open exchange of information through formal and informal interactions among organizational members (Goldhaber, Yates, Porter, & Lesniak,1978). Communication is critical to the effective functioning of teams, including the completion of individual-level tasks and objectives. The broader literature on similarity-attraction theory suggests that interpersonal similarity can facilitate both frequency and quality of communication exchange, including that between team members (Jablin, 1979; Lincoln & Miller, 1979; Padgett & Wolosin, 1980; Roberts & O'Reilly, 1979; Smith, Smith, Sims, O'Bannon, & Scully, 1994; Swann, Polzer, Seyle, & Ko, 2004; Triandis, 1959; Williams & O'Reilly,

1998; Zenger & Lawrence, 1989). GO congruence, like other forms of congruence, can facilitate communication among team members (Erdogan & Bauer, 2005; Erdogan, Kraimer, & Liden, 2004; Kalliath et al., 1999; Kemelgor, 1982; Meglino & Ravlin, 1998; Meglino, Ravlin, & Adkins, 1989, 1991; Posner, Kouzes, & Schmidt, 1985; van Vianen et al., 2004). According to similarity-attraction theory, GO congruence should promote communication because having shared standards regarding the adoption of goals and how to complete those goals establishes a shared framework for describing, classifying, and interpreting events (Erdogan et al., 2004; Meglino & Ravlin, 1998; Schall, 1983). This shared perceptual framework facilitates information exchange while also reducing the likelihood and effects of misunderstandings (Kalliath et al., 1999; Meglino et al., 1989, 1991). GO congruence also implies that teammates share a common approach to cognitive processing, such as how verbal and nonverbal communication among teammates are encoded and decoded (Wiener, Devoe, Rubinow, & Geller, 1972). These similarities can further enhance communication (Kalliath et al.,1999; Meglino et al., 1989, 1991). In contrast, when GO incongruence occurs, individuals are less likely to share standards regarding verbal and non-verbal communication, and it is more likely that individuals will not share perceptual frameworks that would facilitate information exchange. As such, I hypothesize that communication will mediate the effects of LGO and PPGO congruence on outcomes.

*H17: Communication will mediate the effects of LGO congruence on (a) interpersonal outcomes such as knowledge sharing and cooperative behaviorsbehaviors and (b) process outcomes such as commitment and conflict perceptions.*

*H18: Communication will mediate the effects of PPGO congruence on (a) interpersonal outcomes such as knowledge sharing and cooperative behaviorsbehaviors, and (b) process outcomes such as commitment and conflict perceptions.*

In the case of PAGO congruence, the mediation effect is again unclear. According to social-attraction theory, individuals will be more able to communicate with individuals

similar to them because they share perceptual frameworks that facilitate information exchange. Again, according to MAT, because PAGO is an avoidant orientation, it would activate avoidant responses to stimuli, including a reluctance to communicate with other team members, particularly in regards to information exchange about difficult or complex tasks. Because the two theoretical perspectives offer differing positions on the effects of PAGO congruence on trust, I ask the following research question:

*RQ3: Will communication negatively be related to PAGO congruence and mediate the effects of PAGO congruence on (a) interpersonal outcomes such as knowledge sharing and cooperative behaviorsbehaviors and (b) process outcomes such as commitment and conflict perceptions?*

*Self-Regulatory Processes: Metacognition and Self-Efficacy*

*Metacognition*. Metacognition is defined as both the awareness of one's own cognition and the regulation of it (Brown, 1975; Leonesio & Nelson, 1990). Specific metacognitive skills include planning, monitoring, and revising goal-directed behavior (Brown, Bransford, Ferrara, & Campione, 1983; Schoenfeld, 1985). These skills also include understanding the relationship between task demands and one's capabilities and preferences in goal development and pursuit (Pressley, Snyder, Levin, Murray, & Ghatala, 1987), and regulating or evoking appropriate strategies (Bereiter & Scardamalia, 1985).

According to the MAT, when person and team GO is congruent, the motivational processes, good or bad, associated with a GO dimension will be activated because that goal is more salient to an individual (DeShon & Gillespie, 2005). Examples of these self-regulatory behaviors include planning, forecasting, and revising goal directed behavior, which is included as part of metacognition. For example, in the case of LGO congruence, individuals will engage in more planning and revision of goal-directed behavior as part of their team processes. Because individuals share knowledge on teams, they are also likely to share information about how they arrive at that knowledge as well, including revisions

to goal-direct behavior and process oriented thinking. Further, when congruence occurs, individuals will share similar self-regulatory tactics, amplifying the effects of these tactics and encouraging teammates to interact with each other and use metacognitive strategies like planning as they discuss how to complete task work. In the case of PAGO congruence, the opposite effect occurs because of the negative relationship between metacognition and performance GOs (Ford et al., 1998; Pintrich, 2000). Past research has shown that while PPGO typically has little to no relationship between metacognition, PAGO has a direct negative relationship (Ford et al., 1998; Schmidt & Ford, 2003; Bouffard et al., 1995). Because PPGO has no effect on metacognition to amplify, I do not propose a hypothesis regarding PPGO congruence and metacognition.

In the case of LGO incongruence, MAT predicts that the motivational processes associated with LGO (i.e., metacognition) will not be activated because of the incongruence. This means individuals will be less apt to engage in activities like planning because they do not share similar strategies about how to learn or about how to effectively regulate effort toward task completion. In the case of PAGO incongruence, metacognition may actually increase because the incongruence between individual and team PAGO does not create conditions where avoidant motivational processes can occur. As such, I hypothesize that the effects of LGO and PAGO congruence on learning outcomes will be mediated at least partly through the effects of metacognition.

*H19: Metacognition will mediate the effects of LGO congruence on learning outcomes such as learning and individual contributions to the team.*

*H20: Metacognition will mediate the effects of PAGO congruence on learning outcomes such as learning and individual contributions to the team.*

*Self-efficacy*. Self-efficacy is defined as an individual's beliefs about his or her capabilities to produce designated levels of performance (Bandura, 1994). It is a central construct in understanding work motivation, in particular work-team processes (Feltz & Lirgg, 1998), learning and training (Kozlowski et al., 2001), and newcomer socialization

and adjustment (Saks, 1995). GO dimensions have demonstrated links to self-efficacy: LGO in a positive direction and PAGO in a negative one (Payne, Youngcourt, & Beaubien, 2007).

In accordance to MAT, I argue that self-efficacy is a critical mediating factor in the relationships between GO congruence and outcomes. MAT suggests that when GO congruence occurs, individuals motivational processes associated with GO dimensions become activated and more robust, as such, it is important to understand clearly why GO dimensions have a strong relationship with self-efficacy. Kanfer (1990) suggests that GO dimension is linked with self-efficacy because of the implicit theories of ability in GO. Specifically, LGO reflects a dynamic theory of ability that results in higher self-efficacy, and PPGO and PAGO reflect a static theory of ability, associated with lower self-efficacy. As noted before, sharing cognitive frameworks and perceptions, including beliefs about ability, can lead to improved interactions between team members as well as facilitate the functioning of self-regulatory process. When LGO congruence occurs, the match between the GO of the team with the individual matches and enhances the ability of an individual to marshal self-regulatory processes and resources. As consistent with motivated action theory, a high-LGO individual on a high-LGO team will have their goals stimulated by the context. In turn, this will increase the level of proximal processes associated with LGO, including self-efficacy. When incongruence occurs, there is a mismatch between an Hypoindividual's chronically active goals and the situation, meaning an individual's LGO and the self-regulatory processes associated with that goal are not activated, leading to lower self-efficacy. Conversely, when PPGO or PAGO congruence occurs, the context of other team members will activate the performance-approach or performance-avoid goals of individuals, leading to lower self-regulatory activities and lower self-efficacy. When incongruence occurs on these dimensions, this type of self-regulatory lowering will not occur, leading individuals to develop more self-

efficacy. As such, I hypothesize that task-specific self-efficacy will mediate the effects of GO congruence on outcomes.

*H21: Self-efficacy will mediate the effects of LGO congruence on learning outcomes such as learning and individual contributions to the team.*

*H22: Self-efficacy will mediate the effects of PPGO congruence on learning outcomes such as learning and individual contributions to the team.*

*H23: Self-efficacy will mediate the effects of PAGO congruence on learning outcomes such as learning and individual contributions to the team.*

## Team-Level Hypotheses

Team-level GO similarity, operationalized as the standard deviation of GO dimensions among team members, allows us to explore the effects of similarity or dissimilarity of GO on team-level outcomes. To address how GO similarity is related to team-level phenomena, I turn to a theoretical perspective that addresses how diversity among team members can influence performance—the categorization-elaboration model (CEM; Knippenberg, De Dreu, & Homan, 2004). The CEM was developed in response to inconsistencies in the work group demographic diversity literature. However, its focus on how similarity or differences influence motivation, interaction, and information processing at the team level can elucidate team-level GO effects as well. The CEM focuses on two team-level processes: 1) a social categorization process, in which individuals are identified and labeled into subgroups based on their similarities or differences to other members in the group; and 2) an information elaboration process, through which differences among team members reflect relevant cognitive and motivational resources to accomplish the team's task. Each process is associated with a perspective on how differences among group members may impact that group's performance.

In the social categorization perspective, similarities and differences among group members serve as a basis for determining whether individuals fit into an in-group or out-group on a team. Consistent with research on similarity and attraction (Williams & O'Reilly, 1998), when fellow group members are more similar rather than dissimilar, an individual is more positively inclined toward that group and the people in it. As such, it has been sometimes found that in more homogenous groups, commitment is higher (Riordian & Shore, 1997; Tsui et al., 1992), cohesion is higher (O'Reilly, Caldwell, & Barnett, 1989), and there is less relational conflict (Jehn et al., 1999; Pelled, Eisenhardt, & Xin, 1999). According to this perspective, these processes (i.e., commitment, cohesion, lower conflict) can lead to higher-performance in more homogenous groups (e.g., Jehn et al., 1999; Murnighan & Conlon, 1991; Simons, Pelled, & Smith, 1999).

In the information/decision-making perspective, a different mechanism operates and suggests that more diverse groups should outperform relatively homogenous ones. From this perspective, diverse groups are more likely to possess a broader range of task-relevant knowledge, skills, and abilities that provide unique, non-redundant value to the completion of group tasks. This accumulation of heterogeneous resources may allow a group to more effectively complete tasks. Diverse groups may also have differing opinions and perspectives on a group task that allows for a group to consider a variety of alternative solutions to a task and choose the most effective solution among those solutions. Alternatively, the diversity of opinion and beliefs in a dissimilar team may force a team to more thoroughly investigate and compile knowledge and information, leading to more creative or innovative ideas and solutions (Ancona & Caldwell, 1992; Bantel & Jackson, 1989; De Dreu & West, 2001; Cox, Lobel, & McLeod, 1991; Jehn et al., 1999).

On the surface it appears that, these two perspectives serve at cross-purposes. Yet, while the social categorization perspective focuses more on relational aspects, the decision-making perspective focuses more clearly on problem solving and task-specific

group processes. As Van Knippenerg et al. (2004) suggest, diversity may negatively affect relationships within a group while simultaneously increasing group performance (Triandis et al., 1994). The CEM addresses this paradox by suggesting that social categorization and informational/decision-making processes interact, and a given dimension of (dis)similarity in a group may elicit both social categorization and information/decision-making processes. As such, research that uses the CEM can show how a given dimension of similarity may influence both information elaboration and social categorization, and what types of variables may most effectively represent these processes in a team context.

## Main Effects: LGO and PPGO

I believe that GO similarity at the group level primarily influences outcomes via the social categorization process. For social categorization to influence outcomes, the CEM notes that for social categorization to occur, differences among team members must be cognitively accessible and readily detectable (van Knippenberg et al., 2004). I argue that when individuals are on a team and discussing plans for how to complete task work, individual GOs become readily apparent to other team members because of how individuals approach the achievement situation. Although these categories are not as directly visible as race or gender (Fiske, 1991), how individuals attempt to work together provide clear indications of how individuals treat achievement situations, which provides sufficient information to create social categorizations. The presence of similar others can influence the degree to which individuals can efficient work together without conflict and develop a shared belief that they can effectively take interpersonal risks to complete tasks.

Thus, in accordance with the CEM, I predict that similarity in GO among team members should have positive effects on team outcomes and performance and team OCBs. The logic of these hypotheses flows primarily from the social categorization

process. In general, when individuals are more similar on GO dimensions, they are more likely to view each other in a more positive light, leading to greater commitment and cohesion among team members, which will reduce the level of interpersonal conflict on the team, allowing the team to devote more of its resources towards effective task management and completion of task-relevant behaviors. In addition, because individuals are more similar, they are more likely to be able to and willing to provide support to their other teams members in terms of citizenship and helping behaviors that support the functioning of the team to which they feel committed. In this sense, the social categorization process will lead to positive outcomes for teams.

However, GOs also influence motivation and information processing for individuals, and individuals on teams must learn to process information together as a team in order to achieve effective performance. As such, the information elaboration process of the CEM also matters in GO similarity/diversity research, as previously shown (Russo, 2012; Pieterse et al., 2011). In this case, I argue that when individuals are more similar on GO dimensions, they are more likely to share similar styles of communication as well as similar ways to process information, meaning that they will be able to achieve more effective information elaboration. This similarity in terms of how information is processed and learning is regulated among team members will lead to decreased conflict among team members regarding choices of action on team projects, as well as greater agreement about motivational approaches toward required tasks. This similarity supports the development of effective information elaboration processes that lead teams to better outcomes. This development occurs because individuals self-regulate in similar ways and share a perspective on how to manage information sharing on a team, even if the overall mean level of a GO dimension on that team is relatively low (in the case of LGO) or high (in the case of PPGO). As such, both the social categorization and information elaboration processes lead to the following predictions:

*H24: LGO similarity at the team level will positively influence (a) team performance and (b) team cooperative behaviorsbehaviors beyond the effects of mean team LGO.*

*H25: PPGO similarity at the team level will positively influence (a) team performance and (b) team cooperative behaviorsbehaviors beyond the effects of mean team PPGO.*

At the individual level, I predicted that PPGO congruence would produce increased conflict, while I argue at the team level that PPGO similarity will produce more positive results. While these hypotheses may initially appear inconsistent with each other, I argue that different types of performance are more salient at different levels of analysis. At the individual level of analysis, self-regulatory activity is important to individual functioning in teams, and being on a team with a similar performance orientation may short out the self-regulatory activity necessary for effective individual learning. At the group level, social categorization processes drive the effect of similarity on performance team OCBs. In this case, similarity on the PPGO dimensions enhances the performance of a team by increasing the capacity of team members to work as a cohesive group via social categorization. This categorization allows individuals to form motivational bonds with team members that can stimulate team members toward effective performance. As such, there are good reasons to expect differences in outcomes at different levels for PPGO: different processes drive the link between PPGO congruence and individual learning compared to PPGO similarity and team performance.

## Main Effects: PAGO

While I argue in general that GO similarity at the team level should increase team performance and team OCBs, the effects of PAGO similarity are less clear because PAGO is an avoidant orientation, which refers to an absence of effective self-regulatory patterns in individuals. On one hand, it is possible that PAGO similarity at the team level

will positively influence team outcomes because the social categorization associated with this dimension will allow individuals to develop a shared sense of purpose, leading to better performance and more willingness to help the team. On the other hand, it is also possible that when PAGO similarity occurs, individuals will recognize that they are around similar individuals who have similar avoidance motivations, meaning that the team is likely to share negative and avoidant responses to challenging situations. Unfortunately, similarity on PAGO means that individuals will share similar avoidance responses to conflict situations, making them less able to function effectively as a team in challenging situations because they will be less able to effective elaborate information. Further, when a team experiences PAGO similarity, individuals will recognize each other as being similar, which will trigger an avoidant social categorization process. Instead of effectively managing disagreement regarding among team members regarding interpersonal issues not directly task-relevant, team members will engage in avoidant interpersonal interactions, reducing the overall level of commitment to the team and creating an avoidant identity for team members. This lack of identity as a group will reduce cohesion and commitment among team members, reducing the overall level of OCBs. Because there is relatively little theoretical guidance on how to approach PAGO similar, I pose the following research question:

*RQ4: Will PAGO similarity at the team level negatively influence (a) team performance and (b) team cooperative behaviorsbehaviors?*

*Mediation Effects: Team Conflict and Team Psychological Safety*

At the team level, the CEM suggests that two basic processes drive the effects of similarity (or diversity) on performance: social categorization and information elaboration. In the case of GO similarity, it is primarily social categorization that links GO similarity to team-level outcomes. The CEM makes clear that affective evaluations of the team, including conflict, are direct results of the social categorization process (van Knippenberg, 2004). The connection between social categorization and conflict is fairly

clear. Social categorization processes at the team level allow individuals to determine if they are on a team of similar or dissimilar others. When individuals believe that they are on a team of similar others in the way they would like to be similar, they are more attracted to those team members and believe they are part of an effective, cohesive team. As such, they perceive fewer conflicts among team members. When individuals believe they are on a team of individual to whom they are not similar in the ways they would like to be similar, they are less likely to feel they are part of a committed, cohesive team unit and are more likely to perceive and experience conflict among team members. As such, I argue that conflict is an effective mediator of the relationship between GO similarity and both performance and team OCBs. In this case, conflict serves as a proxy of the social categorization process.

Past research that uses the CEM has also used psychological safety as a measure of an affective evaluation or reaction to a group (e.g., Lau &Murnighan, 2005; van Knippenberg & Schippers, 2007). Team psychological safety, which is shared belief among team members that a team is safe for interpersonal risk tasking and exchange, differs from cohesion in the sense that cohesion can reduce the willingness of individuals to exchange information or challenge views that differ from their own (Janis, 1982; Edmondson, 1991). Team psychological safety represents an emergent belief among team members that information can and is exchanged in a way that supports trust and mutual respect. As an example, psychological safety facilitates learning behavior in work teams because it allows team members to focus problem-solving and attentional resources to task-relevant behavior. For example, team members may need to discuss errors or shortcomings errors in team projects that could improve team performance. When a team has higher levels of psychological safety, team members will be more willing to bring up these kinds of errors or shortcomings because they are less concerned with being seen as incompetent or overly critical of other team members. As such, the effects of GO similarity on performance and team OCBs should derive at least partly from the

development of psychological safety among team members. As such, I hypothesize the following:

*H26: The effects of LGO similarity on team performance and team cooperative behaviorsbehaviors will be mediated through (a) team conflict and (b) team psychological safety.*

*H27: The effects of PPGO similarity on team performance and team cooperative behaviorsbehaviors will be mediated through (a) team conflict and (b) team psychological safety.*

Again, because of the unusual nature of PAGO and its effects on teams, it is not clear whether the social categorization effects of PAGO similar will produce positive effects. If the social categorization process acts in a manner similar to that of LGO and PPGO, then it is reasonable to assume that similar mediation mechanisms will function. However, if the main effect of PAGO is negative, and similarity on PAGO causes individuals to engage in more avoidant behavior, avoid taking risks, and develop less effective communication as a team, then it is less likely that psychological safety and conflict will serve as effective mediators. As such, I pose the following research question:

*RQ5: Will the effects of PAGO similarity on team performance and cooperative behaviorsbehaviors be mediated through (a) team conflict and (b) team psychological safety?*

# CHAPTER IV: METHOD

## Research Design

### Participants

Study participants were undergraduate students from a large Midwestern university enrolled in an Introduction to Management course in the spring of 2013. Topics covered in this course include material on how to effectively manage others, HR practices in organizations, leadership, a history of the scholarship and study of management, and managing intercultural issues in teams and management roles, the design of organizations, and motivation at work. Students will be recruited from this course and participated outside of class to receive course credit. As a part of the course work for the class, students are organized into randomly assigned teams and work with these teams from the beginning of the semester until the end to complete 4 team projects. These projects are graded by a group of graduate teaching assistants who complete a rating calibration process in order to ensure that grading is standardized. In addition, for each project, one of the four student members is assigned as a team manager for that project. These projects include writing a letter to an employee that needs to be let go, developing a fictional small business plan, developing a recruiting plan for a fictional organization, and a group process and feedback report and evaluation. There are currently 700 students enrolled that comprise approximately 175 teams, and our anticipated sample is 543 individuals on 153 teams. For teams to be included, they must have a 75% or greater participation rate in all four surveys.

### Procedure

For research purposes, across four points in time participants were asked to respond to online questionnaires. At the initial time point (T1), which will occur in the first two weeks of the semester, participants will be asked to identify their GO and the

GO of their members. At the second time point (T2), which will occur around the sixth week of the semester, participants will be asked to identify the self-regulatory processes (i.e., metacognition and self-efficacy) they engage in. At the third time point (T3), w hich will occur around the tenth week of the semester, participants will report on their interpersonal affiliation processes (i.e., trust, attraction, and communication). While my model does not specify a temporal order in regards to interpersonal affiliation or self-regulatory processes, I separate these two sets of measures to reduce the effects of common method variance in estimating the different mediation effects. At the final time point, which will occur shortly after the completion of the third project and around the twelfth week, individuals will report on behavioral, attitudinal, and performance outcomes. At this point, the individuals on the teams will have completed three of the four projects together and will have received feedback on their first two projects in form of their grades as well as written comments and suggestions for improvement on the first two group projects from their graduate TA grader.

## Study Measures

### Time 1 Measures

*Control Variables (T1).* I will collect information about control variables for individuals, including gender and whether students are native or non-native speakers of English. While I do not anticipate gender effects or differences, whether or not students are native speakers of English can influence their performance on written exams as well as influence the difficulty of interpersonal communication with team members.

*Measures of GO (individual level, T1).* To measure GOs, I use Vandewalle's (1999) 16-item measure with each of the three dimensions, learning GO (LGO), performance-prove GO (PPGO), and performance-avoid GO (PAGO). Examples of LGO items include "I often read materials related to my work to improve my ability" and "For my, development of my work ability is important enough to take risks." Examples of

PPGO items include “I’m concerned with showing I can perform better than my coworkers” and “I enjoy it when others at work are away of how well I am doing.” Examples of PAGO items include “I’m concerned about taking on a task at work if my performance would reveal I had low ability” and “I prefer to avoid situations at work where I might perform poorly.” Participants will rate themselves on a 6-point scale ranging from strongly disagree (1) to strongly agree (6).

*Perceptions of others’ GO (individual level, T1).* In addition to collecting information and observing the mean team GO, I will also collect the perception each individual has of the GO of his or her other team members by adapting Vandewalle’s (1999) items with changed prompts. These perceptions will be collected approximately two weeks in to the first semester to give students opportunities to interact with other and assess the perceived GOs of their teammates. Examples would include “The other members of my team often read materials related to their work to improve their ability,” “My team members are concerned with showing they can perform better than each other,” and “My team member prefer to avoid situation where they might perform poorly.” I am planning to collect this measure because, as Kristof-Brown & Stevens (2001), the perception of others may have a stronger relationship with outcomes than does the actual congruence of psychological characteristics between and individual and their team members. Participants will rate this construct on the same 6-point scale ranging from strongly disagree (1) to strongly agree (6) as their individual GO.

*Team GO (team level, T1).* To measure team GO, I will remove the focal member from his or her team and then average the remaining self-reported GO dimensions of team members. I will assess reliability by treating team members’ average scores as single items.

*GO Fit (individual level, T1).* Fit will be modeled by using polynomial regression to examine the relationship of the individual’s GO as compared to both the team GO measure (actual P-G fit) and the focal respondents’ perceived GO of the other team

members (perceived P-G fit). The appropriate model of this congruence effect is the separate measures of both entities (individual and team GO), the squared terms of each entity and their interaction. Edwards (1993, 1994) provides a more complete discussion of the use of polynomial regression for demonstrating congruence effects.

## Time 2 Measures

*Self-Efficacy (individual level, T2).* This construct will be measured via the 8-item academic self-efficacy scale, also sometimes referred to as self-regulated learning (Choi, Fuqua, & Griffin, 2001). I will use a specific self-efficacy scale that is adapted to the environment in which self-efficacy is required. Sample items include "How well can you finish homework assignments by deadlines" and "How well can you motivate yourself to do school work?" Participants will rate themselves on a 6-point scale ranging from strongly disagree (1) to strongly agree (6).

*Metacognition (individual level, T2).* This construct will be measured via a 10-item scale used in Ford, Smith, Weissbein, Gully & Salas (1998). Examples of items include "I noticed where I made the most mistakes during practice and focused on improving those areas." Participants will rate themselves on a 6-point scale ranging from strongly disagree (1) to strongly agree (6).

*Psychological Safety (individual and team level, T2).* This construct will be measured via the 7-item psychological scale developed in Edmondson, (1999). Examples of items include "When someone in our team makes a mistake, it is often held against them (reverse-scored)" and "No one on this team would deliberately act in a way that undermines others' efforts." Participants will rate their teams on a 6-point scale ranging from strongly disagree (1) to strongly agree (6). This construct will be evaluated both at the individual level (perceptions of safety) and at the team level (shared perception of safety). I will calculate the team-level variable by taking the mean of individual scores and using ICC(1), ICC(2), and rwg's as a basis for aggregation.

## Time 3 Measures

*Trust (individual level, T3).* This construct will be measured via the 6-item trust scale developed in (Robinson, 1996) adapted for use on a team. Examples of items include "I believe my team members have high integrity" and "I can expect my team members to treat me in a consistent and predictable fashion." Participants will rate these statements on a 6-point scale ranging from strongly disagree (1) to strongly agree (6).

*Attraction (individual level, T3).* This construct will be measured with a 4-item scale Attraction Scale used in Wayne & Ferris (1990). Examples of items include "I like my teammates very much," and "I think my teammates would make good friends." Partipants will rate these statements on a 6-point scale ranging from strongly disagree (1) to agree (6).

*Communication (individual level, T3).* This construct will be measured with a 6-item scale developed in (Edwards & Cable, 2009). Examples of these items include "Having people on this team understand what I say" and "Communicating openly with others on this team." Participants will rate each statement in terms of how often it occurs on a 5-point scale ranging from 1 (never) to 6 (always).

## Time 4 Measures

*Knowledge Sharing Behaviors (individual level, T4).* This construct will be measured using a 4-item scale developed in Yu, Lu & Liu (2010). Examples of items include "This team member has contributed knowledge to our team" and "this team member usually actively shared his or her knowledge with others." Participants will rate each statement for both themselves and their team members on a 6-point frequency scale ranging from 1 (never) to 6 (always). When calculating this variable for each participant, I will take mean of each non-focal respondent's ratings and use ICC(1), ICC(2), and rwg's as a basis for aggregation.

*Cooperative Teamwork Behaviors (individual level, T4).* This construct will be measured with three items from Campion, Medsker & Higgs (1993) designed to measure work group behaviors and characteristic. An example item is “This member of my team is very willing to share information with other team members about our work.” When calculating this variable for each participant, I will take mean of each non-focal respondent’s ratings and use ICC(1), ICC(2), and rwg’s as a basis for aggregation.

*Team Contributions (individual level, T4).* This construct will be measured with seven items from Kristof-Brown & Stevens (2001). The instrument assesses behaviors that prior students reported as conducive to team functioning, with a focus on both task and interpersonal contributions (Bales, 1948), which may result in two subscales. Example items include “This team member actively participated in discussions on project-related issues" and "this team member contributed original ideas to assignment solutions." Participants will rate each statement for both themselves and their team members on a 6-point frequency scale ranging from 1 (never) to 6 (always). When calculating this variable for each participant, I will take mean of each non-focal respondent’s ratings and use ICC(1), ICC(2), and rwg’s as a basis for aggregation.

*Team Commitment (individual level, T4).* This construct will be measured with a 4-item scale from Bishop & Scott (2000). Example items include “I talk up this team to my friends as a great team to be on” and “I feel very little loyalty to this team (reverse-scored).” Participants will rate each item on a 6-point scale ranging from strongly disagree (1) to strongly agree (6).

*Team Conflict (individual and team level, T4).* This construct will be measured with 8 items developed in Jehn (1995). Examples of items include “How much friction is there among members of your team?” and “How often do people in your team disagree about opinions regarding the work being done?” This measure will include both relational conflict (i.e., interpersonal difficulties) and task conflict (i.e., disagreement regarding the completion of task-relevant work). Participants will rate each item on a 6-point scale

ranging from strongly disagree (1) to strongly agree (6). This construct will be evaluated both at the individual level (perceptions of conflict) and at the team level (shared perception of conflict). I will calculate the team-level variable by taking the mean of individual scores and using ICC(1), ICC(2), and rwg's as a basis for aggregation.

*Individual Learning Outcomes (individual level, T4).* This construct will be measured by the performance of individual students on the last exam they take in the semester.

*Team Performance (team level, T4).* I will use grades received on the third of four group projects as the measure of team learning. I chose this third task because in this course, the fourth and final project is relatively easy to complete and often has little variation across teams in performance. In addition, taking this measurement late but before the end of the semester will provide a better indicator of how the processes of congruence unfold over time.

*Team Learning Behaviors (team level, T4).* For this measure, I used Edmondson's (1999) measure of team learning behaviors, which foucs on the ability of a team to provide each other with support and help in engaging achievement goals. Respondents replied on 6-point scale ranging from strongly disagree (1) to strongly agree (6).

*CFA.* I conducted at CFA at the individual level analysis across the four time periods to determine the measurement validity of the model. Results showed an acceptable model fit ($\chi 2$ = 1,089.68, df = 383; CFI = .95; NFI = .98; RMSEA = .06; SRMR = .05).

## Analyses

*Congruence Effects.* I will test my hypotheses regarding GO congruence effects by estimating regression equations that include the predictors of each mediator and outcome variable as specified in Figure 1. For example, for metacognition (M), I will use the following regression equation:

$$M = b_{MO} + b_{M1}I + b_{M2}T + b_{M3}I^2 + b_{M4}IT + b_{M5}I^2 + e_C \quad (1)$$

In this equation, M represents the value for metacognition while I and T are individual and perceived team GOs, respectively. The interaction and squared terms are included along with the main effects to determine whether the effect of individual and team GOs can be interpreted as a congruence effect (Edwards, 1994, 2002; Edwards & Perry, 1993). For the outcome variables, such as learning outcomes (L), which I hypothesize as mediating effects, I will use more than one regression equation. In addition to testing the direct effect as shown in equation (1), a second regression will include individual and team values as mediators of that effect, as shown below:

$$L = b_{LO} + b_{L1}I + b_{L2}T + b_{L3}I^2 + b_{L4}IT + b_{L5}I^2 + b_{L6}M + b_{L7}SE + b_{L8}PS + e_L \quad (2)$$

In this equation, L represents learning outcomes, which are dependent both on congruence effects as well as the more proximal effects of metacognition (M), self-efficacy (SE), and perceptions of psychological safety (PS). This type of approach has also been to test the mediating effects of value congruence on outcomes (Edwards & Cable, 2009), goal congruence on outcomes (Kristof-Brown & Stevens, 2001) and the effects of P-E fit on stress and well-being (Edwards & Rothbard, 1999). I will repeat these equations at the individual level for each of the mediator and outcome variables. Results from these sets of equations will be used to obtain path coefficients for each model. For predictors represented as single variables—including the mediator variables as well as the behavioral, process, and learning outcomes—standard regression coefficients will be used as path coefficients. For individual and team values—which are represented via the five terms I, T, IT, $I^2$, and $T^2$—path coefficients will be obtained by treating the five terms as a block variable (Heise, 1972; Igra, 1979). Edwards & Cable (2009) pioneered the use of this type of approach in analyzing path models of congruence effects. For instance, in the block variable associated with equation (1), the outcome variable is equal to the sum of the coefficient weighted I, T, IT, $I^2$, and $T^2$ terms. The five terms are then replaced with the block variable, the regression equation is re-estimated,

and the standardized coefficient of the block variable serves as the path coefficient. Other coefficients in the equation remain unaffected, and the variance explained by the block is equal to that explained in the equation with the original terms. The path coefficients obtained from this procedure can then be used to assess the direct, indirect and total effects associated with the model, allowing me to determine the extent to which each mediator carries the effects of congruence on outcomes. The indirect and total effects involve products of path coefficients, which I will test using bias-corrected confidence intervals from estimated based on 10,000 bootstrap samples (Efron & Tibshirani, 1993; MacKinnnon, Lockwood, & Williams, 2004).

I also used results from these equations to determine whether the coefficients for individual and team values signify a congruence effect. I will use these coefficients to plot three-dimensional response surfaces in which individual and team values are presented on perpendicular horizontal axes while the dependent variables will be placed on vertical axes (Edwards & Parry, 1993). A surface representing a hypothetically perfect congruence effect is presented in Figure 3 and Figure 4. On the floor of the diagram are two lines that represent important references for testing congruence. First is the congruence line, which runs from the lower right to the left back corner, in which the GO of the individual and the team is equal. Second is the incongruence line, which runs from the lower left up to the right back corner, along which the GO of the individual and the team differ. There are three key features of this figure that help to illustrate what a congruence effect would look like. In this figure, the surface above the floor is curved downward along the incongruence line (lower left to right back corner), indicating that the dependent variable decreases as there is increasing incongruence between the individual and team GO. Second, the ridge that best describes the peak or high point of the surface runs along the congruence line (lower right to left back corner, implying that the DV is at its highest when there is congruence on individual and team GO. Finally, the surface is flat along the congruence line such that the level of the outcome remains the

same regards of whether the level of individual and team GO is low or high in absolute terms.

Because differences in mean individual and mean team GO may influence some of the outcomes such as learning, self-regulatory activity, and interpersonal affiliation, I do not expect to find perfectly flat slopes along the congruence line. I expect to observe patterns similar to the congruence effect listed for Hypothesis 1 (LGO with cooperative behaviorsand knowledge sharing behaviors), H4a (LGO commitment), H5a (PPGO with commitment), H6a (PAGO with conflict), H7 (LGO with psychological safety perceptions), H10a and b (LGO with learning and individual contributions).

It is also possible to observe an inverse effect in which congruence drives outcomes downward. In this case, the congruence line (running from the lower right to the left back corner) will be low, while the incongruence line (running from the lower left to the right back corner) will be higher. This type of congruence is displayed in Figure 4. I expect to observe a pattern of results similar to this for H3 (PAGO with knowledge sharing and cooperative behaviorsbehaviors), H4b and H5b (LGO and PPGO with conflict), H6a (PAGO with commitment), H8 and H9 (PPGO and PAGO with psychological safety perceptions), H11a (PPGO with learning), and H12 (PAGO with learning and individual contributions).

These features figure into the three conditions that must be tested in response surface methodology (Edwards, 2007). In a standard congruence effect, the function used to test effects is as follows:

$$DV = b_O + b_1 I + b_2 T + b_3 I^2 + b_4 IT + b_5 I^2 + e \quad (3)$$

In this equation, the coefficients of $b_3$, $b_4$ and $b_5$ are important in assessing congruence effects. If the surface is curved downward along the incongruence line, then the quantity $b_3 - b_4 + b_5$ should be negative. If the surface is flat along the congruence line, then the quantities $b_1 + b_2$ and $b_3 + b_4 + b_5$ should both be zero. And if the ridge of the surface runs along the congruence line, then the first principal axis of the surface

should have a slope of 1 and an intercept of 0. The two principal axes run perpendicular to each other and describe the orientation of the surface in the X, Y plane (Edwards, 2007). The first principal axis describes the line of minimum downward curvature when the surface is concave (Figure 3) and the maximum upward curvature when the surface is convex (Figure 4). I will test these conditions using procedures for testing linear combinations of regression coefficients (Cohen & Cohen, 1983). To test the effects along the first principal axis, I will use bootstrapping samples to construct bias-corrected confidence intervals (Edwards, 2002). I use this bootstrapping method to test confidence intervals because of the use of non-linear terms in the congruence equation.

Requiring all three of the conditions to be met to declare congruence is unrealistic and may be an unrealistically stringent test for congruence. However, if the first two conditions are met, I could claim support for a value congruence effect that was dependent on the overall absolute level of the different GO dimensions. On this basis, I prioritize tests such that if the first two conditions are met, GO congruence is supported. Past research on congruence effects have made similar estimations (Edwards & Cable, 2009; Edwards, 2007) and relaxed the stringent nature of these tests.

*Team-Level Models.* At the team level, I will use multiple hierarchical regression and path modeling to determine the effects of team GO similarity. I will test the mediation effects using bias-corrected confidence intervals from estimated based on 10,000 bootstrap samples (Efron & Tibshirani, 1993; MacKinnnon, Lockwood, & Williams, 2004). In these regressions the form of the equations will be:

$$DV = b_0 + b_1(GO\ similarity) + b_n controls + e \quad (4)$$

$$Mediator = b_0 + b_1(GO\ similarity) + b_n controls + e \quad (5)$$

$$DV = b_0 + b_1(GO\ similarity) + b_2 Team\ Mediator + b_n controls + e \quad (6)$$

This set of analyses will be used to test hypotheses 24 through 27. Controls will include the mean level of the GO dimensions as well as the international status and gender composition of the teams.

# CHAPTER V: RESULTS

## Justification for Aggregation to the Team Level

In order to justify analysis of collective goal orientation at the team level, I calculated ICC(1), ICC(2), and rwg statistics for the three collective goal orientation measures. The ICC(1) statistic estimates the degree of variance in the construct that is attributable to membership in the group. Generally, justification for aggregation requires a minimum value of .05 (LeBreton & Senter, 2008). The ICC(2) statistic is an estimate of the inter-rater reliability for the group construct, and values of between .50 and .70 suggest moderate agreement. The rwg value is an index of agreement on the level of a construct in a group, and values greater than .70 suggest that aggregation is appropriate. For the collective LGO, the ICC(1) value was .12, the ICC(2) was .73, and the rwg was .90. For the collective PPGO, the ICC(1) was .07, the ICC(2) was .80, and the rwg was .89. For the collective PAGO, the ICC(1) value was .12, the ICC(2) value was .78, and the rwg was .87. These values all suggest at least moderate agreement among team members reading the team's LGO and support aggregation (LeBreton & Senter, 2008). In these analyses, the collective GO measures were used to measure the T terms in the polynomial regression analyses.

## Hypothesis Results

To determine if a congruence effect hypothesis was supported, I used the following criteria. First, the set of non-main-effect coefficients—the P2, T2, and PT terms—had to provide statistically significant incremental validity over the main effects, and at least one of those terms had to be statistically significant. Second, I calculated and performed significance tests on the P = T and P = -T lines. If the curvature along the P = T line was negative, this indicated support for the hypothesis. Third, I examined the graphs of the response surfaces to determine the overall pattern of results and confirm that the graph looked as though there was at least some evidence for a congruence effect,

or negative curvature along the P = T line. A number of hypotheses also posit the effect of congruence will be different at high or low levels of the main effects. To determine if this hypothesis was supported, I examined whether the slope of the congruence line was significant and the direction of that slope.

## Congruence Effect Hypotheses

Hypothesis 1 states that LGO congruence will be positively related to knowledge sharing and teamwork behaviors, and that this effect will be stronger for high-high combinations of individual and team LGO than for low-low combinations of individual and team LGO. Table 2 provides results for the test. Results show that the set of congruence terms provide incremental validity over the main effects for both knowledge sharing ($\Delta R^2 = .02$, $p < .05$) and cooperative behaviors ($\Delta R^2 = .02$, $p < .05$). In addition, both knowledge sharing ($\beta = -.10$, $p < .05$) and cooperative behaviors ($\beta = -.13$, $p < .05$) have significant negative curvatures. These results suggest that there is a possibility for a congruence effect.

Figure 5 depicts the 3-D surface plot of the effects of LGO congruence on knowledge sharing behaviors. The response surface has several unique features. First, it shows that the highest level of knowledge sharing occurs when both individuals and teams are high on LGO, but that relatively little knowledge sharing occurs when both individuals and teams are low on LGO. Second, it shows that knowledge sharing behaviors are more common when the team is high on LGO and the individual is low rather than when the individual is high and the team is low. Finally, there is some evidence of curvature, when the individual and the team are not congruent on LGO. This surface depicts the results in Table 4, which show that there is a statistically significant individual-team interaction effect as well as a statistically significant positive slope along the congruence line. Table 2 also reports a statistically significant negative curvature along the incongruence line and a statistically significant negative slope along the

incongruence line. Overall, these results suggest a person-team interaction and are consistent with a congruence effect.

Figure 6 depicts the 3-D surface plot of the effects of LGO congruence on cooperative behaviors. In this case, there appears to be a u-shaped effect for team LGO such that team LGO has an increasingly strong effect on individual cooperative behaviors. Further, there appears to be a linear effect for individual LGO that decreases in strength as team LGO increases. In all, these results suggest that there are unique and different effects for individual and team LGO on cooperative behaviors. This response surface is consistent with the results in Table 4, which show a statistically significant linear effect for individual LGO and a statistically significant linear and quadratic effect for team LGO. Overall, the shape of the response surface and the results of the regression do not suggest a congruence effect exists.

Hypothesis 1 also states that the effect of congruence will be stronger when both individual and team LGO are high. Results for this portion of the hypothesis are shown in Table 2, which shows that the slope of the congruence line for knowledge sharing ($\beta$ = .25, $p < .05$) and cooperative behaviors ($\beta$ = .17, $p < .05$) are statistically significant, supporting this portion of the hypothesis. Therefore, based on both the regression results and the response surfaces, H1 is partially supported. These results show that there is some kind of person-situation interaction that produces the highest levels of cooperative behaviors and knowledge sharing when both individual and team LGO are high; however, it is not consistent with a congruence effect. Overall, these results support that there is a congruence effect for knowledge sharing behaviors, that this effect is stronger when both the individual and the team are high on LGO, and that some kind of interdependent person-team effect exists for LGO on cooperative behaviors.

Hypothesis 2 states that PPGO congruence will lead to an individual having higher levels of knowledge sharing and cooperative behaviors than PPGO incongruence, and that the effect will be stronger for high-high PPGO configurations. Table 2 provides

results to test this hypothesis. Results show that the set of congruence terms had no statistically significant effects on either knowledge sharing ($\Delta R^2 = .00$, *ns*) or on cooperative behaviors ($\Delta R^2 = .00$, *ns*), indicating that no congruence or person-team interactions are present in this data. As such, hypothesis 2 is not supported. Overall, these results do not support a congruence effect or a person-team interdependent relationship for PPGO on knowledge sharing or teamwork behaviors.

Hypothesis 3 states that PAGO congruence will lead to lower levels of knowledge sharing and cooperative behaviorsbehaviors than PAGO incongruence, and that this effect will be stronger for high-high PAGO configurations as opposed to low-low configurations. Results in Table 2 provide a test of this hypothesis. These results show that the effect of the PAGO congruence differs for knowledge sharing compared to teamwork behaviors. Results show that for knowledge sharing, the set of non-main effect terms are not significant and do not provide a statistically significant increase in variance explained. In the case of cooperative behaviors, the set of congruence terms does have a statistically significant effect ($\Delta R^2 = .01$, $p < .05$). However, the results show that the curvature along the congruence line is significant but positive ($\beta = .15$, $p < .05$), not negative. This effect implies a congruence effect, though it is the opposite of the other results.

Figure 7 depicts the 3-D surface plot of the effects of PAGO congruence on cooperative behaviors. The response surface shows that there is a positive slope along the incongruence line. On this surface, this slope means that cooperative behaviors are at their lowest when the individual is low on PAGO but the team is high on PAGO. Conversely, in this surface, cooperative behaviors are at their highest when the team is low on PAGO but the individuals are high on PAGO. The results in Table 2 are consistent with the response surface. The results show that there is a statistically significant interaction term, suggesting that the use of cooperative behaviors depends on both individual and team PAGO. In addition, Table 4 shows that the slope along the

incongruence line is statistically significant. However, these results do not support a congruence effect, though they do depict a person-team interdependent effect. Overall, these results suggest that there is some form of person-situation interaction between individual and team PAGO that influences these outcomes. In the case of knowledge sharing behaviors, it is a congruence effect, and in the case of team work skills, there is some form of person-team interdependency effect.

Hypothesis 4 states that LGO congruence will lead to higher levels of commitment and lower levels of conflict as compared to LGO incongruence. Results in Table 2 show that the set of congruence terms do not provide a statistically significant increase in variance explained over the main effect of individual and team LGO ($\Delta R^2$ = .01, *ns*), implying that there are no meaningful congruence effects for LGO on commitment. In addition, results in Table 2 also show that the set of congruence terms do not provide incremental validity over the main effects in explaining conflict perceptions ($\Delta R^2$ = .00, *ns*). This implies there are no meaningful congruence effects for LGO on conflict. As such, Hypothesis 4 is not supported.

Hypothesis 5 states that PPGO congruence will lead to higher levels of commitment and lower levels of conflict than PPGO incongruence. Results in Table 2 show that the set of congruence terms do not provide a statistically significant increase in variance explained over the main effect of individual and team PPGO ($\Delta R^2$ = .01, *ns*), implying that there are no meaningful congruence effects for PPGO on commitment. Results in Table 2 also show that the set of congruence terms do not provide incremental validity over the main effects in explaining conflict perceptions ($\Delta R^2$ = .01, *ns*). This implies there are no meaningful congruence effects for PPGO on conflict. As such, Hypothesis 5 is not supported.

Hypothesis 6 status that PAGO congruence will lead to lower levels of commitment and higher levels of conflict perceptions than PAGO incongruence. Results in Table 2 show that the set of congruence terms do not provide a statistically significant

increase in variance explained over the main effect of individual and team PAGO ($\Delta R^2$ = .00, *ns*), implying that there are no meaningful congruence effects for PAGO on commitment. In addition, results in Table 2 also show that the set of congruence terms do not provide incremental validity over the main effects in explaining conflict perceptions ($\Delta R^2$ = .01, *ns*). This implies there are no meaningful congruence effects for PAGO on conflict. As such, Hypothesis 6 is not supported.

Hypothesis 7 states that LGO congruence will lead to higher levels of individual psychological safety perceptions than LGO incongruence. Results in Table 2 show that the set of congruence terms do not provide a statistically significant increase in variance explained over the main effect of individual and team LGO ($\Delta R^2$ = .00, *ns*), implying that there are no meaningful congruence effects for LGO on psychological safety. As such, Hypothesis 7 is not supported.

Hypothesis 8 states that PPGO congruence will lead to higher levels of individual psychological safety perceptions than PPGO congruence. Results in Table 2 show that the set of congruence terms do not provide a statistically significant increase in variance explained over the main effect of individual and team PPGO ($\Delta R^2$ = .00, *ns*), implying that there are no meaningful congruence effects for PPGO on psychological safety. As such, Hypothesis 8 is not supported.

Hypothesis 9 states that PAGO congruence will lead to higher levels of individual psychological safety perceptions than PAGO congruence. Results show that the set of congruence terms provides incremental validity above the main effects of individual and team PAGO ($\Delta R^2$ = .00, *ns*). However, these results also show that the curvature along the T = -P line is not statistically significant ($\beta$ = .06, *ns*), suggesting that there is some form of person-team interdependence effect for individual and team PAGO, but that effects is not consistent with a congruence effect.

Figure 8 depicts the 3-D surface plot of the effects of PAGO congruence on psychological safety perceptions. This surface depicts a negative relationship between

Team PAGO and psychological safety perceptions as well as a non-linear, U-shaped relationship for individual PAGO. This surface is consistent with the results in Table 4, which show a statistically significant negative linear effect for team PAGO and a statistically significant positive squared individual PAGO term. In addition, the results also show that there is a positive slope along the incongruence line and a negative slope along the congruence line. While these results suggest a unique pattern of relationships of individual and team PAGO with individual safety perceptions, they are not consistent with a congruence effect. As such, Hypothesis 9 is not supported.

Hypothesis 10 states that LGO congruence will lead to higher levels of learning outcomes and individual contributions to the team than LGO incongruence. Results in Table 2 show that the set of congruence terms explains significant incremental variance beyond individual and team LGO for both learning outcomes ($\Delta R^2 = .02$, $p < .05$) and contributions to the team ($\Delta R^2 = .02$, $p < .02$). In addition, the results for learning outcomes show that there is a negative and statistically significant curvature along the T = -P line ($\beta = -.12$; $p < .05$), indicating that there is a congruence effect. The results for contributions to the team also show that there is a negative and statistically significant curvature along the T = -P line ($\beta = -.18$; $p < .05$), also indicating a congruence effect.

Figure 9 depicts the 3-D surface plot of the effects of LGO on learning outcomes, operationalized as the final score on students' exams. I controlled for performance on the previous two exams as a way to measure the change in learning outcomes over time, consistent with past research (Cronbach & Furby, 1970). The effects of individual LGO, team LGO and their interactions become significantly weaker when I do not control for prior performance. This weakening of the effect suggests that LGO congruence effects may not be influencing the overall level of academic performance outcomes in this sample, but the amount of information students learn from the beginning to the end of the course. Results for this congruence effect show that the highest levels of learning occur when both individual and team are high on LGO. The saddle shape shows that when

individuals and teams are not congruent, learning outcomes are much lower. In addition, there is a statistically significant positive slope on the congruence line and a statistically significant negative slope on the congruence line. This graph is consistent with Table 2, which shows that all three of the congruence terms—the P2, PT and T2 terms—are statistically significantly related to learning.

Figure 10 depicts the 3-D surface plot of the effects of LGO congruence on individual contributions to the team. The response surface shows that there is positive slope along the congruence line, suggesting that the highest levels of contributions to the team occur when both individual and team LGO are high. The results also show that there is a main effect for team LGO such that individual contributions are stronger when team LGO is higher. Finally, the surface suggests some curvature along the congruence line. The surface is consistent with the results in Table 4, which show that there is a statistically significant linear effect for team LGO and a statistically significant interaction term. There is also a statistically significant linear slope on the congruence line and a statistically significant negative curvature along the incongruence line. The shape of the surface and the results in the table suggest a congruence effect; therefore, Hypothesis 10 is supported.

Hypothesis 11 states that PPGO congruence will lead to lower levels of learning outcomes and individual contributions to the team than PPGO incongruence. Results in Table 2 show that the set of congruence terms provide incremental validity over the main effects of individual and team PPGO ($\Delta R^2 = .06$, $p < .05$). Further, the results show that the curvature of along the T = - P line is negative and statistically significant, implying a congruence effect ($\beta = -.16$, $p < .05$).

Figure 11 depicts the 3-D surface plot of the effects of PPGO congruence on learning outcomes. Results here show a saddle effect with a flat line along the congruence line. Learning is highest when the individual and team are congruent on the prove dimension. This effect appears to be roughly equal at both high and low levels of

individual PPGO. Table 2 reports that the P2 and the PT terms are both statistically significant, but that the main P and T effects are not. In addition, Table 2 shows that the curvature along the incongruence line is negative and statistically significant, which is consistent with a congruence effect.

Turning to team contributions, results in Table 2 show that the set of congruence terms do not provide a statistically significant increase in variance explained over the main effect of individual and team PPGO ($\Delta R^2 = .01$, *ns*), implying that there are no meaningful congruence effects for PPGO on team contributions. This implies there are no meaningful congruence effects for PPGO on conflict. As such, Hypothesis 11 is partially supported.

Hypothesis 12 states that PAGO congruence will lead to lower levels of learning outcomes and individual contributions to the team than PAGO incongruence. Results in Table 2 show that the set of congruence terms do not provide a statistically significant increase in variance explained over the main effect of individual and team PAGO ($\Delta R^2 = .00$, *ns*), implying that there are no meaningful congruence effects for PAGO on learning outcomes. In addition, results in Table 2 also show that the set of congruence terms do not provide incremental validity over the main effects in explaining learning outcomes ($\Delta R^2 = .00$, *ns*). This implies there are no meaningful congruence effects for PAGO on conflict. As such, Hypothesis 12 is not supported.

## Summary of Congruence Effect Hypotheses

Results for these twelve hypothesis showed that in the majority of cases (eight of twelve), congruence effects were not supported. Three hypotheses received partial support, which included the effects of LGO and PAGO congruence on knowledge sharing, and the effects of PPGO congruence on learning. Finally, one hypothesis, the effect of LGO congruence on learning and contributions to the team, received full support. A summary of these results are presented in Table 3. These results suggest that

while there is sometimes a complex interplay between individual and team GO, this relationship is only rarely a congruence effect.

## Mediation Hypotheses

One of the important goals of this study was to determine to degree to which self-regulatory processes and social attraction factors mediate the effects of GO congruence on learning and behavioral outcomes in a team setting. To test for mediation, I used the product of coefficients bootstrapping procedure outlined in Tofighi & MacKinnon (2011). To determine the effect of the mediator variables on outcomes, I used standardized regression coefficients. To determine the effect of GO congruence on the mediators, I used the block variable procedure outlined in Edwards and Cable (2009) to determine a standardized coefficient for the effect. Finally, I used the PRODCLIN program to develop bootstrapped 95% confidence intervals for the variables in question. I also controlled for the main effects of the other GO dimensions in each of these results. For example, in analyzing the effect of LGO congruence on learning outcomes via metacognition, I also controlled for the effects of individual and team-level PPGO and PAGO.

For the indirect effect to mediate the congruence effect, it had to meet additional criteria. First, the regression results had to indicate that the set of non-main effects had statistically significant incremental validity beyond the main individual and team GO effects on the mediators in this study. I did not require that the form for the non-main effects on the mediator was a congruence effect. Second, the results from the first 12 hypothesis had to indicate that there was a congruence effect from the GO dimension to the hypothesized outcome. This means that even if an indirect effect was statistically

significant, it may not support a mediated congruence effect. When a mediation hypothesis will not be supported because the hypothesis regarding the direct effect of GO congruence on the DV was not supported, I make a comment at the beginning of the description of the hypothesis test to make this point salient. Results are presented in Table 4.

Hypothesis 13 states that trust will mediate the effects of LGO congruence on interpersonal outcomes such as knowledge sharing and teamwork behavior and process outcomes such as commitment, conflict, and psychological safety. For this hypothesis, the only possible mediated effect is that LGO congruence on knowledge sharing. Because of the effects of LGO congruence on cooperative behaviors, commitment, conflict, and psychological safety were not significant, a statistically significant indirect effect would not indicate a mediated congruence effect but mediated main effects of individual and team LGO. Results in Table 4 provide tests of this mediation. Results showed that the indirect effects via trust of LGO congruence on knowledge sharing ($\alpha\beta = .01$, *ns*) and cooperative behaviors ($\alpha\beta = .00$, *ns*) were not statistically significant. In addition, results in Table 4 also showed that the indirect effects via trust of LGO congruence on commitment ($\alpha\beta = .01$, *ns*), conflict ($\alpha\beta = .00$, *ns*), and psychological safety ($\alpha\beta = .02$, *ns*) were also non-significant, suggesting that trust did mediate any of these relationships. As such, Hypothesis 13 was not supported.

Hypothesis 14 states that trust will mediate the effects of PPGO congruence on interpersonal outcomes such as knowledge sharing and teamwork behavior and process outcomes such as commitment, conflict, and psychological safety. For this hypothesis, a statistically significant indirect effect would not indicate mediation of a PPGO

congruence effect because PPGO did not have congruence effects on knowledge sharing, cooperative behaviors, commitment, conflict, or psychological safety. Here, a statistically significant indirect effect would indicate a mediated main effect of individual and team PPGO. Results in Table 4 show that the effects of PPGO congruence via trust on knowledge sharing ($\alpha\beta$ = .01, *ns*) and cooperative behaviors ($\alpha\beta$ = .01, *ns*) were not statistically significant. In addition, the effects of PPGO congruence via trust on commitment ($\alpha\beta$ = -.01, *ns*), conflict ($\alpha\beta$ = .00, *ns*) and psychological safety ($\alpha\beta$ = .02, *ns*) were not statistically significant. As such, Hypothesis 14 was not supported.

Research question 1 asks whether trust will mediate the effects of PAGO congruence on interpersonal outcomes such as knowledge sharing and teamwork behaviors as well as process outcomes such as commitment, conflict, and psychological safety. I framed this test as a research questions because there is relatively little theoretical and empirical research to provide a basis for developing hypotheses regarding the effects of PAGO on outcomes. For this research question, the only possible mediated congruence effect is that of PAGO congruence on knowledge sharing. Because of the effects of PAGO congruence on cooperative behaviors, commitment, conflict, and psychological safety were not significant, a statistically significant indirect effect here would not indicate a mediated congruence effect but mediated main effects of individual and team PAGO. Results in Table 4 show that trust did not mediate the effects of PAGO congruence on knowledge sharing ($\alpha\beta$ = .00, *ns*), cooperative behaviors ($\alpha\beta$ = .01, *ns*), commitment ($\alpha\beta$ = .01, *ns*), conflict ($\alpha\beta$ = .02, *ns*), or psychological safety ($\alpha\beta$ = .02, *ns*).

Hypothesis 15 states that attraction will mediate the effects of LGO congruence on interpersonal outcomes such as knowledge sharing and teamwork behavior and

process outcomes such as commitment, conflict, and psychological safety. For this hypothesis, the only possible mediated effect is that LGO congruence on knowledge sharing. Because of the effects of LGO congruence on cooperative behaviors, commitment, conflict, and psychological safety were not significant, a statistically significant indirect effect would not indicate a mediated congruence effect but mediated main effects of individual and team LGO. Results in Table 4 show that the indirect effects of LGO congruence via attraction were statistically significant for both knowledge sharing ($\alpha\beta = .09$; $p < .05$) and cooperative behaviors ($\alpha\beta = .09$; $p < .05$). Results also indicate that the indirect effects of LGO congruence via attraction were statistically significant for conflict ($\alpha\beta = -.04$, $p < .05$) but not for psychological safety ($\alpha\beta = .00$, *ns*) or for commitment ($\alpha\beta = .03$, *ns*). These results suggest that the effect of LGO congruence on knowledge sharing is partially mediated via attraction. As such, Hypothesis 15 is partially supported.

Hypothesis 16 states that attraction will mediate the effects of PPGO congruence on interpersonal outcomes such as knowledge sharing and teamwork behavior and process outcomes such as commitment, conflict, and psychological safety. For this hypothesis, a statistically significant indirect effect would not indicate mediation of a PPGO congruence effect because PPGO did not have congruence effects on knowledge sharing, cooperative behaviors, commitment, conflict, or psychological safety. Here, a statistically significant indirect effect would indicate a mediated main effect of individual and team PPGO. Results from Table 4 show that the indirect effects of PPGO congruence via attraction on knowledge sharing ($\alpha\beta = .20$, *ns*) were not significant. The indirect effects of PPGO congruence via attraction on cooperative behaviors ($\alpha\beta = .23$, $p < .05$)

and conflict ($\alpha\beta$ = -.13, $p < .05$) were statistically significant. This result is somewhat surprising, given that PPGO main effects or congruence had no statistically significant relationship to attraction ($R^2$ = .00, *ns*); however, the overall indirect effect did achieve statistical significance. In addition, the indirect effects of PPGO congruence via attraction on commitment ($\alpha\beta$ = .00, *ns*) and psychological safety ($\alpha\beta$ = .04, *ns*) were not statistically significant. As such, Hypothesis 16 was not supported. These results indicate that while the effects of congruence are not present, some effects of individual and team PPGO on interpersonal outcomes and process outcomes are mediated via attraction, and this effect is driven largely by the strong effect of attraction on the outcomes measured.

Research question 2 asks whether attraction will mediate the effects of PAGO congruence on interpersonal outcomes such as knowledge sharing and teamwork behaviors as well as process outcomes such as commitment, conflict, and psychological safety. I framed this test as a research questions because there is relatively little theoretical and empirical research to provide a basis for developing hypotheses regarding the effects of PAGO on outcomes. For this research question, the only possible mediated congruence effect is that of PAGO congruence on knowledge sharing. Because of the effects of PAGO congruence on cooperative behaviors, commitment, conflict, and psychological safety were not significant, a statistically significant indirect effect here would not indicate a mediated congruence effect but mediated main effects of individual and team PAGO. Results in Table 4 indicate that the indirect effects of PAGO congruence via attraction were not statistically significant for both knowledge sharing ($\alpha\beta$ = .04, *ns*) and cooperative behaviors ($\alpha\beta$ = -.05, *ns*). Results in Table 4 also indicate that the indirect effects of PAGO congruence via attraction were not statistically significant

for commitment (αβ = .00, *ns*), conflict (αβ = -.03, *ns*), or psychological safety (αβ = .01, *ns*). As such, these results suggest that PAGO congruence does not have indirect effects on these outcomes via attraction.

Hypothesis 17 states that communication will mediate the effects of LGO congruence on interpersonal outcomes such as knowledge sharing and teamwork behavior and process outcomes such as commitment, conflict, and psychological safety. For this hypothesis, the only possible mediated effect is that LGO congruence on knowledge sharing. Because of the effects of LGO congruence on cooperative behaviors, commitment, conflict, and psychological safety were not significant, a statistically significant indirect effect would not indicate a mediated congruence effect but mediated main effects of individual and team LGO. Results in Table 4 show that the effects of LGO congruence via communication on knowledge sharing (αβ = .01, *ns*) and cooperative behaviors (αβ = .02, *ns*) were not statistically significant. In addition, results in Table 4 show that the indirect effects of LGO via communication were significant for conflict (αβ = -.03, $p < .05$) but were not significant for commitment (αβ = .03, *ns*) and psychological safety (αβ = .00, *ns*). Therefore, Hypothesis 17 was not supported. These results suggest that communication does not mediate the effects of LGO congruence on these outcomes.

Hypothesis 18 states that communication will mediate the effects of PPGO congruence on interpersonal outcomes such as knowledge sharing and teamwork behavior and process outcomes such as commitment, conflict, and psychological safety. For this hypothesis, a statistically significant indirect effect would not indicate mediation of a PPGO congruence effect because PPGO did not have congruence effects on

knowledge sharing, cooperative behaviors, commitment, conflict, or psychological safety. Here, a statistically significant indirect effect would indicate a mediated main effect of individual and team PPGO. Results in Table 4 show that the effects of PAGO congruence via communication on knowledge sharing ($\alpha\beta$ = -.01, *ns*) and cooperative behaviors ($\alpha\beta$ = .01, *ns*) were not significant. Results in Table 4 also show that the effects of individual and team PPGO via communication were significant for conflict ($\alpha\beta$ = -.03, $p < .05$) but not for commitment ($\alpha\beta$ = .01, *ns*) or psychological safety ($\alpha\beta$ = .01, *ns*). Therefore, Hypothesis 18 was not supported.

Research question 3 asks whether communication will mediate the effects of PAGO congruence on interpersonal outcomes such as knowledge sharing and teamwork behaviors as well as process outcomes such as commitment, conflict, and psychological safety. I framed this test as a research questions because there is relatively little theoretical and empirical research to provide a basis for developing hypotheses regarding the effects of PAGO on outcomes. For this research question, the only possible mediated congruence effect is that of PAGO congruence on knowledge sharing. Because of the effects of PAGO congruence on cooperative behaviors, commitment, conflict, and psychological safety were not significant, a statistically significant indirect effect here would not indicate a mediated congruence effect but mediated main effects of individual and team PAGO. Results in Table 4 show that the effects of PAGO congruence via communication on knowledge sharing ($\alpha\beta$ = -.01, *ns*) and cooperative behaviors ($\alpha\beta$ = -.01, *ns*) were not significant. Results in Table 3 also show that the effects of PAGO congruence via communication on commitment ($\alpha\beta$ = -.01, *ns*), conflict ($\alpha\beta$ = .04, $p < .05$), and psychological safety ($\alpha\beta$ = .01, *ns*) were mixed. As such, these results suggest

that a person-situation interaction influences communication, which in turn influences individual perception of conflict on the team.

Hypothesis 19 states that metacognition will mediate the effects of LGO congruence learning outcomes such as learning and individual contributions to the team. In this case, a statistically significant indirect effect would indicate a mediation effect because LGO congruence had statistically significant effects on both learning and individual contributions to the team. Results in Table 4 show that the effect of LGO congruence via metacognition does not have a statistically significant effect on learning outcomes ($\alpha\beta = .00$, *ns*) but does have an effect on contributions to the team ($\alpha\beta = .10$, $p < .05$). Therefore, Hypothesis 19 is partially supported. These results suggest that part of the way in which LGO congruence can influence individual contributions to the team is through its positive effects on increased metacognitive activity in individuals.

Hypothesis 20 states that metacognition will mediate the effects of PPGO congruence on learning outcomes such as learning and individual contributions to the team. In this case, a statistically significant indirect effect could indicate a mediation effect because PPGO congruence had a statistically significant effect on learning but not on individual contributions to the team. Results in Table 4 show that the effects of PPGO congruence via metacognition on learning outcomes are not statistically significant ($\alpha\beta = .00$, *ns*), but the effects on individual contributions are significant ($\alpha\beta = .10$, $p < .05$). In this situation, the indirect effect that is statistically significant is the main effects of individual and team PPGO on individual contributions to the team, but the indirect effect that would indicate a mediated congruence effect via metacognition is not. Therefore, Hypothesis 20 is not supported. These results suggest that part of the way in which PPGO

can influences team contributions is via metacognitive activity, even though this does not appear to be a function of a congruence effect between individual and team PPGO.

Hypothesis 21 states that self-efficacy will mediate the effects of LGO congruence on outcomes such as learning outcomes and individual contributions to the team. In this case, a statistically significant indirect effect would indicate a mediation effect because LGO congruence had statistically significant effects on both learning and individual contributions to the team. Results in Table 4 show that the effects of LGO congruence via self-efficacy on learning outcomes ($\alpha\beta$ = -.01, *ns*) and individual contributions ($\alpha\beta$ = .01, *ns*) were not significant. Therefore, Hypothesis 21 was not supported. These results suggest that the effects of LGO congruence on learning outcomes and individual contributions to the team are not due to an indirect effects on self-efficacy.

Hypothesis 22 states that self-efficacy will mediate the effects of PPGO congruence on learning outcomes such as learning and individual contributions to the team. In this case, a statistically significant indirect effect could indicate a mediation effect because PPGO congruence had a statistically significant effect on learning but not on individual contributions to the team. Results in Table 4 show that the effects of PPGO congruence via self-efficacy on learning outcomes ($\alpha\beta$ = -.01, *ns*) and team contributions ($\alpha\beta$ = .00, *ns*) were not significant. Therefore, Hypothesis 22 was not supported. These results suggest that the effects of PPGO congruence on learning outcomes and individual contributions to the team are not due to an indirect effects on self-efficacy.

Hypothesis 23 states that self-efficacy will mediate the effects PAGO congruence on learning outcomes such a learning and individual contributions to the team. In this

case, PAGO congruence did occur for either learning outcomes or individual contributions to the team, so a statistically significant effect here would indicate that the effects of individual and team PAGO is mediated via self-efficacy. Results in Table 4 show that the effects of PAGO congruence via self-efficacy on learning outcomes ($\alpha\beta$ = .00, *ns*) and team contributions ($\alpha\beta$ = .00, *ns*) were not significant. Therefore, Hypothesis 23 was not supported. These results suggest that the effects of PAGO congruence on learning outcomes and individual contributions to the team are not due to an indirect effects on self-efficacy.

## Summary of Mediation Hypotheses

In summary, these results show that many of the direct effects of GO congruence were not mediated through the hypothesized paths. The strongest and most consistent indirect effects observed were for the effects of attraction on attraction for knowledge sharing and teamwork behaviors and for metacognition on contributions to the team. In addition, the effects of PPGO congruence on learning outcomes were not mediated through any of the hypothesized channels. These results suggest that the effects of PPGO congruence on learning may be a direct effect wth few mediating channels.

## Team -Level Hypotheses

I tested the following hypotheses at the group level using hierarchical regression. To test for indirect effects, I used the PROCLIN program to calculate the confidence intervals of the product of the coefficients. In addition, to model team helping behaviors, I used a referent-shift construct called team learning behaviors (Gibson & Vermeulen, 2003). I also calculated team-level aggregation statistics to determine justifications for assessing conflict, psychological safety behaviors, and team helping behaviors at the group level. These aggregation statistics are found in Table 5. For team conflict, the

ICC(1) value was .19, the ICC(2) value was .61, and the rwg value was .90. For team psychological safety, the ICC(1) value was .05, the ICC(2) value was .68, and the rwg value was .91. For team learning behaviors, the ICC(1) value was .08, the ICC(2) value was .81, and the rwg value was .91. These results all suggest moderate to strong agreement and support aggregation of these constructs to the team level (LeBreton & Senter, 2008.

Hypothesis 24 states that LGO similarity at the team level will positively influence team performance and cooperative behaviorsbehaviors beyond the effects of mean team LGO. Results in Table 7 show the test of this hypothesis, which show that the SD of LGO has a statistically significant effect on team performance ($\beta = .21$, $p < .05$), but not in the expected direction. In this model, the main effect of mean team LGO on team performance was not statistically significant ($\beta = .12$, *ns*). In addition, Table 6 also shows that LGO similarity does not have a statistically significant effect on team learning behaviors ($\beta = -.03$, *ns*), though the mean team LGO did ($\beta = .29$, $p < .05$). The results for LGO similarity suggest that large differences on LGO among team members actually has a positive effect on team performance. The results for the effect of mean LGO, which show that team LGO has an effect on cooperative behaviorsbehaviors or other supportive team behaviors but not on team performance, is consistent with much of the prior literature (Porter, 2005; Porter, 2008). As such, Hypothesis 24 was not supported.

Hypothesis 25 states that PPGO similarity at the team level will positively influence team performance and cooperative behaviorsbehaviors beyond the effects of mean team PPGO. Results in Table 7 show that PPGO similarity does not have a statistically significant effect on performance ($\beta = .00$, *ns*) or team learning behaviors ($\beta = .01$, $p < .05$). In addition, results show that the mean effect of PPGO on team performance is not significant ($\beta = -.07$, *ns*) but the effect of mean PPGO on team learning behaviors is statistically significant ($\beta = .17$, $p < .05$). Again, these mean PPGO

effects are relatively consistent with prior research on team-level PPGO (e.g., Porter, 2005). As such, Hypothesis 25 is not supported.

Research Question 4 asks whether PAGO similarity at the team level will positively or negatively influence team performance and team cooperative behaviorsbehaviors. Results relevant to this question are contained in Table 7, which show that PAGO similarity does not have a statistically significant relationship with team performance (β = .00, *ns*) or team learning behaviors (β = .08, *ns*). In addition, the mean team PAGO did not have statistically significant effects on either team performance (β = -.03, *ns*) or team learning behaviors (β = .01, *ns*).

Hypothesis 26 states that the effects of LGO similarity on team performance and cooperative behaviorsbehaviors will be mediated via team conflict and psychological safety. Results for this hypothesis are in Table 8, which show that for team performance, LGO similarity does not have indirect effect via psychological safety (αβ = .00, *ns*) or conflict (αβ = .00, *ns*). Further, these results show that for team learning behaviors, LGO similarity does have a statistically significant indirect effect via psychological safety (αβ = -.06, $p < .05$), but not via conflict (αβ = .00, *ns*). These results suggest that LGO similarity has an indirect effect on team learning behaviors via its effects on psychological safety. Therefore, hypothesis 26 is partially supported.

Hypothesis 27 states that the effects of PPGO similarity on team performance and cooperative behaviorsbehaviors will be mediated via team conflict and psychological safety. While the direct effects were not statistically significant, it is possible that the indirect effect could be statistically significant. Results in Table 8 show that for team performance, the indirect effects for PPGO via psychological safety (αβ = .00, *ns*) and conflict (αβ = -.01, *ns*) were not significant. Results also show that for team learning behaviors, the indirect effects for PPGO via psychological safety (αβ = .00, *ns*) and conflict (αβ = -.01, *ns*) were not significant. Therefore, Hypothesis 27 was not supported.

Research question 5 asks whether the effects of PAGO similarity will be mediated via its effects on team conflict and team psychological safety. Results in Table 8 show that for team performance, the indirect effects of PAGO similarity via psychological safety ($\alpha\beta$ = .00, *ns*) and conflict ($\alpha\beta$ = -.01, *ns*) were not significant. Results in Table 7 also show that for team learning behaviors, the indirect effects of PAGO via psychological safety ($\alpha\beta$ = .03, *ns*) and conflict ($\alpha\beta$ = .00, *ns*) were not significant.

In summary, the results of these team-level hypotheses regarding team-level LGO similarity were largely unsupported, and in some cases, results contradicted the expected hypotheses. The pattern of results most consistent with the hypothesized model was the indirect effect of LGO similarity on team learning behaviors via psychological safety. This result showed that there was a negative relationship between the standard deviation of LGO on the team and psychological safety, which was consistent with our hypothesis that when team members are more similar on LGO, they will experience increased psychological safety. In turn, this higher level of psychological safety had a positive effect on team learning behaviors, suggesting that LGO similarity can help individuals to learn more and help other team members more when team members are more similar on LGO, regardless of the mean level of LGO on the team.

# CHAPTER VI: DISCUSSION

The purpose of this dissertation project was to expand on extant work in two literatures to determine how goal orientation congruence among team members would influence how individuals contribute to their team, learn by being on those teams, and perceive their teams. The two literatures I used were the literature on GO in teams (e.g., DeShon et al., 2004; Dierdorff & Ellington, 2012; Porter, 2010) and the literature on goal congruence among team members (e.g., Colbert et al., 2008; Kristof-Brown & Stevens, 2001). Because I drew from two diverse research streams, I developed hypotheses and measured results across a broad cross-section of constructs from both literatures. These included measures of the effectiveness and performance of individuals on a team (i.e., individual contributions to the team, knowledge sharing behaviors, cooperative behaviors, and individual learning outcomes), a variety of affective outcomes and individual's perceptions of their team (i.e., team commitment, perceived team conflict, and perceived psychological safety), and team-level outcomes such as team performance and team learning behaviors. I also measured constructs from the GO literature that are linked to the cognitive processes associated with GO (i.e., self-efficacy and metacognition). Finally, I measured constructs from the P-E fit and congruence literature that describe the reasons why individuals like to be in groups that are similar to them (i.e., trust, attraction, and communication). Overall, using this broad cross-section of constructs helped me to develop hypotheses and test results that I believed could effectively contribute to both literatures through testing both main effects but also exploring and testing mediating processes.

Although I examined a broad array of the possible outcomes, the congruence relationships I observed were relatively few. Often, relationships existed such that either an individual's GO or the team's collective GO influenced outcomes, but rarely did the pattern of results take on the form of congruence. However, the findings I did observe

warrant further discussion, and they contribute to the extant knowledge regarding GO in teams, goal congruence in teams, and P-G fit. In the paragraphs below, I highlight the key findings of this study. In the sections following these findings, I discuss the theoretical and managerial implications of these discoveries, then discuss the study's limitations and potential directions for future research.

## Principal Findings

### Individual-Level Results

When analyzing individual-level outcomes, the results suggested that individual-team GO congruence influenced several behavioral outcomes. For LGO, I observed congruence effects for learning such that when individuals were on teams where they had similar levels of LGO, they learned more. Further, this effect was strongest when the level of individual and collective LGO was high and weakest when both individual and collective LGO were low; however, congruence was always better than incongruence. The results further suggested that an individual who had a high LGO but was on a low-LGO team learned more than did a low-LGO individual on a high-LGO team. The results suggested that LGO congruence matters in terms of influencing learning outcomes, and that the high-high LGO congruence was significantly better for learning outcomes than low-low congruence.

LGO congruence also had a positive impact on individual contributions to the team and knowledge sharing behaviors, with the high-high combination of individual and collective LGO related to the highest levels of these behavioral outcomes, while the low-low combination was related to some of the lowest levels of contributions to the team. In contrast to the result for learning outcomes, the pattern of interaction showed that a low-LGO individual on a high-LGO contributed more to the team and shared more knowledge with other team members than a high-LGO individual on a low-LGO team. Although LGO congruence had fairly consistent effects on individual behaviors and

outcomes on teams, it did not have influences perceptions of the team or affective evaluations of the team (i.e., commitment). In short, these results allow demonstrate that LGO congruence has a positive effect on individual behavioral outcomes but not affective outcomes, and that in general, a high-high combination of individual and team LGO were associated with the highest levels of behavioral outcomes.

PPGO congruence did not share LGO's effect on individual the behavioral outcomes of individual contributions to the team and peer ratings of cooperative behaviors. A congruence effect, however, did occur for learning outcomes such that when individuals were on a team where their level of PPGO was similar to that of the team's, they learned more, regardless of the overall level of PPGO. The results showed the learning outcomes were similarly high at the high-high and low-low combinations of PPGO. Past research on the effects of PPGO on learning has either concluded that its effects on learning were either relatively small (e.g., Payne et al., 2007), that it was detrimental to learning (e.g., Elliott & Harackiewicz, 2005), or that contextual and situational factors can influence its effects (Elliott, 2005; Darnon et al., 2007). This research provides evidence that contextual factors (and in this case, a congruent social context) can strengthen the PPGO-learning outcomes relationship. This result opens doors for future research on how other social contexts influence the relationship between PPGO and learning and behavioral outcomes.

My hypotheses on the effects of PAGO congruence were generally unsupported; however, the complex and unusual pattern of effects provides interesting possibilities for future research. The congruence effect I did observe for PAGO was on cooperative behaviors. I had predicted that PAGO congruence would lower the level of cooperative behaviors an individual displayed, meaning that PAGO congruence produced the lowest levels of cooperative behaviors; however, I had not predicted the unusual shape of the interaction. I had anticipated that I would find a saddle-shaped effect with rotated such that the highest levels of peer-rated cooperative behaviors appeared along the

incongruence line. Instead, I found that congruence was convex (bowl-shaped) as opposed to concave (saddle-shaped). This result indicates that while PAGO congruence has an effect on cooperative behaviors, its differed from a traditional congruence effect in which congruence is associated with positive outcomes. These results also suggested that the individual level of PAGO and whether or not the team is high-PAGO matters. Specifically, three conditions led to peers rating their team members as having high levels of cooperative behaviors: having both the individual and the team be high-PAGO, having an individual and a team both be low-PAGO, or having a high PAGO individual on a low-PAGO team. The only combination that proved to have an overall negative effect on the display of cooperative behaviors was that of a low-PAGO person on a high-PAGO team. These results suggest that PAGO congruence sometimes leads to higher peer ratings of an individual's cooperative behaviors, but that its effects in cases of incongruence are driven by the negative impact of the team's collective PAGO on those cooperative behaviors.

In addition to this unhypothesized congruence effect for PAGO, there were several effects observed for PAGO which suggested person-team interdependences that were not consistent with a congruence pattern. In the case of individual and team PAGO levels on psychological safety, team-level PAGO had a strong negative effect on individual psychological safety, but there was a curvilinear relationship for individual PAGO. Individuals at the mean level of PAGO actually experienced less psychological safety on their teams than team members who were above or below the mean PAGO in the sample. These results suggest that individuals experienced the highest levels of psychological safety either in the case of low-low PAGO congruence of in the case of low-team, high-individual PAGO incongruence. Although this effect was not hypothesized, it poses an interesting question about potential non-linear effects for PAGO dimensions, as well as how individual and team PAGO may be inter-related to each other

outside of traditional congruence models. Overall, these results warrant further research on the complex, unique interplay between individual and team PAGO.

Another contribution of this paper is the identification of the mediating mechanisms that link GO congruence to outcomes. Three findings here warrant comment. The first of these findings shows that metacognition partially mediated the effects of LGO congruence on contributions to the team. This result suggests that LGO congruence allowed individuals to engage in greater metacognitive activity that spurred them to greater contributions of effort to the team. This may have occurred because LGO congruence made metacognitive activity, a traditionally difficult, attention-consuming cognitive task (Ford et al., 1998; Schmidt & Ford, 2003), less difficult, freeing attentional and cognitive resources for greater focus on contributions to the team. In light of this finding, the relationship between higher-level cognitive processes and team-based behavioral outcomes warrants further study.

The second of these findings shows that attraction mediated the effects of both LGO congruence on knowledge sharing and PAGO congruence on peer ratings of cooperative behaviors. These results suggest that attraction, as opposed to trust or communication, is the chief driver of the relationships between GO congruence and these interpersonal behaviors. This result extends extant research on value congruence and social interaction, which purports that value congruence affects a variety of social interaction constructs as well as attitudes toward a job assignment (Edwards & Cable, 2009; Van Vianen, De Pater, Kristof-Brown, & Johnson, 2004) but not necessarily job-related behaviors, such citizenship behaviors or task performance.

The third finding of interest is that in the case of LGO congruence and P-G fit, attraction to teammates as opposed to trust or interaction adjustment mediates the congruence effect. This finding—that the effect of LGO on interpersonal outcomes is mediated via attraction—supplements and adds to recent research suggesting that an interaction between an individual's LGO and the team's compositional LGO will have a

positive effect on individual's growth in self-efficacy and metacognition over time (Dierdorf & Ellington, 2012). Dierdorf & Ellington (2012) specifically advocate that future research should directly measure how individual and team LGO interact to influence individual learning on teams. The present study answers this call. However, I did not find evidence in my study that self-efficacy or metacognition mediated the effect of GO congruence on learning outcomes. In fact, the results for the mediation tests also showed that although LGO and PPGO congruence had positive effects on learning, none of the proposed variables mediated this effect. This lack of mediation findings may mean that there were conditions unique to this sample that mitigated the effects of metacognition on learning, or that LGO congruence is related to learning functions through paths other than increased metacognition or self-efficacy.

## Team-Level Results

As I have noted previously, one of the complexities of this study is evaluating two different ways in which individuals on a team can have similar levels of GO. When I refer to *GO congruence*, I am referring to the degree to which an individual's GO and the team's collective GO match and produce effects on individual-level outcomes. At the team level, when I refer to *GO similarity*, I am referring to the degree to which the standard deviation in the individual GO scores of team members are low and may have effects on team-level outcomes and emergent states. At the team level, two effects of GO similarity warrant further commentary.

First, I posited and found that LGO similarity influenced team learning behaviors, such that LGO similarity had a positive effect on team psychological safety, which in turn fueled higher levels of learning behaviors on the team. Surprisingly, my results also showed that LGO similarity had an effect on performance, such that a lack of LGO similarity had a positive effect on team performance. These results warrant further discussion and future research. The finding that LGO similarity is positively related to

psychological safety confirms the idea that GO similarity at the team level functions to help learning by creating a team context in which individuals believe they can take risks and learn. The finding that LGO similarity is negatively related to performance suggests, however, that this similarity in fact leads to lower-performing teams. These results for LGO similarity and performance is not entirely inconsistent with the literature: a previous study on LGO similarity showed that GO similarity can have a negative impact on performance because its effects are moderated by team processes such as reflexivity, a type of team-level emergent metacognition (Pieterse et al., 2007). Another possibility is that within the context of the study, the type and level of learning goals of the team may also influence the safety-performance relationship. While individuals who are similar are more likely to note this and develop a sense of psychological safety, if their overall motivation to achieve goals is low, they may lack the necessary motivation to convert their psychological safety into effect performance. Past research has shown that the positive and negative effects of psychological safety can be dependent on other team processes variables (e.g., Bradley, Postlethwaite, Klotz, Hamdani, & Brown, 2012). Other team process variables also likely moderate the GO similarity-team performance relationship.

Overall, there were three types of effects that I observed in testing my congruence hypotheses: congruence effects, person-team interdependencies, and main effects. While my hypotheses focused on these congruence effects, there are several findings that are worth noting that are related to all three classes of effects I observed. Although many congruence hypotheses were not supported, the congruence effects that were supported were consistent enough across outcomes to provide multiple contributions to the current literature. These results, which showed that polynomial regression approaches yielded results across a relatively small percentage of types of fit and outcomes, is consistent with the prior literature on P-E fit (Kristof-Brown et al., 2005), which reported that approximately 10% of all congruence hypotheses proposed were supported.

One of the results I found that was interesting was the effect of PAGO on psychological safety perceptions. These results showed that there is a U-shaped relationship for individual PAGO on psychological safety with a strong negative relationship between collective PAGO and psychological safety. These results also show a significant positive slope along the incongruence line and a negative slope along the incongruence line, which suggest that high-low combinations of PAGO combinations have a positive effect on psychological safety. I also observed unique interdependent effects of individual and team PAGO for several of the mediating variables, including communication, self-efficacy, and trust, with patterns similar to that of the PAGO non-congruence effect on psychological safety.

In addition, there were a number of main effects for individual and collective GO dimensions that provide possibilities for future research. One example of this type of research is the relatively consistent finding for the effects of collective PAGO on a variety of individual-level behaviors and attitudes, such as knowledge sharing, cooperative behaviors, contributions to the team, conflict perceptions, psychological safety, and team commitment. These results overwhelming collective PAGO has a suppressive, negative effect on behaviors and cognitions that are beneficial to the effective functioning of teams. While a few studies have investigated the role of collective GO on team functioning (e.g., Bunderson & Sutcliffe, 2003), no studies I am aware of have investigated the differentiation between PPGO and PAGO at the collective level. In addition, results also showed that individual-level PPGO had direct effects on team contributions as well as psychological safety and commitment, suggesting that individual PPGO can be useful for individuals in team settings (e.g., DeShon et al., 2004), despite the negative attention PPGO usually receives. In addition, both individual and collective LGO had effects on psychological states such as commitment and trust as well as metacognition, consistent with past meta-analytic evidence (Paynecourt, Young & Beaubien, 2007). Overall, these results extend previous research on goals and GO in

teams by demonstrating how individual and collective GO can influence social outcomes and affective and cognitive responses to teams, as well as learning outcomes for individuals on teams. The results also contribute to the broader literature on GO theory as well as to the fit literature by showing that GO congruence is a meaningful type of P-G fit.

## Contributions and Theoretical Implications

The contributions this study offers are broadly divided into two groups. The first set of contributions are ways in which this study extends, augments, and responds to specific studies in the literature on fit, congruence, and GO in teams. The second set of contributions include broader theoretical implications for GO theory and the P-E fit literature.

### Extensions and Contributions in Relation to Specific Studies

Several studies have noted that GO should have effects on outcomes related to people's willingness to contribute to social processes in teams or toward peers. For example, Kristof-Brown and Stevens (2001) showed that goal congruence between an individual's specific, tactical performance goals and the perceived performance goals of their team has a positive influence on an individual's contributions to their team and their satisfaction with that team. My study demonstrated similar results with LGO congruence and team contributions. Specifically, my study showed that LGO congruence has positive effects on contributions to the team, knowledge sharing behaviors, and peer ratings of cooperative behaviors. In addition, my study extends this research by demonstrating that both a cognitive process (metacognition) and a social interaction process (attraction) mediate LGO congruence–outcome relationships. In another study, Darnon and colleagues (2007) showed that the adoption of learning and performance goals influences the perceptions individuals have of teammates and peers. My study extends this idea by

showing that not only does the GO of individuals matter, but the relationship between their GO and the collective GO of the team. These effects are most salient when discussing outcomes like individual contributions to their team, sharing information with teammates, and learning from their experiences, and applying that knowledge to their own learning outcomes.

Prior studies have noted that the GO configuration of a team has effects on both team processes and individual outcomes. For example, Dierdorff and Ellington (2012) showed that there were some interactions between individuals' GO and the compositional GO of the team. My research extends their results by systematically investigating the way in which a team's collective GO influences how an individual's GO influences behavioral outcomes, as well as the processes that link GO to those outcomes. Porter (2005) and others (DeShon et al., 2004; Dierdorff & Ellignton, 2012) have shown that the mean level of GO on a team impacts team-level helping behaviors. My research extends and augments their results by showing how similarity among team members' GO influences both team processes (i.e., psychological safety) and team outcomes (i.e., team learning behaviors).

## Implications for Literatures and Theory

My study has implications for GO theory as well as the P-E fit literature. My research has implications for the role of PAGO in GO theory because of its strong cross-level effects and the unique pattern of non-congruence interdependencies I observed between individual and team PAGO. Past research on collective GO has focused only on the effects of LGO and PPGO on team-level outcomes, or the trajectory of those outcomes (DeShon et al., 2004; Van der Vegt & Bunderson, 2005). By incorporating PAGO as an emergent, team-level collective construct that has relationships with a broad variety of individual-level behaviors and affective states, my study expands possibilities

for future research on collective PAGO and its cross-level relationships with individual behavior and motivation in teams.

In addition to the importance of PAGO, my research has implications for the role of PPGO in GO theory because it demonstrates when and how PPGO can be beneficial to an individual's learning in a team context. As noted previously, past research has suggested that contextual factors can influence the effects of an individual's PPGO orientation on learning outcomes (Elliott, 2005). Treating the collective emergent PPGO as a contextual factor that influences the individual-level PPGO-learning outcomes relationship provides insight into how other emergent phenomenon could influence individual-level PPGO relationships. In addition, because I measured the effect of PPGO on learning outcomes while controlling for the effect of prior learning outcomes, the results directly addresses how individual PPGO influences learning outcomes over a short time period. Research on PPGO's effects on longitudinal outcomes has found mixed results, with some studies showing that PPGO has little effect on changes in learning outcomes over time (Chen & Mathieu, 2008), and other studies finding that PPGO flattens the positive trajectory of improvement over time (Dierdorff & Ellington, 2012; Yeo et al., 2009). The results from my study suggest that the effects of PPGO on longitudinal outcome and rates of change may also be dependent on contextual factors such as team characteristics, including collective GO.

My research has also has implications for GO theory because it demonstrates how social attraction processes link GO and GO congruence to outcomes of interest. Past research on the effects of GO has focused on the effects of self-regulatory and cognitive mechanisms as mediators of GO and goal congruence effects (e.g., Dierdorff & Ellington, 2012; Kristof-Brown & Stevens, 2001). The results of my study are consistent with other research that has highlighted ways in which learning and performance orientations can impact social behavior beyond learning and the processing of information (Darnon, Butera, & Harackwiez, 2007; Jannsen & Van Yperen, 2004; Poortvliet & Darnon, 2010).

My results suggest that in addition to influencing social comparison orientation, as reported in Darnon et al. (2010), GO can also influence social interaction characteristics such as perceptions of attraction and ease of communication.

Finally, my research has implications for the P-E fit literature because it identifies a form of person-group (P-G) fit with relatively robust effects on outcomes. A recent meta-analysis of the fit literature suggested that person-group (P-G) fit represents a form of fit where effects are weaker and less consistent (Kristof-Brown et al., 2005). Although more recent research has studied the role of individual and collective P-G in the function and effectiveness of teams (Seong, Kristof-Brown, Park, Hong, & Shin, 2012; Seong & Kristof-Brown, 2012), this nascent line of research is still developing. This research has empirically shown how three critical relationships relate P-G fit to team outcomes. First, these studies showed that individual-level P-G fit (i.e. "I am a good fit with my team") influences individual-level job performance in teams. Second, these studies showed collective fit (i.e. "My team fits well together") directly influences team-level performance. Finally, Seong et al. (2012) showed that team characteristics such as educational similarity, gender similarity and other team-level constructions of similarity are antecedents to collective fit perceptions. Therefore, the role of GO congruence as a precursor to subjective perceptions of individual or collective P-G fit may provide valuable information both on the effects of GO congruence on teams as well as the cognitive processes that influence their perceptions.

## Managerial Implications

One practical implication of this study is that managers should be able to conceptualize the difference between the individual-level dispositional GO of the team members and the collective emergent GO of the whole group. Prior studies have examined both the effect of the mean GO dimensions of team members (i.e., Porter, 2005) as well as the effect of collective GO of a team (i.e., Bunderson & Sutcliffe, 2003).

A review of the research suggested that these constructs are related but distinct (Porter, 2008), and my results support this conclusion. Therefore, managers need to consider both the individual GO of the members of a team as well as the collective GO of that team in making decisions about how congruence may affect individual contributions to a team.

One challenge in the GO literature has been the relative lack of findings for PPGO dimensions and their effects on performance, learning, and other outcomes. From a managerial perspective, this makes little sense: an individual with a strong motivation to demonstrate competence to others should perform well at a variety of tasks, including tasks involving the demonstration of competence via cumulative knowledge tests. My results suggest that a collective PPGO context matters just as much as the individual's orientation: when team members are in teams where the collective PPGO is congruent with their own PPGO, they will learn more. In the case of LGO, individuals will benefit from being on teams with a congruence collective LGO, but high-LGO individuals will benefit most from being on teams with high collective LGO. Therefore, if managers are interested in increasing the degree to which individuals are learning and developing, organizing them into groups of individuals with similar levels of PPGO and LGO may produce the desired effects in increasing individual learning.

Managers should consider that both individual GO and collective GO are both properties of an individual or team that have the potential to change over relatively short periods of time. As noted in DeShon & Gillespie (2005), individual GO is best defined as a malleable "quasi-trait," or a characteristic that has a dispositional component that can be activated, suppressed, or otherwise altered by a variety of contextual and situational factors or interventions. In addition, theoretical models of GO have suggested that managerial and supervisor characteristics can strongly influence the development in state-based GO in work units and individuals (Dragoni & Kuenzi, 2012; Dragoni, 2005). When attempting to address a situation in which GO incongruence is hampering an individual's effectiveness or contributions to a team, managers should take into account how they can

use organizational incentives and work structure to promote congruence between an individual and a group's GO in order to enhance individual effectiveness.

This study also demonstrates that collective PAGO has strong and consistently negative effects on individual effectiveness, self-regulation, and social interaction outcomes. Managers should be prepared to assess the level of collective PAGO on a team as well as determine methods to reduce its overall level via the structure of a task or other interventions that might discourage the development of collective PAGO in a group (Dragoni & Kuenzi, 2012). In a related vein, collective PPGO and LGO both had generally positive effects on individual outcomes such as attraction to team members, metacognition, and knowledge sharing behaviors. Managers should find ways to encourage and stimulate teams to develop higher levels of these two orientations to encourage individual effectiveness in teams.

Finally, this study has implications for the composition processes used to form teams. In general, the results suggest that LGO similarity has positive benefits for teams in terms of increasing their sense of psychological safety, allowing individuals to take greater risks and learn more in these types of teams. In situations where learning behaviors are important to the mission of a team or when psychological safety is a key outcome for a team, designing a team with individuals who have a similar level of LGO is more likely to produce the desired results, though it may not help the overall performance of the team.

## Limitations and Future Directions

One limitation of this study is the use of a student sample of project teams. While this context was useful for studying similar-sized teams with longitudinal, multi-source measurement, questions remain about the generalizability of these results to teams in a professional environment. In addition, because this study's context in a university setting highlighted learning and the importance of learning, the value and effects of individual

and collective LGO may have been magnified. However, a number of characteristics of the study reduce the concern about this weakness. First, participants had a personal stake and investment in their team processes and outcomes given that the time required to complete the projects was demanding, and being able to meet more efficiently and effectively increased the time the participants had available for other activities. Second, the tasks students completed as part of their project assignments (e.g., developing a business plan for a new business, diagnosing a problem in a manager-supervisor relationship, developing an HR recruitment strategy from a new manager), have strong external validity with the tasks of project teams in professional settings. Third, much like some types of project teams, the teams in this study were cross-functional in the sense that the teams included individuals with majors and educational training across distinct functional areas (i.e., marketing, HR, operations, finance, accounting). Future studies can explore how well these results generalize across other types of project teams.

A second limitation of this study is that I collected the data on individual and collective GO relatively shortly after the project teams first formed and then collected information on behavioral outcomes several weeks later. Because collective GO is an emergent state that can change over time, it is possible that the collective GO of the teams differed from the time the data on collective GO was collective to the time that the data on team outcomes was collected. Also, team member's situational GO may have shifted over the course of their project assignments to be more similar to that of the collective orientation of the team. If this change occurred, our results may underestimate the degree to which GO congruence can influence individual outcomes and perceptions of one's team. Research that tracks changes in individual's situational GO and the team's collective orientation over time would allow for a better determination of how GO congruence influences outcomes longitudinally.

A third limitation in this study is the possibility that omitted variable bias may be influencing the relationships observed in the data. For example, past research has shown

that the traits from the five-factor model (FFM) of personality such as agreeableness and conscientiousness may influence outcomes such as attraction to other team members or desires to contribute to the team (Mount, Barrick & Stewart, 1998). However, previous meta-analytic research has also shown that individual GO dimensions retained statistically significant effects on learning and performance outcomes after controlling for the effects of the FFM (Payne, Youngcourt, & Beabien, 2007). Future research could directly address the degree to which personality traits may influence GO congruence relationships or affect the formation of team collective GO.

These concerns are offset by a variety of strengths in this paper, including the indirect measures of GO congruence, multiple measures from a variety of different sources, and the analytic method used. Indirect methods of assessing congruence provide a great deal of information about cognitive processes because they avoid asking individual to directly compare their own characteristics with that of their team or teammates as required in a direct comparison approach (Edwards, 1994; Kristof, 1996; Kristof-Brown & Stevens, 2001). Although both methods of assessing congruence can be valuable, this form of assessment allows for research to more explicitly identify complex processes and inter-relationships between individual and team characteristics as they influence individual outcomes. The study also benefits from its use of multiples sources in assessing outcomes and behaviors. Individuals evaluated their own cognitions regarding self-regulation (i.e., metacognition and self-efficacy), interpersonal dynamics (i.e., trust, attraction, and communication), and their own individual-level perceptions of the team. Team members provided peer ratings of individual contributions to the team as well as the measures of collective GO, and test scores from within the courses students were taking were used to evaluate learning outcomes over time. Finding relatively consistent results across a variety of sources with a longitudinal design strengthens the degree to which we can be certain these results are not the consequence of statistical flukes. Finally, the use of response surface analyses and polynomial regression to assess

individual and team GO circumvents the assumptions and ambiguities inherent in the use of difference scores and permits more precise analysis and interpretation of complex relationships (Edwards, 1994; Edwards & Perry, 1993).

Given the focus on this paper on the effects of GO congruence on teams, there are multiple possible future directions of research. One to consider is the effect of GO similarity on negative behaviors and events that occur in team, such as burnout, incivility, and procrastination. Because social attraction processes can drive negative behaviors in team settings (Glomb & Liao, 2003), and GO and GO congruence influences social motivation and attraction, GO congruence could influence negative behaviors in teams. A second future direction is to examine more thoroughly the effects of collective PAGO dimension on outcomes as well as its relationship to other team-level constructions, including other collective GO dimensions and other common emergent states (i.e., cohesion, transactive memory systems). PAGO is a collective state that may in turn influence team-level motivational constructs or cause individuals to react poorly to feedback or other environmental cues. A final possible direction for future research is to examine how other factors relating to specific goals may influence the effects of GO congruence on individual outcomes. For example, past research on GO and goal importance congruence has identified the goal appropriateness and goal clarity as potential moderators of the congruence effects observed (Colbert, Kristof-Brown, Bradley & Barrick, 2008). In summary, these results open the door to a variety of potential future studies regarding the effects of GO congruence in teams.

Additional future research could expand on the context of team or contextual collective GO. For example Colbert and colleagues (2008) examined the role of goal importance congruence in TMTs. Future research on LGO congruence conducted in TMT settings could look at several possibilities. One such possibility would be the type of behaviors and strategic decisions that TMTs make in GO-congruent settings versus GO-incongruent settings. In thise case, it may be that TMT members make more effective or

efficient strategic decisions or resource allocations because LGO congruence increases their metacognitive abilities. Because LGO congruence has positive influences on metacognition, it may also have an effect on other types of cognitive processes, such as attentional resources. As such, LGO congruence or other forms of GO congruence could impact the degree to which TMT members can effectively process information and devote attentional resources to their work, improving their ability to make effective decisions.

Although this study examined the effect of GO congruence in teams, other contextual factors could influence the effective of a GO congruence relationship. For example, although some employees may not work on specific project teams, they may still have coworkers or a regular group of work peers that that employee uses as a referent group for the social context of their work. Therefore, future research could examine the degree to which GO congruence between the contextual GO an employee experiences from coworkers and their own GO, and that effects of this type of congruence on their subsequent work behaviors. Yet another possibility is to consider how GO congruence relationships in teams may be due at least in part to social network structure of that team. If an individual is more central to a team or a network is denser in a team, the effects of GO congruence may be much stronger than in teams with less dense social networks on for an individual who is not central in the team's social network.

## Conclusion

Understanding how an individual's GO interacts with the collective GO of a team provides a framework to better understand how the relationship of GO to the behaviors of individuals on teams, including their ability to learn and their level of contributions to their teams. In addition, this study addresses questions about why some individuals may struggle to learn when they are on teams where the dominant mode of GO is dissimilar to their own dispositional GO. Encouraging teams to develop an awareness of both their

individual GO and the team's collective GO can help team members to improve their ability to communicate with each other as well as their attraction to their team members, which will in turn increase the amount individuals are willing to contribute to their team, share knowledge with team members, and learn more effectively. My results also suggest that teams should strive to develop a high level of collective LGO and a low level of collective PAGO, as these emergent team orientations are linked to a broad spectrum of desirable individual-level behaviors and motivational states. Taken as a whole, these results present a rich and complex portrait of how GO dimensions influence individual behaviors on teams, and further, how congruence between an individual and his or team's GO can spur positive benefits for the individual's learning and ability to contribute to their team.

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# APPENDIX

Table A1. Individual-level Correlation Matrix

| | Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | LGO | *.82* | | | | | | | | | | | | | |
| 2. | PPGO | .05 | *.71* | | | | | | | | | | | | |
| 3. | PAGO | -.28 | .39 | *.79* | | | | | | | | | | | |
| 4. | Mean Team LGO | .63 | .02 | -.19 | - | | | | | | | | | | |
| 5. | Mean Team PPGO | .02 | .59 | .23 | .04 | - | | | | | | | | | |
| 6. | Mean Team PAGO | -.20 | .24 | .59 | -.32 | .40 | - | | | | | | | | |
| 7. | Collective LGO | .29 | .02 | -.14 | .46 | .03 | -.24 | *.90* | | | | | | | |
| 8. | Collective PPGO | .01 | .27 | .19 | .01 | .45 | .32 | .12 | *.80* | | | | | | |
| 9. | Collective PAGO | -.07 | .14 | .32 | -.10 | .24 | .55 | -.34 | .42 | *.82* | | | | | |
| 10. | Metacognition | .34 | .15 | -.06 | .25 | .05 | -.15 | .21 | .03 | -.10 | *.90* | | | | |
| 11. | Self-Efficacy | .03 | .17 | .15 | .02 | .08 | .04 | .09 | .12 | .05 | .17 | *.77* | | | |
| 12. | Attraction | .10 | .02 | -.02 | .12 | -.01 | -.09 | .26 | .01 | -.21 | .26 | -.01 | *.91* | | |
| 13. | Communication | .24 | .06 | -.14 | .21 | .03 | -.10 | .23 | -.05 | -.22 | .27 | -.08 | .58 | *.90* | |
| 14. | Trust | .16 | .15 | .08 | .07 | .06 | .05 | .11 | .12 | .04 | .17 | .22 | .14 | .19 | *.82* |
| 15. | Conflict | .04 | .10 | .06 | .00 | .12 | .06 | -.04 | .14 | .15 | .02 | .15 | -.32 | -.27 | .00 |
| 16. | Psych. Safety | .07 | .09 | -.04 | .04 | .01 | -.07 | .09 | .01 | -.11 | .30 | .24 | .15 | .15 | .19 |
| 17. | Team Learning | .21 | .18 | .07 | .19 | .11 | -.01 | .31 | .16 | -.04 | .37 | .11 | .32 | .21 | .20 |
| 18. | Cooperative Behaviors | .10 | .04 | -.01 | .05 | -.04 | -.07 | .14 | -.07 | -.18 | .12 | -.05 | .47 | .34 | .09 |
| 19. | Knowledge Sharing | .11 | .05 | .03 | .05 | .00 | -.03 | .16 | -.04 | -.15 | .13 | -.03 | .44 | .30 | .10 |
| 20. | Contributions | .09 | .09 | .01 | .07 | .03 | -.05 | .23 | -.01 | -.16 | .14 | .02 | .38 | .31 | .15 |

Table A1. Individual-level Correlation Matrix (continued)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21. | Learning Outcomes | .05 | .00 | -.05 | .06 | -.02 | .02 | .01 | -.05 | -.04 | -.15 | -.07 | -.03 | .08 | -.03 |
| | Mean | 3.58 | 3.41 | 1.16 | 4.21 | 4.01 | 1.16 | 2.89 | 3.16 | 2.26 | 3.01 | 4.89 | 3.16 | 3.28 | 3.86 |
| | SD | 1.10 | .98 | .86 | 1.56 | .98 | .76 | 1.00 | .96 | 1.18 | 1.16 | .78 | .89 | .71 | .91 |

Notes: N = 543. Correlations with values greater than .10 are significant at $p < .05$. Alpha reliabilities are presented on the diagonals.

Table A1. Correlation Matrix (continued)

| Variables | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|
| 1. LGO | | | | | | | |
| 2. PPGO | | | | | | | |
| 3. PAGO | | | | | | | |
| 4. Mean Team LGO | | | | | | | |
| 5. Mean Team PPGO | | | | | | | |
| 6. Mean Team PAGO | | | | | | | |
| 7. Collective LGO | | | | | | | |
| 8. Collective PPGO | | | | | | | |
| 9. Collective PAGO | | | | | | | |
| 10. Metacognition | | | | | | | |
| 11. Self-Efficacy | | | | | | | |
| 12. Attraction | | | | | | | |
| 13. Communication | | | | | | | |
| 14. Trust | | | | | | | |
| 15. Conflict Perception | *.92* | | | | | | |
| 16. Psych. Safety | .07 | *.73* | | | | | |
| 17. Team Learning | -.05 | .22 | *.76* | | | | |
| 18. Cooperative Behaviors | -.32 | .09 | .26 | *.90* | | | |
| 19. Knowledge Sharing | -.29 | .06 | .28 | .09 | *.94* | | |
| 20. Contributions | -.29 | .07 | .30 | .28 | .27 | *.86* | |

Table A1. Correlation Matrix (continued)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 21. | Learning Outcomes | .03 | -.03 | -.13 | -.01 | -.05 | -.06 | *.76* |
| | M | 2.16 | 4.10 | 3.16 | 3.21 | 3.26 | 3.13 | 76.31 |
| | SD | .78 | 1.21 | .78 | 1.16 | 1.18 | .98 | 16.82 |

Notes: N = 543. Correlations with values greater than .10 are significant at $p < .05$. Alpha reliabilities are presented on the diagonals.

Table A2. Regression results for GO Congruence on Behaviors and Perceptions of Team

| Goals | B | | | | | | Along T = - P Line | | Along T = P Line | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Slope | Curvature | Slope | Curvature |
| | $P_{b1}$ | $T_{b2}$ | $P2_{b3}$ | $PT_{b4}$ | $T2_{b5}$ | $R^2$ | $\Delta R^{2\,a}$ | b1 –b2 | b3-b4 + b5 | b1 –b2 | b3-b4 + b5 |
| LGO | | | | | | | | | | | |
| Knowledge Sharing | .12* | .13* | .02 | .10* | -.02 | .04* | .02* | -.01 | -.10* | .25* | .10* |
| Cooperative behaviors | .07* | .10* | .02 | -.02 | .09* | .02* | .02* | -.03 | -.13* | .17* | .09 |
| Team Contributions | .06 | .18** | .01 | .14** | -.05 | .04* | .02* | -.12* | -.18* | .24* | .10* |
| Conflict Perceptions | .07 | -.04 | .02 | -.07 | .02 | .00 | .00 | | | | |
| Psychological Safety | -.01 | .07 | -.05* | .07 | .00 | .04* | .00 | -.08 | -.12* | .06 | .02 |
| Commitment | .17** | .15** | .00 | .07 | -.04 | .04** | .00 | | | | |
| PPGO | | | | | | | | | | | |
| Knowledge Sharing | .04 | -.07 | .05 | -.07 | -.05 | .00 | .00 | | | | |
| Cooperative behaviors | .06 | -.10* | .01 | -.05 | .04 | .01 | .01 | | | | |
| Team Contributions | .10* | -.03 | .04 | .04 | -.04 | .02* | .00 | | | | |
| Conflict Perceptions | .06 | .11* | .00 | .01 | .00 | .01* | .01 | | | | |
| Psychological Safety | .15** | -.01 | .05 | .03 | -.01 | .06** | .00 | | | | |
| Commitment | .09* | -.05 | -.01 | -.01 | .01 | .03* | .01 | | | | |
| PAGO | | | | | | | | | | | |
| Knowledge Sharing | .10* | -.17** | .01 | .06 | -.02 | .03* | .00 | | | | |
| Cooperative behaviors | .05 | -.20** | .04 | .10* | .01 | .06** | .01* | .25* | -.05 | -.15* | .15* |
| Team Contributions | .05 | -.18** | .02 | -.02 | .01 | .07** | .01 | | | | |
| Conflict Perceptions | .00 | .14* | .05 | -.01 | -.02 | .11** | .01 | | | | |

Table A2. Regression results for GO Congruence on Behaviors and Perceptions of Team (continued)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Psychological Safety | -.06 | -.11** | .06* | -.01 | -.01 | .04** | .01* | .10* | .06 | -.12* | .04 |
| Commitment | .07 | -.22* | .01 | -.04 | .02 | .01* | .00 | | | | |

Notes: ΔR2 refers to the change in the model's value after adding the congruence terms (b3, b4, and b5). Analyses control for GO dimensions. *p < .05. **p < .01.

Table A3. Regression results for GO Congruence on Motivational States and Learning Outcomes

| Goals | B | | | | | | Along T = - P Line | | Along T = P Line | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $P_{b1}$ | $T_{b2}$ | $P2_{b3}$ | $PT_{b4}$ | $T2_{b5}$ | $R^2$ | $\Delta R^{2\,a}$ | Slope b1–b2 | Curvature b3-b4+b5 | Slope b1–b2 | Curvature b3-b4+b5 |
| LGO | | | | | | | | | | | |
| Attraction | .04 | .24** | .00 | .08* | -.06* | .02* | .02* | -.20* | -.14* | .28* | .02 |
| Communication | .17** | .15** | .00 | .07 | -.04 | .04** | .00 | | | | |
| Trust | .17** | .07 | .02 | -.03 | .02 | .05** | .00 | | | | |
| Self-Efficacy | .01 | .08 | .13* | -.03 | -.02 | .05* | .01* | -.20* | -.14* | .28* | .02 |
| Metacognition | .31** | .09* | .02 | .10* | -.02 | .16** | .02* | .22* | -.10* | .40* | .10 |
| Learning Outcomes | .07 | .02 | -.03* | .06* | -.05* | .50* | .02* | .05 | -.12* | .09 | -.04 |
| PPGO | | | | | | | | | | | |
| Attraction | .01 | .02 | -.02 | .02 | -.02 | .00 | .00 | | | | |
| Communication | .09* | -.05 | -.01 | -.01 | .01 | .03* | .00 | | | | |
| Trust | .08 | .09* | .02 | .02 | .00 | .05* | .00 | | | | |
| Self-Efficacy | .11* | .07 | .04 | .01 | .04 | .04* | .00 | | | | |
| Metacognition | .17* | -.01 | .05 | .04 | -.04 | .14* | .00 | | | | |
| Learning Outcomes | -.01 | .00 | -.06* | .08* | -.02 | .49* | .06* | -.01 | -.16* | -.01 | .00 |
| PAGO | | | | | | | | | | | |
| Attraction | .07 | -.22* | .01 | -.04 | .02 | .01* | .00 | | | | |
| Communication | -.04 | -.22* | -.03 | -.03 | .04* | .04* | .02* | .18* | .04 | -.26* | -.02 |
| Trust | .05 | .01 | .07* | .05 | .00 | .07* | .02* | .04 | .02 | .06 | .12* |

Table A3. Regression results for GO Congruence on Motivational States and Learning Outcomes (continued)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Self-Efficacy | .04 | -.13* | .07* | -.08 | .02 | .05* | .01* | .17* | .17* | -.09 | .01 |
| Metacognition | .00 | -.09* | .02 | .01 | -.01 | .14* | .00 | | | | |
| Learning Outcomes | .02 | .01 | .01 | .01 | .00 | .40* | .00 | | | | |

Notes: ΔR2 refers to the change in the model's value after adding the congruence terms (b3, b4, and b5). Analyses control for GO dimensions. *p < .05. **p < .01.

Table A4. Summary of Congruence Hypothesis Tests

| Hypothesis | GO Dimension | Outcome | Summary of Support |
|---|---|---|---|
| 1 | LGO | Knowledge sharing and cooperative behaviors | Partial; congruence supported for knowledge sharing |
| 2 | PPGO | Knowledge sharing and cooperative behaviors | Not supported |
| 3 | PAGO | Knowledge sharing and cooperative behaviors | Partial; congruence supported for knowledge sharing |
| 4 | LGO | Commitment and conflict | Not supported |
| 5 | PPGO | Commitment and conflict | Not supported |
| 6 | PAGO | Commitment and conflict | Not supported |
| 7 | LGO | Psychological safety | Not supported |
| 8 | PPGO | Psychological safety | Not supported |
| 9 | PAGO | Psychological safety | Not supported |
| 10 | LGO | Learning and contributions to the team | Fully supported |
| 11 | PPGO | Learning and contributions to the team | Partial support: congruence for learning |
| 12 | PAGO | Learning and contributions to the team | Not supported |

Table A5. Mediation Effects for GO Congruence

| LGO Congruence | Self-Efficacy | Metacognition | Trust | Attraction | Communication |
|---|---|---|---|---|---|
| Learning Outcomes | -.01 [-.03, .01] | .00 [-.03, .03] | -.01 [-.03, .01] | .00 [-.01 ,.01] | -.01 [-.01, .01] |
| Knowledge Sharing | -.01 [-.04, .01] | -.02 [-.05, .02] | .01 [-.01, .03] | .06* [.02, .11] | .01 [-.01, .03] |
| Cooperative behaviors | .01 [-.03, .01] | -.02 [-.05, .02] | .00 [-.01, .01] | .09* [.05, .13] | .02 [-.01, .04] |
| Team Contributions | .01 [-.01, .03] | .10* [.05, .15] | .02 [.00, .05] | .04* [.02, .07] | -.01 [-.03, .01] |
| Conflict Perceptions | .03 [.00, .05] | .04 [.00, .08] | .00 [-.02 ,.02] | -.04* [-.07, -.01] | -.03* [-.05, -.01] |
| Psychological Safety | .04* [.02, .07] | .08* [.04, .13] | .02 [.00, .05] | .00 [-.01, .03] | .01 [-.01, .03] |
| Commitment | -.01 [-.03, .01] | -.01 [-.05, .02] | .00 [-.02, .02] | .03 [-.02, .08] | .01 [.00, .03] |
| PPGO Congruence | | | | | |
| Learning Outcomes | -.01 [-.03, .01] | -.01 [-.05, .02] | .00 [-.02, .02] | .03 [-.02, .08] | .01 [.00, .03] |
| Knowledge Sharing | -.01 [-.03, .01] | .01 [-.01, .02] | .01 [-.01, .03] | .20 [-.13, .27] | -.01 [-.03, .01] |
| Cooperative behaviors | -.01 [-.03, .01] | -.02 [-.06, .02] | .01 [-.01, .02] | .23* [.16, .30] | .01 [.00, .03] |
| Team Contributions | .01 [-.01, .00] | .10* [.06, .15] | .02 [.00, .05] | .13* [.07, .18] | .01 [-.02, .01] |
| Conflict Perceptions | .02 [.00, .05] | .03 [-.01, .07] | .00 [-.02, .02] | -.13* [-.18, -.07] | -.03* [-.05, -.01] |
| Psychological Safety | .03* [.01, .07] | .07* [.03, .11] | .02 [.00, .05] | .04 [-.01, .09] | .01 [-.01, .03] |
| Commitment | -.01 [-.03, .01] | .00 [-.03, .03] | -.01 [-.03, .01] | .00 [-.01 ,.01] | -.01 [-.01, .01] |

Notes: * $p < .05$.

Table A6. Mediation Effects for GO Congruence

| PAGO Congruence | Self-Efficacy | Meta-cognition | Trust | Attraction | Communication |
|---|---|---|---|---|---|
| Learning | .00 | .02 | .01 | .00 | -.01 |
| Outcomes | [-.01, .01] | [-.01, .05] | [-.01, .03] | [-.01, .01] | [-.03, .01] |
| Knowledge Sharing | .00 | -.01 | .00 | .04 | -.01 |
| | [-.02, .01] | [-.05, .02] | [-.02, .03] | [.00, .09] | [-.04, .01] |
| Teamwork | -.01 | -.03 | .01 | -.05 | -.01 |
| Skills | [-.02, .01] | [-.08, .01] | [-.02, .00] | [-.09, .00] | [-.04, .01] |
| Team Contributions | .00 | -.09* | .02 | .03 | -.01 |
| | [-.01, .01] | [-.13, -.05] | [.00, .05] | [.00, .06] | [-.03, .01] |
| Conflict Perceptions | .01 | -.01 | .02 | -.03 | .04* |
| | [.00, .03] | [-.05, .02] | [-.01, .05] | [.06, .00] | [.01, .08] |
| Psychological Safety | .02 | -.07* | .02 | .01 | .01 |
| | [.00, .04] | [-.11, -.04] | [.00, .06] | [-.01, .02] | [-.01, .03] |
| Commitment | -.01 | .00 | -.01 | .00 | -.01 |
| | [-.03, .01] | [-.03, .03] | [-.03, .01] | [-.01 ,.01] | [-.01, .01] |

Table A7. Aggregation Statistics for Collective Variables

| Variable | ICC(1) | ICC(2) | rwg |
|---|---|---|---|
| TLGO | .12 | .73 | .90 |
| TPPGO | .07 | .80 | .89 |
| TPAGO | .12 | .78 | .87 |
| Team Conflict | .19 | .61 | .90 |
| Team Psychological Safety | .05 | .68 | .91 |
| Team Learning Behaviors | .08 | .81 | .91 |
| Contributions to the team | .12 | .68 | .91 |
| Knowledge Sharing Behaviors | .10 | .73 | .87 |
| Cooperative behaviors | .15 | .81 | .93 |

Table A8. Correlation Matrix for Team Level Effects

| | | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | LGO Mean | 4.04 | .36 | 1.00 | | | | | | | | | | | | |
| 2. | LGO SD | .43 | .32 | -.14 | 1.00 | | | | | | | | | | | |
| 3. | PPGO Mean | 3.47 | .35 | .08 | -.06 | 1.00 | | | | | | | | | | |
| 4. | PPGO SD | .52 | .29 | .14 | .21 | -.17 | 1.00 | | | | | | | | | |
| 5. | PAGO Mean | 2.67 | .43 | -.31 | .05 | .39 | -.06 | 1.00 | | | | | | | | |
| 6. | PAGO SD | .58 | .37 | .03 | .26 | -.10 | .28 | .10 | 1.00 | | | | | | | |
| 7. | TLGO | 3.64 | .43 | .48 | -.02 | .01 | .20 | -.25 | .16 | 1.00 | | | | | | |
| 8. | TPPGO | 3.17 | .37 | .02 | -.10 | .46 | -.09 | .30 | .02 | .17 | 1.00 | | | | | |
| 9. | TPAGO | 2.69 | .43 | -.15 | .07 | .28 | -.08 | .59 | .10 | -.28 | .44 | 1.00 | | | | |
| 10. | Psych Safety | 3.09 | .24 | .04 | -.17 | .01 | .03 | -.09 | -.04 | .12 | .03 | -.18 | 1.00 | | | |
| 11. | Conflict | 1.96 | .51 | .02 | .05 | .12 | .08 | .07 | .14 | -.08 | .19 | .21 | .07 | 1.00 | | |
| 12. | Learning Behaviors | 3.27 | .38 | .33 | -.11 | .18 | .06 | -.02 | .07 | .50 | .26 | -.05 | .33 | .06 | 1.00 | |
| 13. | Team Performance | 66.03 | 5.66 | .10 | .18 | -.09 | .08 | -.09 | .05 | .14 | -.11 | -.08 | .00 | -.05 | .14 | 1.00 |

Notes: N = 153. Correlations of absolute value greater than or equal to .16 are statistically significant at the $p < .05$ level.

Table A9. Regression Table for the effects of GO diversity on Team Mediators and Outcomes

| Variable | **Model 1** Performance β | **Model 2** TLB β | **Model 3** PS β | **Model 4** Conflict β | **Model 5** Performance β | **Model 6** TLB β |
|---|---|---|---|---|---|---|
| Team Performance (T1) | .17* | .08 | -.08 | .02 | .16* | .10 |
| LGO | .12 | .29** | .01 | .10 | .13 | .31** |
| PPGO | -.07 | .17* | .05 | .03 | -.08 | .15 |
| PAGO | -.03 | .01 | -.11 | -.12 | -.03 | .04 |
| LGO SD | .20* | -.09 | -.18* | .01 | .21* | -.03 |
| PPGO SD | .00 | .04 | .08 | .08 | .00 | .01 |
| PAGO SD | .01 | .08 | .01 | .14 | .00 | .08 |
| Psychological Safety (PS) | | | | | .05 | .33** |
| Conflict | | | | | -.04 | .01 |
| $R^2$ | .08* | .14** | .05* | .06 | .09* | .25** |
| $\Delta R^2$ | .04* | .00 | .03* | .03 | .01 | .09** |

Notes: N = 153. * $p < .05$; ** $p < .01$. TLB = Team Learning Behaviors.

Table A10. Regression Table for the effects of Collective GO on Team Mediators and Outcomes

| Variable | **Model 1** Performance β | **Model 2** TLB β | **Model 3** PS β | **Model 4** Conflict β | **Model 5** Performance β | **Model 6** TLB β |
|---|---|---|---|---|---|---|
| Team Performance (T1) | .24** | -.01 | -.14 | -.05 | .24** | .04 |
| LGO | -.01 | .11 | -.04 | -.05 | -.02 | .12 |
| PPGO | .16 | .03 | .05 | .25** | .17* | -.01 |
| PAGO | .00 | .04 | -.09 | -.05 | -.01 | .07 |
| Collective LGO | .18* | .41** | .08 | .03 | .18* | .38** |
| Collective PPGO | -.04 | .17* | .00 | -.02 | -.04 | .17* |
| Collective PAGO | -.08 | .00 | -.10 | .19* | -.06 | .02 |
| Psychological Safety (PS) | | | | | -.03 | .28** |
| Conflict | | | | | -.04 | .06 |
| $R^2$ | | .26** | .05 | .08* | .14** | .34** |
| $\Delta R^2$ | | .18** | .02 | .02* | .00 | .08** |

Notes: N = 153. * $p < .05$; ** $p < .01$. TLB = Team Learning Behaviors.

Table A21. Indirect Effects of GO Congruence on Outcomes

| | Team Performance | Team Learning Behaviors |
|---|---|---|
| LGO Diversity | | |
| Psychological Safety | .00 [-.01, .00] | -.06* [-.10, -.03] |
| Conflict | .00 [-.01, .01] | .00 [-.01, .01] |
| PPGO Diversity | | |
| Psychological Safety | .00 [-.01, .02] | .03 [-.01, .06] |
| Conflict | -.01 [-.03, .01] | .00 [-.01, .01] |
| PAGO Diversity | | |
| Psychological Safety | .00 [-.01, .02] | .00 [-.03, .04] |
| Conflict | -.01 [.03, .01] | .00 [-.01, .02] |

Notes: * $p < .05$.

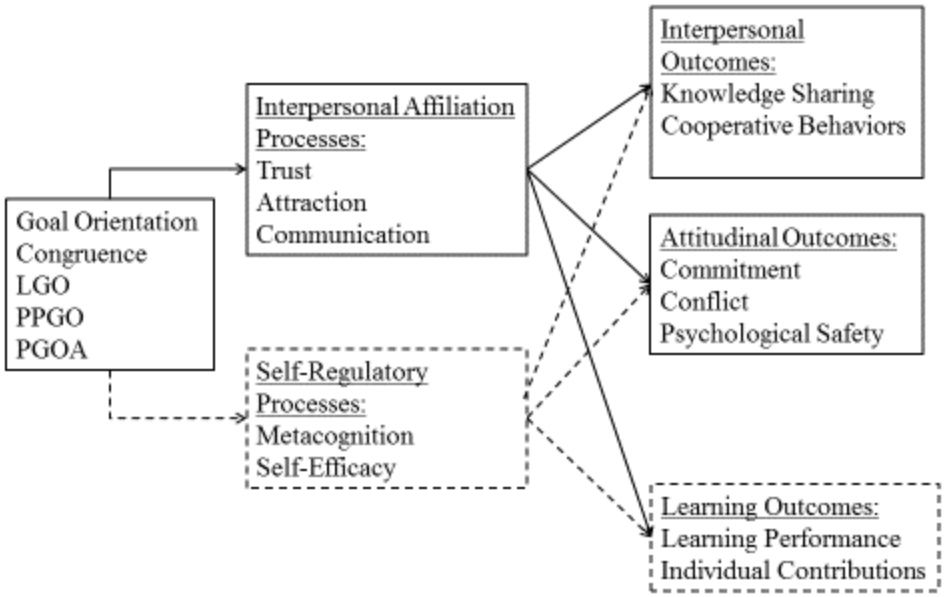


Figure A1. Individual-Level Model for Study

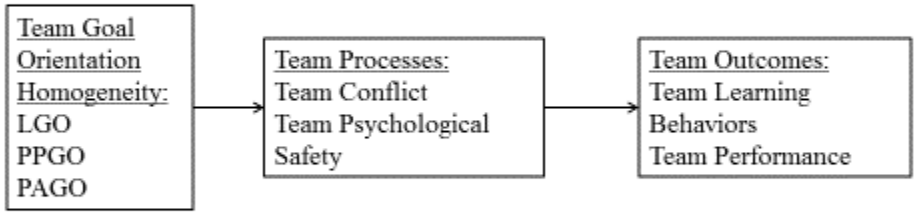


Figure A2. Team-Level Model for Study

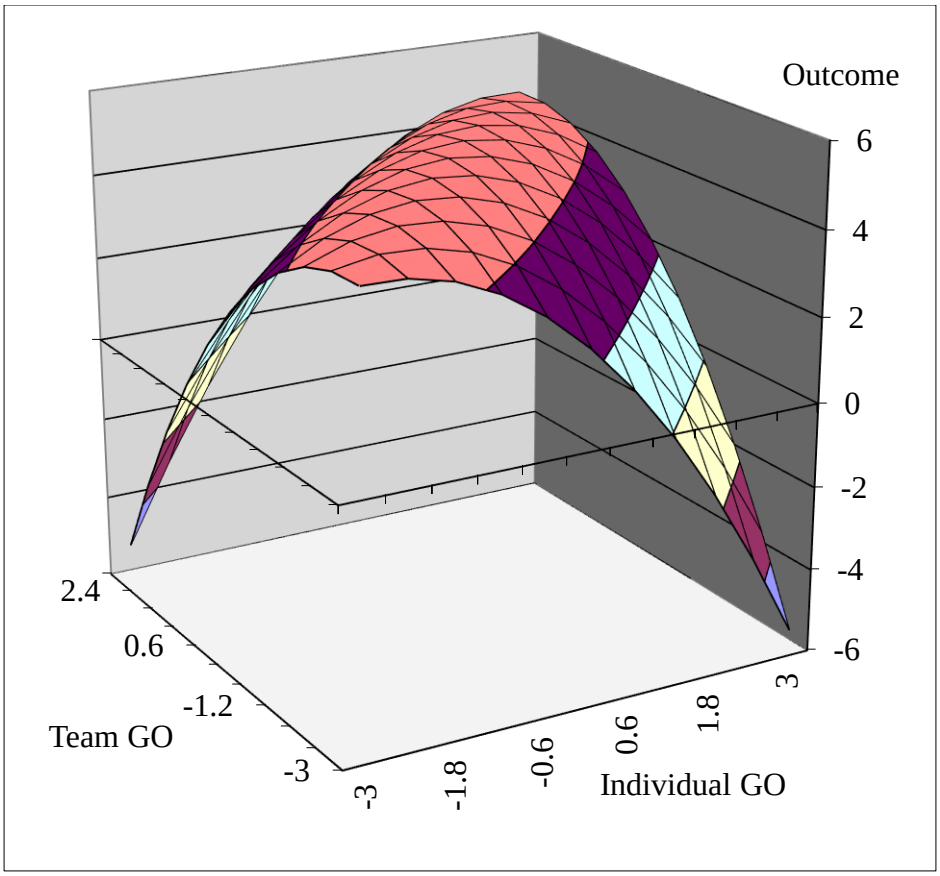


Figure A3. A congruence effect. Adapted from Edwards & Cable (2009).

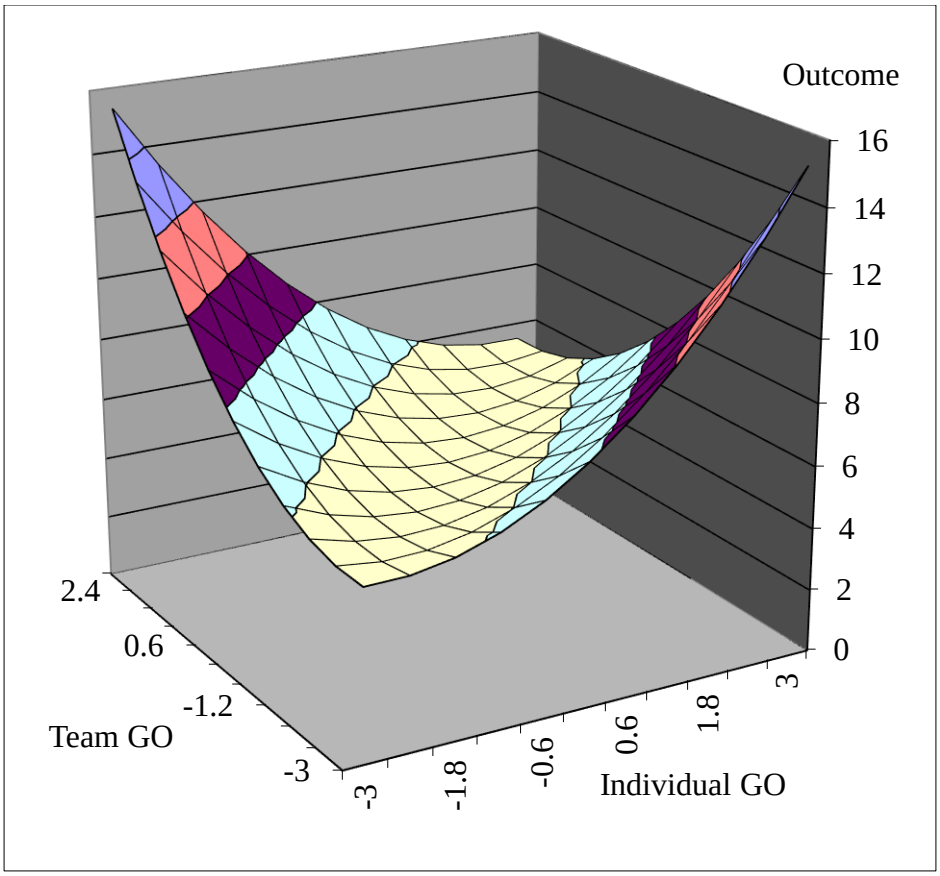


Figure A4. An Inverse Congruence Effect.

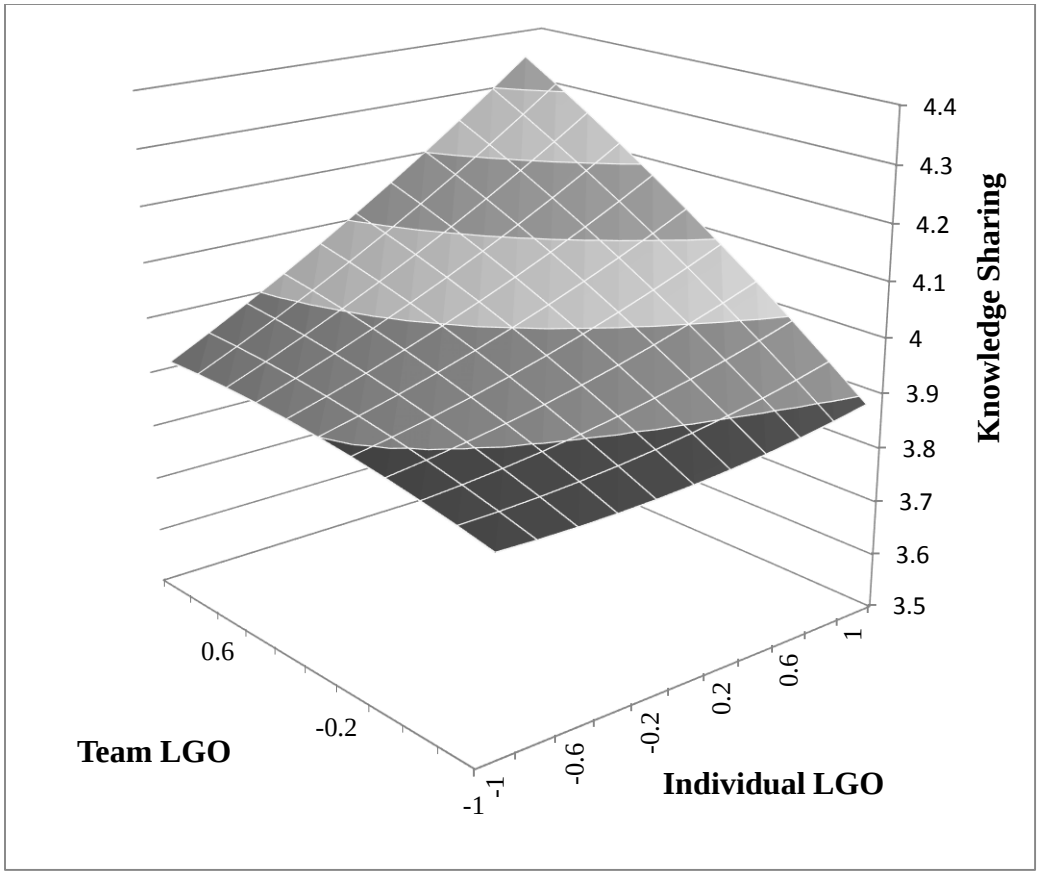


Figure A5. The Effect of Individual and Team LGO on Knowledge Sharing

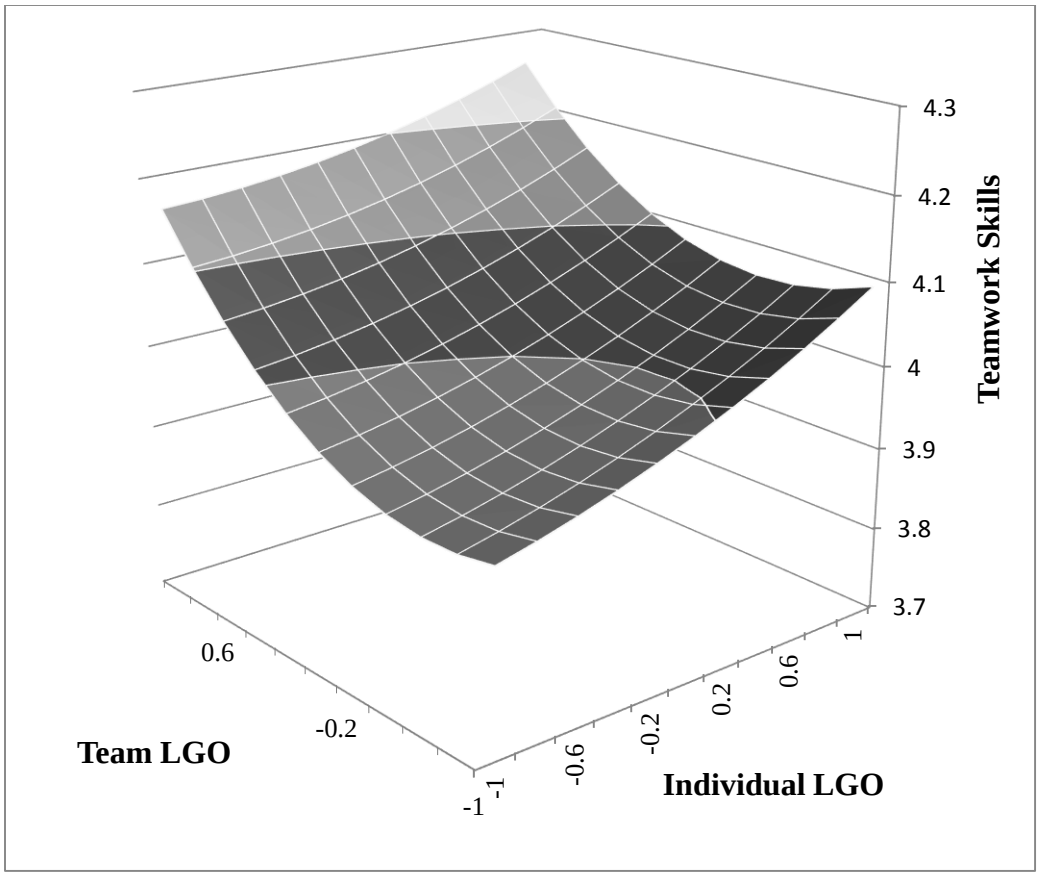


Figure A6. The Effect of Individual and Team LGO on Teamwork Skills

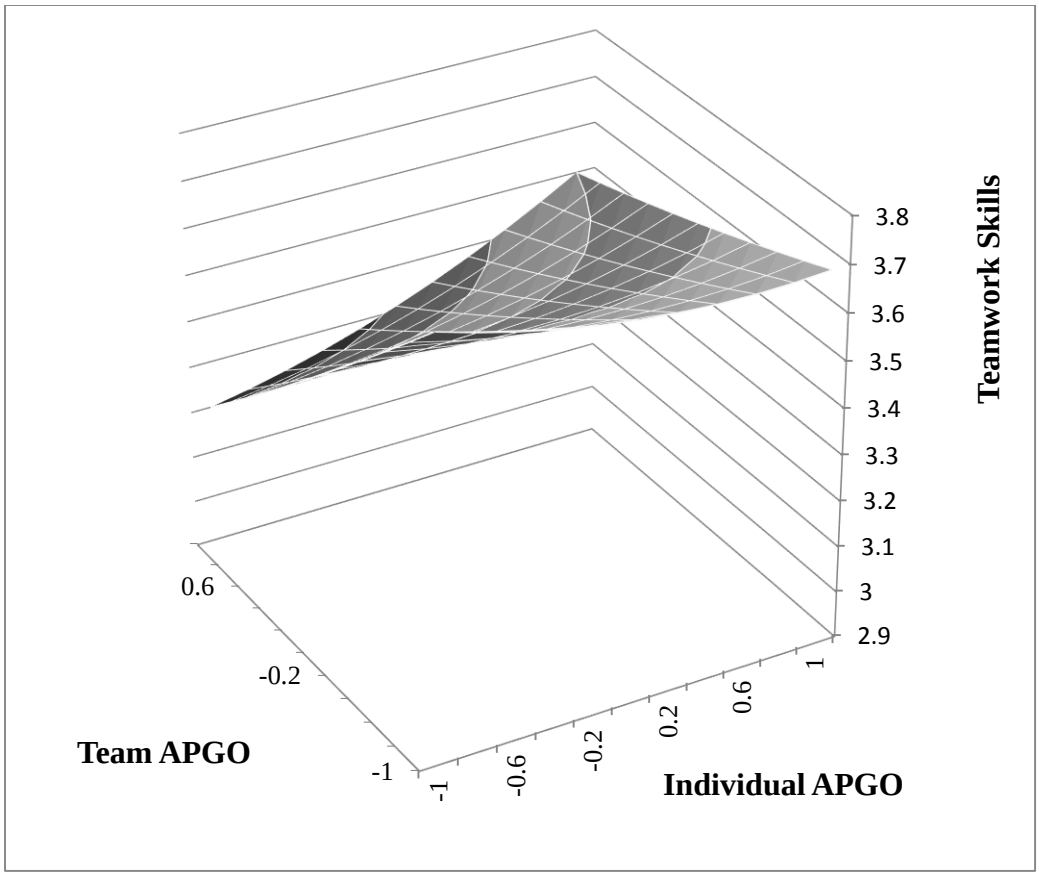


Figure A7. The Effect of Individual and Team PAGO on Knowledge Sharing

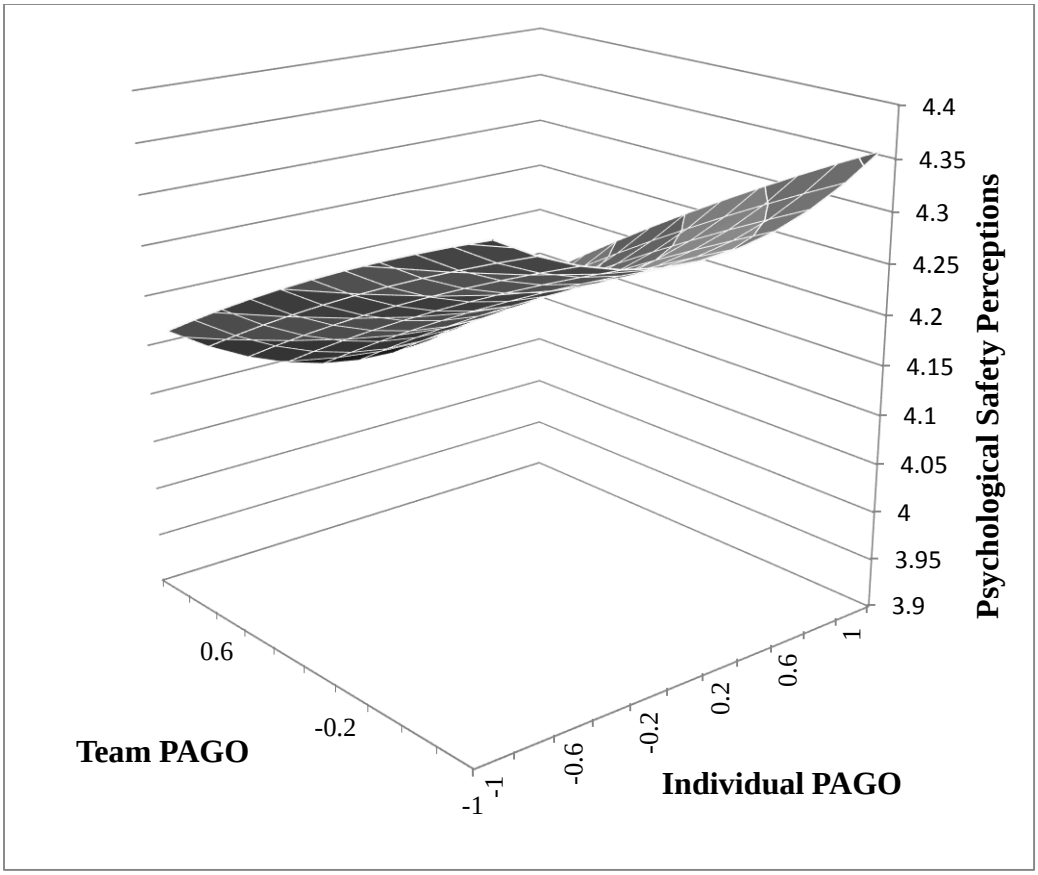


Figure A8. The effect of PAGO Congruence on Psychological Safety Perceptions

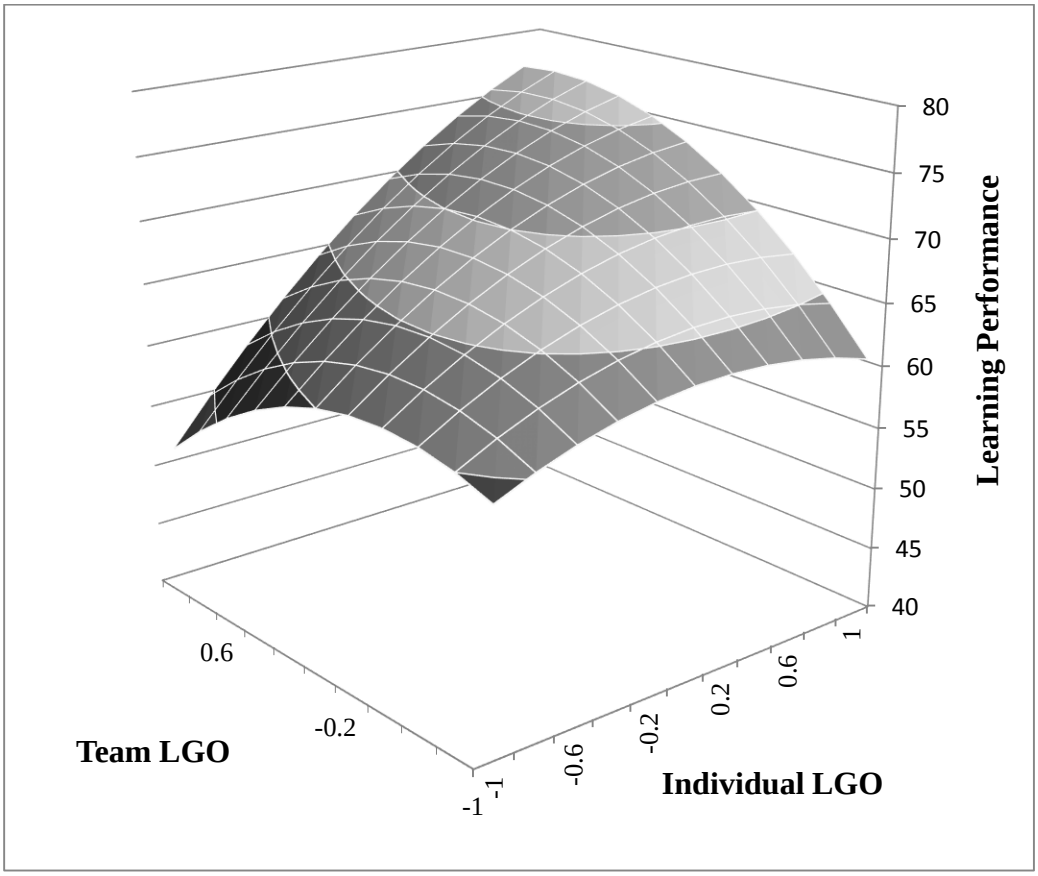


Figure A9. The Effect of LGO Congruence on Learning Outcomes

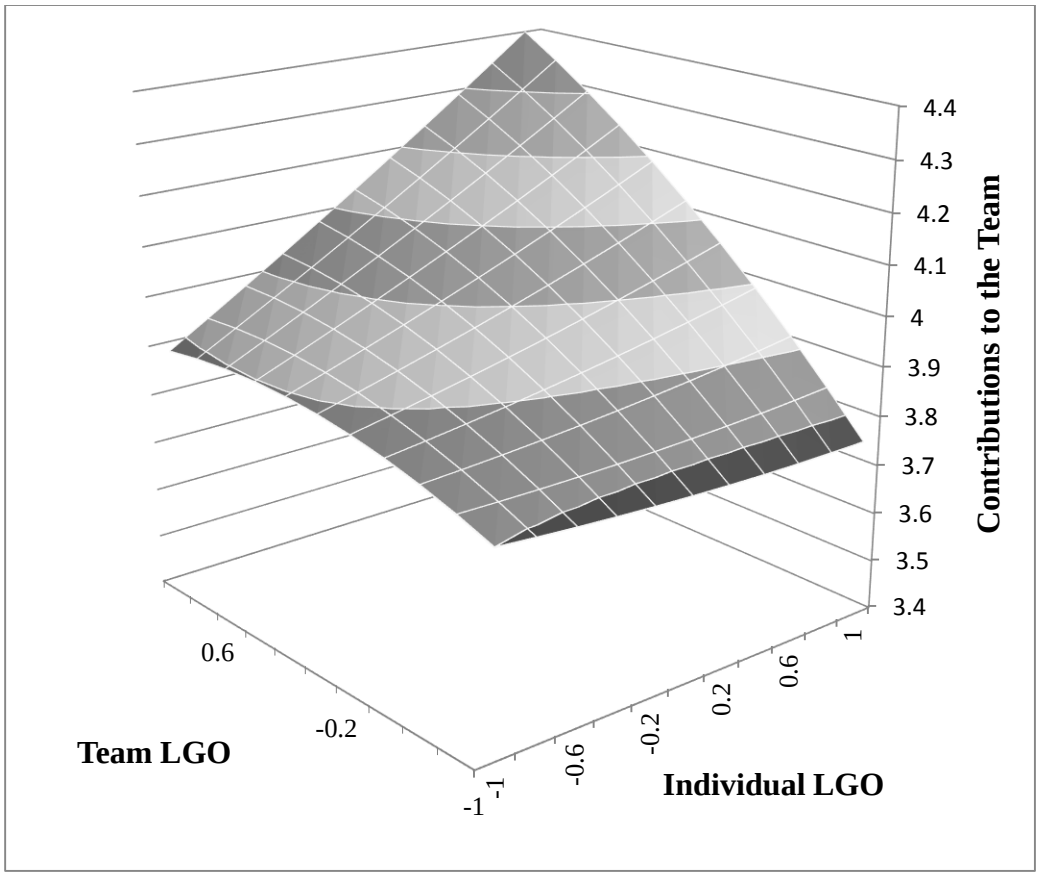


Figure A10. The Effect of LGO Congruence on Contributions to the Team

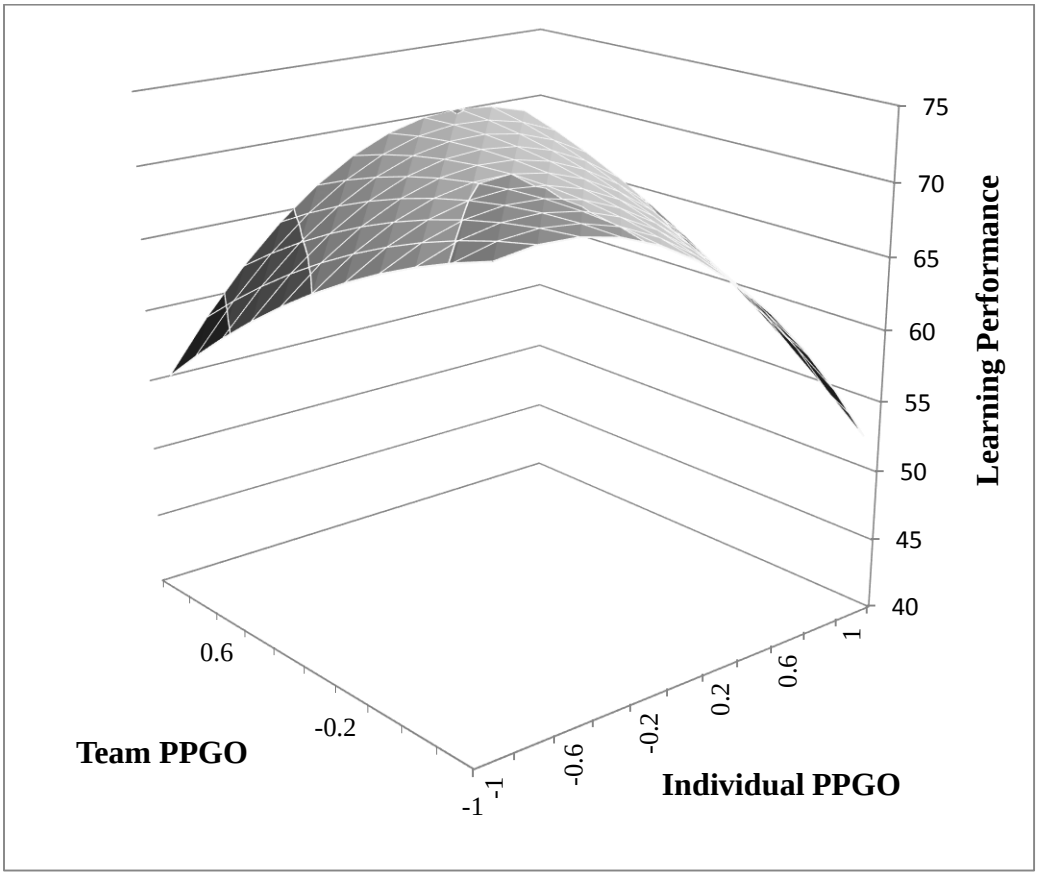


Figure A11. The Effect of PPGO Congruence on Learning Outcomes

# Appendix A: Scales Used in Dissertation

Individual Goal Orientation (VandeWalle, 1997):

Different people have different goals as they learn.

Please use the following statements to describe YOUR PERSONAL achievement goals as accurately as possible. Rate each item on a scale from 1 to 6, where "1" means "strongly agree" and "6" means "strongly disagree." Describe yourself as you see yourself at the present time, not as you wish to be in the future.

Individual LGO

1. I often read materials related to my work to improve my ability.
2. I am willing to select a challenging work assignment that I can learn a lot from.
3. I often look for opportunities to develop new skills and knowledge.
4. I enjoy challenging and difficult tasks at work where I'll learn new skills.
5. For me, development of my work ability is important enough to take risks.
6. I prefer to work in situations that require a high level of ability and talent.

   Individual PPGO
7. I would rather prove my ability on a task that I can do well at than to try a new task.
8. I'm concerned with showing that I can perform better than my peers.
9. I try to figure out what it takes to prove my ability to others at work.
10. I enjoy it when others at work are aware of how well I am doing.
11. I prefer to work on projects where I can prove my ability to others.

    Individual PAGO

12. I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others.
13. Avoiding a show of low ability is more important to me than learning a new skill.
14. I’m concerned about taking on a task at work if my performance would reveal that I had low ability.
15. I prefer to avoid situations at work where I might perform poorly.
16. When I don’t understand something at work, I prefer to avoid asking what might appear to others to be “dumb questions” that I should know the answer to already.

Collective Goal Orientation (adapted from VandeWalle, 1997):

Different people have different goals as they learn.

Please use the following statements to describe YOUR TEAM MEMBERS' achievement goals as accurately as possible. Rate each item on a scale from 1 to 6, where "1" means "strongly agree" and "6" means "strongly disagree." Describe yourself as you see yourself at the present time, not as you wish to be in the future.

Collective Team LGO

1. My team members often read materials related to my work to improve my ability.
2. My team members are willing to select challenging work assignments that they can learn a lot from.
3. My team members often look for opportunities to develop new skills and knowledge.
4. My team members enjoy challenging and difficult tasks at work where they will learn new skills.
5. For my team members, development of their work ability is important enough to take risks.
6. My team members prefer to work in situations that require a high level of ability and talent.

Collective Team PPGO

7. My team members would rather prove their ability on a task that they can do well at than to try a new task.
8. My team members are concerned with showing that they can perform better than my peers.

9. My team members try to figure out what it takes to prove their ability to others when we work.
10. My team members enjoy it when others are aware of how well they are doing.
11. My team members prefer to work on projects where they can prove their ability to others.

    Collective Team PAGO

12. My team members would avoid taking on a new task if there was a chance that they would appear rather incompetent to others.
13. Avoiding a show of low ability is more important to my team members than learning a new skill.
14. My team members are concerned about taking on a task in our team if their performance would reveal that they had low ability.
15. My team members prefer to avoid situations at work where they might perform poorly.
16. When my team members don't understand something in our team, they prefer to avoid asking what might appear to others to be "dumb questions" that they should know the answer to already.

Psychological Safety (Edmondson, 1999):

Please use the following statements to describe the extent to which you view your team's social climate and willingness to trust others not to gain advantage at your expense.

1. When someone makes a mistake in this team, it is often held against him or her.
2. In this team, it is easy to discuss difficult issues and problems
3. In this team, people are sometimes rejected for being different.
4. It is completely safe to take a risk on this team.
5. It is difficult to ask other members of this team for help.
6. Members of this team value and respect each other's contributions.
7. No one on this team would deliberately act in a way that would undermine my efforts.

Metacognition (Ford et al., 1998):

Different people use different learning strategies in coursework. Your answers to the following questions will help the researchers understand how individuals with different learning strategies work together.

Please use the following statements to describe your learning strategy. Rate each item on a scale from 1 to 6, where "1" means "strongly agree" and "6" means "strongly disagree."

Describe yourself as you behaved and learned in this class, not as you wish you had behaved.

1. During my group projects, I made up questions to help focus on my learning.
2. During my group projects, I asked myself questions to make sure I understood the things I had been trying to learn.
3. During my group projects, I tried to change to way I learned in order to fit the demands of the situation or topic.
4. During my group projects, I tried to think through each topic and decide what I was supported to learn from it, rather than just jump in without thinking.
5. During my group projects, I tried to determine which things I didn't understand well and adjust my learning strategies accordingly.
6. During my group projects, I set goals for myself in order to direct my activities.
7. During my group projects, if I got confused I made sure I sorted it out as soon as I could before moving on.
8. During my group projects, I thought about how well my tactics for learning were working.
9. During my group projects, I thought carefully about how well I had learned material I had previously studied.
10. During my group projects, I thought about what skills needed the most practice.

11. During my group projects, I tried to monitor closely the areas where I needed the most improvement.
12. During my group projects, I thought about what things I needed to do to learn.
13. During my group projects, I carefully selected what to focus on to improve on weaknesses I identified.
14. During my group projects, I noticed where I made mistakes and focused on improving those areas.
15. When I practiced a new skill on my team, I monitored how well I was learning its requirements.

Self-Efficacy (Choi et al., 2008):

Please read each of the following statements and indicate the extent to which you agree or disagree with each statement as it relates to this course. Describe yourself as you see yourself at the present time, not as you wish to be in the future.

1. I can finish assignments by deadlines.
2. I find it difficult to work on my assignments when there are other interesting things to do. (R)
3. I am able to concentrate on my coursework.
4. I find it difficult to take notes on this course's class lectures and instruction. (R)
5. I can use the library effectively to get information for class assignments.
6. I find it difficult to plan my schoolwork. (R)
7. I am able to remember information presented in lecture and textbooks.
8. I am able to organize my schoolwork.
9. It is difficult for me to arrange a place to complete coursework without distraction. (R)
10. I don't feel I participate well in class projects. (R)

Communication (Ewards & Cable, 2009):

Different people have different styles and modes of communication in teams. For each statement, please rate the degree to which you agree with these statements in regards to your fellow team members**.**

1. People on my team understand what I say.
2. I can communicate openly with the other people on my team.
3. I understand what people on my team say to me.
4. I have clear conversations with the other people on my team.
5. I have clear conversations with the other people on my team.
6. I think other people on my team understand me.

Trust (Edwards & Cable, 2009):

For each statement, please rate the degree to which you agree in regards to your fellow group project members.

1. I believe my team members have high integrity.
2. I can expect my team members to treat me in a consistent and predictable fashion.
3. My team members are not always honest and truthful. (R)
4. I generally believe my team members' motives and intentions are good.
5. I don't think my team members treat me fairly.
6. My team members are open and upfront with me.
7. I'm not sure I fully trust my team members. (R)

Attraction (Edwards & Cable, 2009):

For each statement, please rate the degree to which you agree in regards to your fellow group project members.

1. In general, I like my team members.
2. In general, I get along well with my team members.
3. I think my team members would make good friends.
4. I enjoy working with my team members.

Commitment (Bishop & Scott, 2000):

Please read the following statements about your team and indicate how strongly you agree or disagree with each statement.

1. My team members really care about the fate of this team.
2. I cannot accomplish my tasks without information or materials from other members of my team.
3. Other members of my team depend on me for information or materials needed to perform their tasks.
4. Within my team, jobs performed by team members are related to one another.

Conflict (Jehn & Mannix, 2001):

The following questions ask about relationships within the team as a whole.

1. How much friction is there among members in your team?
2. How much are personality conflicts evident in your team?
3. How much tension is there among members in your team?
4. How much emotional conflict is there among members of your team?
5. How much conflict about the work you do is there in your team?
6. To what extent are there differences of opinion in your team?
7. How frequently are there conflicts about ideas in your team?
8. How often do people in your team disagree about opinions regarding the project being done?

Team Learning Behaviors (Edmondson, 1999):

Please rate the degree to which you agree with the following statements regarding your team and how you work together.

1. We regularly take time to figure out ways to improve our team's work processes.
2. This team tends to handle differences of opinion privately or off-line, rather than addressing them directly as a group.
3. Team members go out and get all the information they possibly can from others, such as our TA, our professor, or people we trust.
4. This team frequently seeks new information that leads us to make important changes.
5. In this team, someone always makes sure that stop to reflect on the tam's work process.
6. People in this team often speak up to test assumptions about issues under discussion.
7. We invite people from outside the team to present information or have discussions with us.

Contributions to the Team (Kristof-Brown & Stevens, 2001):

Please rate the degree to which you agree about the following statement regarding your team member.

1. Actively participated in discussion on project-related issues.
2. Contributed original ideas to group projects.
3. Attended team meetings prepared to discuss assigned topics.
4. Followed up on decisions.
5. Completed assigned work.
6. Remained focused on subject matter during meetings.
7. Met team deadlines.

Cooperative behaviors (Campion, Medsker & Higgs, 1993):

Please rate the degree to which you agree with the following statements about your coworker:

1. This member of my team is very willing to share information with other team members about our work.
2. This team member enhances the communication among the people in our group.
3. This team member cooperates to the get work done.

Knowledge-Sharing Behaviors (Yu et al., 2010):

This team member has…

…contributed knowledge to our team.

…usually actively shared his or her knowledge with others.

…has contributed knowledge to the other team members that resulted in the development of new insights.

…has tried to share his or her educational and training expertise with other members in more effective ways.