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The Relationship of Team Goal Orientation with Team Processes and Outcomes

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Abstract

As teams are highly prevalent in organizations, it is beneficial to examine inputs that facilitate effective team processes and outcomes. This research examined the relationship between goal orientation and important team processes (communication, interpersonal conflict, task conflict, and social loafing) and how these processes, in turn, impacted team performance and satisfaction. The moderating role of task interdependence was also examined. Information was gathered from 270 individuals (83 teams) who were enrolled in graduate and undergraduate courses that required a team project. Results indicated that team learning goal orientation was positively related to increased communication and decreased task conflict, interpersonal conflict, and social loafing. Prove goal orientation was significantly related to communication. Avoid goal orientation was related to decreased communication and increased interpersonal conflict. In contrast to past literature, no significant relationships were found between team processes and team performance and satisfaction; however, task interdependence did moderate the relationship between task conflict and performance along with the relationship between social loafing and satisfaction. Theoretical and practical implications concerning team goal orientation are discussed.

The Relationship of Team Goal Orientation with Team Processes and Outcomes

Teams are prevalent in many organizations and are responsible for important activities such as decision making, product development, strategy formulation, and other various tasks that are aligned with organizational goals (Devine, Clayton, Philips, Dunford, & Melner, 1999). In light of the prevalence and importance of teamwork in organizations, it is important to understand what factors influence team processes and outcomes in order to improve team efficiency and effectiveness.

A team involves two or more individuals who interact to accomplish shared goals (Kozlowski & Bell, 2003). In order to better understand factors that influence teams and their resulting outcomes, it is conceptually helpful to examine these factors in a theoretical framework. A commonly utilized framework in team research is the input-processes-output (I-P-O) framework (Guzzo & Shea, 1992; Hackman, 1987; McGrath, 1984; Steiner, 1972). Inputs entail individual characteristics (e.g., personality), team factors (e.g., team structure), and organizational factors (e.g., organizational culture). These inputs influence teams by facilitating and/or limiting potential processes. Processes (e.g., interpersonal interactions), in turn, influence team outcomes by impacting how the team members interact together.

Some inputs that have been examined in teams are personality and cognitive ability (Barrick, Stewart, Neubert, & Mount, 1998; Barry & Stewart, 1997; Bell, 2007; Devine & Philips, 2001). In a meta-analysis conducted by Bell (2007) it was found that personality factors such as conscientiousness ($\rho = 0.30$), agreeableness ($\rho = 0.31$), extraversion ($\rho = 0.15$), and openness to experience ($\rho = 0.20$) are related to team performance in field settings. In addition, cognitive ability has also been found to be

significantly related to team performance (Barrick et al., 1998; Bell, 2007; Devine & Philips, 2001). Although these are important inputs that influence team processes and outcomes, there are other inputs that may influence team work. An additional input is goal orientation (GO), which refers to peoples' motivation to learn new information, prove their competence, and/or avoid looking incompetent (VandeWalle, 1997). Goal orientation has been shown to exhibit incremental validity over conscientiousness, agreeableness, extraversion, emotional stability, openness to experience, and general mental ability in predicting performance at the individual level (Payne, Youngcourt, & Beaubien, 2007). Although the importance of GO has been found at the individual level, it is necessary to determine the extent to which GO translates to group level processes allowing for an increased understanding of inputs that influence group processes and outcomes (Klein & Kozlowski, 2000).

In order to determine the effects of GO on teams, the relationship between group level GO and team processes (communication, task conflict, relationship conflict, and social loafing) and their resulting influence on team performance and satisfaction outcomes will be examined. These processes have been shown to be important factors relating to both satisfaction and performance in teams. Communication refers to the extent to which team members talk to each other and share information (Campion, Medsker, & Higgs, 1993). Communication has been shown to be positively correlated with team productivity, although the correlation with satisfaction was nonsignificant (Campion et al., 1993). Task conflict involves disagreement and argument concerning project tasks while relationships conflict refers to interpersonal friction and conflict. Both have been shown to negatively relate to performance and communication (De Dreu

& Weingart, 2003). Social loafing involves individuals in groups demonstrating less effort and motivation than when they are working independently, which, by definition, results in decreased productivity (Karau &Williams, 1993; Latané, Williams, & Harkins, 1979). To increase knowledge about the influence of GO at the team level, the relationship between these processes with team performance and satisfaction will be explored. Given the examination of team level variables, it is important to look at task interdependence, which is the degree to which team members are dependent upon each other to accomplish their tasks (Wageman, 1995). More specifically, the moderating influence of perceived task interdependence on the relationship between team processes and outcomes will be examined.

Goal Orientation

Goal orientation refers to an individual's "goal preferences in achievement settings" (Payne et al., 2007). The basic ideas of GO originally emerged in educational psychology with the work of Carol Dweck (1999). Dweck observed that children had one of two unique reactions when confronted with a challenge. Some students quickly gave up, exhibiting a sense of helplessness, while other students persisted. Based on these observations, Dweck hypothesized that students either had an incremental or an entity theory of intelligence. Students with an entity theory viewed intelligence as a fixed trait. In contrast, students with an incremental theory believed that intelligence is malleable; they believed that if they work hard enough they could improve their intelligence (Dweck, 1999). These two theories of intelligence influenced how students approached learning situations. Students with an entity theory believed that since intelligence was fixed, it was necessary for them to prove they were intelligent by

completing work quickly and easily. Any difficulty was perceived as a demonstration of lesser intelligence. Conversely, students with an incremental theory were not threatened by difficult tasks. In fact, they believed that these difficulties were opportunities to improve their abilities (Dweck, 1999).

Structure of goal orientation. Based on these ideas about intelligence, Dweck (1999) proposed that students could either have a learning goal orientation (LGO) or a performance GO. Students with a LGO had an incremental theory of intelligence and wanted to master the respective subject matter. Students with a performance GO had an entity theory of intelligence and wanted to prove their intelligence or avoid looking unintelligent (Dweck, 1999).

Learning goal orientation and performance GO were originally perceived as being on opposite ends of the same continuum (Dweck, 1999). However, because wanting to learn and master new information and the desire to exhibit high performance are not mutually exclusive, it was proposed that LGO and performance GO are not merely opposite ends of the same continuum, but that they are separate constructs (Button, Mathieu, & Zajac, 1996). If LGO and performance GO were merely at opposite ends of the same continuum, it would be expected that they would be inversely related to each other, such that someone with a high learning orientation would have a low performance orientation. It was, however, found that there was no significant relationship between the two dimensions, supporting the idea that they were indeed separate constructs (r = -0.007, *ns*; Button et al., 1996). Given this, the present study will consider LGO and performance GO to be inclusive, meaning that someone can simultaneously have a high LGO and a high performance GO.

Originally, the GO literature defined performance GO as entailing the desire both to receive positive judgments and avoid negative judgments about one's intelligence (Heyman & Dweck, 1992). Although the GO literature historically considered GO to be two-dimensional, VandeWalle (1997) proposed that it would be advisable to divide performance GO into prove goal orientation (PGO) and avoid goal orientation (AGO).

Prove goal orientation is defined as "the desire to prove one's competence and to gain favorable judgments about it" (VandeWalle, 1997). Proving one's abilities can be done by comparing the performance of oneself to another's performance. In contrast to PGO, someone with a LGO is focused on self-improvement (Butler, 1992; Pintrich, 2000). For example, an item on the PGO scale developed by VandeWalle (1997) is "I'm concerned with showing that I can perform better than my colleagues."

In contrast to a PGO, AGO is primarily concerned with avoiding negative judgments about one's performance. People with AGO prefer to avoid situations in which they might demonstrate possible incompetence (VandeWalle, 1997). VandeWalle (1997) demonstrated that these two dimensions of performance orientation are distinct from each other and from LGO through an exploratory factor analysis, and verified this by a supplementary confirmatory factor analysis. Even though VandeWalle (1997) found that all three aspects of GO are distinct constructs, they are related. Learning GO is correlated positively with PGO (ρ = 0.15) and negatively related to AGO (ρ = -0.23). In addition, AGO and PGO are positively related with one another (ρ = 0.40) (Payne et al., 2007). These results support VandeWalle's (1997) proposal that these three forms of GO are indeed separate constructs. Even though AGO and PGO are correlated with each other, they each have a different directional relationship with LGO.

It has recently been suggested that, in addition to breaking down performance GO into AGO and PGO, LGO should also be broken down into prove and avoid (Elliot & McGregor, 2001). Prove learning goal orientation refers to what was traditionally known as LGO, namely, that people with this orientation strive to learn and master the information. Avoid learning orientation refers to an individual's tendency to avoid loss of information and skills that were previously acquired. This is distinct from AGO. Individuals with an avoid learning orientation use themselves as the basis of comparison while individuals with an AGO use others as the basis of comparison. An exploratory factor analysis and subsequent factor analysis provide evidence that there might be four separate GO constructs (Elliot & McGregor, 2001). The applicability of this additional GO facet, however, is not as broad as the other three. The concern over losing previously acquired information is primarily applicable to a small number of individuals who are experts in their specific field (DeShon & Gillespie, 2005). An additional concern of using mastery avoid orientation is that it has little empirical support (DeShon & Gillespie, 2005). Given this lack of empirical support and the student participants that will be used in this study, a three facet concept of GO will be utilized.

Trait vs. situational goal orientation. Goal orientation can be conceptualized in three ways. First, it can be viewed as a personality trait that is stable across situations. People who think that GO is best described as a trait have traditionally attempted to ascertain a person's GO through various self-report scales designed to access an individual's underlying GO (e.g., Button et al., 1996; Kristof-Brown & Stevens, 2001; VandeWalle, 1997). Second, it can be viewed as dependent on the situation, where in some circumstances an individual may have a PGO while in others he or she might have

a LGO. This has primarily been studied through either administering a set of instructions designed to induce the desired GO state (e.g., Ames, 1984; Nicholls, 1975) or through situation specific self-report scales (e.g., Button et al., 1996). Through an exploratory factor analysis examining trait and situation-specific GO, it was found that they are distinct with four factors (trait LGO, trait PGO, state LGO, and state PGO) fitting the data better than two factors (combined state and trait LGO and combined state and trait PGO) ($\chi^2_{(5,\, n = 443)} = 871.92$, $p < 0.05$). Even though the exploratory factor analysis indicated that they are distinct constructs, they are positively correlated with each other (trait and state LGO ($r = 0.51$); trait and state learning orientation ($r = 0.48$); Button et al., 1996). A third way is to view GO as a quasi-trait, a hybrid of trait and situational (e.g., Button et al., 1996). From this perspective, GO is considered primarily to be a trait, but in certain situations it can be manipulated (DeShon & Gillespie, 2005). In the absence of strong situational factors, a trait GO would prevail. However, when there are strong environmental factors, a situational GO may be employed.

A recent study examined the influence of trait versus situational GO in responses to a situational judgment test (Friede Westring et al., 2009). It was found that situational differences better accounted for the variance in responses to the GO situational judgment test than trait difference. Overall, trait factors accounted for 13.6% of the variance while situational differences accounted for 43% of the variance. Although the results of situational judgment test might not perfectly extrapolate to actual behaviors, these results do demonstrate the importance of examining situation specific GO. Given the greater variance explained through situational differences, this study will examine the situational, as opposed to trait, component of GO.

Correlates of goal orientation. Goal orientation has been found to be important in the workplace. A meta-analysis conducted by Payne et al. (2007) examined the effects of trait GO and found several important relationships. Learning GO was found to be positively related to behaviors such as learning strategies (ρ = 0.49), more difficult self-set goals (ρ = 0.19), feedback seeking (ρ = 0.20), and increased learning (ρ = 0.16), but negatively related to state anxiety (ρ = -0.10). In general, PGO and AGO were found to be related to negative behaviors. Prove GO was negatively related to learning strategies (ρ = -0.17) and was positively related to greater state anxiety (ρ = 0.19). Avoid GO was found to be related to goal difficulty (ρ = -0.17) such that individuals with an AGO set easier goals. Also, AGO resulted in decreased feedback seeking behaviors (ρ = -0.22) and greater state anxiety (ρ = 0.36). Overall, there were no large relationships between GO and performance. However, LGO and performance GO had small positive nonsignificant relationships with performance, while AGO had a small negative relationship with performance (ρ = -0.13; Payne et al., 2007).

Goal orientation and teams. Although GO has primarily been examined at the individual level, it also has been examined at the team level. A team's GO has been examined in two ways. First, it was considered to be an aggregate of individual team members' GO (LePine, 2005; Porter, 2005). Second, it was viewed as a collective construct such that each team member's perception of overall team GO was measured and then aggregated (Bunderson & Sutcliffe, 2003). In order to increase understanding of how GO influences team processes and outcomes, team GO will be measured utilizing both of these methods. Although results are expected to be similar, it is important to

verify that this is indeed the case in order to provide a more complete understanding of the GO construct in teams (Research Question 1).

Research on the effect of team GO on performance has been mixed. Some research has pointed to a curvilinear relationship between team LGO and performance such that teams with a moderate learning orientation performed better than teams with weak or strong learning orientations (Bunderson & Sutcliffe, 2003). In contrast, other research has shown a positive, albeit nonsignificant, relationship between learning orientation and task performance ($r = 0.10$, *ns*) with a stronger relationship with performance orientation and task performance ($r = 0.17$, *ns*). It is important to note that GO was measured at the individual level and then aggregated in order to obtain team level GO (Porter, 2005).

Although research on the relationship between team GO and performance has been mixed, team LGO (measured at the individual level and then aggregated to form the team level) was found to be positively related to efficacy, commitment, and backing up behavior (assisting other team members in the completion of their tasks). Similarly, team PGO was positively related to commitment; however, it was not related to team efficacy and backing up behavior (Porter, 2005). Team GO has also been found to interact with goal difficulty in predicting how teams will adapt. Teams with a high PGO struggled with difficult goals while teams with high LGO were more effective (LePine, 2005).

Current GO literature at the team level is limited in that previous studies have only examined LGO and performance GO. In the past, researchers have not divided performance GO into prove and avoid, limiting the understanding of how different GO's relate to teams. In addition, previous researchers have measured GO as either an

aggregate of individuals' GO (LePine, 2005; Porter, 2005) or an aggregate construct (Bunderson & Sutcliffe, 2003). These two methods have not been directly compared in the same study. Another goal of this research is to shed light on how GO influences team processes and outcomes.

GO and Processes

The extent to which team GO influences team processes will be examined. More specifically, the influence of LGO, PGO, and AGO on communication, interpersonal conflict, task conflict, and social loafing and the subsequent effect of these processes on team performance and satisfaction will be examined.

In terms of personality characteristics, individuals with LGO demonstrate increased emotional control, social competence (the use of social skills in interpersonal relationships), proactive behavior (seeking ways to improve one's environment), healthy conflict, willingness to share, willingness to help, desire to maintain relationships with others, and desire to act within social norms (Cheung, Ma, & Shek, 1998; Darnon & Butera, 2007; Porath & Bateman, 2006). In teams, individuals with a LGO are more likely to exhibit greater team commitment and assist others who are failing at their task, while they are less likely to view peers as a threat (Porter, 2005; Ryan & Pintrich, 1997). Due to the positive interpersonal characteristics that individuals with LGO have, it is expected that a team with a high LGO will have more positive interpersonal team processes. More specifically, teams with a LGO will exhibit increased communication because communication provides an environment for increased learning.

In contrast, it is expected that teams high in LGO will have decreased negative team processes. Since individuals with a LGO desire to maintain relationships with

others (Cheung et al., 1998), it is expected that teams with a high LGO will be less likely to exhibit interpersonal conflict because interpersonal conflict detracts from their goal of mastering the information (Dweck, 1999). In contrast, the relationship between LGO and task conflict is expected to be positive. This relationship is expected to occur because task conflict provides the opportunity for teams to discuss various aspects of the task, thereby improving their understanding of the task. Similar to interpersonal conflict, social loafing would limit the individuals' and the teams' ability to learn the material since less effort is put into accomplishing the task, therefore, the hypotheses for the relationship between team LGO and team processes are as follows:

Hypothesis 1a: Team LGO will be positively related to team communication.

Hypothesis 1b: Team LGO will be negatively related to team interpersonal conflict.

Hypothesis 1c: Team LGO will be positively related to team task conflict.

Hypothesis 1d: Team LGO will be negatively related to team social loafing.

In contrast to the positive interpersonal skills associated with LGO, individuals with performance GO demonstrate increased interpersonal disagreement. Performance goal orientation has no relationship with pro-social behavior, emotional control, social competence, and proactive behavior (Cheung et al., 1998; Porath & Bateman, 2006). Students with trait performance orientations are less likely to seek help from peers and teachers (Karabenich, 2003; Ryan & Pintrich, 1997), viewing their peers and teachers as more of a threat than students with LGO (Ryan & Pintrich, 1997). Similarly, students with a situational performance orientation spend more time engaging in social comparisons than students with situational LGO (Butler, 1992). In addition, performance

GO does not impact social loafing (Gagné & Zuckerman, 1999). It is important to note, however, that these studies did not separate performance orientation into PGO and AGO.

Given the differences inherent in PGO and AGO orientations, it is expected that they will be related to different team processes. More specifically, individuals with a PGO are concerned with demonstrating that they are superior to their peers (Butler, 1992; Pintrich, 2000). This competiveness at the individual level is expected to play out at the group level in terms of interpersonal and task conflict because interpersonal and task conflict provide the means to demonstrate an individual's ability. Therefore, it is expected that teams with high PGO will more likely demonstrate increased team interpersonal and task conflict.

The relationship between PGO and communication is a little more convoluted. On one hand, PGO might be positively related to communication because it would improve a team's performance and provide an environment which allows the team to demonstrate its abilities to those outside the team. On the other hand, since individuals with a PGO try to prove that they are better than their peers, they might share less information with their teammates in order to give themselves a competitive advantage (Butler, 1992; Pintrich, 2000). Given this, the direction of the relationship between PGO and communication will not be hypothesized.

It is expected that team PGO will be negatively related to social loafing. Individuals with a PGO desire to prove their competencies (VandeWalle, 1997). Given this desire, PGO would result in decreased acts of social loafing because engaging in social loafing does not provide the opportunity to demonstrate competencies. The hypotheses are as follows:

Hypothesis 2a: Team PGO will be related (positively or negatively) to team communication.

Hypothesis 2b: Team PGO will be positively related to team interpersonal conflict.

Hypothesis 2c: Team PGO will be positively related to team task conflict.

Hypothesis 2d: Team PGO will be negatively related to social loafing.

Avoid goal orientation encompasses the desire to prevent demonstrating incompetence. One potential way to avoid demonstrating incompetence is to exert less effort. If one does not do the work, then one cannot make a mistake. Supporting this idea, previous research has shown that learning and PGO are positively correlated with effort. In contrast, AGO demonstrates a negative, albeit nonsignificant, relationship with effort (VandeWalle, Cron, & Slocum, 2001). Given this, it is probable that teams with an AGO will exhibit increased instances of social loafing.

Social loafing results in decreased effort and withdrawal (Karau & Williams, 1993). It is expected that teams with an AGO will exhibit a decrease in communication, interpersonal conflict, and task conflict since these processes are a result of decreased effort and withdrawal. The hypotheses for the relationship between AGO and team processes are as follows:

Hypothesis 3a: Team AGO will be negatively related to team communication.

Hypothesis 3b: Team AGO will be negatively related to team interpersonal conflict.

Hypothesis 3c: Team AGO will be negatively related to team task conflict.

Hypothesis 3d: Team AGO will be positively related to team social loafing.

Processes and Outcomes

It is expected that team processes will influence team outcomes. Past research has demonstrated that team communication is positively related to team productivity and satisfaction (Campion et al., 1993; Campion, Papper, & Medsker, 1996; Earley & Mosakowski, 2000; Hoegl & Gemuenden, 2001). Given this, it is hypothesized that team communication will relate positively to team performance and satisfaction.

In a meta-analysis, it was found that interpersonal conflict is negatively related to both team performance (ρ = -0.22) and satisfaction (ρ = -0.54; De Dreu & Weingart, 2003). In this meta-analysis, task conflict was also shown to be negatively related to performance (ρ = -0.23) and satisfaction (ρ = -0.32). It is expected that there will be a negative relationship between interpersonal and task conflict with team performance.

Given the nature of social loafing (that individuals put less effort into team work than individual work) it is expected that social loafing will result in decreased performance (Karau & Williams, 1993; Latané et al., 1979). The relationship between social loafing and team satisfaction is a little more convoluted. It is possible that teams high in social loafing have increased team satisfaction; however, it is also possible that the resulting decreased performance of teams with high social loafing would result in decreased team satisfaction. Given these two possibilities, the relationship between social loafing and team satisfaction is unknown but will be explored. Following from this, the hypotheses of the relationship between team processes and team outcomes are as follows.

Hypothesis 4a: Team communication will be positively related to team

performance.

Hypothesis 4b: Team communication will be positively related to team satisfaction.

Hypothesis 5a: Team interpersonal will be negatively related to team performance.

Hypothesis 5b: Team interpersonal conflict will be negatively related to team satisfaction.

Hypothesis 6a: Team task conflict will be negatively related to team performance.

Hypothesis 6b: Team task conflict will be negatively related to team satisfaction.

Hypothesis 7: Team social loafing will be negatively related to team performance.

Task Interdependence

Task interdependence involves the degree to which team members are dependent on each others' resources in order to accomplish their goals (Wageman, 1995). Depending on the needs of the team, some teams are highly interdependent, with the goals of the team only being accomplished if team members actively share their knowledge, skills, and abilities. For other teams, less task interdependence is necessary to accomplish their goal.

Previous research has found that task interdependence, the extent to which team members are dependent on each other, is generally positively related to team performance, although this depends to some extent on the structure and needs of the team (e.g., Campion et al., 1993; Campion et al., 1996; Fan & Gruenfeld, 1998; Shaw,

Duffy, & Stark, 2000). In addition to being positively related with performance, task interdependence may be positively related to team satisfaction and job satisfaction (van der Vegt, Emans, & van de Vliert, 2001).

Along with being directly correlated with performance, satisfaction, and interpersonal behaviors, perceived task interdependence has also been found to interact with other variables in team work. For example, the relationship between helping behaviors, teamwork processes, team goal commitment, and team control with team performance have all been found to interact with task interdependence such that the process are more related to performance when the task interdependence is high (Aubé & Rousseau, 2005; Bachrach, Powell, Collins, & Richey, 2006; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008; Liden, Wayne, & Bradway, 1997). In fact, task interdependence is so important that Kozlowski and Bell (2003, p. 363) state that "new research that fails to consider the effects of task interdependence for the team phenomenon in question has little relevance to building knowledge in the work groups and teams literature." Given this, perceived task interdependence will be included in this model.

It is expected that perceived task interdependence will moderate the relationship between team processes and outcomes (e.g., Bachrach et al., 2006; LePine et al., 2008). More specifically, it is anticipated that team processes will be more important with respect to team performance and satisfaction when perceived task interdependence is high than when it is low. This is hypothesized to occur because in situations with high task interdependence, team members are more dependent upon each other; thereby, they are more influenced by team processes than when task interdependence is low. Based on this, the hypothesis is as follows:

Hypothesis 8: Perceived task interdependence will moderate the relationship between team processes (communication, interpersonal and task conflict, and social loafing and outcomes (team performance and satisfaction). That is, low perceived task interdependence will be associated with a decreased relationship between team processes and outcomes while high perceived task interdependence will be associated with an increased relationship between team processes and outcomes.

Method

Participants

A total of 403 undergraduate and graduate students at a Midwestern university participated in this study. All participants were enrolled in courses that required team work. The team work in these courses consisted of a wide variety of projects. For example, one team project entailed presenting a case analysis and another involved completing an information analysis for a nonprofit organization. One participant was removed because he/she was younger than 18. In 16 cases participants were enrolled in more than one of the classes utilized for this study, that is, they were a part of multiple teams. For those cases, only the chronologically first response from each individual was kept in the dataset to maintain the independence of the data. This resulted in 386 unique individual responses. The data were screened for univariate and multivariate outliers. Fifty-six participants had high Mahalanobis distances. Upon further examination, strange response patterns were observed. Primarily, these participants were not consistent in responding to scales; they would strongly agree and strongly disagree with items designed to assess the same underlying construct. Therefore, they were removed from

the dataset. The team response rates for the remaining 330 participants were examined. Participants were removed from the dataset if they had less than 3 team members respond in order to accurately assess team inputs, processes, and outcomes. Sixty participants were removed due to low team participation.

The final sample included 270 participants (83 teams). The teams ranged in size from three to seven members with an average team size of 4.05 members. Of the 270 participants, 30 (13%) were African American, 28 (12%) were Asian, 163 (68%) were Caucasian, 4 (2%) were Hispanic/Latino, 15 (6%) were other ethnicities, and 4 chose not to respond. The average age of the participants was 25.96 (*SD* = 6.42) with 130 (53%) males and 114 (47%) females (see Table 1).

Table 1. ***Participant Demographics***

	n	%
Year in School		
Freshmen	3	1
Sophomore	11	5
Junior	66	27
Senior	123	51
Graduate Student	39	16
Ethnicity		
African American	30	13
Asian	28	12
Caucasian	163	68
Hispanic/Latino	4	2
Other	15	6
Gender		
Male	130	53
Female	114	47

Procedures

Near the middle of their team project, the researcher went to each class and invited team members to participate in the research (Time 1). The midpoint of the team

project was selected in order to provide ample opportunity for team members to interact and develop team norms prior to measurement. The time the groups had spent together at Time 1 ranged from 30 minutes to 30 hours with individuals spending a median time of 2 hours on their team project. At this point, individual GO, team processes, and task interdependence were measured.

Toward the end of the team project, a second set of measures was administered, measuring team GO and team satisfaction (Time 2). In total, the teams spent 45 minutes to 200 hours on their projects with teams spending a median of 5 hours working together. Finally, when the project was complete, the teams' project grades and ratings of task performance were obtained from class instructors.

Measures

Perceived team goal orientation. To obtain the individuals' perceptions of their team's GO, a 14-item scale adapted from VandeWalle (1997) for LGO, PGO, and AGO at work was given which is similar to past research (Bunderson & Sutcliffe, 2003). Although this scale traditionally measures trait GO at work, the questions were rephrased to measure GO specific to their team project. In addition, two items were removed because they were not applicable–the items referred to selecting the team project, whereas in this study the sample teams were assigned a project. An example, measured using a 6-point Likert scale (1 = *strongly agree* to 6 = *strongly disagree*), is as follows: "*My team prefers to work in situations on this group project that require a high level of ability and talent*" (LGO).

In a confirmatory factor analysis (CFA) the three factor model for team GO demonstrated poor fit ($\chi^2_{74} = 239.68$, $p < 0.01$, RMSEA = 0.09, CFI = 0.95, GFI = 0.88).

However, allowing the error of two items in the LGO scale ("*My team often reads material related to this team project to improve our abilities*" and "*On this team project, my team often looks for opportunities to develop new skills and knowledge*") to covary significantly improved model fit ($\Delta\chi^2_1 = 33.26$, $p < 0.01$; $\chi^2_{73} = 206.42$, $p < 0.01$, RMSEA = 0.08, CFI = 0.95, GFI = 0.90). Thus, this modification was applied to subsequent analyses. Coefficient alpha was 0.90 for team LGO, 0.84 for team PGO, and 0.69 for team AGO. Like individual GO, a 2-factor model was compared to the 3-factor model. The 3-factor model (LGO, PGO, and AGO) demonstrated better fit than the 2-factor model (LGO and performance GO; $\Delta\chi^2_2 = 194.25$, $p < 0.01$; $\chi^2_{75} = 400.67$, $p < 0.01$ RMSEA = 0.13, CFI = 0.90, GFI = 0.82) suggesting that team GO is best conceptualized as being comprised of LGO, PGO, and AGO as separate latent factors.

Individual goal orientation. Individuals' situational LGO, PGO, and AGO were measured using a 16-item scale based on VandeWalle's (1997) scale. As with the previous scale, these items were modified from VandeWalle (1997) to better measure the individuals' GO for the project. One example item is, "*On this team project, I enjoy challenging and difficult tasks where I'll learn new skills*" (LGO). All questions were measured using a 6-point Likert scale (1 = *strongly agree* to 6 = *strongly disagree*; for a complete list of questions, see Appendix 1).

Confirmatory factor analysis (CFA) was utilized to verify the scale's hypothesized factor structure. A three factor model of individual GO (comprised of LGO, PGO, AGO) exhibited adequate fit ($\chi^2_{101} = 204.19$, $p < 0.01$, RMSEA = 0.07, CFI = 0.96, GFI = 0.90). Coefficient alpha was 0.87 for individual LGO, 0.73 for PGO, and 0.83 for AGO. The highest interfactor correlation was between PGO and AGO (r =

0.44); however, the 3-factor model demonstrated better fit than a 2-factor model which combined AGO and PGO ($\Delta\chi^2_{(2)} = 193.16$, $p < 0.01$; $\chi^2_{103} = 397.35$; $p < 0.01$, RMSEA = 0.11, CFI = 0.91, GFI = 0.83). This is in line with the results found by VandeWalle (1997). For descriptive statistics and scale fit indices see Table 2; for intercorrelations see Table 3.

Communication. Communication was assessed using a three question scale from Campion et al., (1993) and O'Reilly and Roberts (1976). Participants were asked to indicate on a 6-point Likert scale (1 = *strongly agree* to 6 = *strongly disagree*) the extent to which "*Members of my team are very willing to share information with other team members about our work*" along with two other similar questions (Campion et al., 1993). Alpha was 0.87 and a CFA indicated good model fit ($\chi^2_8 = 17.08$, $p < 0.03$, RMSEA = 0.07, CFI = 0.99, GFI = 0.98; note: the CFA for communication was analyzed simultaneously with the CFA for task interdependence to prevent model saturation). In one of the subsequent analyses, a Heywood Case was observed. In order to run the models, the error variance of item *'It is easy to ask advice from any member of this group*" was set to zero in all subsequent analyses.

Interpersonal conflict. Interpersonal conflict was assessed using four questions measured on a 6-point Likert scale (1 = *very little* to 6 = *a lot*) based on a scale developed by Jehn (1995). This scale was modified from focusing on their "work unit" to focusing on their "team" which is more applicable in the educational environment. An example item is: "*How much are personality conflicts evident in your team?*" Alpha was 0.91. A CFA of the model did not result in adequate fit ($\chi^2_2 = 18.75$, $p < 0.01$, RMSEA = 0.19, CFI = 0.98, GFI = 0.96). However, when the uniqueness of "*How much friction is there*

among members of your team?" was allowed to covary with the uniqueness of "*How much are personality conflicts evident in your team?*" model fit became adequate ($\Delta\chi^2_1$ = 16.95, $p < 0.01$; $\chi^2_1 = 1.8$, $p = 0.18$, RMSEA = 0.06, CFI = 1.00, GFI = 1.00). Given this improved fit, the uniquenesses of these items were allowed to covary in subsequent analyses.

Task conflict. Task conflict was assessed with a four question, 6-point Likert scale (1 = *very little* to 6 = *a lot*). These questions were based on a scale developed by Jehn (1995) but modified to fit the educational environment. An example question is as follows: "*To what extent are there differences of opinion in your team?*" Alpha was 0.86 and a CFA indicated adequate fit ($\chi^2_2 = 7.18$, $p = 0.03$, RMSEA = 0.10, CFI = 0.99, GFI = 0.99).

Social loafing. Social loafing was measured using a four question, 6-point Likert scale (1 = *very little* to 6 = *a lot*) based on previous measures of social loafing which were modified in order to measure team social loafing in the educational context (George, 1992; Price, Harrison, & Gavin, 2006). An example question is as follows: "*To what extent do members of your group defer responsibilities to other members in you group?"* (George, 1992). The CFA did not exhibit adequate fit ($\chi^2_2 = 9.61$, $p = 0.08$, RMSEA = 0.13, CFI = 0.98, GFI = 0.98), however, when the uniqueness of "*To what extent do members of your team defer responsibilities to other members*" was allowed to covary with "*To what extent do members of your team goof off,*" the model fit became adequate ($\chi^2_1 = 0.45$, $p = 0.50$, RMSEA = 0.00, CFI = 1.00, GFI = 1.00). Although this modification significantly improved the fit, the uniquenesses of these items were not

allowed to covary in subsequent analyses given that it caused difficulties in model admissibility for models incorporating more latent factors. Coefficient alpha was 0.79.

Task interdependence. Perceived task interdependence was measured using a 3-item scale modified from Campion et al. (1993). The participants were asked to rate their answers on a 6-point Likert scale (1 = *strong agree* to 6 = *strongly disagree*). An example item is "*Team members depend on each other for information or materials needed to perform tasks.*" Hypothesized factor structure was adequate (χ^2_8= 17.08, $p <$ 0.03, RMSEA = 0.07, CFI = 0.99, GFI = 0.98; note that the CFA for task interdependence was analyzed with the CFA for communication to prevent model saturation) and coefficient alpha was 0.85.

Satisfaction. In order to assess satisfaction, individuals were given a 3-item scale with questions based on Cammann, Fichman, Jenkins, and Kelsh's (1983) scale of job attitudes but modified to asses team satisfaction as opposed to job satisfaction. An example item is "*In general, I like working with my group*." Items were measured on a 6-point Likert scale (1 = *strong agree* to 6 = *strongly disagree*). A CFA indicated adequate fit (χ^2_{18} = 43.08, p = 0.01, RMSEA = 0.07, CFI = 0.99, GFI = 0.96; note that the CFA for satisfaction was analyzed simultaneously with the CFA for team LGO to prevent model saturation) and coefficient alpha was 0.88.

Task performance. The teams' task performance was measured using their grade for the team project and a scale which assessed the quality, quantity, and accuracy of their work. The scale entailed a 3-item, 5-point Likert scale based on a performance scale developed by Welbourne, Johnson, & Erez (1998; 1 = *needs much improvement* to 5 = *excellent*). The performance scale had a coefficient alpha of 0.82. The average grade

for team performance was a B+. Adding grade to the performance scale resulted in a poor fitting model of team performance ($\chi^2_2 = 4.69$, $p = 0.10$, RMSEA = 0.13, CFI = 0.98, GFI = 0.91). However, allowing the uniquenesses of "*Quantity of the work*" and "*Accuracy of the work*" to covary resulted in a better fitting model ($\Delta\chi^2_1 = 4.21$, $p < 0.05$; $\chi^2_1 = 0.48$, $p = 0.49$, RMSEA = 0.00, CFI = 1.00, GFI = 1.00). Given the improved fit, the uniquenesses of these items were allowed to covary in subsequent analyses.

Table 2. ***Scale Descriptives***

	M_{Team}	SD_{Team}	$M_{Indiv.}$	$SD_{Indiv.}$	*df*	χ^2	RMSEA	CFI	GFI
Mean Individual GO					101	204.19	0.07	0.96	0.90
Learning	4.45	0.56	4.43	0.84					
Prove	4.46	0.57	3.67	0.89					
Avoid	4.46	0.57	2.81	0.93					
Team GO					73	206.42	0.08	0.95	0.90
Learning	4.45	0.63	4.43	0.89					
Prove	4.85	0.83	4.15	0.93					
Avoid	2.96	0.58	2.98	0.96					
Communication and Interdependence					8	17.08*	0.07	0.99	0.98
Communication	5.03	0.69	5.04	0.99					
Interdependence	4.45	0.87	1.95	1.21					
Interpersonal Conflict	1.56	0.53	1.56	0.79	1	1.80**	0.06	1.00	1.00
Task Conflict	1.90	0.52	1.92	0.76	2	7.18*	0.10	0.99	0.99
Social Loafing	1.95	0.58	1.95	0.88	1	0.45**	0.00	1.00	1.00
Satisfaction	4.85	0.83	4.85	1.11	18	43.08*	0.07	0.99	0.96
Group Performance	3.83	0.84			1	0.48**	0.13	0.98	0.97

*$p > 0.05$; **$p > 0.01$

note: CFAs for communication and interdependence along team LGO and satisfaction were run together to prevent model saturation. All CFAs except group performance were run using individual level data.

Table 3. ***Scale Reliabilities and Intercorrelations Among Group-Level Variables***

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Mean Individual LGO	(0.87)												
2. Mean Individual PGO	0.30*	(0.73)											
3. Mean Individual AGO	-0.27*	0.44**	(0.83)										
4. Team LGO	0.55**	0.19	-0.21	(0.90)									
5. Team PGO	0.22*	0.43**	0.14	0.43**	(0.84)								
6. Team AGO	-0.25*	0.30*	0.48**	-0.11	0.30*	(0.69)							
7. Communication	0.48**	0.05	-0.30	0.40**	0.31**	-0.33**	(0.87)						
8. Interpersonal Conflict	-0.16	0.08	0.17	-0.35**	-0.28*	0.18	-0.47**	(0.85)					
9. Task Conflict	-0.09	0.05	0.07	-0.26	-0.05	0.19	-0.27*	0.68**	(0.91)				
10. Social Loafing	-0.08	0.05	0.06	-0.38**	-0.06	0.10	-0.27*	0.65**	0.54**	(0.86)			
11. Interdependence	0.21	-0.12	-0.27*	0.22*	0.00	-0.21	0.35**	-0.17	-0.10	-0.09	(0.79)		
12. Satisfaction	0.24	0.01	-0.20	0.62**	0.43**	0.00	0.29*	-0.51**	-0.31**	-0.36**	0.17	(0.88)	
13. Performance	-0.06	-0.16	0.08	-0.03	-0.06	0.04	0.03	-0.01	-0.08	-0.09	0.01	0.11	(0.83)

*$p < 0.05$, **$p < 0.01$

Note. Reliability estimates are along the diagonal in parentheses.

Results

Aggregating Data to the Group Level

Before the data could be analyzed, it was first necessary to determine if there were any patterns of missingness. For both participants who only completed either the Time 1 or the Time 2 survey along with participants who failed to complete individual scale items, the data were missing completely at random ($\chi^2_{1774} = 1724$, $p = 0.79$).

In order to determine if it was appropriate to analyze GO, communication, interpersonal conflict, task conflict, social loafing, perceived task interdependence, and satisfaction at the group level, the mean R_{wg} and the ICC(1) for each scale were examined. R_{wg} is a measure of interrater agreement; an expected uniform variance distribution was utilized. In line with recommendations by James et. al. (1984), negative R_{wg}'s were dropped as they suggest nonsystematic agreement. A median R_{wg} of 0.70 or higher was observed for all variables. A mean R_{wg} of 0.70 was observed for all variables except for task interdependence ($R_{wg} = 0.67$). See Table 4.

In addition to R_{wg}, the ICC(1) of each scale was examined. ICC(1) is a measure of interrater reliability and has been recommended as an indicator regarding the appropriateness of aggregating individual level data to the group level (James, 1982; Bliese 2000). Moderate levels of ICC(1) were observed for team LGO, communication, interpersonal conflict, task conflict, social loafing, task interdependence, and satisfaction (see Table 4). A low levels of ICC(1) was observed for team AGO (ICC(1) = 0.00) which indicates that the responses of individuals within the teams were similar to the responses of individuals not in the team.

Given the moderately high levels of R_{wg} and the moderately high levels of ICC(1), it was deemed appropriate to aggregate team LGO, team PGO, communication, interpersonal conflict, task conflict, social loafing, task interdependence, and satisfaction to the group level. Team AGO had a low ICC(1) value indicating that a low amount of variance was attributed to group membership, however, the R_{wg} was 0.72 indicating that group members had adequate agreement. Together these results suggest that although agreement was high among group members, not much variance existed between groups. This is further corroborated by the low standard deviation of team AGO (*SD* = 0.58). Given the adequate agreement, it was deemed appropriate to aggregate team AGO to the group level even though it may be difficult to support hypotheses due to low variance.

Table 4. ***R_{wg} and ICC(1)***

	R_{wg}			ICC(1)
	Mean	Median	SD	
Team GO				
LGO	0.78	0.88	0.24	0.17
PGO	0.72	0.81	0.26	0.06
AGO	0.72	0.83	0.28	0.00
Communication	0.77	0.83	0.25	0.18
Interpersonal Conflict	0.82	0.89	0.25	0.12
Task Conflict	0.84	0.91	0.22	0.17
Social Loafing	0.77	0.89	0.25	0.10
Task Interdependence	0.67	0.76	0.33	0.21
Satisfaction	0.71	0.83	0.30	0.23

Hypotheses

The relationships between GO (team and mean individual), processes, and outcomes were examined using two-step SEM in LISREL 8.72. Given the small team sample size (*N* = 83) relative to the number of paths in the model, the relationship between each type of GO (team LGO, PGO, and AGO; and mean individual LGO, PGO,

and AGO) with team processes and outcomes was analyzed in separate models (for a general model of team inputs, processes, and outcomes examined was examined see Figure 1). Given that past research has shown that the team processes are correlated with each other (e.g., De Dreu & Weingart, 2003; Stewart & Barrick), team processes were allowed to covary in all of the models.

It was first important to determine if shared perceptions of team GO and mean individual GO had differing relationships with team processes (Research Question 1). In order to do this, a model using team GO was compared to a model using mean individual GO for LGO, PGO, and AGO. Although the models could not directly be compared as they were not nested, the goodness-of-fit indices along with standardized beta weights were examined. Only significant differences between team GO and mean individual GO are discussed, however, the goodness-of-fit indices along with the standardized beta weights for all the models can be found in Tables 5, 6, and 7.

Shared perceptions of team LGO ($\chi^2_{30} = 389.56$, $p < 0.01$, RMSEA = 0.06, CFI = 0.95, GFI = 0.74) and mean individual LGO ($\chi^2_{331} = 410.55$, $p < 0.01$, RMSEA = 0.05, CFI = 0.96, GFI = 0.74) had similar model fit, however, they had differing relationships with interpersonal conflict, task conflict, and social loafing. Shared perceptions of team LGO had significant or marginally significant relationships with these processes, while the relationships of mean individual LGO with these processes were not significant (see Table 5).

In examining differences between team PGO and mean individual PGO, similar model fit was observed (team PGO: $\chi^2_{331} = 404.39$, $p < 0.01$, RMSEA = 0.05, CFI = 0.95, GFI = 0.74; mean individual PGO: $\chi^2_{305} = 388.64$, $p < 0.01$, RMSEA = 0.06, CFI =

0.94, GFI = 0.75). A different relationship existed between mean individual PGO and team PGO and communication. Team PGO as positively significantly related to communication while mean individual PGO was not significantly related to communication (see Table 6).

Goodness-of-fit indices were similar for team AGO ($\chi^2_{256} = 319.45$, $p < 0.01$, RMSEA = 0.06, CFI = 0.96, GFI = 0.76) and mean individual AGO ($\chi^2_{305} = 353.0$, $p < 0.01$, RMSEA = 0.04, CFI = 0.96, GFI = 0.76). Minimal differences were found between the standardized beta weights of team AGO and mean individual AGO with team processes.

In summary, the results from Research Question 1 suggest that differences do exist in the relationship between team GO and mean individual GO with the team processes that were examined. Team GO and mean individual GO are not synonymous. Given the research goal of exploring GO at the group level, team GO will be used in subsequent analyses.

Table 5. ***SEM for Team GO and Mean Individual GO***

Model	β	*t*	*df*	χ^2	RMSEA	CFI	GFI
Team LGO (TLGO)			304	389.56	0.06	0.95	0.74
TLGO → Communication	0.46	3.83					
TLGO → Interpersonal Conflict	**-0.35**	**-2.83**					
TLGO → Task Conflict	**-0.22**	**-1.78**					
TLGO → Social Loafing	**-0.45**	**-3.40**					
Communication → Satisfaction	0.24	1.98					
Communication → Performance	0.04	0.31					
Interpersonal Conflict → Satisfaction	-0.14	-0.57					
Interpersonal Conflict → Performance	-0.07	-0.23					
Task Conflict → Satisfaction	0.12	0.78					
Task Conflict → Performance	-0.07	-0.41					
Social Loafing → Satisfaction	-0.39	-1.97					
Social Loafing → Performance	0.03	0.15					
Individual LGO (ILGO)			331	410.55	0.05	0.96	0.74
ILGO → Communication	0.47	3.61					
ILGO → Interpersonal Conflict	**-0.20**	**-1.62**					
ILGO → Task Conflict	**-0.09**	**-0.71**					
ILGO → Social Loafing	**-0.11**	**-0.89**					
Communication → Satisfaction	0.19	1.54					
Communication → Performance	0.04	0.30					
Interpersonal Conflict → Satisfaction	-0.38	-1.43					
Interpersonal Conflict → Performance	-0.08	-0.27					
Task Conflict → Satisfaction	0.12	0.73					
Task Conflict → Performance	-0.07	-0.41					
Social Loafing → Satisfaction	-0.16	-0.84					
Social Loafing → Performance	0.04	0.20					

Note. Figures in bold highlight different relationships between team and mean individual GO and team processes.

Table 6. ***SEM for Team GO and Mean Individual GO***

Model	β	*t*	*df*	χ^2	RMSEA	CFI	GFI
Team PGO (TPGO)			331	404.39	0.052	0.95	0.74
TPGO → Communication	**0.39**	**1.96**					
TPGO → Interpersonal Conflict	-0.26	-1.62					
TPGO → Task Conflict	-0.04	-0.34					
TPGO → Social Loafing	-0.08	-0.60					
Communication → Satisfaction	0.17	1.34					
Communication → Performance	0.04	0.32					
Interpersonal Conflict → Satisfaction	-0.45	-1.80					
Interpersonal Conflict → Performance	-0.07	-0.23					
Task Conflict → Satisfaction	0.15	0.93					
Task Conflict → Performance	-0.08	-0.43					
Social Loafing → Satisfaction	-0.10	-0.54					
Social Loafing → Performance	0.04	0.17					
Individual PGO (GLGO)			305	388.64	0.06	0.94	0.74
IPGO → Communication	**0.03**	**0.26**					
IPGO → Interpersonal Conflict	0.18	1.22					
IPGO → Task Conflict	0.08	0.61					
IPGO → Social Loafing	0.11	0.77					
Communication → Satisfaction	0.20	1.60					
Communication → Performance	0.03	0.25					
Interpersonal Conflict → Satisfaction	-0.34	-1.37					
Interpersonal Conflict → Performance	-0.11	-0.40					
Task Conflict → Satisfaction	0.11	0.67					
Task Conflict → Performance	-0.06	-0.37					
Social Loafing → Satisfaction	-0.17	-0.89					
Social Loafing → Performance	0.06	0.29					

Note. Figures in bold highlight different relationships between team and mean individual GO and team processes.

Table 7. ***SEM for Team AGO and Mean Individual GO***

	β	*t*	*df*	χ^2	RMSEA	CFI	GFI
Team AGO (TAGO)			256	319.45	0.06	0.96	0.76
TAGO → Communication	-0.45	-3.73					
TAGO → Interpersonal Conflict	0.25	2.04					
TAGO → Task Conflict	0.18	1.48					
TAGO → Social Loafing	0.09	0.71					
Communication → Satisfaction	0.19	1.54					
Communication → Performance	0.04	0.32					
Interpersonal Conflict → Satisfaction	-0.36	-1.44					
Interpersonal Conflict → Performance	-0.07	-0.24					
Task Conflict → Satisfaction	0.11	0.71					
Task Conflict → Performance	-0.07	-0.40					
Social Loafing → Satisfaction	-0.16	-0.81					
Social Loafing → Performance	0.03	0.15					
Individual AGO (IAGO)			305	353.9	0.4	0.96	0.76
IAGO→ Communication	-0.34	-2.43					
IAGO → Interpersonal Conflict	0.26	2.04					
IAGO → Task Conflict	0.05	0.36					
IAGO → Social Loafing	0.05	-0.41					
Communication → Satisfaction	0.19	1.54					
Communication → Performance	0.05	0.33					
Interpersonal Conflict → Satisfaction	-0.37	-1.49					
Interpersonal Conflict → Performance	-0.06	-0.21					
Task Conflict → Satisfaction	0.12	0.74					
Task Conflict → Performance	-0.08	-0.44					
Social Loafing → Satisfaction	-0.15	-0.79					
Social Loafing → Performance	0.03	0.13					

Note. Figures in bold highlight different relationships between team and mean individual GO and team processes.

Hypothesis 1 proposed that team LGO was positively related to communication and task conflict and negatively related to interpersonal conflict and social conflict. In order to test this, the standardized beta weights were examined (see Table 5 for goodness-of-fit indexes and standardized beta weights; see Table 7 for a list of which hypothesis were supported and which were rejected). The relationships between team LGO and communication ($\beta = 0.46$, $p < 0.05$), interpersonal conflict ($\beta = -0.35$, $p < 0.05$), and social loafing ($\beta = -0.45$, $p < 0.05$) were significant and in the hypothesized direction. The relationship between team LGO and task conflict ($\beta = -0.22$, $p < 0.10$) was marginally significant but not in the hypothesized direction. Together, these results provide partial support for Hypothesis 1.

Hypothesis 2 examined the relationship between team PGO and group processes. More specifically, team PGO was hypothesized to be related (either positively or negatively) to communication, positively related to interpersonal and task conflict, and negatively related to social loafing. Team PGO was positively related to communication ($\beta = 0.39$, $p < 0.05$). However, team PGO was not significantly related to interpersonal conflict, task conflict, or social loafing (see Table 6). This provides partial support for Hypothesis 2.

Hypothesis 3 examined team AGO and team processes. Team AGO was hypothesized to be negatively related to communication, interpersonal conflict, and task conflict, and positively related to social loafing. Team AGO was negatively related to communication ($\beta = -0.45$, $p < 0.05$). Team AGO was positively related to interpersonal conflict, which was opposite the hypothesized direction ($\beta = 0.25$, $p < 0.05$; see Table 7).

Team AGO was not significantly related with task conflict or social loafing, providing partial support for Hypothesis 3.

Team processes were hypothesized to be related to team satisfaction and performance. More specifically, the following relationships were hypothesized: communication will be positively related to team performance and satisfaction (Hypothesis 4), interpersonal conflict will be negatively related to team performance and satisfaction (Hypothesis 5), task conflict will be negatively related to team performance and satisfaction (Hypothesis 6) and social loafing will be negatively related to performance (Hypothesis 7). The standardized beta weights were examined from the team LGO, team PGO, and team AGO models (Tables 5, 6, and 7). The only significant beta weight was between communication and team satisfaction in the team LGO model ($\beta = 0.24$, $p < 0.05$), however, this relationship was not significant in the team PGO ($\beta = 0.17$, $p > 0.05$) and team AGO ($\beta = 0.19$, $p > 0.05$) models. This indicates that team communication and satisfaction are only marginally related. No significant relationships were found between team processes (interpersonal conflict, task conflict, and social loafing) and team performance and satisfaction. These results provided marginal support for Hypothesis 4 but failed to support Hypotheses 5-7.

Table 8. ***List of Supported, Partially Supported, and Rejected Hypotheses***

Hypothesis 1a	**Team LGO will be positively related to team communication.**	***Supported***
Hypothesis 1b	**Team LGO will be negatively related to team interpersonal conflict.**	***Supported***
Hypothesis 1c	Team LGO will be positively related to team task conflict.	*Rejected*
Hypothesis 1c	**Team LGO will be negatively related to team social loafing.**	***Supported***
Hypothesis 2a	**Team PGO will be related (positively or negatively) to team communication.**	***Supported***
Hypothesis 2b	Team PGO will be positively related to team interpersonal conflict.	*Rejected*
Hypothesis 2c	Team PGO will be positively related to team task conflict.	*Rejected*
Hypothesis 2d	Team PGO will be negatively related to social loafing.	*Rejected*
Hypothesis 3a	**Team AGO will be negatively related to team communication.**	***Supported***
Hypothesis 3b	Team AGO will be negatively related to team interpersonal conflict.	*Rejected*
Hypothesis 3c	Team AGO will be negatively related to team task conflict.	*Rejected*
Hypothesis 3d	Team AGO will be positively related to team social loafing.	*Rejected*
Hypothesis 4a	Team communication will be positively related to team performance.	*Rejected*
hypothesis 4b	**Team communication will be positively related to team satisfaction.**	***Partially Supported***
Hypothesis 5a	Team interpersonal will be negatively related to team performance.	*Rejected*
Hypothesis 5b	Team interpersonal conflict will be negatively related to team satisfaction.	*Rejected*
Hypothesis 6a	Team task conflict will be negatively related to team performance.	*Rejected*
Hypothesis 6b	Team task conflict will be negatively related to team satisfaction.	*Rejected*
Hypothesis 7	Social loafing will be negatively related to team performance.	*Rejected*
Hypothesis 8	Perceived task interdependence will moderate the relationship between team processes (communication, interpersonal and task conflict, and social loafing) and outcomes (team performance and satisfaction).	***Partially Supported***

Perceived task interdependence was hypothesized to moderate the relationship between team processes (communication, interpersonal and task conflict, and social loafing) and outcomes (team performance and satisfaction). That is, low perceived task interdependence was hypothesized to be associated with a decreased relationship between team processes and outcomes while high task interdependence was hypothesized to be associated with an increased relationship between team processes and outcomes (Hypothesis 8). Moderated SEM (MSEM), following the steps taken by Mathieu, Tannenbaum, and Salas (1992), was utilized to test this hypothesis. For a more detailed explanation of the steps taken, see Appendix 2.

Task interdependence did not moderate the majority of relationships between team processes and outcomes; however, it did moderate two relationships (see Table 9). Task interdependence moderated the relationship between task conflict and performance ($\Delta\chi^2 = 5.43$, $p < 0.05$). To interpret the interaction, a graph of the interaction was examined. For teams with high task interdependence, low task conflict was related to decreased performance while high task conflict was related to increased task performance. For team with low task interdependence, the opposite pattern of relationships emerged. Low task conflict was related to higher performance while high task conflict was related to lower performance. This moderator analysis was significant but not in the hypothesized direction. Potential causes of this unexpected result are expounded upon in the discussion.

Task interdependence moderated the relationship between social loafing and satisfaction ($\Delta\chi^2 = 7.01$, $p < 0.05$). An examination of the graph revealed that for both high and low levels of task interdependence increased social loafing was related to

decreased satisfaction. However, when social loafing was low, teams with high task interdependence were more satisfied than teams with low task interdependence. In contrast, when social loafing was high teams with high task interdependence were less satisfied than teams with low task interdependence. These results are compatible with the hypothesis since the relationship between social loafing and satisfaction was stronger in teams with high task interdependence than low task interdependence. Taken together, these results provide partial support for Hypothesis 8.

Table 9. ***MSEM Testing the Moderating Role of Task Interdependence***

	df	χ^2	$\Delta\chi^2$	RMSEA	CFI	GFI
Communication						
Additive Model	356	427.94		0.05	0.95	0.74
Performance Interaction Model	355	428.13	-0.19	0.05	0.95	0.74
Satisfaction Interaction Model	355	427.03	0.91	0.05	0.95	0.74
Interpersonal Conflict						
Additive Model	356	420.51		0.05	0.95	0.74
Performance Interaction Model	355	419.73	0.78	0.05	0.95	0.74
Satisfaction Interaction Model	355	420.40	0.11	0.05	0.95	0.74
Task Conflict						
Additive Model	356	428.37		0.05	0.95	0.74
Performance Interaction Model	355	422.94	5.43*	0.05	0.95	0.74
Satisfaction Interaction Model	355	429.10	-0.73	0.05	0.95	0.74
Social Loafing						
Additive Model	356	431.00		0.05	0.95	0.73
Performance Interaction Model	355	431.45	-0.45	0.05	0.95	0.73
Satisfaction Interaction Model	355	423.99	7.01*	0.05	0.95	0.74

*$p < 0.05$.

Additional Analyses

The variance in team GO along with the variance in individual GO within teams was examined to determine if these differences were related to team processes and outcomes. Researchers have suggested it is important to examine variance in group level constructs (e.g., DeRue, Hollenbeck, Ilgen, & Feltz, 2010; Kozlowski & Klein, 2000).

To test this, the variance within group members for each GO type was calculated and used as the single indicator of the latent variable. This was done because low correlations existed between item variances in the GO scales. Like the previous analyses, separate models were run for LGO, PGO, and AGO. Although all model fit indices and standardized beta weights can be found in Tables 10, 11, and 12, only the significant relationships are discussed.

For team GO, variance in team LGO was significantly related to communication ($\beta = -0.21$, $p < 0.05$), interpersonal conflict ($\beta = 0.24$, $p < 0.05$), and social loafing ($\beta = 0.29$, $p < 0.05$) such that increased differences in perceptions of team LGO was related to decreased communication and increased interpersonal conflicts and social loafing. In addition, increased variance in team PGO was significantly related to decreased task conflict ($\beta = -0.23$, $p < 0.05$). Variance in team AGO was not significantly related to team processes.

For individual GO, variance in individual LGO and PGO was not significantly related to team processes. Variance in individual AGO was marginally related to interpersonal conflict ($\beta = -0.21$, $p < 0.10$) and significantly related to task conflict ($\beta = -0.30$, $p < 0.05$) and social loafing ($\beta = -0.31$, $p < 0.05$). This indicates that increased variance in individual AGO was related to decreased interpersonal conflict, task conflict, and social loafing. Implications of these relationships are further explored in the discussion.

Table 10. ***SEM Model for Variance in Team and Individual LGO***

	β	*t*	*df*	χ^2	RMSEA	CFI	GFI
Variance in Team LGO (VTLGO)			212	253.73*	0.05	0.89	0.75
VTLGO → Communication	-0.21	-1.97					
VTLGO → Interpersonal Conflict	0.24	2.11					
VTLGO → Task Conflict	0.04	0.28					
VTLGO → Social Loafing	0.29	2.45					
Communication → Satisfaction	0.19	1.56					
Communication → Performance	0.04	0.31					
Interpersonal Conflict → Satisfaction	-0.35	-1.41					
Interpersonal Conflict → Performance	-0.07	-1.24					
Task Conflict → Satisfaction	0.14	0.87					
Task Conflict → Performance	-0.06	-0.36					
Social Loafing → Satisfaction	-0.20	-1.01					
Social Loafing → Performance	0.02	0.11					
Variance in Individual LGO (VILGO)			212	251.30*	0.048	0.96	0.79
VILGO → Communication	-0.04	-0.35					
VILGO → Interpersonal Conflict	0.08	0.72					
VILGO → Task Conflict	0.08	0.73					
VILGO → Social Loafing	-0.01	-0.06					
Communication → Satisfaction	0.18	1.49					
Communication → Performance	0.05	0.36					
Interpersonal Conflict → Satisfaction	-0.38	-1.53					
Interpersonal Conflict → Performance	-0.04	-0.13					
Task Conflict → Satisfaction	0.11	0.72					
Task Conflict → Performance	-0.07	-0.41					
Social Loafing → Satisfaction	-0.14	-0.71					
Social Loafing → Performance	0.01	0.03					

* $p < 0.05$.

Table 11. ***SEM for Variance in Team and Individual AGO***

	β	*t*	*df*	χ^2	RMSEA	CFI	GFI
Variance in Team PGO (VTPGO)			212	244.24	0.043	0.97	0.73
VTPGO → Communication	0.14	1.26					
VPGO → Interpersonal Conflict	-0.16	-0.55					
VPGO → Task Conflict	-0.23	-2.00					
VTPGO → Social Loafing	-0.12	-1.04					
Communication → Satisfaction	0.19	1.53					
Communication → Performance	0.04	0.28					
Interpersonal Conflict → Satisfaction	-0.35	-1.47					
Interpersonal Conflict → Performance	-0.10	-0.35					
Task Conflict → Satisfaction	0.12	0.74					
Task Conflict → Performance	-0.06	-0.35					
Social Loafing → Satisfaction	-0.16	-0.81					
Social Loafing → Performance	0.05	0.24					
Variance in Individual PGO (VGLGO)			212	248.39	0.046	0.96	0.79
VIPGO→ Communication	0.09	0.78					
VIPGO → Interpersonal Conflict	-0.11	-0.94					
VIPGO → Task Conflict	-0.01	-0.07					
VIPGO → Social Loafing	-0.01	-0.12					
Communication → Satisfaction	0.18	1.46					
Communication → Performance	0.04	0.28					
Interpersonal Conflict → Satisfaction	-0.40	-1.59					
Interpersonal Conflict → Performance	-0.09	-0.32					
Task Conflict → Satisfaction	0.13	-0.78					
Task Conflict → Performance	-0.07	-0.38					
Social Loafing → Satisfaction	-0.13	-0.67					
Social Loafing → Performance	0.05	0.24					

$^{**}p < 0.01$.

Table 12. ***SEMs for Variance in Team and Individual AGO***

	β	*t*	*df*	χ^2	RMSEA	CFI	GFI
Variance in Team AGO (VTAGO)			212	260.12**	0.053	0.96	0.78
VTAGO → Communication	0.08	0.71					
VTAGO → Interpersonal Conflict	-0.12	-1.06					
VTAGO → Task Conflict	-0.04	-0.36					
VTAGO → Social Loafing	-0.20	-1.50					
Communication → Satisfaction	0.19	1.54					
Communication → Performance	0.04	0.30					
Interpersonal Conflict → Satisfaction	-0.36	-1.42					
Interpersonal Conflict → Performance	-0.10	-0.29					
Task Conflict → Satisfaction	-0.11	0.73					
Task Conflict → Performance	-0.08	-0.44					
Social Loafing → Satisfaction	-0.14	-0.86					
Social Loafing → Performance	0.07	0.25					
Variance in Individual AGO (VIAGO)			212	254.95	0.05	0.96	0.79
VIAGO→ Communication	0.08	0.74					
VIAGO → Interpersonal Conflict	-0.21	-1.83					
VIAGO → Task Conflict	-0.30	-2.69					
VIAGO → Social Loafing	-0.31	-2.63					
Communication → Satisfaction	1.21	1.62					
Communication → Performance	0.05	0.34					
Interpersonal Conflict → Satisfaction	-0.32	-1.31					
Interpersonal Conflict → Performance	-0.05	-0.19					
Task Conflict → Satisfaction	0.11	0.59					
Task Conflict → Performance	-0.08	-0.43					
Social Loafing → Satisfaction	-0.19	-1.00					
Social Loafing → Performance	0.02	0.10					

**$p < 0.01$.

Discussion

The current study benefits the team and goal orientation literature in several important ways. First, this study adds to the goal orientation literature by increasing understanding of group level goal orientation. With a few exceptions (e.g., Bunderson & Sutcliffe, 2003; LePine, 2005; Porter, 2005), the majority of research on GO has examined it at the individual level (Payne et al., 2007). While previous GO research has demonstrated the effectiveness of GO at the individual level, it is necessary to determine if the same relationships emerge at the group level since individual level relationships do not always translate to group level relationships (Klein & Kozlowski, 2007).

Second, this study adds to the team GO literature by examining a three factor structure of goal orientation (LGO, PGO, and AGO) and the relationships of those three factors with team processes. Previous team GO literature has examined a two factor structure of goal orientation (LGO and performance GO); performance GO was not broken down into PGO and AGO. This is a significant limitation in past team GO studies because research has demonstrated that GO is better represented by the three factor structure (VandeWalle, 1997). While previous research has found that performance GO was not negatively related to team processes (Porter, 2005), examining only performance GO masks the unique relationships that PGO and AGO have with team processes.

Team Goal Orientation versus Mean Individual Goal Orientation

In examining GO at the group level, previous research has operationalized team GO as either the mean of individual GO (LePine, 2005; Porter, 2005) or as an emerged construct (Bunderson & Sutcliffe, 2003). One goal of this research was to determine if these two operationalizations of team GO are synonymous (i.e., if they are interchangeable). If they are synonymous, then studies examining GO in teams could

construe GO as either team GO or the mean of individuals' GO with results being generalizable across both operationalizations. The results of this study, however, indicate that these two operationalizations of team GO have different relationships with team processes, suggesting that they are not exchangeable. Given this, it is recommended that researchers base their choice of GO operationalization on their theory, clarify their operationalizations of team GO, and not use these two terms synonymously. For example, if a researcher thinks that the team is highly influenced by forces that allow for group level emergence such as contextual factors, common stimuli, and socialization, team GO should be examined. If, however, these forces are less strong it would be more advisable to utilize mean individual GO (Kozlowski & Klein, 2000).

Goal Orientation and Team Processes

Since the primary emphasis of this research was to examine GO at the group level, the relationship between team GO (that is, GO as an emerged construct) and team processes was examined. Examining the relationship between team GO and team processes is relevant because the mechanisms through which GO impacts team performance are still generally unknown (Bunderson & Sutcliffe, 2003; Porter, 2005). This research found that LGO was positively related to team communication and negatively related to interpersonal conflict and social loafing. These results are in line with previous research which found both team and individual LGO are positively related to interpersonal processes (Cheung et al., 1998; Darnen & Butera, 2007; Porath & Bateman, 2006; Porter, 2005). An unexpected result was that LGO was negatively related to task conflict. A potential explanation for this unexpected result is that teams

with high LGO may have similar opinions and ideas thereby resulting in decreased task conflict.

Prove GO was found to be positively related to communication (teams high in PGO were more willing to share information with and seek advice from their team members) and nonsignificantly related to both task and interpersonal conflict. Previous research has found that individuals high in PGO are concerned with demonstrating superiority over their peers (Butler, 1992; Pintrich, 2000). However, in team situations it is not know if they want to demonstrate superiority over their team members, those outside of their team, or both. These demonstrations of superiority may occur through both interpersonal and task conflict as these provide the mechanisms through which demonstrations of superiority may occur. Since PGO was not significantly related to either task or interpersonal conflict within the team, these results suggest that teams high in PGO may be more concerned in demonstrating their superiority to others outside their team as opposed to peers within their group. In order to see if this is true, further research should explore to whom individuals high in PGO are most interested in proving their ability. Finally, PGO was not significantly related to social loafing. So, although PGO was not detrimental to team processes, it was not as strongly related to increased positive team processes and decreased negative team processes as LGO.

In contrast to both LGO and PGO, AGO was negatively related to team communication. This supports the idea that teams high in AGO are less likely to talk openly to each other in order to avoid looking incompetent. In contrast to hypotheses, AGO was positively related to interpersonal conflict. One possible explanation for this relationship is that teams high in AGO are concerned with avoiding demonstrations of

incompetence to team members (as evidenced by decreased communication), however, they are also concerned with avoiding demonstrating incompetence to others outside of their team. In certain situations, in order to avoid demonstrating incompetence to individuals outside of the team, incompetence must be demonstrated to team members. This may results in conflicting goals and high levels of frustration. This resulting frustration may be expressed more through interpersonal conflict than task conflict. Interpersonal conflict is not task-relevant, hence, interpersonal conflict does not provide as many opportunities to demonstrate incompetence concerning the project as task conflict. In order to more thoroughly understand these results, future research needs to examine to whom individuals who are high in PGO are most concerned about avoiding demonstrations of incompetence. No significant relationship was found between AGO and social loafing which was in contrast to hypotheses but is similar to past research which found that AGO was nonsignificantly related to effort (VandeWalle et al., 2001).

Taken together, these results suggest that LGO is strongly related to positive team processes. Although PGO was positively related to team communication, its relationships with other processes were not significant, suggesting that it is not highly related with team processes. In contrast, AGO was negatively related to communication and positively related to interpersonal conflict indicating that it is negatively related to effective team processes. This pattern mirrors the results of past individual level GO research. Consistent with past literature, LGO was the most strongly related to positive outcomes, PGO was less or nonsignificantly related to positive outcomes, and AGO was related to more negative outcomes (Payne et al., 2007). This provides initial evidence that the patterns observed in individual level GO research are also observed in group

level GO research. Given the importance of GO at the individual level (Payne et al., 2007), the similar pattern of results between past individual level GO research and the present research speak to the importance of team GO. This should be a further impetus for continuing to examine team GO.

Team Processes and Outcomes

Surprisingly, few significant relationships were found between team processes and team outcomes. This is in contrast to past research. Previous research had found that team communication was positively related to team productivity and satisfaction (Campion et al., 1993; Campion et al., 1996; Earley & Mosakowski, 2000; Hoegl & Gemuenden, 2001), interpersonal and task conflict were negatively related to satisfaction and performance (De Dreu & Weingart, 2003), and social loafing was negatively related to performance (Karau & Williams, 1993; Latané et al., 1979). Two possible explanations for this inconsistency exist. The first is that decreased variance in negative team processes may have been present due to social desirability. The team members may have behaved in a socially desirable way thereby minimizing negative team processes. The second possibility involves the project grading structures which included peer evaluations. Since part of the students' grades were based on their how their team members evaluated them, this may have decreased the variance of negative team processes. Team members may have demonstrated less negative team processes (i.e., task conflict, relationship conflict, and social loafing) than they would have if team evaluations did not occur, lessening the relationship between these team processes and outcomes. Initial support for the impact of a social desirability or peer evaluations is evident in the lower means and standard deviations found in negative team processes than

positive team processes (see Table 2). Future research should examine whether peer evaluations can prevent negative team processes in organizational settings.

Task Interdependence

The moderating role of task interdependence was also examined due to the importance it has in impacting team processes and outcomes (Kozlowski & Bell, 2003). Although the majority of the relationships were not significant, task interdependence moderated two relationships: the relationship between social loafing and performance along with the relationship between social loafing and satisfaction. It is interesting to note that task interdependence did not moderate more of the relationships between team processes and outcomes. A potential explanation for this lack of significant results parallels the explanation for the lack of significant results between team processes and outcomes, namely, that the educational nature of the team projects along with peer evaluations resulted in lower variance in negative team processes than what would be seen in organizational teams. This lower variance in team processes makes it especially difficult to observe significant interactions between team processes and task interdependence.

Additional Analyses

Kozlowski and Klein (2000) suggest that examining a variance form of emergence, that is, examining variance within groups, may benefit organizational research. Consistent with this, the following relationships were observed: increased variance in team LGO was related to decreased communication and increased interpersonal conflict and social loafing, increased variance in team PGO was related to decreased task conflict, and increased variance in individual AGO was related to

decreased interpersonal conflict, task conflict, and social loafing. These results indicate that it is best if teams have similar individual LGO and PGO along with dissimilar individual AGO. These exploratory analyses provide support for the importance of examining a variance form of emergence (Kozlowski & Klein, 2000). In addition to examining team GO as an aggregate variable, the variance in team GO should also be examined to fully understand GO in teams.

Practical Implications

Team goal orientation has important relationships with team processes. Given the results of this study, organizations should encourage teams to have high LGO. Along with encouraging higher levels of team LGO, organizations should put effort into ensuring that team members have a similar perception of team LGO as this relates to more positive team processes. In addition to LGO, organizations should pay attention to AGO. Individual AGO may encourage communication and discourage interpersonal conflict. In fact, having at least one member high in AGO may decrease task and relationship conflict along with social loafing. Even though the results of having individuals with high AGO are not negative, problems do arise when the team as a whole has a high level AGO as it is related to decreased communication and increased interpersonal conflict.

In order to encourage high levels of LGO in teams, just selecting individuals high in LGO may not be enough. In order to encourage teams to have high levels of LGO, organizations should take steps to make team learning objectives salient. These objectives could be made salient by encouraging teams to explore new and difficult aspects of their tasks. In addition, organizations could build an environment where teams

are rewarded for taking on new and difficult tasks that encourage learning. Organizations should also try to decrease variance in team LGP. This could be accomplished by encouraging teams to have discussions about their LGO which would encourage shared perceptions of LGO.

Organizations should not be hesitant to have teams with members high in AGO, but care should be taken to ensure that high levels of team AGO do not emerge. Discouraging the emergence of team AGO could be done through a variety of means. Organizations could communicate to teams that avoiding demonstrations of low ability should not be a goal of the team. In addition, organizations should refrain from "making examples of" teams who have failed. "Making examples of" failed teams would increase the salience concerning the negative consequences of demonstrating incompetence, thereby increasing team AGO.

Strengths, Limitations, and Future Research

There are several methodological strengths exhibited in this current study. A strength of the current study is the time the group members spent working together. The median amount of time that the teams spent working together was 5 hours, which is longer than the amount of time team members spent together in previous studies of team GO. Teams in previous team GO research have spent 30 minutes to 2 ½ hours engaged in teamwork (LePine, 2005; Porter, 2005; Porter, Webb, & Gogus, 2010; see Bunderson & Sutcliffe, 2003 for an exception). An additional strength involved the use of classroom team projects. These projects involved significant outcomes for the participants (i.e., grades), thereby increasing the motivation of participants to be highly engaged in the group project. In addition, these teams were responsible for determining how and when

to accomplish their work, similar to teams in organizations. In contrast, the majority of previous team GO research has examined team GO in highly structured lab experiments (LePine, 2005; Porter, 2005; Porter et al., 2010). Finally, the longitudinal and multi-sourced nature of this research was a methodological strength. Teams were surveyed at two separate times and team performance measures were gathered from course instructors to reduce the impacts of common method variance.

Several limitations exist in the current study. First, the teams were comprised of undergraduate and graduate students working on group projects. These students may have had either less or more motivation in regards to their team project than typical organizational teams. In addition, the fact that team members provided peer evaluations for their team members may have changed the behaviors that were exemplified in teams. In teams where peer evaluations are the norm, team members may be less inclined to engage in negative team processes such as task conflict, relationship conflict, and social loafing. Future research should examine the impact that motivation and peer evaluations have on team processes.

A second limitation concerns the sample size and power. In the present study, several standardized path estimates were moderately large, yet failed to reach statistical significance. If those path estimates are relatively stable, then future research using a larger team sample size might find more significant relationships due to increased power.

Future research should examine the impact of GO on team processes over time. Research should examine how team GO emerges over time and what factors most strongly impact this emergence. It is possible that stronger and/or significant relationships would emerge if the teams spent more time together. Future research

should also examine the interaction of team GO with individual outcomes. For example, an individual high in LGO may learn more working in a team high in LGO. In contrast, a team member high in individual PGO may be frustrated working in a team with high LGO. Similarly, DeRue et al. (2010) theorized that different dispersion patterns of efficacy among team members may have different relationships with team efficiency. This may also be true with GO. Different dispersion patterns in perceptions of team GO or different dispersion patterns in individual GO may have unique relationships with team processes and outcomes. Future research should examine this to provide a more complete understand of how GO relates to teams.

Conclusion

In summary, this research provides initial evidence that the impact of GO at the group level is similar to what occurs at the individual level. In other words, team LGO is related to positive outcomes, team PGO is slightly or nonsignificantly related to positive outcomes, and AGO is related to negative outcomes. By examining how team GO relates to team processes, these findings further our understanding of how GO impacts teams and continue to point to group level GO as an important area of research.

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Appendix 1

Scales

Individual-level Goal Orientation (based on VandeWalle, 1997)

Learning

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

Prove

1. On this team project, I would rather prove my ability on a task that I can do well at then to try a new task.
2. I'm concerned with showing that I can perform better than other students on this team project.
3. On this team project, I try to figure out what it takes to prove my ability to others outside my group.

4. On this team project, I enjoy it when others are aware of how well I am doing.
5. I am concerned with proving my competence to my team members.

Avoid

1. I would avoid taking on a new task on this team project if there was a chance that I would appear rather incompetent to others.
2. Avoiding a show of low ability, on this team project, is more important to me than learning a new skill.
3. On this team project, I'm concerned about taking on a task if my performance would reveal that I had low ability.
4. On this team project, I prefer to avoid situations where I might perform poorly.
5. When I don't understand something on this team project, I prefer to avoid asking what might appear to others to be "dumb questions" that I should know the answers already.

Team-level goal orientation (based on VandeWalle, 1997)

Learning

1. My team often reads materials related to this team project to improve our ability.
2. On this team project, my team often looks for opportunities to develop new skills and knowledge.
3. On this team project, my team enjoys challenging and difficult tasks where we'll learn new skills.

4. On this team project, development of our team's ability is important enough to take risks.
5. On this team project, my team prefers to work in situations that require a high level of ability and talent.

Prove

1. On this team project, my team would rather prove that we can do well than to try a new task.
2. My team is concerned with showing that we can perform better than other students and teams in this class.
3. On this team project, we try to figure out what it takes to prove our ability to others outside our group.
4. On this team project, my team enjoys it when others are aware of how well we are doing.
5. My team prefers to work on projects where we can prove our ability to others in this class.
6. My team members are concerned with proving their competence to each other.

Avoid

1. My team would avoid taking on a new aspect of this project if there was a chance that we would appear rather incompetent to others.
2. On this team project, avoiding a show of low ability is more important to my team than learning a new skill.

3. When my team doesn't understand something about this project, we prefer to avoid asking what might appear to others to be "dumb questions" that we should know the answers already.

Communication (Campion et al., 1993; O'Reilly & Roberts, 1976)

1. It is easy to talk openly to all members of this group (O'Reilly & Roberts, 1976).
2. It is easy to ask advice from any member of this group (O'Reilly & Roberts, 1976).
3. Members of my team are very willing to share information with other team members about our work (Campion et al., 1993).

Conflict (based on Jehn, 1995)

Interpersonal Conflict

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* in your team?

Task Conflict

1. How often do people in your team *disagree about opinions* regarding the work being done?
2. How frequently are there *conflicts about ideas* in your team?
3. How much *conflict about the work* you do is there in your team?
4. To what extent are there *differences of opinion* in your team?

Social Loafing (George, 1992; Price et al, 2006)

1. To what extent do members of your team defer responsibilities to other members in your group (George, 1992)?
2. To what extent do members of your team not do their share of the work (George, 1992)?
3. To what extent do members of your team goof off (Price et al., 2006)?
4. To what extent do members of your team have other things to do when asked to help out? (Price et al., 2006).

Task Interdependence (Campion et al., 1993)

1. Team members cannot accomplish their task without information or materials from other members of their team.
2. Team members depend on each other for information or materials needed to perform their tasks.
3. Jobs performed by team members are related to one another.

Satisfaction (Based on Cammann, Fichman, Jenkins & Klesh's 1983; similar to a scale previously utilized by Dineen, Noe, Shaw, Duffy, & Wiethoff (2007)).

1. In general, I like working with my group.
2. All in all, I am satisfied with my group
3. If I had a choice, I would work with a different group

Performance

1. Quality of work output.
2. Quantity of work output.
3. Accuracy of work output.

Appendix 2.

Explanation of MSEM

The following steps were taken to analyze the MSEM (Mathieu et al., 1992). First, an interaction term was created between the standardized grand mean of each team processes and the standardized mean of task interdependence. Second, a model was tested to determine the direct relationship between the task interdependence and the specific team process being tested. From this model, the reliability of the interaction term was computed using the following formula (Bornstedt & Marwell, 1978):

$$r_{\varepsilon 1\,,\varepsilon 2\,\cdot\,\varepsilon 1,\varepsilon 2} = \frac{[(r_{\varepsilon 1\,\cdot\,\varepsilon 1} * r_{\varepsilon 2\,\cdot\,\varepsilon 2}) + r_{\varepsilon 1\,\varepsilon 2}{}^2]}{(1 + r_{\varepsilon 1\,\varepsilon 2}{}^2)},$$

where the reliability of the interaction term ($r_{\varepsilon 1\,,\varepsilon 2\,\cdot\,\varepsilon 1,\varepsilon 2}$) is the product of the reliabilities of interdependence and the specific team process being tested ($r_{\varepsilon 1\,\cdot\,\varepsilon 1}$ and $r_{\varepsilon 2\,\cdot\,\varepsilon 2}$) and the squared correlation between interdependence and the specific team process ($r_{\varepsilon 1\,\varepsilon 2}{}^2$). Third, an additive model was then examined where the path from the latent interaction to the indicator interaction is set to equal the square root of the reliability of the interaction term, and the error of the interaction term is set to equal to one minus the reliability of the interaction term. In this model the interaction term does not relate to either performance or satisfaction. Third, the additive model is compared to a model where the latent product is related to either performance or satisfaction and a χ^2 difference test is utilized to determine if moderation does occur (Cortina, Chen, & Dunlap, 2001). Given the similarities in paths between team processes and outcomes using different types of GO (i.e., team LGO, team PGO, and team AGO), all of the moderation analyses were run using a model that included team AGO. Team AGO was utilized because the models'

standardized beta weights are representative of the standardized beta weights of models including other types of GO.

Figure 1.

General model of team inputs, processes, and outcomes