Lehigh University
Lehigh Preserve

2010

The Social Effects of Achievement Goals

Laura S. Gelety
Lehigh University

Follow this and additional works at: https://preserve.lehigh.edu/etd

Part of the Psychology Commons

The Social Effects of Achievement Goals

by

Laura Sophia Gelety

A Dissertation

Presented to the Graduate and Research Committee

of Lehigh University

in Candidacy for the Degree of

Doctor of Philosophy

(Doctor of Arts)

in

Psychology

Lehigh University

September 2010

UMI Number: 3419354

UMI®
Dissertation Publishing

ProQuest®

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

ii

Approved and recommended for acceptance as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Laura Sophia Gelety
The Social Effects of Achievement Goals

_____
Defense Date

_____
Dr. Christopher Burke

_____
Approved Date

Committee Members:

_____
Dr. Heidi Grant

_____
Dr. Gordon B. Moskowitz

_____
Dr. Michael J. Gill

_____
Dr. Deborah Laible

_____
Dr. Carol S. Dweck

iii

Acknowledgments

I would like to express my sincerest thanks and gratitude to my advisor, Dr. Heidi Grant, for all of the unconditional guidance, wisdom, understanding, and friendship that she has provided me through out my graduate career. Thanks are also extended to Dr. Christopher Burke for all of his statistical guidance as well as general support during the writing of my dissertation. I would also like to thank my committee members Drs. Gordon B. Moskowitz, Michael J. Gill, Deborah Laible, and Carol S. Dweck for all of their immensely helpful insight and suggestions. Finally, special thanks go out to my parents whose unconditional love, support, and encouragement has greatly helped me along in my journey as a graduate student.

Table of Contents

List of Tables

viii

List of Figures

ix

Abstract

The vast majority of achievement goal research has focused on the *individual's* experiences during goal pursuit. By contrast, very little of this research has taken into consideration the *interpersonal* effects of achievement goals. This is surprising given that many achievement situations involve and depend on interactions with others (i.e. sporting events, classroom tasks, group projects in the workplace, etc). Therefore, a Pilot Study and two Experiments will be discussed that addressed how a focus on learning or performance influences interpersonal dynamics such as cooperation and communication when a group of people work together to complete a task. The experimental tasks were framed as either a learning goal or a performance goal in all three experiments. Groups of 3 or 4 participants worked on a card sequencing task (Pilot Study) or on a series of anagrams (Experiments 1 and 2). In Experiment 1, group members were required either to work together on one set of 30 anagrams or independently on their own sets of 10. In Experiment 2, some groups received an easy set of anagrams while others received a difficult set. In the Pilot Study and two Experiments, group members' perceptions of intragroup prosocial behavior, antisocial behavior, strategy use, and each group's task performance were assessed. In general, it was found that groups with learning goals reported high levels of perceived intragroup prosocial behavior and low levels of antisocial behavior regardless of the achievement context while groups with performance goals took on a 'strategic' approach with regard to prosocial behavior. The implications of these results as well as directions for future research are discussed.

1

The Social Effects of Achievement Goals

Introduction

The vast majority of achievement goal research has focused on the *individual's* experiences during goal pursuit. By contrast, very little of this research has taken into consideration the *interpersonal* effects of achievement goals. This is surprising given that many achievement situations involve and depend on interactions with others (i.e. sporting events, classroom tasks, group projects in the workplace, etc). Accordingly, the primary goal of this work is to experimentally determine the effects of achievement goals on social dynamics and outcomes. More specifically, the Pilot Study and two Experiments described in this paper addressed the following key questions: (1) How do goals influence achievement when they are pursued by *teams* rather than *individuals*? and (2) How does a focus on learning or performance influence interpersonal dynamics, such as cooperation and communication, when a group of people work together to complete a task?

Dissertation Overview

This dissertation consists of four parts. The first part includes a brief description of the two major categories of achievement goals that are focused on in motivation research followed by a short review of the research that has looked at the impact of achievement goals on *individual* goal pursuit. The second part is comprised of a review of some of the literature that has explored the relationship between achievement goals and social attitudes and behavior. In this review, I highlight the key hypotheses, findings, and implications that formed the basis for my dissertation project. The review is organized in terms of three different achievement domains that are commonly studied in

2

this literature: (1) academics, (2) sports, and (3) the workplace. The third part includes a summary of the issues that have yet to be addressed by existing research and is followed by a description of and the results for a Pilot Study and two Experiments that further addressed the social impact of achievement goals. The fourth and final part of this dissertation includes a general discussion of the findings, implications, and limitations of the current work, directions for future work, and concluding remarks.

<u>Part 1</u>

Different Goal Systems: Performance and Learning Goals

For this research, I focus primarily on two major classes of achievement goals which are referred to as *performance* and *learning goals.* Individuals who pursue *performance goals* are concerned with demonstrating and/or validating ability. The individual with a performance goal might also be concerned with out-performing others rather than simply demonstrating his/her own abilities. For example, a person who strives to get an A in order to demonstrate her intelligence or strives to get the highest grade in the course has a performance goal with respect to that course (Gelety & Grant, 2010). Performance goals are also commonly referred to as *ego-involving* goals because they create a focus on the self (Nicholls, 1984). They might also be referred to as *ability-linked* goals (Grant & Dweck, 2003). Researchers who have looked at the social effects of achievement goals almost exclusively refer to these goals as ego-involving goals. For this work, I further break down performance goals into two sub-categories based on whether they are focused primarily on normative or ability-linked concerns as previous research has manipulated and found unique effects for these two types (Grant & Dweck, 2003). Specifically, I refer to performance goals that are primarily concerned with

3

validation as *performance ability goals* and those that are primarily concerned with outperforming others as *performance normative goals.*

In contrast to performance goals, individuals who pursue *learning goals* are concerned with developing skills and acquiring new knowledge. Individuals with learning goals might also be concerned with mastering a challenge, self-improvement, or a focus on progress (Dweck, 1986; Elliott & Dweck, 1988; Elliot & McGregor, 2001; Grant & Dweck, 2003; Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Schunk, Pintrich, & Meece, 2008). For example, if a person is focused primarily on learning as much as he can in a course to improve his mastery of the topic, then he has a learning goal with respect to that course. Learning goals may also be referred to as *task-involving* goals or *mastery goals* because they focus the individual on the task at hand rather than the self (Ames & Archer, 1988; Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Nicholls, 1984). Again, most of the research on the social effects of achievement goals refers to these kinds of goals as task or mastery oriented. For my work, however, I refer to these goals as learning goals (Gelety & Grant, 2010).

The Approach-Avoidance Distinction

It is important to note that, in addition to the performance and learning distinction, a distinction exists between the valences of achievement goals. More specifically, achievement goals can be further broken down into *approach* or *avoidance* forms. *Performance-approach* goals involve demonstrating competence whereas *performance-avoidance* goals involve avoiding the demonstration of incompetence. *Learning-approach* goals focus the individual on gaining knowledge and skill while *learning-avoidance* goals emphasize a focus on avoiding losing skills or not learning as much as

4

one could (Elliot & McGregor, 2001). Approach and avoidance goals have been found to have very different effects on mood, motivation, and performance (Elliot & Church, 1997). Specifically, approach forms are thought to be beneficial while avoidance forms (particularly performance-avoidance goals) are shown to predict lowered performance, loss of intrinsic motivation, and withdrawal from the goal (Gelety & Grant, 2010). For this research, I focus only on approach goals because they are the most commonly endorsed and most often studied goals (see Grant & Dweck, 2003).

The Impact of Achievement Goals on Individual Goal Pursuit

Very rarely does goal pursuit progress in a smooth and easy manner. In fact, we are more often than not faced with obstacles (e.g. time constraints, complex tasks, the presence of distractions, etc.) that make reaching our goals more difficult. Consequently, performance and learning goals have been found to have very different effects in how individuals perceive and respond to success and failure. Specifically, individuals with learning goals use the amount of progress being made or level of improvement in gauging how successful they are in pursuing their goals. By contrast, individuals with performance goals view success as being able to validate/demonstrate their ability or to outperform others (Darnon & Butera, 2007). Learning goals have been found to predict a more adaptive pattern of responding to obstacles encountered during goal pursuit. Performance goals, by contrast, have been found to predict a helpless pattern of responding (Dweck, 1986; Dweck & Leggett, 1988; Gelety & Grant, 2010; Nicholls, 1984).

Why do performance and learning goals lead to such different patterns of responding to success and failure? The answer lies in the fact that individuals who

5

pursue performance or learning goals differ in the *attributions* they typically make for failure and their *expectations* for future success. At the outset of goal pursuit, both learning- and performance-oriented individuals tend to have high and often equal expectancies for successful goal attainment (Elliot & Church, 1997). In response to difficulty, however, individuals pursuing performance goals, because of their focus on demonstrating high ability, are more likely to attribute difficulty to a *lack thereof* (Ames & Archer, 1988; Dweck, 1986; Dweck & Leggett, 1988; Grant & Dweck, 2003). Not surprisingly, their expectancies for future success after a failure decrease (Dweck, 1986). On the other hand, individuals pursuing learning goals, given their emphasis on skill development, often attribute failure to *lack of effort* or *inappropriate strategy use*. These individuals believe that goal attainment is still possible if they increase their effort or choose a better strategy. As a result, their expectancies for future success after a failure remain the same or may even increase (Ames & Archer 1988; Dweck, 1986; Dweck & Leggett, 1988; Gelety & Grant, 2010; Grant & Dweck, 2003).

Dweck (1986) and Dweck and Leggett (1988) argue that the helpless pattern of responding to failure that is characteristic of performance goals only occurs when a person with these goals has low perceptions of ability. However, when perceptions of ability are high, individuals with performance goals are more likely to maintain high expectancies and remain motivated and engaged in the task, thus, leading to superior performance (see also Grant & Dweck, 2003). In past studies, ability perceptions have most often been manipulated through explicit failure or success feedback. However, perceptions of ability and consequent expectancies for future performance are also

6

influenced by task difficulty, a point to which I will return to later (Gelety & Grant, 2010).

Intrinsic Motivation

In addition to different conceptions of success and failure, performance and learning oriented individuals also differ in their levels of intrinsic motivation for completing a task. Given the different concerns of achievement goals (validation vs. development), learning goals typically predict greater intrinsic motivation overall as well as maintenance of it for difficult tasks whereas performance goals typically predict a decrease in intrinsic motivation (Dweck, 1986).   Indeed, Elliot and Church (1997) found that learning goals facilitated intrinsic motivation through challenge appraisal, excitement, and task absorption for students in an introductory psychology course. Performance approach goals were found to be unrelated to intrinsic motivation. Likewise, in a series of studies conducted by Grant and Dweck (2003), learning goals were found to predict sustained motivation while performance goals were found to predict motivational withdrawal in the face of difficulty (Gelety & Grant, 2010).

Task Performance

The findings with regard to the effects of achievement goals on task performance are mixed. While there is a general agreement that learning goals are the more adaptive of the achievement goals, performance goals have also been found to predict some beneficial achievement outcomes. More specifically, in some studies, performance goals have been found to predict higher exam and course grades as well as team performance whereas learning goals have been found to predict higher intrinsic motivation and team planning only (Elliot & Church, 1997; Elliot & McGregor, 2001; Elliot, McGregor, &

7

Gable, 1999; Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Mehta, Feild, Armenakis, & Mehta, 2009; Senko & Harackiewicz, 2005). For instance, in their third study, Elliot & McGregor (2001) found that performance goals predicted higher grades on both multiple choice and short answer/essay exams whereas learning goals were unrelated to graded performance. In a related vein, Elliot, McGregor, and Gable (1999) found in both of their studies that performance goals were positively correlated with exam performance while learning goals were unrelated to exam performance. Finally, in a study looking at how a team goal orientation affects task performance through team planning, Mehta, Feild, Armenakis, and Mehta (2009) found that a team learning orientation predicted only team planning whereas a team performance orientation predicted task performance (and this relationship was mediated by team planning).

By contrast, other researchers have found that performance goals are detrimental to performance while learning goals are beneficial, supporting the notion that performance goals are generally maladaptive in difficult achievement situations (Ames & Archer, 1988; Dweck, 1986; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Grant, Baer, & Dweck, 2006; Grant & Dweck, 2003; Grant, Baer, Gelety & Dweck, 2010). Dweck and Leggett (1988) argue that impaired performance occurs for those with performance goals because they are more likely to have low expectancies for the utility of greater effort, believe effort to indicate lack of ability, experience anxiety in the face of difficulty, and lack the intrinsic motivation necessary for persistence. Learning goals lead to improved performance because individuals with these goals view difficulty as an opportunity for improvement, have high expectancies for future success, experience

8

positive affect in the face of difficulty, and are motivated by difficulty (Gelety & Grant, 2010).

The Role of Task Difficulty

Given that performance goals and learning goals lead to such different patterns of response to the inevitable difficulties encountered during goal pursuit, it makes sense that task difficulty would play an important role in bringing about these different patterns. However, it is important to mention that the researchers of achievement goal effects on performance have rarely taken the difficulty of the achievement situation explicitly into account. Studies assessing the effects of achievement goals have utilized a variety of different tasks. For instance, some studies implemented fun, easy tasks (i.e. NINA puzzles, boggle, or pinball) while others involved tougher, more complex tasks (i.e. difficult math problems, analytical problems, or actual course exams). However, very little research has directly addressed *how* task difficulty itself affects achievement. Failure to take into account important potential moderators (task difficulty in particular) of goal effects may account for the discrepant findings I highlighted earlier. A review of the literature suggests that researchers who have found maladaptive effects of performance goals have tended to find them in difficult achievement contexts, while benefits are primarily found with easier tasks (Gelety & Grant, 2010).

Accordingly, the aim of my Masters project (Gelety & Grant, 2010) was to directly address this issue. I conducted two experiments to better understand why goal type and difficulty interact to influence performance. For both studies, goal type was manipulated through the task instructions that were presented orally to the participants. More specifically, participants were assigned to either a performance goal or learning

9

goal. Task difficulty was manipulated by presenting participants with computer interruptions (Experiment 1) or different numbers of unsolvable anagrams (Experiment 2). The primary dependent variables of interest in both studies were: (a) task performance (number of correct solutions), (b) performance expectancies, (c) mood, and (d) self-reported motivation.

For both experiments, I predicted and found that individuals with performance goals are negatively impacted by difficulty while individuals with learning goals are not. Performance goals created an advantage over learning goals in terms of both expectancies for success and actual achievement in the easy conditions. However, these advantages disappeared in the difficult conditions. More specifically, in the easy task conditions, performance goals led to more correct solutions than learning goals, while in the difficult task conditions, learning goal and performance goal participants did not differ in correct solutions generated.

For Experiment 2, I further predicted and found that difficulty leads to lowered expectancies, but more so for performance goals than learning goals. Lowered expectancies, in turn, lead to a loss of motivation and lowered achievement for performance goals but not for learning goals. To be clear, I found that individuals with performance goals suffer for two related reasons. First, individuals with performance goals experience greater drops in expectancies than those with learning goals in the face of difficulty. Second, individuals with performance goals are impacted more negatively by drops in expectancies than people with learning goals.

In sum, the results indicate that when tasks are easy, having a performance goal with respect to those tasks is beneficial. However, when tasks become difficult, the

10

benefits of performance goals disappear. According to Experiment 2 correlations, the loss of benefits of performance goals in difficult situations appear to be associated with drops in expectancies.

<u>Part 2</u>

The Social Impact of Achievement Goals: A Literature Review

It is clear that achievement goals predict unique patterns of cognitive, affective, and behavioral responses for the *individual* during goal pursuit (particularly in the face of difficulty). However, given that most achievement situations involve and often depend on interactions with other people, it makes sense that the influence of learning and performance goals would extend beyond individual experience into the interpersonal realm. Surprisingly, much less research exists that has explored the social effects of achievement goals in group- or team-based achievement contexts (for similar arguments see Darnon, Butera, & Harackiewicz, 2007; Darnon, Muller, Schrager, Pannuzzo, & Butera, 2006; Janssen & Van Yperen, 2004; Levy, Kaplan, & Patrick, 2004; Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2007). The smaller number of studies that have examined the social effects of achievement goals have focused on a variety of domains (i.e. academics, sports, and work) as well as different populations of people (i.e. young adolescents, athletes, college students, and employees). The findings and implications from this literature formed the primary basis for my dissertation project.

Academics

Achievement goals play a vital role in academic contexts. Students enter the classroom with different goal orientations that guide their academic pursuits. The classroom context itself also facilitates different goals depending on the instructor and

11

makeup of the student body. Students are often required to work together on classroom tasks and projects. Indeed, group learning contexts provide ample opportunity for both prosocial (cooperation) and antisocial (cheating) behavior among students depending on the kinds of goals they have with respect to academic tasks (see Midgely, Kaplan, & Middleton, 2001 for a review). Researchers have explored the effects of achievement goals on a variety of social variables in the classroom including prosocial behavior such as cooperation, anti-social behavior such as cheating, and conflict regulation.

Prosocial Behavior

Cheung, Ma, and Shek (1998) examined the relationship between adolescents' achievement goal orientations and their attitudes towards prosocial behavior as well as the actual enactment of such behavior. The authors measured the primary goal orientations (task or ego orientations) of 673 Chinese secondary school students. In the study, each student rated his/her attitude towards prosocial behavior. They were also asked to report the frequency with which they engaged in 65 antisocial (i.e. gambling) and prosocial (i.e. volunteering) behaviors during the past year. Cheung and colleagues hypothesized and found that task orientation is positively associated with prosocial orientation and behavior. Conversely, it was found that ego orientation is unrelated to prosocial orientation and behavior. These results illustrate the important role that different conceptions of success play in affecting a person's moral feelings and behaviors (Cheung, Ma, & Shek, 1998).

In a related vein, Levy, Kaplan, and Patrick (2004) conducted a qualitative study assessing the relationships between Israeli fifth grade students' achievement goals, social status, and attitudes towards cooperation with peers of different social statuses. For the

12

study, each student reported his/her chronic goal orientation, social status, and willingness to cooperate with other students in the class.

Levy and colleagues found that students' academic goals and social goals are related. More specifically, it was found that a focus on academic self-worth that is intrinsic to performance goals is related to a concern with social status. Therefore, cooperation is evaluated based on its utility in maintaining or boosting social status. Conversely, it was found that a concern with learning and improvement inherent in mastery goals is unrelated to concerns about social status. Accordingly, cooperation is evaluated based on its utility for learning. Students who were predominantly mastery oriented were not as focused on social status and preferred to cooperate with other students (regardless of their social status) who fostered mastery goal strivings. Students with performance goals, on the other hand, placed heavy emphasis on social status and preferred to work with peers from within their own social groups. However, they were willing to work with out-group peers if it resulted in a boost in their own social status (Levy, Kaplan, & Patrick, 2004).

Cheating

Anderman, Griesinger, and Westerfield (1998) conducted a correlational study with the goal of determining the motivational factors involved in early adolescents' attitudes about cheating as well as their actual cheating behavior in science classes. The authors hypothesized that students who perceived their school as being performance focused would be more likely to favor and engage in cheating behavior than students who perceived their school to be primarily mastery focused. Indeed, it was found that perceptions of performance focused environments were related to greater cheating

13

behavior among students but were only marginally related to positive attitudes towards cheating. The authors propose that the heavy emphasis on grades and ability validation inherent in performance focused atmospheres might provoke students to do whatever it takes to get a high grade or to demonstrate their ability even if they generally condemn cheating (Anderman, Griesinger, & Westerfield, 1998).

By contrast, there was a marginally significant negative relationship between perceptions of mastery oriented environments and attitudes towards cheating. Moreover, mastery oriented environments were unrelated to cheating behavior all together. The authors claim that this finding does not imply that mastery oriented environments have *no* impact whatsoever on students' opinions about cheating. Rather, it suggests that perceptions of performance oriented environments are the key contributors to pro-cheating attitudes and behavior. Accordingly, they argue that schools should instead emphasize learning and progress in order to attenuate the stress of pursuing academic goals solely to demonstrate ability or to be the highest ranking student in the class. This reduction in stress should, in turn, reinforce anti-cheating attitudes and reduce cheating behavior in the classroom (Anderman, Griesinger, & Westerfield, 1998).

Conflict Regulation

Darnon, Muller, Schrager, Pannuzzo, and Butera (2006) conducted two studies showing that achievement goals influence the kinds of strategies students use in regulating sociocognitive conflict over material to be learned in the classroom. The authors focused on two types of conflict regulation strategies in their studies: *epistemic* and *relational* conflict regulation. These strategies are used when two people work together on a task and a conflict arises. Specifically, individuals who take on the

14

epistemic regulation strategy "recognize the other person's competence and try to understand how his or her point of view can compliment their own understanding" (Darnon et al., 2006, p. 767). By contrast, the relational regulation strategy involves affirming competence and individuals who take on this strategy "try to demonstrate that they are right and the other person is wrong" (Darnon et al., 2006, p. 767). In addition, the epistemic regulation strategy emphasizes a focus on the task while the relational regulation strategy emphasizes a focus on social aspects of the situation (i.e. comparison and competence evaluation; Darnon et al., 2006).

Participants' chronic goal orientations (performance versus mastery) were measured in both studies. In Study 1, participants were asked to imagine a discussion with someone who held conflicting views about an important experiment they learned about in their psychology class. Participants were then asked to report the extent to which they would use an epistemic or relational strategy to regulate the conflict. In Study 2, participants experienced an actual sociocognitive conflict with another 'student' with whom they were ostensibly interacting by means of a computer. They were then asked to rate their own competence with regard to the material being learned as well as the competence of their interaction partner.

Darnon and colleagues predicted and found in both studies that participants with performance goals used the relational strategy to regulate sociocognitive conflict more than those with mastery goals. By contrast, participants with mastery goals used the epistemic strategy to regulate conflict to a greater degree than those with performance goals. Additionally, in Study 2, performance oriented participants rated their own competence as higher than that of their interaction partner (supporting the idea that

15

relational conflict regulation involves affirming one's own competence). Mastery oriented participants, on the other hand, were more likely to acknowledge their partner's competence instead of downplaying it (Darnon, Muller, Schrager, Pannuzzo, & Butera, 2006).

More recently, Darnon, Butera, and Harackiewicz (2007) conducted an experiment assessing how performance and mastery goals affect learning during social interactions. For the study, participants were told that they would study a social psychology text in pairs. They would communicate with their 'partners' via computer-mediated interactions. The specific task instructions were framed as either a mastery goal or a learning goal. Level of disagreement between the participant and his/her 'partner' was also manipulated. Participants were asked four questions with regard to the text they studied. They were asked to write down their answer to each question and send it by computer to their partners (participants' answers were always correct). Participants then received pre-recorded answers from their partners. These answers were either in agreement or disagreement with participants' answers. After receiving their partners' answers, participants could either send another answer to the same question or continue studying the text (this procedure was used for all 4 questions). Immediately after the interaction, participants completed a post-task questionnaire (measuring participants' sense of certainty and confidence in their understanding of the text) and a multiple choice test (to measure actual learning; which was the primary dependent variable of interest). Participants completed the same multiple choice test 1 to 2 weeks later.

Darnon and colleagues found that mastery goals fostered better learning of the text than performance goals when participants' and their partners' answers were in

16

disagreement. No differences in learning were found for the two goal conditions when their respective answers were in agreement. Specifically, in the case of disagreement (which increased uncertainty for participants in both goal conditions), learning of the text was better for participants in the mastery goal condition than for those in the performance goal condition. The authors reasoned that that this result occurred because participants in the mastery goal condition might have used epistemic conflict regulation while those in the performance goal condition might have used relational conflict regulation in resolving the disagreements (Darnon, Butera, & Harackiewicz, 2007). This reasoning was based on the findings from the Darnon, Muller, Schrager, Pannuzzo, and Butera (2006) studies and was later confirmed in the Darnon and Butera (2007) experiment which directly tested this reasoning.

In summary, it appears that achievement goals play an important role not only in students' individual academic performance but also in how they approach social situations in the classroom. Achievement goals shape students' attitudes with regard to prosocial behaviors such as cooperation, antisocial behaviors such as cheating, and guide their actual interactions with peers. More specifically, Cheung, Ma, and Shek (1998) found that being task oriented leads to more favorable attitudes towards prosocial behavior as well as a greater likelihood of actually engaging in such behaviors. The results of the Levy, Kaplan, and Patrick (2004) study indicate that the kinds of goals students have influence their perceptions of cooperation in that students with learning goals are more likely to cooperate with peers on academic tasks regardless of their social status. This is because cooperation with peers enhances learning; which is the main focus of mastery goals. By contrast, students with performance goals only cooperate with peers

17

who will boost or maintain their social status. Anderman, Greisinger, and Westerfield (1998) found that students who perceived their classroom environment as being performance oriented had more favorable attitudes towards cheating and were more likely to actually engage in such behavior. Finally, both the Darnon, Muller, Schrager, Pannuzzo, and Butera (2006) and Darnon, Butera, and Harackiewicz (2007) studies show that participants with learning goals devote more attention to the task at hand and are far more likely to use epistemic regulation strategies in regulating conflicts that arise when working with another person on a task. Participants with performance goals, on the other hand, are more focused on the social dynamics of the achievement situation and are more likely to use relational regulation strategies in dealing with conflicts that arise during the completion of a task.

Sports

Athletics constitute another domain in which achievement goals and teamwork play important roles. Perhaps even more so than academics, sports provide an arena in which athletes can choose to engage in prosocial or antisocial behavior towards fellow teammates and opponents in order to reach their athletic. Consequently, the type of achievement goal that an athlete brings to the sport or the motivational climate of the specific context should affect how an athlete thinks and behaves with respect to the social dynamics of the sporting event. Indeed, much correlational and qualitative research has been conducted examining a variety of social variables such as general attitudes towards prosocial and antisocial behavior in sport, morality and aggression, and sportspersonship.

18

Prosocial and Antisocial Behavior

Kavussanu (2006) explored how individual goal orientation and perceived motivational climate affect prosocial and antisocial behavior in 325 male association football players. Participants filled out questionnaires assessing their chronic goal orientation (task versus ego), their perceptions of the motivational climate (mastery versus performance), and the frequency with which they engaged in a series of antisocial and prosocial behaviors (i.e. pretending to be injured or helping an opponent off the floor).

In general, it was found that ego orientation positively predicted antisocial behavior and negatively predicted prosocial behavior. Conversely, task orientation positively predicted prosocial behavior and negatively predicted antisocial behavior. In addition, perceived mastery climate positively predicted prosocial behavior while perceived performance climate positively predicted antisocial behavior. No significant interactions between goal orientation and perceived motivational climate were found. However, perceived mastery climate was found to be more important in predicting prosocial behavior than task orientation, a result that Kavussanu argues can be explained by the cooperative learning component involved in overall mastery oriented climates that is "not present in task orientation" (p. 585). Finally, ego orientation and perceived performance climate were equally important predictors of antisocial behavior because it is argued that both involve a "normative definition of success" (Kavussanu, 2006, p. 585).

19

Morality and Aggression

In an early study conducted by Stephens and Bredemeier (1996), the relationships between aggression, moral constructs, and motivational constructs for 212 youth female soccer players were explored. Perceived ego oriented climates were found to be stronger predictors of an athlete's aggressive self-identification than was her own dispositional goal orientation. Stephens and Bredemeier (1996) argue that perhaps in the case of young athletes, the "moral atmosphere" (i.e. the kind of goals the coach espouses; p. 170) plays a more significant role in eliciting or inhibiting aggressive behavior than do the dispositional goal orientations of the athletes.

Kavussanu and Roberts (2001) conducted a similar study in order to reveal how individual goal orientation (task versus ego) affects morality, negative attitudes towards sportspersonship, and judgments about intentionally injurious acts among 209 college basketball players. The variables were measured by having each athlete complete a series of surveys and rating the legitimacy of negative behaviors as 'solutions' to four basketball-related dilemmas.

Ego orientation was found to be positively associated with judgments about and intentions to engage in negative behaviors. Ego orientation was also found to be positively related to judgments about the legitimacy of intentionally injurious acts. In other words, ego oriented athletes were more likely to report that it is okay to engage in harmful behaviors in order to resolve basketball-related dilemmas. However, ego orientation was unrelated to actual enactment of these behaviors. Kavussanu and Roberts suggest that this finding might be explained by the fact that these types of dilemmas do not happen very often in basketball games, thus, limiting the opportunity for active

20

engagement in antisocial behaviors. Ego orientation and unsportsmanlike attitudes were also found to be unrelated. Finally, task orientation was found to be unrelated to all variables measured in the study. With respect to the lack of results for task orientation, the authors reason that this type of orientation might not necessarily lead an individual to behave morally because it serves to focus the individual on the task at hand and not the social/moral aspects of the situation (Kavussanu & Roberts, 2001). However, based on the results of the rest of the research in this review, I will argue later that task orientations *do* lead to a focus on the social aspects of an achievement situation under certain circumstances (i.e. when people must work together on a task).

Sportspersonship

Ommundsen, Roberts, Lemyre, and Treasure (2003) incorporated achievement goal theory to examine the relationships between perceived motivational climate (performance versus mastery) on youth soccer players' social-moral functioning, sportspersonship, and team norm perceptions. According to the results, mastery oriented teams involve athletes who (1) use more mature reasoning for resolving soccer-related moral dilemmas, (2) are less likely to engage in antisocial behaviors (i.e. intimidation, cheating, and physical aggression towards their opponents), (3) foster among each other norms of good sportspersonship and moral behavior, and (4) and generally disapproved of any kind of amoral behavior. The opposite is true for athletes from performance oriented soccer teams (Ommundsen, Roberts, Lemyre, & Treasure, 2003).

Stornes and Ommundsen (2004) conducted a similar study to the Ommundsen et al. (2003) study. However, Stornes and Ommundsen explored the main and interactive effects of both *dispositional* and *situational* goal orientations on sportspersonship.

21

Specifically, they sought to determine the relationship between achievement goal orientation (task versus ego), perceived motivational climate (mastery versus performance), sportspersonship, and instrumental aggression in a sample of 440 male Norwegian handball players.

Both mastery oriented climates and task orientations were found to be positively related to indices of sportspersonship (e.g. respect for social conventions, rules, and officials). Ego orientation was negatively associated with sportspersonship. Moreover, athletes who were strongly ego oriented and who perceived a strong performance oriented climate scored lower on indices of sportspersonship and higher on indices of instrumental aggression. Ego oriented athletes also reported less respect for opponents in weak rather than strong mastery oriented climates (Stornes & Ommundsen, 2004).

Finally, Gano-Overway, Guivarnau, Magyar, Waldron, and Ewing (2005) conducted a very similar study to that of Stornes and Ommundsen (2004) with the following exceptions: (1) their participants were 202 female club volleyball players and (2) they examined the effects of achievement goals at the *individual* level and the *team* level. They focused on two specific components of sportspersonship: respect for the game and respect for the opponents.

Individual task orientation was found to be positively related to respect for the game and opponents. Individual ego orientation and perceived ego involving climate were both unrelated to the two components of sportspersonship. In addition, team level perceptions of a strong task involving climate were positively (though only marginally) related to team level respect for the game. Finally, the authors found a significant 3-way interaction between individual task orientation, individual ego orientation, and task

22

involving climate for respect for the game. Specifically, athletes with strong ego orientations who perceived themselves as being part of a strong task involving climate were more likely to increase in task orientation *and* respect for the game. However, for weakly task involved climates, the relationship between task orientation and respect for the game was positive *only* for weakly ego orientated athletes. There was no relationship between task orientation and respect for the game when ego orientation was high (Gano-Overway, Guivarnau, Magyar, Waldron, & Ewing, 2005).

The results of the Stornes and Ommundsen (2004) and Gano-Overway et al. (2005) studies speak to the power of the motivational climate in affecting athletes' social-moral attitudes and behaviors. Indeed, Gano-Overway and colleagues argue that fostering a task involving climate is necessary in order to 'override' the deleterious effects of dispositional ego orientations in athletic contexts.

Taken together, the results of the above studies indicate that dispositional goal orientations as well as the motivational climate have important independent and interactive effects on athletes' social-moral attitudes and behaviors in sport. With regard to general prosocial and antisocial behavior in sport, Kavussanu (2006) found that ego orientation positively predicted antisocial behavior and negatively predicted prosocial behavior. The opposite pattern was true for task orientation. Moreover, perceived mastery climate positively predicted prosocial behavior while perceived performance climate positively predicted antisocial behavior. Upon taking a more specific look at morality and aggression in sport, Stephens and Bredemeier (1996) found that while both dispositional and situational ego orientation were positive predictors of aggressive behavior among young female soccer players, perceptions of an ego involved climate

23

were stronger predictors of aggression than were dispositional ego orientations. Similarly, Kavussanu and Roberts (2001) found ego orientation to be positively associated with judgments about and intentions to engage in negative behaviors as well as to judgments about the legitimacy of intentionally injurious acts.

Finally, research has shown that the type of achievement goal orientation espoused within a team affects sportspersonship. Specifically, the results of the Ommundsen, Roberts, Lemyre, and Treasure (2003) study indicate that mastery oriented climates foster greater sportspersonship, more mature moral reasoning with regard to soccer-related moral dilemmas, and general condemnation of antisocial behavior. The results for the Stornes and Ommundsen (2004) and Gano-Overway et al. (2005) studies emphasize the importance of fostering a mastery oriented climate in sport. Specifically, it was found that the negative effects of dispositional ego orientations were less pronounced in strongly mastery oriented climates than in climates where mastery orientation is weakly endorsed or where a performance orientation is strongly endorsed.

The Workplace

Another domain in which achievement goals and interpersonal processes apply is the workplace. Employees rarely work in isolation as they must interact with their supervisors and co-workers (often on team projects) (Janssen & Van Yperen, 2004). As a result, successful job performance depends on positive and productive social interactions in the workplace. Indeed, some research has provided evidence that workers' achievement goals influence the nature of social interactions in the workplace, the likelihood of prosocial behaviors among co-workers, and information exchange during the completion of work-related tasks.

24

Social Interactions

Janssen and Van Yperen (2004) conducted a study assessing the relationship between employees' goal orientations and the quality of leader-member exchange. In this study, 170 employees of a Dutch energy supplier provided self-reports of their chronic goal orientations (performance versus mastery), quality of leader-member exchange, and job satisfaction. In addition, their supervisors rated each employee's job performance (measured as in-role and innovative job performance).

Janssen and Van Yperen hypothesized and found that an employee-adopted mastery orientation leads to higher quality interactions with supervisors. Second, it was predicted and found that an employee-adopted performance orientation leads to lower quality exchanges. More specifically, employees with performance orientations were more likely to establish low quality interactions which Janssen and Van Yperen describe as "predominantly contractual exchanges that result in hierarchy-based downward influence and distance between the parties" (p. 371). These results indicate that employees' predominant goal orientations affect more than just their job performance. They also guide how employees approach interactions with their supervisors. More specifically, mastery oriented employees perceive their bosses as being valuable sources of information and support. Therefore, mastery oriented employees approach their supervisors in respectful, positive ways that, in turn, elicit similar treatment from their supervisors. Performance oriented employees, on the other hand, are more likely to perceive their bosses as threats to their beliefs about their own abilities and job competence. Therefore, performance oriented employees are more likely to interact with their supervisors as little as possible and only fulfill the minimal requirements of their

25

jobs in order to avoid being reminded of their inferior status. As a result, supervisors of performance oriented employees are less likely to view them as competent and autonomous workers (Janssen & Van Yperen, 2004).

Prosocial Behavior

Porter (2005) conducted a study looking at the effects of goal orientation on 'backing up behavior'. In general, backing up behavior is that which serves to help fellow team members reach their goals when they are struggling to do so themselves (Porter, 2005; Porter, Hollenbeck, Ilgen, Ellis, West, & Moon, 2003). For the study, 320 undergraduates worked in 4-person teams on a tactical decision-making task. Each team member's chronic goal orientation was measured and the 'mean level' of goal orientation was calculated for each team. Porter found that higher mean levels of learning orientation were associated with more backing up behavior. Mean levels of performance orientation were negatively but non-significantly related to backing up behavior. However, both learning and performance orientations were unrelated to task performance. These results indicate that a team learning orientation might be more important for facilitating prosocial behavior than for enhancing task performance (Porter, 2005).

In a related vein, LePine (2005) conducted a study that assessed how team goal orientation and goal difficulty interact to affect team adaptation when faced with a sudden disruption during the completion of a task. It was found that members of teams that were predominantly performance oriented and who were given difficult goals were the least likely to maintain support and respect for each other when faced with the disruption. Their quality of communication also deteriorated. By contrast, when

26

members of teams with a predominant mastery goal orientation were given a difficult goal, they stepped up their communicative efforts and maintained mutual support and respect for each other during the disruption.

Information Exchange

Poortvliet, Janssen, Van Yperen, and Van de Vliert (2007) conducted two experiments in which participants engaged in an information exchange task (which was framed as either a performance or mastery goal) that involved reading a scenario describing an airplane crash that stranded the surviving passengers in a desolate, frigid area. Participants also read that the passengers were able to gather 12 valuable items from the plane wreckage. After reading the passage, participants were asked to evaluate and rank each item in terms of its importance for survival and share their rankings with another 'participant' via computer. After sending their rankings, participants received the rankings of the other 'participant' over the computer (in reality, no such participant existed and the rankings were pre-written). After this initial trade was completed, participants were asked to formulate a second ranking. Participants in the mastery goal condition were told to try to "perform better on your second ranking as compared to your first ranking" while participants in the performance goal condition were told to try to "perform better on your second ranking as compared to the other's ranking" (Poortvliet et al., 2007, p. 1439).

The results for Experiment 1 indicated that participants in the performance goal condition were less open in sharing their most valuable information with the other participant. They were also more likely to detect and use only the most valuable information given to them when formulating their second rankings. Participants in the

27

mastery goal condition, by contrast, were much more open and willing to share valuable information with the other 'participant'. They were also more likely to take into consideration and deeply process *all* of the information given to them (regardless of how valuable it was) when formulating their second rankings (Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2007).

For Experiment 2, the authors sought to replicate the Experiment 1 results as well as determine the psychological processes that contributed to the different exchange behaviors of participants in each goal condition. It was hypothesized that performance goals foster an ego-based *exploitation orientation* with regard to information exchange in achievement situations. More specifically, given that individuals with performance goals are concerned with outperforming others and demonstrating their ability, they should be more likely to withhold valuable information that might provide an advantage for other people involved in the achievement situation. Additionally, people with performance goals are more likely use this exploitation orientation to manipulate others into sharing only the most valuable information they have with regard to completing an achievement task. By contrast, it was hypothesized that mastery goals foster a cooperative *reciprocity orientation* with regard to information exchange. That is, given that individuals with learning goals are concerned with mastery and growth, they should be more likely to view other people involved in an achievement situation as valuable sources of information. Therefore, people with learning goals should more openly share any valuable information they have with the expectation that their interaction partners will do the same. In essence, individuals with learning goals should take on a more cooperative mindset when entering into achievement situations. The procedure was identical to the

28

one used for Experiment 1 with the exception that participants received the worst possible ranking from the fictitious partner (this ranking was meant to provide low quality information). This was done in order to gain a fuller understanding of how individuals with different achievement goals utilize information given to them by others. The results of Experiment 2 were consistent with those found in Experiment 1. Participants with performance goals were less likely to use the low quality information in formulating their second rankings than were those with learning goals. Finally, participants with performance goals were more likely to adopt an exploitation orientation in their interactions with their partners while those with learning goals were more likely to adopt a reciprocity orientation, supporting the authors' hypotheses for Experiment 2 (Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2007).

Again it is clear that achievement goals have important effects on social dynamics in the workplace. Not only do they guide workers' actual job performance, they also influence their attitudes and behaviors towards supervisors and co-workers in important ways. Janssen and Van Yperen (2004) found that employees with predominant mastery orientations reported higher quality interactions with their supervisors (and considered them as valuable informational resources) while those with performance orientations were more likely to approach such interactions in a hierarchical manner (and considered their supervisors as threatening authority figures). The results of the Porter (2005) and LePine (2005) studies emphasize the importance of fostering a learning oriented climate among teams in order to facilitate behaviors that serve to help fellow team members in completing a task, particularly when they are faced with challenges. Finally, Poortvliet, Janssen, Van Yperen, and Van de Vliert (2007) determined that individuals with

29

performance goals are more likely to adopt a generally exploitative mindset when working with others on a task. Individuals with learning goals, by contrast, are more likely to adopt a reciprocal mindset in their interactions with others during an achievement situation.

Overall Implications

It appears that learning goals are related to more prosocial mindsets. More specifically, mastery goals appear to foster positive attitudes towards cooperation and communication; which lead to more positive and adaptive social interactions. Performance goals, on the other hand, appear to be related to more antisocial mindsets. The above research suggests that performance goals foster positive attitudes towards cheating and other exploitative behavior. In sum, the above research clearly indicates that achievement goals have important interpersonal effects in a variety of achievement domains. Thus, when determining which goal or combination of goals should lead to optimal achievement, it is important to consider their effects on *both* task performance and interpersonal processes as most achievement situations involve and depend on successful interactions with others.

<u>Part 3</u>

Summary of Issues to be Addressed

While the above research constitutes a valuable step in understanding the interpersonal effects of achievement goals, there are still several important issues that have yet to be addressed. The first issue concerns the question of causality. The majority of the research that I have reviewed involves qualitative or correlational studies where goal orientations are measured rather than manipulated (with the exception of the Darnon

30

& Butera (2007), Darnon, Butera, & Harackiewicz (2007), and Poortvliet, Janssen, Van Yperen, & Van de Vliert (2007) experiments). While these studies confirm that an important relationship indeed exists between achievement goals and social attitudes and behavior, the causal nature of the relationship cannot be inferred from the results. Thus, one goal of the current work was to conduct experimental studies in a laboratory setting that involved controlled social interactions and direct manipulation of achievement goals in order to determine the exact nature of their effects on social factors.

Second, very little research has proposed and tested for possible moderators of the relationship between achievement goals and social variables (with the exception of the LePine, 2005 study). The current work included tests for moderation in order to better understand *when* different goals affect different variables during group achievement contexts. More specifically, the present work included two additional independent variables: task interdependence (Experiment 1) and task difficulty (Experiment 2) in order to determine whether or not they moderate the relationship between achievement goals and social attitudes and behaviors.

Third, research on achievement goals has focused either on their impact on task performance (i.e. Ames & Archer, 1988; Dweck, 1986; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Grant, Baer, & Dweck, 2006; Grant & Dweck, 2003; Grant, Gelety, Baer, & Dweck, 2007; Mehta, Feild, Armenakis, & Mehta, 2009) or on their impact on social variables (i.e. Anderman, Griesinger, & Westerfield, 1998; Janssen & Van Yperen, 2004; Kavussanu, 2006; Levy, Kaplan, & Patrick, 2004; Ommundsen, Roberts, Lemyre, & Treasure, 2003; Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2007). However, very little of the reviewed research has looked at both (with the exception of the Darnon,

31

Butera, & Harackiewicz (2007), LePine (2005), and Porter (2005) studies). Therefore, for this project, I examined how the social effects of achievement goals themselves are related to task performance.

Finally, the majority of the reviewed research examined the effects of achievement goals held by individuals within groups or on dyads. Therefore, in the present work, *entire groups* of participants rather than individual participants were given an achievement goal with respect to the experimental tasks. Stated differently, all members of a group were given the same kind of achievement goal for completing the tasks. For instance, some groups were given a performance goal while others were given a learning goal. By doing this, I was able to determine how a given achievement goal affects an entire group working together rather than each individual member separately.

<center>*The Present Work*</center>

In order to address the above issues and to expand upon my previous work, I have designed a Pilot Study and two Experiments. To address the question of causality, the Pilot Study and both Experiments were conducted in a controlled laboratory setting where goal orientation was manipulated rather than measured. To address the question of moderation, Experiment 1 determined whether *task interdependence* moderates the relationship between achievement goals and group interactions and task performance while Experiment 2 assessed whether *task difficulty* plays a moderating role. Both group interaction and performance variables were measured in the Pilot Study and two Experiments in order to determine how the social effects of achievement goals are related to task performance. Finally, the Pilot Study and two Experiments involved groups of three or four participants rather than individuals or dyads.

<center>32</center>

General Hypotheses

Based on the findings of past research and the purposes of the present work, I have devised two over-arching hypotheses. Each hypothesis corresponds to a particular achievement goal. Given that goal type will be manipulated in the Pilot Study and two Experiments, these over-arching hypotheses apply to each. Specific predictions with respect to task interdependence and difficulty will be outlined in detail in the descriptions for Experiments 1 and 2.

1. *Learning Goals.* Learning goals involve a concern with progress and improvement. Behaving in a prosocial manner (i.e. being helpful and cooperative) is a useful strategy to optimize learning. Therefore, the hypothesis with regard to learning goals is clear. Specifically, learning goals should foster more positive attitudes towards prosocial behavior. As a result, more adaptive interactions should occur among group members (i.e. they should display higher levels of communication and cooperation and use more adaptive strategies when completing the tasks) which, subsequently, should lead to enhanced performance on the tasks.

2. *Performance Goals.* The hypothesis with regard to performance goals is less clear. Therefore, I am taking a more exploratory approach in my predictions for these goals. The hypothesis with regard to performance goals can be broken down into two alternative sub-hypotheses (both of which are consistent with past research):

   A. Given that performance goals emphasize demonstrating and validating one's own ability, these goals could lead each group member to focus on his/her self rather than on the task or group as a whole (even though the performance goal instructions are framed at the group level in the Pilot Study and two

33

Experiments). Accordingly, performance goals could foster more positive

attitudes towards antisocial behavior (specifically intragroup competition[1]).

Performance goals should also decrease intrinsic motivation for completing

the tasks. Accordingly, more maladaptive interactions could occur among

group members. In other words, group members could behave in a more

competitive and dominating manner towards each other, decreasing the

quality of communication and cooperation (if they engage in any type

of cooperation or communication at all). If true, groups with these goals

should perform the worst on the experimental tasks. That is, group members

could be more inclined to behave competitively *among themselves* in order to

reach the goal of demonstrating individual superiority on the task and this

could decrease task performance.

B. Groups with performance goals could also be focused primarily on

outperforming other groups. Therefore, these groups could take on a

'strategic' approach with respect to prosocial behavior, in that they could be

selective with regard to when they will band together or remain independent.

That is, performance goals could foster prosocial mindsets in individual group

members *only when it is beneficial* to their strivings to outperform *other*

groups on the tasks. As a result, performance goals could lead to generally

adaptive interactions and enhanced task performance, but *only* when

---

[1] Intragroup competition was one primary dependent variable of interest in a study conducted by Mitchell and Silver (1990) that assessed how general individual and group goal setting affects strategy use and task performance when group members are required to work together. However, none of the reviewed literature on the social effects of *achievement* goals considered intragroup competition as a group-based antisocial behavior. Therefore, I implemented measures of intragroup competition in the Pilot Study and two Experiments in order to determine if learning and performance goals influence the likelihood of such behavior occurring among group members.

34

cooperation and communication are beneficial for ensuring superior performance over other groups. However, these goals should still lead to decreased intrinsic motivation because they do not involve a concern with learning or progress. In summary, performance goals could lead to generally adaptive intragroup interactions and, subsequently, enhanced task performance when prosocial behavior is beneficial for outperforming other groups.

Overall Analytic Strategy

The hypotheses for the Pilot Study and two Experiments are framed at the condition (goal) level and involve a multi-level design. More specifically, the design consists of two levels: (1) the individual participants that were randomly assigned to the experiment and (2) the 3 or 4-person groups to which the participants belong. Therefore, I used hierarchical linear modeling (HLM) in SPSS to analyze the data for all dependent variables (with the exception of task performance) for the Pilot Study as well as Experiments 1 and 2. This allowed me to account for any variability due to particular group members within a specific group[2]. Because task performance was purely a group-level variable, univariate ANOVAs were conducted for the number of correct card sequences generated by each group in the Pilot Study and for the number of correctly generated words by each group in Experiments 1 and 2 [3].

---

[2] I would also like to note that in some cases, there was not enough variability in the average group scores to estimate the random intercept. In these cases, the degrees of freedom on the SPSS output indicated that the total number of observations (the total number of participants) were used in this calculation. Therefore, I made a more conservative adjustment to the degrees of freedom by using the total number of groups as opposed to the total number of participants.

[3] Given that there were very few incorrect card solutions generated by any one group in the Pilot Study and very few incorrect words generated by any one group in Experiments 1 and 2, I only conducted analyses for the total numbers of correct solutions in each experiment.

35

Covariates

Past research has consistently shown that goal commitment and self-efficacy beliefs are strong predictors of task performance (Bandura & Cervone, 1983; Gollwitzer & Moskowitz, 1996). Therefore, level of commitment to the group and perceptions of group-efficacy were measured in the pre-task surveys for all three experiments and entered as covariates in order to control for any influence they might have on task performance. Gender was also included as a covariate because past research has uncovered gender differences in prosocial and antisocial behavior as well as achievement goal adoption (Kavussanu & Roberts, 2001; Sage & Kavussanu, 2007).

With perceptions of group efficacy, level of commitment to the group, and gender entered as covariates, goal type, level of task interdependence (Experiment 1), level of task difficulty (Experiment 2), and their interactions were entered as the predictors for all post-task survey variables. Gender was not included as a covariate in the analyses for task performance as it is a purely group-based variable. When the significance level for any given covariate was less than .10, it was retained in the model. If the significance level was equal to or greater than .10 for any given covariate, the models were re-run without it.

Pilot Study

The primary goal of this study was threefold: (1) to establish an effective experimental paradigm (which included finding an appropriate task and creating valid measures of the dependent variables), (2) to establish the basic effects of learning and performance goals on a series of group interaction and performance variables (more specifically, this study shed light on how the different achievement goals affect the nature

36

of the group interactions and subsequent performance on the experimental task), and (3)

to master the statistical analyses necessary for this study – hierarchical linear modeling

involving multi-level designs.

Method

Participants

Participants were 135 Lehigh University undergraduates recruited through the

psychology participant pool. They participated as a part of a research requirement for

their introduction to psychology course. Participants worked in groups of 3 to 4 for a

total of 38 groups. Due to failure to endorse their assigned goals, the data for 27

participants were omitted.[4] Therefore, the data for 108 participants (31 groups; 47 men

and 61 women) were used in all subsequent analyses.

Design

The design involved one between-subjects independent variable, goal type, with

four levels: (1) no-goal control (this condition was included in order to establish a

baseline with regard to the primary dependent variables), (2) learning (LG), (3)

performance ability (PA), and (4) performance normative (PN). Because some past work

has manipulated and found unique effects for performance ability and performance

normative goals at the individual level (see Grant & Dweck, 2003 for an example), I

chose to manipulate both types of performance goals for this study to determine if they

have unique and independent effects on the dependent variables at the group level. Goal

---

[4] Data was omitted for groups in which at least one participant gave a rating of less than 4 for the assigned goal on the manipulation check questionnaire, indicating that the goal manipulation was not effective for these groups.

type was manipulated through instructions that were read out loud to participants at the beginning of the experiment.

The primary dependent variables of interest were (1) perceived intragroup cooperation, (2) perceived intragroup communication, (3) perceived intragroup competition, (4) self-reported intrinsic motivation, (5) perceived use of productive, counterproductive, and hierarchical strategies[5], and (6) task performance (the total number of correctly generated card sequences for each group).

Measures

Each participant privately completed a pre-task survey assessing perceptions of self and group efficacy as well as level of commitment to the group (see **Appendix B**). Specifically, participants rated on a scale of 1 (not at all true) to 7 (completely true) the extent to which they believed that they themselves and their group would be able to complete the task as well as the extent to which they were committed to the success of their group.

Each participant also privately completed a post-task survey assessing perceptions of intragroup communication, cooperation, and competition as well as the extent to which their group used a series of different strategies (all variables were measured on 7-point scales). The items tapping into perceived intragroup cooperation, competition, and strategy use are based on the measurements used in the Mitchell and Silver (1990) study. Additionally, on the section assessing strategy use, the first nine items were modified versions of the items from the Teamwork Behavioral Observation Scales (BOS) used by

---

[5] As perceived strategy use is an exploratory variable in this work, no specific predictions were made. However, given the findings of previous research and the rationale behind my general hypotheses, I would expect that the results for adaptive (productive) and maladaptive (counterproductive and hierarchical) strategies would be similar to those predicted for perceived prosocial and antisocial behavior.

Brown and Latham (2002) (see **Appendix D** for the complete post-task survey). As a manipulation check, participants were also asked to report the kind of goal they were given with regard to the task.

Group Efficacy. A composite variable for group efficacy was created using the scores for the following two pre-task survey items: (1) "I believe that my group will be capable of completing this task" and (2) "I believe that my group will be able to achieve what is asked of us" ($\alpha = .942$).

Commitment. Only one item was used from the pre-task survey to measure level of commitment to the group: "I am committed to the success of my group on this task".

Communication. The composite variable for perceived intragroup communication consisted of the scores from the following two post-task survey items: (1) "Please rate your group's ability to communicate and (2) How productive was your group's communication?" ($\alpha = .896$).

Cooperation. This variable consisted of the scores for the following two post-task survey items: (1) "Please rate how well you think you and your fellow group members got along" and (2) "Please rate how cooperatively you think your group behaved with each other" ($\alpha = .904$).

Competition. Only one item from the post-task survey was used to measure intragroup competition: "Please rate how competitively you think your group behaved with each other".

Intrinsic Motivation. Intrinsic motivation includes the scores for the following two post-task survey items: (1) "How interesting did you find the task?" and (2) "How enjoyable did you find the task?" ($\alpha = .876$).

39

Productive Strategies. The composite variable for productive strategies consisted of the scores from the following 3 post-task items: (1) "Group members helped each other answer questions with regard to the task", (2) "Group members helped each other clarify task instructions when needed", and (3) "Group members notified each other of any mistakes that were made while completing the task" ($\alpha = .778$).

Counterproductive strategies. The scores for the following 3 post-task survey items were used in creating the composite variable for counterproductive strategies: (1) "Group members did not communicate with each other about completing the tasks", (2) "Group members argued with each other through-out the task, and (3) Some group members did not actively participate in the completion of the tasks" ($\alpha = .651$).

Hierarchical strategies. Finally, a composite variable was created using the scores from the following 3 post-task survey items assessing use of hierarchical strategies: (1) "A hierarchy was formed among the group members", (2) "Some members behaved in a dominating manner during the completion of the task", and (3) "One group member was stuck with most of the work" ($\alpha = .552$).

Task

Participants completed a modified version of a card sequencing task (see Bachrach, Powell, Collins, & Richey (2006) for original task). Participants completed the task in groups of three to four. They received 3 sets of playing cards with each set containing 2 decks (for a total of 6 decks of cards). Each set included 1 deck of red-backed and 1 deck of blue-backed cards. Their task was to produce as many conforming sequences as possible in 30 minutes (see **Appendix C** for the specific card sequencing guidelines).

40

Procedure

Upon arrival, participants were told that they would be taking part in a study assessing group performance on conceptual problem solving tasks. Before beginning the experiment, each participant was asked to read and sign two informed consent documents. The experimenter then gave participants a 5-minute 'getting acquainted' period in order to establish a group rapport. After the 5-minute period ended, the experimenter read out loud a set of instructions framed as a learning goal, performance ability goal, or performance normative goal (see **Appendix A** for the instructions). Some participants were placed in a no-goal control condition. After hearing the instructions, each participant privately completed the pre-task survey (see **Appendix B**). Participants in the no-goal control condition simply proceeded to the pre-task survey after the 5-minute 'getting acquainted' period ended. Upon completion of the survey, the groups were told that they had 30 minutes to complete a card-sequencing task. They were given the specific card sequencing instructions which remained visible for the duration of the task (see **Appendix C**). The experimenter informed participants that s/he would be working in an adjacent room but would be available to answer any questions they might have while working on the card-sequencing task. This was done to reduce any experimenter effects on the groups' interactions and performance. After the 30 minutes passed, each participant privately completed the post-task survey (see **Appendix D**). Finally, participants were fully debriefed on the nature of the study, thanked for their participation, and dismissed from the laboratory. The experimenter counted the total number of card sequences (correct and incorrect) participants generated as a measure of actual performance.

41

Predictions

The following predictions are based on the possible impact of goal type on the following primary dependent variables of interest. They are also based on the assumption that the achievement context involved in this study is a case in which intragroup cooperation and communication are beneficial for and intragroup competition detrimental to task performance.

Intragroup Cooperation. I predict significant differences in the average level of perceived intragroup cooperation across the different goal conditions. More specifically, it is predicted that the LG groups will report the highest levels of perceived intragroup cooperation. If performance goals lead to lower cooperation regardless of the need for it (Hypothesis 2A) then groups in the PG conditions should report significantly lower perceived intragroup cooperation. If, however, they are strategic in their use of cooperation (Hypothesis 2B), groups in the PG conditions should report moderate levels of intragroup cooperation.

Intragroup Communication. I predict significant differences in the level of intragroup communication between the different goal conditions. Similar to cooperation, I predict that the LG groups will report the highest levels of perceived intragroup communication. If performance goals lead to lower communication regardless of the need for it (Hypothesis 2A) then groups in the PG conditions should report significantly lower levels of perceived intragroup communication. Alternatively, if they are strategic in their use of communication (Hypothesis 2B) then groups in the PG conditions should report moderate levels of perceived intragroup communication.

42

Intragroup Competition. I predict that groups in the LG condition should report low levels of perceived intragroup competition. If performance goals lead to generally anti-social interactions (Hypothesis 2A) then groups in the PG conditions should report significantly higher levels of intragroup competition. However, if they predict a strategic approach with regard to prosocial behavior (Hypothesis 2B) then groups in the PG conditions should report lower levels of intragroup competition.

Intrinsic Motivation. I predict significant differences in average levels of intrinsic motivation across goal conditions. More specifically, I predict that the LG group members will report the highest levels of task interest and enjoyment (the two components of intrinsic motivation). The level of intrinsic motivation for members of groups in the PG conditions should be significantly lower than that of the LG groups. This prediction is based on previous research which has consistently found that learning goals are beneficial for intrinsic motivation while performance goals are detrimental (Dweck, 1986; Elliot & Church, 1997; Grant & Dweck, 2003).

Task Performance. Finally, I predict significant differences in performance on the card task across the goal conditions. More specifically, it is predicted that the LG groups will produce relatively high numbers of correct card sequences. If performance goals predict only intragroup competition (Hypothesis 2A) then the PG groups should produce relatively low numbers of correct card sequences. By contrast, if performance goals foster a strategic approach with regard to prosocial behavior (Hypothesis 2B) then the PG groups should produce moderately high numbers of correct card sequences.

43

Results

Perceptions of Group Efficacy. A main effect of condition emerged, $F(3, 27) = 4.049$, $p = .017$. Pairwise comparisons using a Bonferroni adjustment indicate that the mean group efficacy score for the no-goal control condition was significantly higher than that for the performance ability goal condition ($p = .017$; see **Table 1** for means and standard errors).

Level of Commitment to the Group. A marginally significant main effect of condition was found, $F(3, 27) = 2.695$, $p = .066$. Pairwise comparisons using a Bonferroni adjustment indicate that none of the differences between the goal conditions were significant (see **Table 1** for means and standard errors).

Intragroup Cooperation. Controlling for gender, no significant effect of goal emerged for perceived intragroup cooperation, $F(3, 32.47) = .18$, $p = .909$. However, the pattern of means was somewhat consistent with my predictions. Compared to the no-goal control groups, participants in the LG groups reported the highest levels of intragroup cooperation while participants in the PG groups reported lower levels (see **Table 1** for means and standard errors).

Intragroup Communication. Controlling for level of commitment, no significant effect of goal emerged for intragroup communication, $F(3, 31.60) = .45$, $p = .721$. The pattern of means, however, was consistent with my predictions such that participants in the LG groups reported the highest levels of intragroup communication while participants in both of the PG groups reported similarly low levels in comparison to the no-goal control groups (see **Table 1** for means and standard errors).

44

Intragroup Competition. No significant effect of goal emerged for intragroup competition, $F(3, 27) = 1.69$, $p = .192$. However, the pattern of means was again partially consistent with my predictions. In comparison to the no-goal control groups, participants in the LG groups reported the lowest levels of intragroup competition while participants in the PG groups reported the highest (see **Table 1** for means and standard errors).

Self-reported Intrinsic Motivation. Controlling for gender and group efficacy, no significant effect of goal was found for self-reported intrinsic motivation, $F(3, 32.41) = .09$, $p = .963$. Contrary to my predictions, participants in the PG groups reported the highest levels of intrinsic motivation while those in the LG groups reported the lowest in comparison to the no-goal control groups (see **Table 1** for means and standard errors).

Perceived Strategy Use

Productive Strategies. Controlling for gender and group efficacy, no effect of goal was found for productive strategies, $F(3, 32.69) = .53$, $p = .667$. In comparison to the no-goal control groups, participants in the LG groups reported the lowest use of productive strategies while participants in the PG groups reported the highest (see **Table 2** for means and standard errors).

Counterproductive Strategies. No effect of goal was found for counterproductive strategies, $F(3, 34.07) = 1.03$, $p = .393$.   Groups in all conditions reported similar levels of counterproductive strategy use (see **Table 2** for means and standard errors).

Hierarchical Strategies. Controlling for commitment to the group, no effect of goal was found for counterproductive strategies, $F(3, 29.12) = .86$, $p = .474$. The pattern of means indicates that participants in the LG groups reported the greatest use of

45

hierarchical strategies while participants in the PG groups reported the lowest in comparison to the no-goal control groups (see **Table 2** for means and standard errors).

Task Performance. No effect of goal was found for the total number of correct card sequences generated, $F(3, 27) = .52$, $p = .675$. The pattern of means was opposite of what was predicted such that the LG groups generated the fewest number of correct sequences while the PG groups generated the most (see **Table 2** for means and standard errors).

<center>*Summary*</center>

While no significant effects of goal were found for any of the dependent variables, several of the patterns of means were at least partially consistent with my predictions. More specifically, participants in the LG groups reported the highest levels of intragroup cooperation and intragroup communication as well as the lowest levels of intragroup competition. The results for self-reported intrinsic motivation, perceived strategy use, and task performance were less clear and were contrary to my predictions. Moreover, the effects of performance normative goals were not significantly different from those of the performance ability goals. Therefore, only the performance ability goal instructions were used for Experiments 1 and 2 to induce a performance goal orientation as well as to reduce the number of participants needed for each condition. The performance ability instructions where used because most research where achievement goals are manipulated use performance goal instructions that focus primarily on ability validation (see Darnon, Butera, & Harackiewicz, 2007 for an example).

There are five factors that possibly could have contributed the lack of significant results and unexpected patterns of means. First, the card sequencing task may have been

<center>46</center>

too easy and enjoyable, thus, possibly explaining why the PG groups generated more correct sequences than the LG groups. Previous research has shown that individuals with performance goals do better than individuals with learning goals on easy tasks (see Gelety and Grant, 2010). Second, 30 minutes may have been too much time for completion of the task as several groups correctly generated the maximum number of sequences (24) in that period. This could have possibly created ceiling effects in performance. Third, participants completed the pre- and post-task surveys in each other's presence. This may have led participants to respond in socially desirable ways (especially on the items assessing their perceptions of how well the group worked together), possibly explaining the high mean scores for these variables. Fourth, there was a high level of participant attrition and the data for a large portion of participants was omitted. Finally, the design of this experiment was, in retrospect, a poor test of the two alternative sub-hypotheses for performance goals. In other words, it is not clear given the experimental design that the achievement context was one in which cooperation and communication are beneficial and intragroup competition maladaptive for task performance. Since I only *assumed* that this was a case in which prosocial behaviors are good and anti-social behaviors are bad for task performance, I cannot make any concrete inferences with regard to how performance goals affect the likelihood of such behaviors, and consequently cannot draw conclusions as to whether the results support Hypothesis 2A or 2B.

Experiment 1

This experiment was conducted with two primary goals. First, it was designed to attempt to rectify the problems encountered in the Pilot Study. Specifically, I

47

implemented a different task – anagrams (which have been used successfully in my past work on achievement goals and individual goal pursuit; Gelety & Grant, 2010). I also reduced the amount of time provided to complete the task in order to reduce the likelihood of ceiling effects in performance. Participants also completed the pre- and post-task surveys in private cubicles in order to reduce any social desirability effects. Efforts were made to ensure greater participant retention and to reduce the number of participants required. Specifically, I omitted the performance normative goal and no-goal control conditions in this experiment and all groups were composed of 3 participants (as opposed to 3 or 4 for the Pilot Study). Finally, the design of this experiment allowed for a much clearer test of the two alternative sub-hypotheses for performance goals outlined earlier in the paper.

The second goal was to expand upon the Pilot Study by implementing an additional independent variable: level of task interdependence (TI). The design of this study resembles the design of the Bachrach, Powell, Collins, and Richey (2006) study from which the modified card task in the Pilot Study was taken. Bachrach and colleagues assessed whether or not task interdependence moderated the relationship between organizational helping behavior and group performance. The authors adopted the Van der Vegt and Janssen (2003) definition of task interdependence which states that TI is the "extent to which employees depend on other members of their group to carry out work effectively" (Brass, 1985 and Kiggundu, 1983 as cited in Bachrach, Powell, Collins, & Richey, 2006, p. 1396). Accordingly, I will use this same definition for my conceptualization of task interdependence. Bachrach and colleagues made two hypotheses: (1) "Helping behavior has a positive main effect on group performance

48

across task interdependence conditions" and (2) "Task interdependence moderates the effects of helping behavior on group performance, such that there is positive effect in the high task interdependence condition and a negative effect in the low task interdependence condition" (pp. 1397-1398). Their results generally supported these hypotheses. However, they did not take into consideration the *kinds* of goals that the participants might have brought into the group achievement situation and how those goals might influence the likelihood of helping behavior in the group. Thus, the aim of this experiment was to examine if and how task interdependence (TI) moderates the relationship between achievement goals and group interactions/performance. In addition, by manipulating the level of task interdependence, it will be clear under which condition intragroup cooperation and communication should be beneficial and intragroup competition maladaptive for task performance. Indeed, Mitchell and Silver (1990) argue that cooperative strategies are essential for successful task performance under conditions of high task interdependence.

Consistent with my predictions for the Pilot Study, I hypothesized that learning goals would facilitate intragroup cooperation and communication regardless of level of TI and, as a result, lead to enhanced task performance in the high TI condition. Consistent with my over-arching hypotheses outlined earlier in the paper, I will argue that there are two possible alternative outcomes for performance goals. First, it may be the case that groups with performance goals will perceive high levels of intragroup competition and low levels of prosocial behavior regardless of level of TI because intragroup competition (but not prosocial behavior) will be viewed as a useful strategy for demonstrating individual superiority on the task (consistent with hypothesis 2A). As

49

a result, task performance should be *decreased* in the high TI condition, where prosocial behavior is necessary for success.

Alternatively, performance goals could lead groups to take on a 'strategic' approach with regard to prosocial behavior (consistent with hypothesis 2B). That is, performance goals could lead to *greater* intragroup communication and cooperation (and *enhanced* task performance) in the high TI condition (where prosocial behavior should be viewed as a good strategy for outperforming other groups).

In summary, learning goals should predict greater prosocial behavior regardless of TI condition but this should only benefit task performance in the high TI condition. There are two alternative outcomes for performance goals: (1) they could predict high levels of perceived intragroup competition and low levels of perceived intragroup prosocial behavior across the TI conditions (and, consequently, task performance should suffer in the high TI condition) or (2) they could predict prosocial behavior *only when it is useful* - namely, when TI is high (where task performance should be enhanced).

Method

Participants

Participants were 171 Lehigh University undergraduates (83 men and 88 women) that were recruited through the psychology participant pool. They participated as a part of a research requirement for their introduction to psychology course. Participants worked in groups of 3 for a total of 57 groups.

Design

The experiment included two independent variables: goal type and level of task interdependence (TI). Goal type consisted of two levels: (1) learning goals and (2)

50

performance goals. Level of task interdependence also consisted of two levels: (1) low TI and (2) high TI. Therefore, this study involved a 2 X 2 between-subjects factorial design with four conditions in all. To manipulate goal type, participants heard the same task instructions used in the Pilot Study that were framed as a learning goal or performance ability goal. To manipulate level of TI, some groups were required to work together on one set of 30 anagrams (high TI) while the remaining groups were told that each individual member must work *only* on his/her own set of 10 anagrams (low TI).

As was the case for the Pilot Study, the primary dependent variables of interest were (1) perceived intragroup cooperation, (2) perceived intragroup communication, (3) perceived intragroup competition, (4) self-reported intrinsic motivation, (5) perceived use of productive, counterproductive, and hierarchical strategies[6], and (6) task performance (the number of correct word solutions generated for the 30 anagrams by each group).

Measures

Each participant privately completed a pre-task survey assessing perceptions of self and group efficacy as well as his/her level of commitment to the group (see **Appendix F**). Each participant also privately completed a post-task survey assessing perceptions of intragroup communication, cooperation, and competition as well as the extent to which their group used a series of different strategies. This survey was identical to the one used in the Pilot Study with the exception that the modified Brown and Latham (2002) items were removed (all variables were measured on 7-point scales; see **Appendix**

---

[6] As was the case in the Pilot Study, no specific predictions were made with regard to perceived strategy use as it is an exploratory variable in this work. However, given the findings of previous research and the rationale behind my general hypotheses, I would expect that the results for adaptive (productive) and maladaptive (counterproductive and hierarchical) strategies would be similar to those predicted for perceived prosocial and antisocial behavior.

51

H). As a manipulation check, participants were also asked to report the kind of goal they were given with regard to the task.

The same composite variables that were created for the Pilot Study were created for this experiment using the same items from the pre- and post-task surveys (see alphas below). The alphas for all composite variables indicated moderate to high internal reliability with the exception of counterproductive strategies ($\alpha = .053$). Accordingly, separate analyses were conducted for each of the three items that made up the counterproductive strategy variable: (1) "Group members did not communicate with each other about completing the tasks (reverse scored)", (2) "Group members argued with each other through-out the task", and (3) "Some group members did not actively participate in the completion of the tasks" (reverse scored).

Group Efficacy. A composite variable for group efficacy was created using the scores for the following two pre-task survey items: (1) "I believe that my group will be capable of completing this task" and (2) "I believe that my group will be able to achieve what is asked of us" ($\alpha = .900$).

Commitment. Only one item was used from the pre-task survey to measure level of commitment to the group: "I am committed to the success of my group on this task".

Communication. The composite variable for perceived intragroup communication consisted of the scores from the following two post-task survey items: (1) "Please rate your group's ability to communicate" and (2) "How productive was your group's communication?" ($\alpha = .880$).

Cooperation. This variable consisted of the scores for the following two post-task survey items: (1) "Please rate how well you think you and your fellow group members

52

got along" and (2) "Please rate how cooperatively you think your group behaved with each other" ($\alpha = .840$).

Competition. Only one item from the post-task survey was used to measure intragroup competition: "Please rate how competitively you think your group behaved with each other".

Intrinsic Motivation. Intrinsic motivation includes the scores for the following two post-task survey items: (1) "How interesting did you find the task?" and (2) "How enjoyable did you find the task?" ($\alpha = .846$).

Productive Strategies. The composite variable for productive strategies consisted of the scores from the following 3 post-task items: (1) "Group members helped each other answer questions with regard to the task", (2) "Group members helped each other clarify task instructions when needed", and (3) "Group members notified each other of any mistakes that were made while completing the task" ($\alpha = .767$).

Hierarchical strategies. Finally, a composite variable was created using the scores from the following 3 post-task survey items assessing use of hierarchical strategies: (1) "A hierarchy was formed among the group members", (2) "Some members behaved in a dominating manner during the completion of the task", and (3) "One group member was stuck with most of the work" ($\alpha = .703$).

Task

In groups of 3, participants worked on a set of 30 anagrams. Their task was to produce as many word solutions for each anagram in 5 minutes (see **Appendix G** for the anagrams).

53

Procedure

Upon arrival, participants were told that they would be taking part in a study assessing group performance on conceptual problem solving tasks. Before beginning the experiment, each participant was asked to read and sign two informed consent documents. After signing the informed consent documents, the participants were then asked to take part in a 5 minute 'getting acquainted' session in order to establish a group rapport. After 5 minutes passed, the experimenter then read out loud a set of instructions framed either as a learning goal or performance ability goal (the instructions also included TI information; see **Appendix E** for instructions). After hearing the instructions, each participant privately completed the pre-task survey (see **Appendix F**). Upon completion of the survey, participants were then given 5 minutes to work on the 30 anagrams. This is the point at which the TI manipulation was explicitly implemented. Groups in the high TI condition received one sheet of paper containing all 30 anagrams. The experimenter informed these participants that they must *work as a group* on the anagrams. In the low TI condition, each of the 3 group members received a sheet of 10 anagrams (each sheet contained a different set of 10 anagrams from the overall set of 30; see **Appendix G**). The experimenter informed these participants they were required to work *only* on their respective anagrams but were allowed to communicate with each other while they worked. The participants in the low TI groups pooled their solutions at the end of the 5 minutes.

The experimenter informed the groups that s/he would be working in an adjacent room but would be available to answer any questions they might have. This was done to reduce any experimenter effects on the groups' interactions and performance. After the 5

54

minutes ended, each participant privately completed the post-task survey (see **Appendix H**). Finally, participants were fully debriefed on the nature of the study, thanked for their participation, and dismissed from the laboratory. The experimenter counted the number of word solutions (correct and incorrect) that the groups generated as a measure of task performance.

Predictions

The predictions for the dependent variables listed below are based on the possible main effects of achievement goals, TI level, and their interaction.

Intragroup Prosocial Behavior (Communication and Cooperation). Learning goal groups should perceive cooperation and communication as beneficial strategies for learning, regardless of the level of task interdependence. There are two possible alternative outcomes for groups with performance goals: (1) these goals (given their concern with demonstrating individual ability) could lead groups to view prosocial behavior as a poor strategy for ability validation and will not predict any intragroup prosocial behavior across the TI conditions or (2) groups with these goals could perceive intragroup cooperation and communication as beneficial strategies for outperforming other groups in the high TI condition (thus, fulfilling the normative concern inherent in these goals). In the low TI condition, where prosocial behaviors are less instrumentally useful, groups with performance goals should not adopt these strategies.

Specifically, I predict that there will be main effects of both goal type and TI level (such that the average level of perceived intragroup cooperation and communication should be higher for learning goal groups than performance goal groups and higher in the high TI condition than in the low TI condition). I also predict a possible significant two-

way interaction between goal type and TI level (consistent with hypothesis 2B). For learning goal groups, reported levels of prosocial behavior should be high regardless of TI condition. For performance goal groups, perceived level of prosocial behavior should low in the low TI condition and high in the high TI condition.

Intragroup Competition. As is the case for prosocial behavior, there are two possible alternative outcomes for groups with performance goals. Specifically, because performance goals place an emphasis on individual ability validation, group members with these goals could perceive intragroup competition as a beneficial strategy for demonstrating individual competence regardless of TI condition. However, it is also possible that performance goal groups could perceive intragroup competition as a poor strategy in both TI conditions because it is not beneficial for outperforming *other groups*. Learning goal groups should view intragroup competition as a poor strategy in both TI conditions because it is not beneficial for task mastery.

Specifically, I predict that there may be a main effect of goal type. If a main effect does emerge, I predict that performance goal groups will report high levels of perceived intragroup competition in both TI conditions. By contrast, learning goal groups should report low levels of intragroup competition regardless of TI condition. I do not expect a main effect of TI level or an interaction between goal type and TI level.

Intrinsic Motivation. This prediction is based on previous research which has consistently found that learning goals are beneficial for intrinsic motivation while performance goals are detrimental (Dweck, 1986; Elliot & Church, 1997; Grant & Dweck, 2003). Hence, I predict that there will only be a main effect of goal. More specifically, learning goal group members should report the high levels of intrinsic

56

motivation while performance goal group members should report low levels of intrinsic motivation.

Task Performance. Learning goals should predict greater prosocial behavior, which should only benefit performance when TI is high. Again, there are two possible alternative outcomes for groups with performance goals. First, if performance goals predict *only* intragroup competition, then task performance for these groups should be decreased in the high TI condition (where prosocial behavior is instrumental for successful task performance). By contrast, if performance goals predict a 'strategic' approach with regard to prosocial behavior, then the task performance for groups with these goals should be enhanced in the high TI condition.

To summarize, if performance goals predict only intragroup competition across TI conditions (consistent with hypothesis 2A), then I would predict a significant two-way interaction of goal type and TI level to emerge. Specifically, learning goal groups should perform moderately well in the low TI condition but should demonstrate superior performance in the high TI condition. Performance goal groups should perform moderately well in the low TI condition but should do poorly on the task in the high TI condition (where their lack of prosocial behavior will hinder performance).

However, if performance goals lead to strategic use of prosocial behaviors (consistent with hypothesis 2B), then I would expect only a main effect of TI level whereby task performance should be better in the high TI condition than in the low TI condition.

Finally, as a test of my assumptions with respect to prosocial behavior, antisocial behavior, and performance under conditions of high and low task interdependence, I

57

predict that intragroup communication and cooperation will be positively related to performance and intragroup competition negatively related to performance in the high TI condition. These variables should be unrelated to task performance in the low TI condition.

<div align="center">Results</div>

Perceptions of Group Efficacy. A significant main effect of TI level was found, $F(1, 56) = 5.51$, $p = .023$. Specifically, groups in the low TI condition reported higher average group efficacy ($M = 6.26$, $SE = .09$) than did groups in the high TI condition ($M = 5.98$, $SE = .08$).

A marginally significant Goal X TI level interaction also emerged, $F(1, 56) = 3.06$, $p = .086$. Groups with learning goals reported slightly higher average group efficacy in the low TI condition than in the high TI condition ($M = 6.33$, $SE = .12$ and $M = 5.84$, $SE = .12$, respectively). Groups with performance goals reported similar levels of group efficacy in both the low and high TI conditions ($M = 6.19$, $SE = .12$ and $M = 6.12$, $SE = .12$, respectively).

Level of Commitment to the Group. Controlling for gender, only a main effect of goal was found, $F(1, 56) = 5.69$, $p = .021$. The performance ability groups reported greater commitment to their groups than did learning goal groups ($M = 6.42$, $SE = .10$ and $M = 6.09$, $SE = .10$, respectively).

Intragroup Cooperation. Controlling for commitment to the group and gender, a significant main effect of TI level was also found ($F(1, 55.26) = 13.09$, $p = .001$) such that groups in the high TI condition reported greater perceived levels of intragroup

<div align="center">58</div>

cooperation (*M* = 6.58, *SE* = .13) than did those in the low TI condition (*M* = 5.91, *SE* = .13).

A significant Goal X TI level interaction also emerged, $F(1, 55.59) = 5.24$, $p = .026$ (see **Figure 1**). As expected, groups with learning goals reported similarly high levels of intragroup cooperation in the low and high TI conditions (*M* = 6.22, *SE* = .19 and *M* = 6.46, *SE* = .18, respectively). Groups with performance goals reported lower levels of intragroup cooperation in the low TI condition (*M* = 5.60, *SE* = .19) than in the high TI condition (*M* = 6.71, *SE* = .19). Planned contrasts revealed that TI level did not impact perceived level of cooperation for learning goal groups ($p = .349$), while performance goal groups in the low TI condition perceived significantly lower levels of intragroup cooperation than did those in the high TI condition ($p < .001$). This result supports hypothesis 2B where performance goals could lead to a more strategic approach with regard to prosocial behavior.

Intragroup Communication. A significant main effect of TI level emerged, $F(1, 57.18) = 17.97$, $p < .001$. As was the case with intragroup cooperation, groups in the high TI condition reported higher levels of intragroup communication than did groups in the low TI condition (*M* = 6.12, *SE* = .21 and *M* = 4.86, *SE* = .21, respectively).

While not significant ($F(1, 57.18) = 2.06$, $p = .157$), the pattern of means for the Goal X TI level interaction was similar to that for intragroup cooperation. Specifically, groups with learning goals reported relatively high levels of intragroup communication in both the low and high TI conditions (*M* = 5.26, *SE* = .30 and *M* = 6.10, *SE* = .29, respectively). Groups with performance goals reported lower levels of intragroup

59

communication in the low TI condition (*M* = 4.46, *SE* = .30) than in the high TI condition (*M* = 6.16, *SE* = .30), once again providing support for hypothesis 2B.

Intragroup Competition. A marginally significant main effect of goal emerged, $F(1, 57) = 3.35$, $p = .072$. Groups with performance goals reported higher levels of perceived intragroup competition (*M* = 3.31, *SE* = .21) than did groups with learning goals (*M* = 2.78, *SE* = .20), providing support for hypothesis 2A in which performance goals could foster a general tendency towards anti-social behavior.

Self-reported Intrinsic Motivation. Controlling for group efficacy, no significant main effects or interactions were found for self-reported intrinsic motivation. The average self-report scores were similar for learning goal groups and performance goal groups (*M* = 4.92, *SE* = .13 and *M* = 4.92, *SE* = .13, respectively).

Perceived Strategy Use

Productive Strategies. Controlling for group efficacy, a main effect of TI level was found, $F(1, 56.13) = 15.10$, $p < .001$. Specifically, groups in the low TI condition reported perceived use of fewer productive strategies than did those in the high TI condition (*M* = 3.81, *SE* = .23 and *M* = 5.07, *SE* = .23, respectively).

A marginally significant Goal X TI level interaction also emerged, $F(1, 55.39) = 3.01$, $p = .088$). The pattern of means for this interaction is similar to those for intragroup cooperation and communication. Again, the mean scores for perceived productive strategy use for groups with learning goals were similar in the low and high TI conditions (*M* = 4.22, *SE* = .32 and *M* = 4.92, *SE* = .31, respectively). However, groups with performance goals perceived less use of these strategies in the low TI condition (*M* = 3.41, *SE* = .33) than in the high TI condition (*M* = 5.22, *SE* = .32).

60

Counterproductive Strategies. For the item 'Group members did not communicate with each other about completing the tasks (reverse scored)' a marginally significant main effect of goal was found, $F(1, 57) = 3.96$, $p = .051$. As expected, groups with learning goals reported greater communication ($M = 5.94$, $SE = .25$) than did groups with performance goals ($M = 5.23$, $SE = .25$).

A main effect of TI level also emerged, $F(1, 57) = 13.88$, $p < .001$. Groups in the high TI condition reported greater perceived communication than did those in the low TI condition ($M = 6.25$, $SE = .25$ and $M = 4.92$, $SE = .25$, respectively).

For the item 'Group members argued with each other through-out the task', no significant main or interactive effects emerged when controlling for gender.

Finally, no significant main or interactive effects emerged for the item 'Some group members did not actively participate in the completion of the tasks (reverse scored)'.

Hierarchical Strategies. A main effect of TI level was found, $F(1, 57) = 25.00$, $p < .001$. Groups in the high TI condition reported higher levels of perceived hierarchical strategy use than did groups in the low TI condition ($M = 2.49$, $SE = .13$ and $M = 1.55$, $SE = .13$, respectively).

Task Performance. Controlling for group efficacy, a main effect of TI level emerged, $F(1, 52) = 19.84$, $p < .001$. Contrary to my prediction, groups in the low TI condition generated more correct word solutions ($M = 59.86$, $SE = 2.75$) than the groups in the high TI condition ($M = 42.28$, $SE = 2.70$). No other main effects or interactions emerged for task performance.

61

How do intragroup cooperation, communication, and competition relate to task performance?

To assess the relationships between intragroup cooperation, communication, competition, and task performance, I split the data by TI condition and calculated separate bivariate correlations for each variable. Intragroup cooperation was found to be unrelated to task performance in both the low and high TI conditions ($r = -.182$, $p = .354$ and $r = .128$, $p = .508$, respectively). As expected, intragroup communication was found to be positively related to task performance in the high TI condition ($r = .426$, $p = .021$) and unrelated to task performance in the low TI condition ($r = -.195$, $p = .320$), providing support for the idea that communication is beneficial for task performance when individuals are required to work together on a task. Finally (and unexpectedly), intragroup competition was found to be positively related to task performance in the high TI condition ($r = .393$, $p = .035$) and unrelated to task performance in the low TI condition ($r = -.276$, $p = .155$).

Summary

The results of Experiment 1 provide general support for my predictions with regard to learning goals such that they predicted similarly high levels of perceived intragroup cooperation, communication, and productive strategy use in both TI conditions. Even more interesting were the results for performance goal groups. That is, the results provided preliminary support for *both* alternative hypotheses for performance goals in that they predicted generally higher levels of perceived intragroup competition across the TI conditions but also appear to have fostered a more 'strategic' approach with regard to prosocial behaviors. Groups with performance goals perceived relatively high

62

levels of intragroup cooperation, communication, and productive strategy use in the high TI condition where these behaviors are more instrumental for outperforming other groups. By contrast, performance goal groups in the low TI condition reported relatively low levels of these behaviors, perhaps indicating that they viewed them as unnecessary for successfully outperforming other groups.

In general, it appears that performance goal groups are concerned with individual ability validation *and* outperforming other groups and behave in ways that ensure fulfillment of both of these concerns. In other words, not only do they report engaging in greater intragroup competition in order to demonstrate individual superiority on the task, they also strategically engage in prosocial behavior when it is necessary in order to outperform other groups.

Finally, it was found that groups performed better in the low TI condition than in the high TI condition. Perhaps it is better for group members to remain independent when completing tasks such as letter anagrams. Stated differently, it could be that requiring group members to work together on this kind of task actually interferes with their performance rather than enhancing it (see Bachrach, Powell, Collins, & Richey, 2006 for a similar argument).

Experiment 2

This experiment was designed to expand upon my previous work on the impact of achievement goals and task difficulty on mood, motivation, and performance (Gelety & Grant, 2010). Research has consistently shown that performance and learning goals predict different patterns of responding to difficulty and/or failure during *individual* goal pursuit. The aim of this experiment, then, is to determine whether task difficulty

63

moderates the relationship between achievement goals and *group* dynamics and task performance.

I have revised my predictions for this experiment based on the results that emerged for Experiment 1. Prosocial behaviors like communication and cooperation should facilitate performance on difficult tasks, but should be less necessary for relatively easy tasks. Similar to my hypothesis for Experiment 1, I expect that learning goal groups will report high levels of perceived prosocial behavior regardless of task difficulty. Consequently, their task performance should only be enhanced in the difficult condition where these behaviors are more beneficial. Performance goal groups should also report high levels of perceived prosocial behavior but *only* in the difficult condition where positive interactions are instrumental in ensuring superior performance over other groups. However, since prosocial behavior is less necessary for the easy tasks, performance goal groups should not report adopting these behaviors in the easy condition. In addition, performance goal groups should report high levels of perceived intragroup competition in both difficulty conditions in order to satisfy their concern with individual ability validation. As a result, their performance on the task should suffer in the easy condition but should be enhanced in the difficult condition. That is, while a lot of active cooperation and communication might not be necessary in the easy condition, actively competing against one's fellow group members should be harmful for task performance. To be clear, I am arguing that intragroup competition doesn't simply involve the *absence* of cooperation and communication, it also involves group members *actively* working against one another, which should hurt task performance.

64

Additionally (and consistent with the findings from my past work; Gelety & Grant, 2010), I predict that goal type and difficulty will interact in their effects on group members' expectancies for group-based performance on a similar future task. Specifically, in the easy condition, expectancies for future success should be equal for groups with learning goals and groups with performance goals. However, in the difficult condition, groups with performance goals should report lower expectancies for future success than groups with learning goals.

Method

Participants

Participants were 174 Lehigh University undergraduates that were recruited through the psychology participant pool. They participated as a part of a research requirement for their introduction to psychology course. Due to one group's misunderstanding of the task instructions and failure to provide any word solutions for the anagrams, the data for those three participants was omitted. Therefore, the data for 171 participants (57 groups; 87 men and 84 women) were used in all subsequent analyses.

Design

The experiment included two independent variables: goal type and task difficulty. Goal type consisted of two levels: (1) learning goals and (2) performance goals. Task difficulty also consisted of two levels: (1) easy and (2) difficult. Thus, this experiment involved a 2 X 2 between-subjects factorial design with four conditions in all. To manipulate goal type, participants were given the same oral task instructions that were used in the Pilot Study and Experiment 1. To manipulate task difficulty, some groups

65

received a set of 15 anagrams where 1 out of the first 5 anagrams was unsolvable (constituting the easy condition). The remaining groups received a set of 15 anagrams where 4 out of the first 5 anagrams were unsolvable (constituting the difficult condition).

The primary dependent variables of interest were (1) perceived intragroup cooperation, (2) perceived intragroup communication, (3) perceived intragroup competition, (4) self-reported intrinsic motivation, (5) perceived performance expectancies, (6) perceived use of productive, counterproductive, and hierarchical strategies, and (7) task performance (the number of correct word solutions generated by each group for anagrams 6 through 15).

Measures

Each participant privately completed a pre-task survey assessing perceptions of self and group efficacy and level of commitment to the group (see **Appendix J**). Each participant also privately completed a post-task survey assessing perceptions of intragroup communication, cooperation, and competition as well as the extent to which their group used a series of different strategies. The post-task survey used in this experiment is identical to that used in Experiment 1 with the exception that some additional items tapping into perceived performance expectancies, perceived productive strategy use, and perceived intragroup competition were added. Specifically, the item "Compared to the previous set of 15 anagrams, how well do you think your group would perform on a second set if they were given to you now?" was added in order to tap into group members' expectancies for performance on a future similar task. The item "Group members asked each other for help when needed" was added as an additional item tapping into perceived productive strategy use and was based on Porter (2005)'s

66

argument that a willingness to *seek* help from one's group members is equally adaptive as is *providing* help.   Finally, two additional items tapping into perceived intragroup competition were added in order to allow for a more robust measurement of the variable. As a manipulation check, participants were also asked to report the kind of goal they were given with regard to the task (all variables were measured on 7-point scales; see **Appendix L**).

The same composite variables that were created for the Pilot Study and Experiment 1 were created here (see alphas below) with three exceptions. First, an additional item tapping into perceived productive strategy use was added to the post-task survey and was used in making up the composite variable for productive strategies (see items below). Second, an additional item tapping into perceived intragroup competition was added to the post-task survey and was used in creating a composite variable for competition (see items below). Finally, the following item tapping into expectancies for future success was added to the post-task survey: "Compared to the previous set of 15 anagrams, how well do you think your group would perform on a second set if they were given to you now?"

Group Efficacy. A composite variable for group efficacy was created using the scores for the following two pre-task survey items: (1) "I believe that my group will be capable of completing this task" and (2) "I believe that my group will be able to achieve what is asked of us" (α = . 864).

Commitment. Only one item was used from the pre-task survey to measure level of commitment to the group: "I am committed to the success of my group on this task".

67

Communication. The composite variable for perceived intragroup communication consisted of the scores from the following two post-task survey items: (1) "Please rate your group's ability to communicate" and (2) "How productive was your group's communication?" ($\alpha = .855$).

Cooperation. This variable consisted of the scores for the following two post-task survey items: (1) "Please rate how well you think you and your fellow group members got along" and (2) "Please rate how cooperatively you think your group behaved with each other" ($\alpha = .752$).

Competition. This variable consisted of the scores for the following two post-task survey items: (1) "Please rate how competitively you think your group behaved with each other" and (2) "To what extent do you feel that the members of your group were trying to outperform each other?" ($\alpha = .735$).

Intrinsic Motivation. Intrinsic motivation includes the scores for the following two post-task survey items: (1) "How interesting did you find the task?" and (2) "How enjoyable did you find the task?" ($\alpha = .891$).

Counterproductive Strategies. A composite variable for counterproductive strategies was created using the scores for the following two post-task survey items: (1) "Group members did not communicate with each other about completing the tasks (reverse scored)" and (2) "Some group members did not actively participate in the completion of the tasks" (reverse scored) ($\alpha = .587$).

Productive Strategies. The composite variable for productive strategies consisted of the scores from the following 4 post-task items: (1) "Group members helped each other answer questions with regard to the task", (2) "Group members helped each other

68

clarify task instructions when needed", (3) "Group members notified each other of any mistakes that were made while completing the task", and (4) "Group members asked each other for help when needed" (α = .735).

Hierarchical strategies. Finally, a composite variable was created using the scores from the following 3 post-task survey items assessing use of hierarchical strategies: (1) "A hierarchy was formed among the group members", (2) "Some members behaved in a dominating manner during the completion of the task", and (3) "One group member was stuck with most of the work" (α = .546).

Task

In groups of 3, participants worked on a set of 15 anagrams. Their task was to produce as many word solutions as possible for each anagram in 5 minutes (see **Appendix K** for the anagrams).   The first 5 anagrams contained the difficulty manipulation. Groups in the easy condition received an anagram set where 1 out of the first 5 anagrams was unsolvable. Groups in the difficult condition received an anagram set where 4 out of the first 5 anagrams were unsolvable.

Procedure

Upon arrival, participants were told that they would be taking part in a study assessing group performance on conceptual problem solving tasks. Before beginning the experiment, each participant was asked to read and sign two informed consent documents. After signing the informed consent documents, the participants were then asked to take part in a 5 minute 'getting acquainted' session in order to establish a group rapport. After 5 minutes passed, the experimenter then read out loud a set of instructions framed either as a learning goal or performance ability goal (see **Appendix I** for

69

instructions). After hearing the instructions, each participant privately completed the pre-task survey (see **Appendix J**). Upon completion of the survey, participants were then given 5 minutes to work on the 15 anagrams (see **Appendix K**). This is the point at which the difficulty manipulation was implemented. Groups in the easy condition received 15 anagrams in which 1 out of the first 5 anagrams was unsolvable. Groups in the difficult condition received 15 anagrams in which 4 out of the first 5 anagrams were unsolvable. The experimenter informed the groups that s/he would be working in an adjacent room but would be available to answer any questions they might have. This was done to reduce any experimenter effects on the groups' interactions and performance. After the 5 minutes ended, each participant privately completed the post-task survey (see **Appendix L**). Finally, participants were fully debriefed on the nature of the study, thanked for their participation, and dismissed from the laboratory. The experimenter counted the number of word solutions (correct and incorrect) that participants generated for anagrams 6 through 15 as a measure of task performance.

<center>*Predictions*</center>

The predictions for the dependent variables listed below are based on the possible main effects of achievement goals, difficulty level, and their interaction as well as the results that emerged in Experiment 1.

Intragroup Prosocial Behavior (Cooperation and Communication).   Learning goal groups should perceive prosocial behavior as an optimal strategy for the successful mastery of the task regardless of difficulty level. However, performance goal groups should consider prosocial behavior as beneficial *only* in the difficult task condition (but should not be concerned with it in the easy condition).

<center>70</center>

More specifically, I expect a significant two-way interaction of goal type and difficulty to emerge. For the learning goal groups, prosocial behavior should be equally high in both difficulty conditions. Performance goal groups, on the other hand, should report high levels of perceived prosocial behavior in the difficult condition and low levels in the easy condition.

Intragroup Competition. Based on the findings from Experiment 1, I predict that performance goal group members should perceive intragroup competition as a beneficial strategy for demonstrating individual competence regardless of difficulty level. By contrast, learning goal group members should view intragroup competition as a poor strategy in both difficulty conditions because it is not beneficial for task mastery.

Thus, a main effect of goal (but not difficulty) is expected. For learning goal groups, perceived intragroup competition levels should be low regardless of difficulty level. For performance goal groups, perceived intragroup competition levels should be high regardless of difficulty condition. I do not expect to find an interaction between goal type and difficulty.

Self-Reported Intrinsic Motivation. Similar to my predictions for the Pilot Study and Experiment 1, a main effect of goal is expected with regard to self-reported intrinsic motivation. Intrinsic motivation should be higher for members of the learning goal groups than members of the performance goal groups.

Performance Expectancies. A main effect of difficulty (but not goal) is expected. Groups in the difficult condition should expect to do worse on a future set of anagrams than groups in the easy condition. I also predict a significant two-way interaction of goal type and difficulty. In the easy condition, learning goal and performance goal groups

71

should not differ in their expectancies for future performance. In the difficult condition, performance goal groups should expect to do worse than the learning goal groups on a future set of anagrams.

Task Performance. Again, my predictions for task performance stem from my argument that learning goals should predict greater prosocial behavior across difficulty conditions, which should only benefit performance in the difficult condition. Performance goals should predict prosocial behavior and enhanced performance only in the difficult condition where prosocial behavior is beneficial.

Specifically, I expect a significant two-way interaction of goal type and difficulty to emerge. Learning goal groups should perform moderately well in the easy condition and should demonstrate enhanced performance in the difficult condition. Performance goal groups should demonstrate poor performance in the easy condition and enhanced performance in the difficult condition (because the presence of prosocial behavior in the difficult condition should serve as a buffer against the negative effects of intragroup competition).

Similar to my predictions for Experiment 1, I predict that intragroup communication and cooperation will be positively related to task performance in the difficult condition. However, cooperation and communication should be unrelated to task performance in the easy condition because prosocial behaviors are less necessary for success in this condition. Finally, since group members are required to work together in both the easy and difficult conditions, intragroup competition should be detrimental to performance in both conditions. Therefore, I predict that intragroup competition will be negatively related to task performance in both difficulty conditions.

72

Results

Perceptions of Group Efficacy. Since perceptions of group efficacy were measured before the difficulty manipulation was implemented, I did not include task difficulty in the model. No significant effect of goal was found, $F(1, 56) = .197$, $p = .659$. Groups in the learning goal condition and groups in the performance goal condition reported similar levels of group efficacy ($M = 6.09$, $SE = .09$ and $M = 6.03$, $SE = .09$, respectively).

Level of Commitment to the Group. Since commitment to the group was measured before the difficulty manipulation was implemented, I did not include task difficulty in the model. Controlling for gender, no significant effect of goal was found, $F(1, 55.394) = .988$, $p = .325$. Learning goal groups and performance goal groups reported similar levels of group commitment ($M = 6.25$, $SE = .11$ and $M = 6.09$, $SE = .11$, respectively).

Intragroup Cooperation. Controlling for level of commitment to the group, a marginally significant Goal X Difficulty interaction emerged, $F(1, 56) = 3.24$, $p = .077$. Specifically, groups with learning goals reported higher perceived levels of intragroup cooperation in the easy condition than in the difficult condition ($M = 6.32$, $SE = .11$ and $M = 6.14$, $SE = .12$). According to planned contrasts, this difference was not significant ($p = .260$), supporting my prediction that perceived intragroup cooperation would be similar across difficulty conditions for groups with learning goals. The opposite was true for groups with performance goals in that they reported higher perceived levels of intragroup cooperation in the difficult condition than in the easy condition ($M = 6.34$, $SE = .12$ and $M = 6.10$, $SE = .11$, respectively). However, according to planned contrasts,

this difference was found to be non-significant (p = .159). No other significant main or interactive effects emerged.

Intragroup Communication. Controlling for level of commitment to the group, only a main effect of difficulty emerged, F(1, 54.73) = 13.53, p = .001. Specifically, groups in the easy condition reported greater perceived intragroup communication (M = 6.14, SE = .10) than did the groups in the difficult condition (M = 5.59, SE = .11) which was an unexpected finding.

Intragroup Competition. Controlling for gender, a marginally significant main effect of difficulty emerged, F(1, 56) = 2.93, p = .093. Specifically, groups in the easy condition reported greater intragroup competition (M = 2.94, SE = .15) than did those in the difficult condition (M = 2.57, SE = .15).

While non-significant (F(1, 56) = 1.17, p = .284), I would like to note that the pattern of the Goal X Difficulty interaction suggests that in the case of differing levels of task difficulty, groups with performance goals take on a strategic approach with regard to intragroup competition. Specifically, groups with performance goals reported higher levels of perceived intragroup competition in the easy condition than the difficult one (M = 3.14, SE = .21 and M = 2.55, SE = .22, respectively). Groups with learning goals reported similarly low levels of perceived intragroup competition in both the easy and difficult conditions (M = 2.73, SE = .21 and M = 2.60, SE = .22, respectively).

Self-reported Intrinsic Motivation. Contrary to my prediction, no main effect of goal was found for intrinsic motivation when controlling for level of commitment to the group. Groups with learning goals and those with performance goals reported similar

74

levels of intrinsic motivation (*M* = 4.82, *SE* = .15 and *M* = 4.89, *SE* = .16, respectively). No other main or interactive effects emerged.

Expectancies for Future Performance. Controlling for group efficacy, only a main effect of difficulty emerged, $F(1, 57.36) = 12.97$, $p = .001$. Not surprisingly (and as predicted), groups in the easy condition expected to do better on a future task (*M* = 5.83, *SE* = .12) than did groups in the difficult condition (*M* = 5.23, *SE* = .12). No other significant main effects or interactions emerged.

Perceived Strategy Use

Productive Strategies. Controlling for group efficacy and gender, no significant main or interactive effects emerged

Counterproductive Strategies. Controlling for commitment to the group, no significant main or interactive effects emerged.

Hierarchical Strategies. No significant main or interactive effects emerged for hierarchical strategies.

Task Performance. No significant main effects or interactions emerged for the number of correct word solutions generated for anagrams 6 through 15. However, I would like to note that the pattern of means is contrary to my prediction for this experiment. Specifically, in the easy condition, mean task performance was similar for learning goal and performance goal groups (*M* = 20.47, *SE* = 1.98 and *M* = 20.33, *SE* = 1.98, respectively). However, in the difficult condition, groups with learning goals generated more correct word solutions (*M* = 19.29, *SE* = 2.05) than did groups with performance goals (*M* = 16.69, *SE* = 2.12).

How do intragroup cooperation, communication, and competition relate to task performance?

To assess the relationships between intragroup cooperation, communication, competition, and task performance, I split the data by difficulty condition and calculated separate bivariate correlations for each variable. Contrary to my predictions, intragroup cooperation was found to be unrelated to task performance in the difficult condition ($r = -.013$, $p = .948$) and marginally positively related to task performance in the easy condition ($r = .328$, $p = .077$). Similarly, intragroup communication was found to be positively related to task performance in the easy condition ($r = .486$, $p = .006$) but not in the difficult condition ($r = .261$, $p = .188$). Finally, intragroup competition was found to be unrelated to task performance in the easy and difficult conditions ($r = -.068$, $p = .723$ and $r = .064$, $p = .750$, respectively). This unexpected set of correlations could possibly explain the lack of significant main and interactive effects found for task performance.

Summary

While several interesting results emerged for Experiment 2, few were consistent with my predictions (with the exception of the main effect of difficulty found for expectancies for future success), suggesting that task difficulty moderates the effects of achievement goals on group dynamics in a very different manner than does task interdependence. For example, while non-significant, the Goal X Difficulty interaction for intragroup competition suggests that under conditions of differing task difficulty, performance goals lead groups to take on a strategic approach with regard to antisocial behaviors as well as prosocial ones. Moreover, it might be the case that the task

difficulty manipulation was so strong that it may have washed out any goal effects, potentially explaining the various main effects of difficulty that were found.

Finally, while non-significant, the Goal X Difficulty interaction for task performance can be viewed as an extension of the task performance results found in my previous work on individual goal pursuit (see Gelety and Grant, 2010). Specifically, in my previous work, it was found that individuals with performance goals did better on the tasks than individuals with learning goals when those tasks were easy. However, achievement for individuals with performance goals was similar to that for individuals with learning goals on difficult tasks, suggesting that any benefits of performance goals disappear in the face of difficulty. In the current work, groups with performance goals performed at a similar level to those with learning goals on the easy task. However, groups with learning goals outperformed groups with performance goals on the difficult task. These results suggest that, perhaps in the case of group-based achievement contexts, the benefits of learning goals and the disadvantages of performance goals become clearer when groups are faced with difficult tasks.

<div align="center">Part 4</div>

<div align="center">General Discussion</div>

Taken together, the results of Experiment 1 and 2 suggest that achievement goals have important effects on group dynamics in group-based achievement contexts. Not surprisingly and consistent with most of the previous research on the social effects of achievement goals, it appears that giving a group a learning goal with respect to a task fosters a generally prosocial mindset among group members (regardless of the specific characteristics of the achievement context). Specifically, groups with learning goals

<div align="center">77</div>

reported similar levels of prosocial behavior regardless of TI level (Experiment 1) and task difficulty (Experiment 2). Stated differently, it appears that the prosocial behavior elicited by learning goals is unaffected by the specific context in which groups with these goals work. In Experiment 1, prosocial behavior for learning goal groups was not dependent on TI level. Likewise, in Experiment 2, prosocial behavior for learning goal groups was not dependent on task difficulty. Thus, it appears that groups who are given a learning goal evaluate prosocial behavior in terms of its usefulness for learning and task mastery no matter what circumstances they work under.

Perhaps even more interesting were the findings for groups who were given performance goals. Recall the two alternative hypotheses that I made for performance goals: (1) they could predict o*nly* intragroup competition or (2) they could predict a 'strategic' approach with regard to prosocial behavior. The results from Experiment 1 lend support for *both* alternatives. Specifically, in Experiment 1, it was found that groups with performance goals reported similar levels of perceived intragroup competition in both TI conditions. Additionally, groups with performance goals scored higher on perceived intragroup competition than did groups with learning goals, lending support for hypothesis 2A (though, this effect was only marginal and should be interpreted with caution). However, the results with regard to intragroup cooperation, communication, and productive strategy use support hypothesis 2B. Specifically, groups with performance goals reported high levels of perceived intragroup cooperation, communication, and productive strategy use in the high TI condition (and were similar to the reported levels for the learning goal groups) and low levels in the low TI condition.

78

There are two additional alternative explanations that could be applied to these results. First, it is possible that the performance goal instructions caused the groups who heard them to be highly concerned with performing well. Therefore, they may have behaved in any way that the context allowed that ensured superior performance. That is, in the low TI condition, groups with performance goals may have been 'frustrated' by the fact that they were relatively isolated and could not engage in the group processes that might have helped them to perform well, possibly explaining why they reported low levels of such behaviors in this condition. By contrast, since group members were required to work together in the high TI condition, performance goal groups may have taken full advantage of the opportunity to cooperate, communicate, and engage in productive strategies in order to perform well, thus, possibly explaining why they reported high levels of such behaviors in this condition. Second, requiring group members with performance goals to work alone in the low TI condition may have diminished their sense of control over their performance and, as a result, decreased the likelihood of adaptive behaviors such as cooperation, communication, and productive strategy use.

I would like to note that while it was not significant, the pattern of the Goal X Difficulty interaction for intragroup competition in Experiment 2 suggests that groups with performance goals also take on a strategic approach with regard to antisocial behaviors like intragroup competition. Specifically, groups with performance goals reported higher levels of intragroup competition in the easy condition than in the difficult condition, perhaps implying that group members with these goals may have recognized

79

that working against each other is maladaptive for outperforming other groups when working on a difficult task.

The results supporting the idea that groups with performance goals take on a 'strategic' approach with regard to prosociality are consistent with the results found for the Levy, Kaplan, and Patrick (2004) study where students who were predominantly performance-focused were open to cooperating with other peers only if it would result in maintenance of or a boost in their own social statuses. They are also consistent with the results found in the Poortvliet, Janssen, Van Yperen, and Van de Vliert (2007) studies where individuals with performance goals were more likely to take on an 'exploitative' approach with regard to sharing valuable information with a partner when working on a task. In summary, it appears that groups who are given a performance goal are concerned *both* with demonstrating individual superiority on a task and with outperforming other groups, suggesting that they will use strategies that address both concerns (i.e. by engaging in intragroup competition and instrumental prosociality).

Social Effects and Task Performance

In addition to determining the social effects of achievement goals, another goal of the current project was to explore how they are further related to task performance. The only significant result for task performance was found in Experiment 1. Specifically, a main effect of task interdependence emerged such that groups in the low TI condition generated more correct word solutions than did those in the high TI condition. This result was unexpected but not inexplicable. It could be the case that requiring group members to work together on tasks such as generating word solutions for anagrams is actually detrimental to task performance. Perhaps when group members are required to work

80

together, their focus on the task at hand and, accordingly, their performance is undermined as a consequence of having to regulate the nature of the social interactions that necessarily occur when working together (as evidenced by the greater incidence of hierarchical strategy use in the high TI condition).

Furthermore, bivariate correlations revealed that intragroup communication is positively related to performance in the high TI condition and unrelated to performance in the low TI condition, providing support for the notion that prosocial behaviors such as communication are beneficial for task performance when group members are required to work together. Contrary to my predictions, intragroup competition was also found to be positively related to performance in the high TI condition (and unrelated to it in the low TI condition). While unexpected, this relationship could possibly be explained by the fact that competition is very motivating for individuals with performance goals. Specifically, members of groups who were given performance goals may have been very motivated to demonstrate individual superiority and the 'independent atmosphere' of the low TI condition provided them with ample opportunity to do so.

Limitations

While the current experiments improved upon previous studies that examined the social effects of achievement goals, they are certainly not without their limitations. Perhaps the most important limitation was the strength of the goal manipulation. Specifically, the instructions that framed the task in terms of different achievement goals were only a few sentences in length, thus, reducing their capacity to really 'stick' in the minds of the participants. Furthermore, given that the instructions were read out loud to participants at the beginning of the experiment, it is possible that the groups progressively

81

'lost sight' with regard to the goals they were given as the experimental session progressed.

Moreover, the very nature of the goal manipulation (rather than the actual group processes that emerged) may have influenced participants' self-reports of the levels of perceived cooperation, communication, competition, and strategy use. For example, groups who heard the learning goal instructions may have interpreted those instructions as dictating cooperation, thus, leading participants to report that their groups had behaved cooperatively regardless of whether or not they had actually behaved that way.

A second limitation involves the length of the experimental sessions. In the Pilot Study and two Experiments, the groups were only given five minutes to get acquainted. However, the short 'getting acquainted' period could also be considered a strength insofar as it reduced the opportunity for the groups to establish firm group norms which could have potentially overridden the effects created by the goal manipulation. Furthermore, the task completion periods were very short, severely limiting the opportunity for different social effects to clearly unfold.

Third, the types of tasks used in the current experiments could also be considered a limitation. Specifically, the card sequencing task used in the Pilot Study and the anagram tasks used in Experiments 1 and 2 may have been too easy and did not allow for the best test of the relationships between intragroup cooperation, communication, competition and task performance (as the only significant effect found was a main effect of task interdependence in Experiment 1). It may be the case that successful performance on these tasks really doesn't depend upon adaptive social interactions. Indeed, previous

82

research on team processes involved experiments in which groups worked on complex tasks where interpersonal processes are more important for successful task completion.

Fourth, it is important to note that all of the dependent variables (with the exception of task performance) were measured by having participants rate their perceptions using Likert-type scales. Therefore, the majority of the data that I collected for each experiment is based on self-report measurements. It is possible that participants' responses were biased in order to create a positive image of their respective groups. While efforts were made to reduce social desirability effects in participant responses, it is impossible to completely eliminate them. As a result, the nature of the way in which the dependent variables were measured may have contributed to some of the non-significant effects that emerged.

Fifth, I measured level of commitment to the group and perceptions of group efficacy *after* the groups heard the goal instructions. In the Pilot Study and Experiment 1, significant goal and condition effects were found. Since I entered commitment and group efficacy as covariates in several of the models, I may have filtered out their influence which could have diminished any observable effect of goal on the primary dependent variables of interest.

Sixth, the way in which task difficulty was manipulated in Experiment 2 may not have been the most optimal method. Specifically, groups were presented with different numbers of unsolvable anagrams. The very fact that the difficulty manipulation involved unsolvable problems could have disrupted rather than facilitated the group processes that are adaptive for succeeding on a difficult task.

83

Finally, the size of Lehigh's participant pool limited the number of participants I was able to run. I believe that if I had been able to include a greater number of participants (and thus, a greater number of groups) in my experiments, they would have yielded more reliable results.

<p align="center">*Future Directions*</p>

It is clear based on the results obtained from the current experiments that achievement goals do have important effects on social dynamics in group-based achievement contexts (even under such limited circumstances). However, there is still much more work to be done in this area and I look forward to continuing my exploration of the social effects of achievement goals.

Directions for the Near Future

Perhaps the most important and immediate goal for future work in this area will be to address the limitations that I outlined above. Specifically, I would like to develop a more potent goal manipulation to be used in future experiments. The groups involved in the experiments should also be reminded of the goals they are given at different points through-out the sessions in order to keep them 'fresh' in their minds.

I would also like to implement longer, more complex tasks for four reasons. First, adaptive interpersonal processes are more meaningful for successful completion of complex tasks. In addition, more complex tasks would mirror real-life tasks in which the outcomes are meaningful (i.e. tasks in the workplace or in the classroom). Implementing more complex tasks where the outcome matters would allow for a better test of which kind of goal is most optimal for success. Second, having groups engage in longer work periods will allow for different social effects to more clearly emerge. Third, utilizing

84

more complex tasks should create more robust performance differences which will allow for a better test of the relationship between social dynamics and task performance. Fourth, the tasks used in the current experiments were reported as being as highly enjoyable and interesting to all participants, regardless of goal condition. Longer, more complex tasks might allow for the predicted differences in intrinsic motivation among goal conditions to emerge.

Additionally, I would like to implement direct observational measures such as video recording in future studies in order to determine if participants respond to survey items based on the instructions they heard or on the actual group processes that emerge during task completion. Also, by implementing direct observational measures, I will be able to more clearly and confidently determine under which conditions different goals facilitate or hinder prosocial and antisocial behaviors during group-based achievement contexts. In a related vein, I would like to incorporate an additional control condition whereby participants are led to believe they will work together as a group on a task. They will then hear instructions framed as a learning or performance goal. However, they will not actually work on a task together after hearing the instructions. Rather, they will be asked questions as to how they *think* the group will behave. This will allow for a clearer understanding of how the instructions themselves influence expectations and perceptions with regard to group behavior.

In future studies looking at the effects of achievement goals and task difficulty on group-based goal pursuit, I would like to implement an improved difficulty manipulation where groups are not presented with insoluble problems but rather tasks of increasing

85

complexity. This will ensure that any group processes that serve to help the group cope with a difficult task are not disrupted.

Finally, in all future studies, I will be sure to measure perceptions of group efficacy and level of commitment to the group before the goal manipulation is implemented in order to minimize the possibility of diminishing any observable goal effects.

Directions for the Distant Future

Once I have addressed the above limitations, I hope to further expand upon this line of research by conducting future studies in which *multiple* types of achievement goals are given to groups. Very rarely to do individuals or groups pursue a single goal in isolation. I believe it is important to understand how different combinations of goals facilitate or hinder different interpersonal processes and task performance (indeed, some research has found support for a multiple-goal perspective at the individual level; see Barron and Harackiewicz, 2001 for a review).

In related vein, I would also like to conduct future studies looking at how a group member's individual goal orientation interacts with the type of goal given to the entire group in affecting social dynamics and task performance. For example, Kristof-Brown and Stevens (2001) conducted a study showing that perceived congruence between a team member's personal goals (performance or mastery) and the goals endorsed by the team as a whole (performance or mastery) has important effects on each member's likelihood of making positive 'interpersonal contributions' during the completion of a class project. I would like to expand upon this study by measuring group members'

86

chronic goal orientations and manipulating goal type at the group level to see how they interact to affect social and performance variables in a controlled laboratory setting.

I would also like to explore through future studies any possible *group characteristics* that might moderate the relationship between achievement goals and their effects on group-based goal pursuit. For instance I am interested in how the hierarchical structure of a group interacts with goal type to influence group dynamics. For example, it is possible that when there is a designated leader who controls and evaluates the other team members that it is more difficult to pursue a learning goal in that context. However, even though forming a hierarchy might make pursuing a learning goal more difficult, it might be the case that doing so is beneficial for task performance. This speculation is based on the results found in Experiment 1 with regard to perceived use of hierarchical strategies and task performance.

Finally, another interesting question I would like to explore through future research is whether or not the *type of task* interacts with achievement goals to influence group-based goal pursuit. I believe this is an important point to consider in future research because in the real world, the kinds of tasks groups work on vary in important ways. It may be the case that a specific goal that is adaptive for one kind of task is less useful for other types of tasks. For example, giving a group a performance goal for tasks in which the outcomes involve the pooling of different areas of expertise, mirroring many real-life tasks (i.e. building a house) might be more beneficial than giving the group a learning goal (because then each member will be motivated to demonstrate his/her ability for his/her particular skill set and will perform accordingly). Indeed, it was found in a study conducted by Bunderson and Sutcliffe (2003) that performance efficiency was

87

compromised for tasks on which teams with strong learning orientations were already doing well, suggesting that it is not always the case that fostering strong learning goals is beneficial (as is commonly assumed by achievement goal researchers). Additionally, conducting an experiment that involves a task in which success depends on different skills sets might provide for a better test for the impact of task interdependence. It is possible that the most optimal performance in this case would occur in a condition of low task interdependence and where the groups are given a performance goal.

Conclusions

I believe the findings and subsequent implications of the current project contribute to the existing research on the social effects of achievement goals in four important and valuable ways. First, the Pilot Study and two Experiments involved several methodological improvements over the studies involved in the research that I reviewed earlier in the paper. Specifically, I manipulated achievement goals in a controlled experimental setting by giving *entire groups* a specific goal rather than computing an 'aggregate' group-level orientation through measuring each member's chronic goal orientation. This allowed for a direct test of the effects of different achievement goals on group-based goal pursuit. I also implemented different potential moderators (task interdependence in Experiment 1 and task difficulty in Experiment 2) in order to further understand when different achievement goals are more likely to facilitate or hinder interpersonal prosocial and antisocial behavior. Stated differently, I went above and beyond simply confirming that an important relationship indeed exists between achievement goals and social dynamics by determining under which circumstances they are more likely to affect group interactions.

88

Second, the experimental nature of this work allowed for a more rigorous test of the hypothesized relationships between achievement goals and group processes. Moreover, since the results where obtained experimentally, they allow for more definitive inferences to be made with regard to the directionality of the relationships. Thus, the implications of the results extend beyond the correlational results of past research, adding substantially to what is already known about the relationship between achievement goals and group-based goal pursuit.

Third, I believe it is important to emphasize that even though the current experiments involved several important limitations (i.e. weak goal manipulations and limited participant numbers); a variety of significant and illuminating results still emerged, speaking to the power of situationally induced goals. If important differences can be found under such temporary and limited circumstances, imagine the profound effects that achievement goals have on interpersonal processes where different goals are *chronically* dictated by external forces! Additionally, the limitations of the current experiments only pave the way for more potentially fruitful research (as outlined above).

Fourth and finally, this line of research is not only theoretically illuminating, but it also has obvious practical import. Educators, coaches, and supervisors hoping to optimize performance would benefit from gaining an understanding about how the kinds of goals they endorse affect the interpersonal processes involved in the classroom, on the field, and in the workplace because, as the current research shows, success depends not only on individual expertise but on productive social interactions.

89

Table 1

Pilot Experiment: Mean Scores and Standard Errors for Primary Post-Task Survey

Variables

	Goal Type			
	NG	PA	PN	LG
Dependent Variable	Mean (SE)	Mean (SE)	Mean (SE)	Mean (SE)
Group Efficacy	6.48 (0.16)	5.78 (0.15)	6.30 (0.19)	6.02 (0.16)
Commitment to the Group	6.214 (0.19)	5.53 (0.17)	6.00 (0.22)	6.04 (0.19)
Intragroup Cooperation	6.48 (0.20)	6.33 (0.19)	6.27 (0.23)	6.39 (0.20)
Intragroup Communication	6.22 (0.19)	6.02 (0.18)	6.02 (0.22)	6.27 (0.19)
Intragroup Competition	3.25 (0.37)	3.84 (0.35)	4.45 (0.44)	3.43 (0.37)
Intrinsic Motivation	3.99 (0.34)	4.12 (0.32)	4.06 (0.39)	3.88 (0.34)

Note. Means = Estimated Marginal Means

NG = No Goal

PA = Performance Ability

PN = Performance Normative

LG = Learning Goal

90

Table 2

Pilot Experiment: Mean Scores and Standard Errors for Perceived Strategy Use and

Task Performance

	Goal Type			
	NG	PA	PN	LG
Dependent Variable	Mean (SE)	Mean (SE)	Mean (SE)	Mean (SE)
Productive Strategies	6.28 (0.18)	6.22 (0.17)	6.01 (0.21)	6.02 (0.18)
Counterproductive Strategies	1.25 (0.23)	1.73 (0.22)	1.64 (0.27)	1.76 (0.23)
Hierarchical Strategies	3.11 (0.30)	3.12 (0.28)	3.18 (0.34)	3.68 (0.30)
Number of Correct Sequences	19.13 (2.51)	18.11 (2.37)	15.67 (2.90)	15.38 (2.51)

Note. Means = Estimated Marginal Means

    NG = No Goal

    PA = Performance Ability

    PN = Performance Normative

    LG = Learning Goal

91

Figure Captions

Figure 1. Experiment 1 Cooperation by Goal and TI level

92

Figure 1
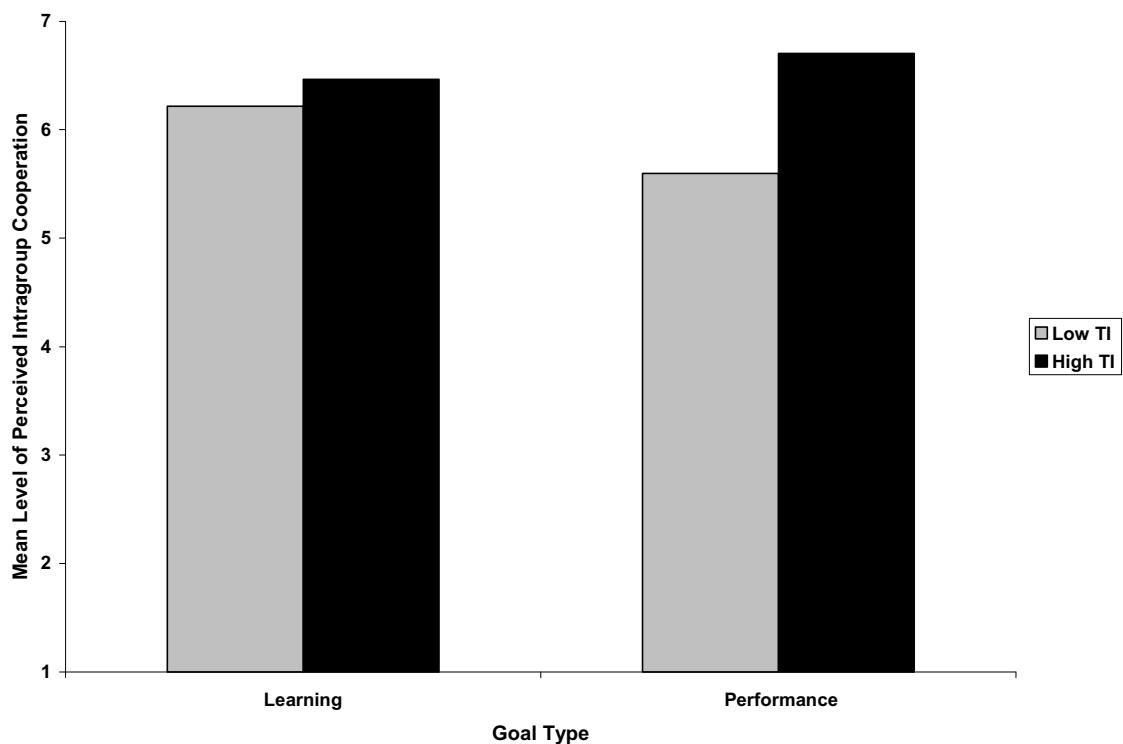
References

Ames, C. & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology, 80,* 260-267.

Anderman, E. M., Griesinger, T., & Westerfield, G. (1998). Motivation and cheating during early adolescence. *Journal of Educational Psychology, 90,* 84-93.

Bachrach, D. G., Powell, B. C., Collins, B. J., & Richey, R. G. (2006). Effects of task interdependence on the relationship between helping behavior and group performance. *Journal of Applied Psychology, 91,* 1396-1405.

Bandura, A. & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology, 45,* 1017-1028.

Barron, K. E. & Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: Testing multiple goal models. *Journal of Personality and Social Psychology, 80,* 706-722.

Brown, T. C. & Latham, G. P. (2002). The effects of behavioral outcome goals, learning goals, and urging people to do their best on an individual's teamwork behavior in a group problem-solving task. *Canadian Journal of Behavioral Science, 34,* 276-285.

Bunderson, S. J. & Sutcliffe, K. M. (2003). Management team learning orientation and business unit performance. *Journal of Applied Psychology, 88,* 552-560.

94

Cheung, P. C., Ma, H. K., & Shek, D. T. L. (1998). Conceptions of success: Their correlates with prosocial orientation and behavior in Chinese adolescents. *Journal of Adolescence, 21,* 31-42.

Darnon, C. & Butera, F. (2007). Learning or succeeding? Conflict regulation with mastery or performance goals. *Swiss Journal of Psychology, 66,* 145-152.

Darnon, C., Butera, F., & Harackiewicz, J. M. (2007). Achievement goals in social interactions: Learning with mastery vs. performance goals. *Motivation and Emotion, 31,* 61-70.

Darnon, C., Muller, D., Schrager, S. M., Pannuzzo, N., & Butera, F. (2006). Mastery and performance goals predict epistemic and relational conflict regulation. *Journal of Educational Psychology, 98,* 766-776.

Dunn, J. G. H. & Causgrove-Dunn, J. (1999). Goal orientations, perceptions of aggression, and sportspersonship in elite male youth ice hockey players. *The Sport Psychologist, 13,* 183-200

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41,* 1040-1048.

Dweck, C. S. & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95,* 256-273.

Elliot, A. J. & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology, 72,* 218-232.

Elliott, E. S. & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology, 54,* 5-12.

95

Elliot, A. J. & McGregor, H. A. (2001). A 2 X 2 achievement goal framework. *Journal of Personality and Social Psychology, 80,* 501-519.

Elliot, A. J., McGregor, H. A., & Gable, S. (1999). Achievement goals, study strategies, and exam performance: A mediational analysis. *Journal of Education Psychology, 91,* 549-563.

Gano-Overway, L. A., Guivernau, M., Magyar, T. M., Waldron, J. J., & Ewing, M. E. (2005). Achievement goal perspectives, perceptions of the motivational climate, and sportspersonship: Individual and team effects. *Psychology of Sport and Exercise, 6,* 215-232.

Gelety, L. S. & Grant, H. (2010). The impact of achievement goals and difficulty on performance. Manuscript undergoing revision for resubmission.

Gollwitzer, P. M. & Moskowitz, G. B. (1996). Goal effects on action and cognition. In E.T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles.* (pp. 361-399) New York: Guilford Press.

Grant, H., Baer, A. R., & Dweck, C. S. (2006). Personal goals predict the level and impact of dysphoria. Manuscript under review.

Grant, H. & Dweck, C. S. (2003). Clarifying achievement goals and their impact. *Journal of Personality and Social Psychology, 85,* 541-553.

Grant, H., Baer, A. R., Gelety, L. S. & Dweck, C. S. (2010). Achievement goals moderate the effects of depressed affect on performance. Manuscript undergoing revision for resubmission.

Harackiewicz, J. M., Barron, K. E., Carter, S. M., Lehto, A. T., & Elliot, A. J. (1997). Predictors and consequences of achievement goals in the college classroom: Maintaining interest and making the grade. *Journal of Personality and Social Psychology, 73,* 1284-1295.

Janssen, O. & Van Yperen, N. W. (2004). Employees' goal orientations, the quality of leader-member exchange, and the outcomes of job performance and job satisfaction. *Academy of Management Journal, 47,* 368-384.

Kavussanu, M. (2006). Motivational predictors of prosocial and antisocial behaviour in football. *Journal of Sports Sciences, 24,* 575-588.

Kavussanu, M. & Roberts, G. C. (2001). Moral functioning in sport: An achievement goal perspective. *Journal of Sport and Exercise Psychology, 23,* 37-54.

Kristof-Brown, A. L. & Stevens, C. K. (2001). Goal congruence in project teams: Does the fit between members' personal mastery and performance goals matter? *Journal of Applied Psychology, 86,* 1083-1095.

LePine, J. A. (2005). Adaptation of teams in response to unforeseen change: Effects of goal difficulty and team composition in terms of cognitive ability and goal orientation. *Journal of Applied Psychology, 90,* 1153-1167.

Levy, I., Kaplan, A., & Patrick, H. (2004). Early adolescents' achievement goals, social status, and attitudes towards cooperation with peers. *Social Psychology of Education, 7,* 127-159.

Mehta, A., Feild, H., Armenakis, A., & Mehta, N. (2009). Team goal orientation and team performance: The mediating role of team planning. *Journal of Management, 35,* 1026-1046.

97

Midgley, C., Kaplan, A., & Middleton, M. (2001). Performance-approach goals: Good for what, for whom, under what circumstances, and at what cost? *Journal of Educational Psychology, 93,* 77-86.

Mitchell, T. R. & Silver, W. S. (1990). Individual and group goals when workers are interdependent: Effects on task strategies and performance. *Journal of Applied Psychology, 75,* 185-193.

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346.

Ommundsen, Y., Roberts, C. G., Lemyre, P. N., & Treasure, D. (2003). Perceived motivational climate in male youth soccer: Relations to social-moral functioning, sportspersonship, and team norm perceptions. *Psychology of Sport and Exercise, 4,* 397-413.

Poortvliet, P. M., Janssen, O., Van Yperen, N. W., & Van de Vliert, E. (2007). Achievement goals and interpersonal behavior: How mastery and performance goals shape information exchange. *Personality and Social Psychology Bulletin, 33,* 1435-1447.

Porter, C. O. L. H. (2005). Goal orientation: Effects on backing up behavior, performance, efficacy, and commitment in teams. *Journal of Applied Psychology, 90,* 811-818.

Porter, C. O. L. H., Hollenbeck, J. R., Ilgen, D. R., Ellis, A. P. J., West, B. J., & Moon, H. (2003). Backing up behaviors in teams: The role of personality and legitimacy. *Journal of Applied Psychology, 88*, 391-403.

Sage, L. & Kavussanu, M. (2007). The effects of goal involvement on moral behavior in an experimentally manipulated competitive setting. *Journal of Sport and Exercise Psychology, 29*, 190-207.

Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2008). *Motivation in Education: Theory, Research, and Applications.* New Jersey: Pearson Education, Inc.

Senko, C. & Harackiewicz, J. M. (2005). Achievement goals, task performance, and interest: Why perceived difficulty matters. *Personality and Social Psychology Bulletin, 31,* 1739-1753.

Stephens, D. E. & Bredemeier, B. J. L. (1996). Moral atmosphere and judgments about aggression in girl's soccer: Relationships among moral and motivational variables. *Journal of Sport and Exercise Psychology, 18,* 158-173.

Stornes, T. & Ommundsen, Y. (2004). Achievement goals, motivational climate and sportspersonship: A study of young handball players. *Scandinavian Journal of Educational Research, 48,* 205-221.

Van der Vegt, G. S. & Janssen, O. (2003). Joint impact of interdependence and group diversity on innovation. *Journal of Management, 29,* 729-751.

Appendix A

Pilot Experiment: Goal Framing Instructions

Learning Goal:

"We would like your group to engage in a task that involves decision making and strategic skills, both important aspects of conceptual problem solving. This is not a test at all. Although it is a very challenging task, it is simply a training tool that groups can learn from and use to improve their problem-solving skills. Our research indicates that these are skills that can be acquired over time, and your group will have an opportunity to improve."

Performance Ability Goal:

"We would like your group to complete a problem-solving test, which involves decision making and strategic skills, both crucial aspects of intelligence. This is a new kind of ability test designed specifically for groups. Whereas older group-based ability and intelligence measures often depended on knowing facts, scores on this one instead reflect the overall intelligence of a group of persons taken together. It is a very challenging task that we will use to discriminate between high-ability groups and low-ability groups."

Performance Normative Goal:

"We would like your group to complete a problem-solving test which involves decision making and strategic skills, both crucial aspects of problem -solving that lead to the success of groups. It is a very challenging task that a number of groups have already taken part in. We will use the results from your group's work and compare them to that of the other groups that have already done this task. From these results, we will be able to inform you of how your group's performance compares to that of other groups of Lehigh students."

100

Pilot Experiment: Pre-Task Survey

For each of the following questions, please circle the number that best represents your viewpoint:

	1	2	3	4	5	6	7
	Not at all true			**Neutral**			**Completely true**

I am capable of working through a task with a group:

1	2	3	4	5	6	7

I am a valuable group member:

1	2	3	4	5	6	7

I am an asset to my group when given a challenging task:

1	2	3	4	5	6	7

I am committed to the success of my group on this task:

1	2	3	4	5	6	7

I believe that my group will be capable of completing this task:

1	2	3	4	5	6	7

I believe that my group will be able to achieve what is asked of us:

1	2	3	4	5	6	7

I have the ability to complete this task on my own:

1	2	3	4	5	6	7

As a group member, I feel that I am:

	1	2	3	4	5
	Not at all true		**Neutral**		**Completely true**

Creative:

1	2	3	4	5

Appendix B (cont'd)

Pilot Experiment: Pre-Task Survey

Dominant:

        1   2   3   4   5

Considerate:

        1   2   3   4   5

Competitive:

        1   2   3   4   5

Intelligent:

        1   2   3   4   5

Stubborn:

        1   2   3   4   5

Helpful:

        1   2   3   4   5

Capable:

        1   2   3   4   5

Compromising:

        1   2   3   4   5

Appendix C

Pilot Experiment: Card Sequencing Instructions

Cards:

Your group will receive *three* sets of two decks of cards (six decks total). Each set will contain cards with blue backs and red backs.

Sequence Requirements:

The task for your group is to complete a series of sub-tasks and produce as many conforming sequences as possible in 15 minutes. A conforming sequence is a run of 13 cards that meets the following three requirements:

1. The sequence must begin with an ace. Next must come the numbered cards: 2 through 10, in *ascending* order. Finally, the remaining face cards must follow the 10 in the order of jack, queen, and king.

2. The cards in the sequence must rotate through the suits in the following order: *spade, club, heart, and diamond.*

3. The back sides of the cards in the sequence must rotate through back colors (i.e. a red back must be followed with a blue back).

    Please refer to the poster for the color rotation and the 4 possible sequences

Sub-tasks:

Your group must produce sequences by *first* completing the following sub-tasks *in the order specified*. The overall task of your group is to produce as many conforming sequences as possible *after* these sub-tasks have been completed. You will have **30 minutes** to complete the sub-tasks and produce the sequences. The sub-tasks are as follows:

1. Sort each stack by color. This will yield two separate decks of cards: one blue and one red.

2. Sort each of the color-sorted decks by suit. This will yield a total of 8 sets of suits – 4 for each deck of blue and red cards.

3. Order each of these 8 sets by face: ace, 2 through 10, jack, queen, and then king.

4. Prepare conforming sequences (refer to requirements listed above) by drawing cards from the 8 sets produced by Step 3.

5. Bind each conforming sequence with a rubber band and place it at the end of the table.

Pilot Experiment: Post-task Survey

For each of the following questions, please circle the number that best represents your thoughts and feelings with regard to this experiment:

1. Please rate your group's ability to communicate:

$$\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$$
Not at all good   **Neutral**   **Very good**

2. How productive was your group's communication?

$$\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$$
Not at all productive   **Neutral**   **Very productive**

3. Please rate how well you think you and your fellow group members got along:

$$\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$$
Not at all well   **Neutral**   **Very well**

4. Please rate how cooperatively you think your group behaved with each other:

$$\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$$
Not at all   **Neutral**   **Very much**

5. Please rate how competitively you think your group behaved with each other:

$$\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$$
Not at all   **Neutral**   **Very much**

6. Please rate the extent to which you and your fellow group members relied on each other to complete the task:

$$\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$$
Not at all   **Neutral**   **Very much**

7. How well do you feel your group did on this task?

$$\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$$
Not at all well   **Neutral**   **Very well**

Pilot Experiment: Post-task Survey

8. How interesting did you find the task?

	1	2	3	4	5	6	7	
Not at all interesting				**Neutral**			**Very interesting**	

9. How enjoyable did you find the task?

	1	2	3	4	5	6	7	
Not at all enjoyable				**Neutral**			**Very enjoyable**	

10. How difficult did you find the task?

	1	2	3	4	5	6	7	
Not at all difficult				**Neutral**			**Very difficult**	

_____

Please answer the following questions regarding the card-sequencing task:

What percentage (from 0-100%) of the work were you responsible for doing during the task? _____

Using the following scale, please rate the extent to which your group used the following strategies:

	1	2	3	4	5	6	7	
Not at all				**Neutral**			**Very much**	

1. Each member helped our group reach a consensus on how to complete the task: _____

2. Group members explained the rationale for their ideas and positions: _____

3. Group members helped focus each other on the task at hand: _____

4. The other group members listened actively and non-judgmentally to my ideas: _____

5. Each group member took into consideration the ideas of all other group members: _____

6. Group members helped each other to resolve any conflicts that arose: _____

7. All group members participated equally in group discussions: _____

8. Group members were courteous with each other: _____

9. Group members assertively defended their own ideas: _____

10. One member read the task instructions out loud to the group: _____

11. The 3 sets of cards were divided among the group members to be sorted: _____

Pilot Study: Post-task Survey

12. A hierarchy was formed among the group members (i.e. one member was designated as the leader): _____

13. Group members helped each other answer questions with regard to the task: _____

14. Group members helped each other clarify task instructions when needed: _____

15. Group members notified each other of any mistakes that were made while completing the task: _____

16. Some members behaved in a dominating manner during the completion of the task: _____

17. Group members generally kept to themselves during the task: _____

18. One group member was stuck with most of the work: _____

19. All sub-tasks were distributed evenly among group members: _____

20. Group members *did not* communicate with each other about completing the tasks: _____

21. Group members argued with each other throughout the task _____

22. Some group members *did not* actively participate in completion of the tasks: _____

Using the following scale, please rate the extent to which you were focused on:

1	2	3	4	5	6	7
Not at all			**Neutral**			**Very much**

1. Learning and improving as much as possible *as a group* on conceptual problem solving tasks _____**.**

2. *You* learning and improving as much as possible on conceptual problem solving tasks _____**.**

3. Showing that *your group* has high ability for completing conceptual problem solving tasks _____.

4. Showing that *you* have high ability for completing conceptual problem solving tasks _____.

5. Making sure that *your group* performs better on the task than the other groups _____.

6. Making sure that *you* perform better on the task than the other members of your group _____.

106

Appendix E

Experiment 1: Goal Instructions

<u>Learning Goal/HIGH TI</u>

Hello. Thank you for participating.

We would like your group to engage in a task that involves conceptual problem solving.

This is not a test at all. Although it is a very challenging task, it is simply a training tool

that groups can learn from and use to improve their problem-solving skills. Our research

indicates that these are skills that can be acquired over time, and your group will have an

opportunity to improve.

For this experiment, you will work as a group on a set of 30 anagrams. Your task

will be to generate word solutions using ALL of the letters in each anagram. There are

multiple solutions for each anagram so you should try and find as many solutions as

possible for each. For instance, the anagram ATC has two solutions: 'ACT' and 'CAT'.

You must work together on finishing one anagram before moving on to the next. You

will have approximately five minutes to work on them. I will be in the adjacent room

should you have any questions at all with regard to the task. The clock will be stopped if

you do have any questions and will be started again when you continue with the task.

Experiment 1: Goal Instructions

Performance Goal/HIGH TI

Hello. Thank you for participating.

We would like your group to complete a problem-solving test, which involves decision

making and strategic skills, both crucial aspects of intelligence. This is a new kind of

ability test designed specifically for groups. Whereas older group-based ability and

intelligence measures often depended on knowing facts, scores on this one, instead,

reflect the ability of a group to effectively carry out a task. It is a very challenging task

that we will use to discriminate between high-ability groups and low-ability groups.

For this experiment, you will work as a group on a set of 30 anagrams. Your task

will be to generate word solutions using ALL of the letters in each anagram. There are

multiple solutions for each anagram so you should try and find as many solutions as

possible for each. For instance, the anagram ATC has two solutions: 'ACT' and 'CAT'.

You must work together on finishing one anagram before moving on to the next. You

will have approximately five minutes to work on them. I will be in the adjacent room

should you have any questions at all with regard to the task. The clock will be stopped if

you do have any questions and will be started again when you continue with the task.

Experiment 1: Goal Instructions

<u>Learning Goal/LOW TI</u>

Hello. Thank you for participating.

We would like your group to engage in a task that involves conceptual problem solving.

This is not a test at all. Although it is a very challenging task, it is simply a training tool

that groups can learn from and use to improve their problem-solving skills. Our research

indicates that these are skills that can be acquired over time, and your group will have an

opportunity to improve.

  For this experiment, you will each work on your own set of 10 anagrams. Your

task will be to generate word solutions using ALL of the letters in each anagram. There

are multiple solutions for each anagram so you should try and find as many solutions as

possible for each. For instance, the anagram ATC has two solutions: 'ACT' and 'CAT'.

All of your solutions will be pooled at the end of the experiment. You must work on

finishing one anagram before moving on to the next. You will have approximately five

minutes to work on them. I will be in the adjacent room should you have any questions

at all with regard to the task. The clock will be stopped if you do have any questions and

will be started again when you continue with the task.

Experiment 1: Goal Instructions

<u>Performance Goal/LOW TI</u>

Hello. Thank you for participating.

We would like your group to complete a problem-solving test, which involves decision making and strategic skills, both crucial aspects of intelligence. This is a new kind of ability test designed specifically for groups. Whereas older group-based ability and intelligence measures often depended on knowing facts, scores on this one, instead, reflect the ability of a group to effectively carry out a task. It is a very challenging task that we will use to discriminate between high-ability groups and low-ability groups.

For this experiment, you will each work on your own set of 10 anagrams. Your task will be to generate word solutions using ALL of the letters in each anagram. There are multiple solutions for each anagram so you should try and find as many solutions as possible for each. For instance, the anagram ATC has two solutions: 'ACT' and 'CAT'. All of your solutions will be pooled at the end of the experiment. You must work on finishing one anagram before moving on to the next. You will have approximately five minutes to work on them. I will be in the adjacent room should you have any questions at all with regard to the task. The clock will be stopped if you do have any questions and will be started again when you continue with the task.

Appendix F

Experiment 1: Pre-task Survey

For each of the following questions, please circle the number that best represents your viewpoint:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Not at all true   **Neutral**   **Completely true**

I am capable of working through a task with a group:

1   2   3   4   5   6   7

I am a valuable group member:

1   2   3   4   5   6   7

I am an asset to my group when given a challenging task:

1   2   3   4   5   6   7

I am committed to the success of my group on this task:

1   2   3   4   5   6   7

I believe that my group will be capable of completing this task:

1   2   3   4   5   6   7

I believe that my group will be able to achieve what is asked of us:

1   2   3   4   5   6   7

I have the ability to complete this task on my own:

1   2   3   4   5   6   7

111

Experiment 1 Anagrams

High TI Anagram Set:

**Instructions: You must work as a group on completing one anagram at a time
BEFORE moving on to the next. Remember, you must use ALL of the letters in
each anagram for your word solutions. Please write your word solutions for each
anagram on the lines provided.**

1. CHAERS _____
2. SATRE _____
3. RPESNTE _____
4. NTOES _____
5. HPSEA _____
6. EAKTS _____
7. EDSO _____
8. SMRA _____
9. ERSU _____
10. UBST _____
11. OTLOS _____
12. WFLO _____
13. NDES _____
14. OPLO _____
15. RDEA _____
16. TRA _____
17. TMEI _____
18. PLSA _____
19. PRTA _____
20. SGUN _____
21. ENST _____
22. SAPN _____
23. RASC _____
24. ITDE _____
25. SPTE _____
26. LRIA _____
27. TNA _____
28. PTSO _____
29. SHMA _____
30. MSGU _____

Experiment 1 Anagrams

Low TI Anagram Set 1:

Instructions: You must use ALL of the letters in each anagram for your word solutions. Please write your word solutions for each anagram on the lines provided.

1. CHAERS _____
2. SAPN _____
3. RASC _____
4. ITDE _____
5. SPTE _____
6. LRIA _____
7. TNA _____
8. PTSO _____
9. SHMA _____
10. MSGU _____

Low TI Anagram Set 2:

1. SATRE _____
2. NDES _____
3. OPLO _____
4. RDEA _____
5. TRA _____
6. TMEI _____
7. PLSA _____
8. PRTA _____
9. SGUN _____
10. ENST _____

Low TI Anagram Set 3:

1. RPESNTE _____
2. NTOES _____
3. HPSEA _____
4. EAKTS _____
5. EDSO _____
6. SMRA _____
7. ERSU _____
8. UBST _____
9. OTLOS _____
10. WFLO _____

113

Appendix H

Experiment 1: Post-task Survey

For each of the following questions, please circle the number that best represents your thoughts and feelings with regard to this experiment:

1. Please rate your group's ability to communicate:

1	2	3	4	5	6	7
Not at all good			**Neutral**			**Very good**

2. How productive was your group's communication?

1	2	3	4	5	6	7
Not at all productive			**Neutral**			**Very productive**

3. Please rate how well you think you and your fellow group members got along:

1	2	3	4	5	6	7
Not at all well			**Neutral**			**Very well**

4. Please rate how cooperatively you think your group behaved with each other:

1	2	3	4	5	6	7
Not at all			**Neutral**			**Very much**

5. Please rate how competitively you think your group behaved with each other:

1	2	3	4	5	6	7
Not at all			**Neutral**			**Very much**

6. Please rate the extent to which you and your fellow group members relied on each other to complete the task:

1	2	3	4	5	6	7
Not at all			**Neutral**			**Very much**

7. How well do you feel your group did on this task?

1	2	3	4	5	6	7
Not at all well			**Neutral**			**Very well**

Experiment 1: Post-task Survey

8. How interesting did you find the task?

	1	2	3	4	5	6	7

    Not at all interesting   **Neutral**   **Very interesting**

9. How enjoyable did you find the task?

	1	2	3	4	5	6	7

    Not at all enjoyable   **Neutral**   **Very enjoyable**

10. How difficult did you find the task?

	1	2	3	4	5	6	7

    Not at all difficult   **Neutral**   **Very difficult**

_____

Please answer the following questions regarding the card-sequencing task:

What percentage (from 0-100%) of the work were you responsible for doing during the task? _____

Using the following scale, please rate the extent to which your group used the following strategies:

	1	2	3	4	5	6	7

    Not at all   **Neutral**   **Very much**

1. One member read the task instructions out loud to the group: _____

2. A hierarchy was formed among the group members (i.e. one member was designated as the leader): _____

3. Group members helped each other answer questions with regard to the task: _____

4. Group members helped each other clarify task instructions when needed: _____

5. Group members notified each other of any mistakes that were made while completing the task: _____

6. Some members behaved in a dominating manner during the completion of the task: _____

7. Group members generally kept to themselves during the task: _____

8. One group member was stuck with most of the work: _____

9. All anagrams were distributed evenly among group members: _____

115

Experiment 1: Post-task Survey

10. Group members *did not* communicate with each other about completing the tasks: _____

11. Group members argued with each other throughout the task _____

12. Some group members *did not* actively participate in completion of the tasks: _____

At the beginning of the experiment, some instructions were read out loud to you about the task. Using the following scale, please rate the extent to which the instructions focused on:

1	2	3	4	5	6	7
Not at all			**Neutral**			**Very much**
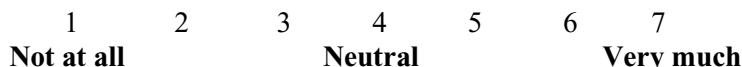
3. *As a group*, learning and improving as much as possible on conceptual problem solving tasks _____**.**

4. *Individually,* learning and improving as much as possible on conceptual problem solving tasks _____**.**

3. Showing that *your group* has high ability for completing conceptual problem solving tasks _____.

6. Showing that you, *individually*, have high ability for completing conceptual problem solving tasks _____.

7. Making sure that *your group* performs better on the task than the other groups _____.

6. Making sure that you, *individually*, perform better on the task than the other members of *your own* group _____.

Please take a few moments to write down some of the strategies your group used to complete the anagrams:

Experiment 2: Goal Instructions

<u>Learning Goal</u>

Hello. Thank you for participating.

We would like your group to engage in a task that involves conceptual problem solving. This is not a test at all. Although it is a very challenging task, it is simply a training tool that groups can learn from and use to improve their problem-solving skills. Our research indicates that these are skills that can be acquired over time, and your group will have an opportunity to improve.

For this experiment, you will work as a group on a set of 15 anagrams for 5 minutes. Your task will be to generate word solutions using ALL of the letters in each anagram. There are multiple solutions for each anagram so you should try and find as many solutions as possible for each. For instance, the anagram ATC has two solutions: 'ACT' and 'CAT'. You must work together on finishing one anagram before moving on to the next.

I will be in the adjacent room should you have any questions at all with regard to the task. The clock will be stopped if you do have any questions and will be started again when you continue with the task.

Experiment 2: Goal Instructions

<u>Performance Goal</u>

Hello. Thank you for participating.

We would like your group to complete a problem-solving test, which involves decision making and strategic skills, both crucial aspects of intelligence. This is a new kind of ability test designed specifically for groups. Whereas older group-based ability and intelligence measures often depended on knowing facts, scores on this one, instead, reflect the ability of a group to effectively carry out a task. It is a very challenging task that we will use to discriminate between high-ability groups and low-ability groups.

For this experiment, you will work as a group on a set of 15 anagrams for 5 minutes. Your task will be to generate word solutions using ALL of the letters in each anagram. There are multiple solutions for each anagram so you should try and find as many solutions as possible for each. For instance, the anagram ATC has two solutions: 'ACT' and 'CAT'. You must work together on finishing one anagram before moving on to the next.

I will be in the adjacent room should you have any questions at all with regard to the task. The clock will be stopped if you do have any questions and will be started again when you continue with the task.

Experiment 2: Pre-task Survey

For each of the following questions, please circle the number that best represents your viewpoint:

	1	2	3	4	5	6	7
Not at all true				**Neutral**			**Completely true**

1. I am capable of working through a task with a group:

        1   2   3   4   5   6   7

2. I am a valuable group member:

        1   2   3   4   5   6   7

3. I am an asset to my group when given a challenging task:

        1   2   3   4   5   6   7

4. I am committed to the success of my group on this task:

        1   2   3   4   5   6   7

5. I believe that my group will be capable of completing this task:

        1   2   3   4   5   6   7

6. I believe that my group will be able to achieve what is asked of us:

        1   2   3   4   5   6   7

7. I have the ability to complete this task on my own:

        1   2   3   4   5   6   7

8. How well do you think your group will do on the anagrams?

	1	2	3	4	5	6	7
Not at all well							**Very well**

Experiment 2 Anagrams

Anagrams for the Easy Condition:

Instructions: You must work as a group on completing the anagrams. Remember, you must use ALL of the letters in each anagram for your word solutions. Please write your word solutions for each anagram on the lines provided.

1. LREA _____
2. SAPN _____
3. EBRER (UNSOLVABLE) _____
4. PRTA _____
5. EDSO _____
6. ITDE _____
7. RDEA _____
8. PLSA _____
9. EAKTS _____
10. TNA _____
11. SHMA _____
12. ENST _____
13. WFLO _____
14. ERSU _____
15. SATRE _____

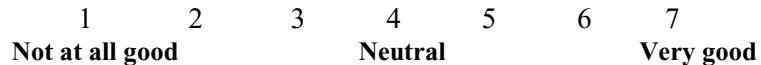*Anagrams for the Difficult Condition:*

1. RILOY (UNSOLVABLE) _____
2. EBRER (UNSOLVABLE) _____
3. EDSO _____
4. BOLWA (UNSOLVABLE) _____
5. EDAGE (UNSOLVABLE) _____
6. ITDE _____
7. RDEA _____
8. PLSA _____
9. EAKTS _____
10. TNA _____
11. SHMA _____
12. ENST _____
13. WFLO _____
14. ERSU _____
15. SATRE _____

Appendix L

Experiment 2: Post-task Survey

For each of the following questions, please circle the number that best represents your thoughts and feelings with regard to this experiment:

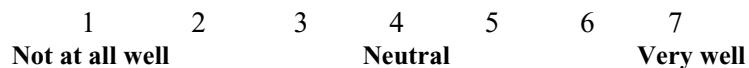1. Please rate your group's ability to communicate:

	1	2	3	4	5	6	7	
Not at all good				**Neutral**			**Very good**	

2. How productive was your group's communication?

	1	2	3	4	5	6	7	
Not at all productive				**Neutral**			**Very productive**	

3. To what extent do you feel that the members of your group were trying to outperform each other?

	1	2	3	4	5	6	7	
Not at all				**Neutral**			**Very much**	

4. Please rate how well you think you and your fellow group members got along:

	1	2	3	4	5	6	7	
Not at all well				**Neutral**			**Very well**	

5. Please rate how <u>cooperatively</u> you think your group behaved with each other:

	1	2	3	4	5	6	7	
Not at all				**Neutral**			**Very much**	

6. Please rate how <u>competitively</u> you think your group behaved with each other:

	1	2	3	4	5	6	7	
Not at all				**Neutral**			**Very much**	
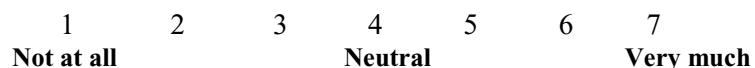
7. Please rate the extent to which you and your fellow group members relied on each other to complete the task:

	1	2	3	4	5	6	7	
Not at all				**Neutral**			**Very much**	

121

Experiment 2: Post-task Survey

8. How well do you think your group did on this task?

<div align="center">

1   2   3   4   5   6   7

Not at all well   **Neutral**   **Very well**

</div>

9. Compared to the previous set of 15 anagrams, how well do you think your group would perform on a second set if they were given to you now?

<div align="center">

1   2   3   4   5   6   7

Not at all well   **Neutral**   **Very well**

</div>

10. How interesting did you find the task?

<div align="center">

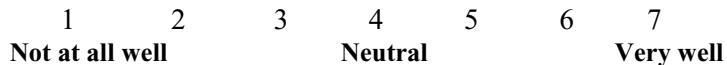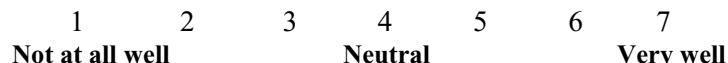1   2   3   4   5   6   7

Not at all interesting   **Neutral**   **Very interesting**

</div>

11. How enjoyable did you find the task?

<div align="center">

1   2   3   4   5   6   7

Not at all enjoyable   **Neutral**   **Very enjoyable**

</div>

12. How difficult did you find the task?

<div align="center">

1   2   3   4   5   6   7

Not at all difficult   **Neutral**   **Very difficult**

</div>

Please answer the following questions regarding the anagram task:

What percentage (from 0-100%) of the work were you responsible for doing during the task? _____

Using the following scale, please rate the extent to which your group used the following strategies:

<div align="center">

1   2   3   4   5   6   7

Not at all   **Neutral**   **Very much**

</div>

1. One member read the task instructions out loud to the group: _____

2. A hierarchy was formed among the group members (i.e. one member was designated as the leader): _____

3. Group members helped each other answer questions with regard to the task: _____

4. Group members helped each other clarify task instructions when needed: _____

122

Experiment 2: Post-task Survey

5. Group members notified each other of any mistakes that were made while completing the task: _____

6. Some members behaved in a dominating manner during the completion of the task: _____

7. Group members generally kept to themselves during the task: _____

8. One group member was stuck with most of the work: _____

9. All anagrams were distributed evenly among group members: _____

10. Group members *did not* communicate with each other about completing the tasks: _____

11. Group members argued with each other throughout the task _____

12. Some group members *did not* actively participate in completion of the tasks: _____

13. Group members asked each other for help when needed: _____

14. Group members behaved in a competitive manner with each other: _____

At the beginning of the experiment, some instructions were read out loud to you about the task. Using the following scale, please rate the extent to which the instructions focused on:

1	2	3	4	5	6	7
Not at all			**Neutral**			**Very much**
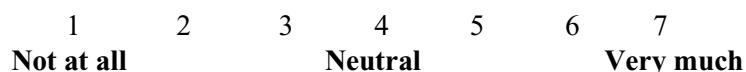
5. *As a group*, learning and improving as much as possible on conceptual problem solving tasks _____**.**

6. *Individually,* learning and improving as much as possible on conceptual problem solving tasks _____**.**

3. Showing that *your group* has high ability for completing conceptual problem solving tasks _____.

8.   Showing that you, *individually*, have high ability for completing conceptual problem solving tasks _____.

Please take a few moments to write down some of the strategies your group used to complete the anagrams:

123

Laura Sophia Gelety

Campus Address: Home Address:

Department of Psychology   201L Community Drive
Lehigh University   Shillington, PA 19607
17 Memorial Drive East   (570) 204-1881
Bethlehem, PA 18015

Email: lsg205@lehigh.edu

EMPLOYMENT

Aug. 2010   Albright College, Instructor of Psychology for the Degree Completion
                 Program in Organizational Behavior and Applied Psychology

EDUCATION

Aug. 2010   Ph.D in Social Psychology, Lehigh University, Bethlehem, PA
(expected)   Advisor: Dr. Heidi Grant

Jan. 2008   M.S. in Social Psychology, Lehigh University, Bethlehem, PA
                 Advisor: Dr. Heidi Grant

Dec. 2004   B.S. in Psychology, The Pennsylvania State University**,** University Park,
                 PA

HONORS AND AWARDS

2004   Psi Chi National Honor Society

TEACHING EXPERIENCE

Spring, 2010   **Graduate Teaching Assistant**, Department of Psychology, Lehigh
                 University
                 Course: Experimental Research Methods (1 section, 20 students).

Fall, 2009   **Graduate Teaching Assistant**, Department of Psychology, Lehigh
                 University
                 Course: Introduction to Social Psychology (1 section, 69 students).

124

Summer, 2009 **Instructor**, Department of Psychology, Lehigh University
Course: Introduction to Social Psychology (1 section, 12 students).

Spring, 2009 **Graduate Teaching Assistant**, Department of Psychology, Lehigh University
Course: Introduction to Social Psychology (1 section, 110 students).

Fall, 2008 **Graduate Teaching Assistant**, Department of Psychology, Lehigh University
Course: Personality Psychology (1 section, 100 students).

Summer, 2008 **Instructor**, Department of Psychology, Lehigh University
Course: Introduction to Social Psychology (1 section, 8 students).

Spring, 2008 **Graduate Teaching Assistant**, Department of Psychology, Lehigh University
Course: Introduction to Social Psychology (1 section, 180 students).

Fall, 2007 **Graduate Teaching Assistant**, Department of Psychology, Lehigh University
Course: Introduction to Social Psychology (1 section, 150 students).

Spring, 2006 **Graduate Teaching Assistant**, Department of Psychology, Lehigh University
Course: Experimental Research Methods (1 section, 20 students).

Fall, 2005 **Graduate Teaching Assistant**, Department of Psychology, Lehigh University
Course: Experimental Research Methods (1 section, 20 students).

Fall 2004 **Undergraduate Teaching Assistant**, Department of Psychology, The Pennsylvania State University
Course: Research Methods in Psychology (Lab recitation, approx. 20 students).

OTHER PROFESSIONAL EXPERIENCE

Fall, 2006 – **Graduate Technical Assistant**, Department of Psychology, Lehigh
Summer 2007 University
-Tasks included assisting with department technical work such as computer set-up and website maintenance. I was also responsible for managing the psychology department participant pool and scoring exams for all departments of the university.

125

DEPARTMENT SERVICE ROLES

Fall 2009-   **Colloquium Assistant**, Department of Psychology, Lehigh University
Spring, 2010   Responsibilities included purchasing refreshments and organizing post
                colloquium receptions.

Fall, 2006-   **Graduate Student Representative,** Department of Psychology, Lehigh
Spring, 2007   University
                -Responsibilities included meeting with the department graduate
                committee to go over graduate applications and organizing the visitation
                day for prospective graduate students.

Fall, 2006   **Conference Organization Assistant,** Department of Psychology, Lehigh
                University
                -Responsibilities included aiding in the preparation of and working at the
                annual Society for Experimental Social Psychology conference that was
                held in Philadelphia in October of 2006.

RESEARCH INTERESTS

My broad research interests fall under the categories of goal pursuit, motivation, and self-regulation. I have recently finished conducting three studies examining how different goals (learning vs. performance goals), task interdependence, and task difficulty interact to influence social dynamics in group-based achievement contexts.

RESEARCH EXPERIENCE

Nov. 2008-   **Dissertation Research**
Present   -For this project, I designed and conducted three
                studies examining how achievement goals, level of task interdependence,
                and task difficulty interact to affect social dynamics in group-based
                achievement contexts.

Sept. 2006-   **Masters Thesis Research**
Jan., 2008   -For this project, I designed and conducted two studies that examined how
                and why task difficulty interacts with goal type (performance vs.
                learning) to impact subsequent goal pursuit.

Sept. 2005-   **Graduate Research Assistant** to Dr. Heidi Grant, Department of
Dec. 2009   Psychology, Lehigh University
                -I assisted Dr. Grant on numerous projects investigating how goals
                influence mood, motivation, and task performance.

Sept. 2004- Aug. 2005	**Employed Research Assistant** to Dr. Theresa K. Vescio, Department of Psychology, The Pennsylvania State University -I assisted Dr. Vescio in researching the following: (a) the different psychological factors that contribute to racial disparities in academic achievement, (b) the role of anger in approach motivation, and (c) attentional biases due to anger and fear.
Spring, 2004	**Undergraduate Research Assistant** to Dr. Theresa K. Vescio and graduate student Matthew Callahan, Department of Psychology, The Pennsylvania State University -Conducted experiments examining factors that exacerbated women's threat responses when they were assigned leadership roles as well as experiments examining how family values predict anti-gay prejudice.
Fall, 2003	**Undergraduate Research Assistant** to Dr. David A. Rosenbaum, Department of Psychology, The Pennsylvania State University -Conducted experiments examining the cognitive processes involved in motor movement choices. Other tasks included: entering and analyzing data using MATLAB.

CONFERENCE PRESENTATIONS

Gelety, L. S. (2010, March). *The Social Effects of Achievement Goals and Task Interdependence.* Poster presented at the 2010 meeting of the Eastern Psychological Association, Brooklyn, NY.

Gelety, L. S., and Grant, H. (2008, February). *Achievement goals and responses to difficulty.* Poster presented at the Society for Personality and Social Psychology Annual Conference, Albuquerque, NM.

Gelety, L. S., and Grant, H. (2007, May). *Achievement goals moderate the impact of obstacles on mood, motivation, and performance.* Poster presented at the Annual Meeting of the Association for Psychological Science, Washington, DC.

Gelety, L. S. and Grant, H. (2007, January). *The impact of goals on anger and performance.* Poster presented at the Society for Personality and Social Psychology Annual Conference, Memphis, TN.

Gelety, L. S. and Gallatti, N. (2005, April). *The role of agency and pathways in anger: A scale development study.* Poster presented at the Psi Chi Undergraduate Research Conference, The Pennsylvania State University, PA.

ASSOCIATION MEMBERSHIPS

-American Psychological Association
-Association for Psychological Science
-Society for Personality and Social Psychology
-Eastern Psychological Association

PUBLICATIONS

Grant, H. and Gelety, L. S. (2009). Goal content theories: Why differences in <u>what</u> we are striving for matter. In G. B. Moskowitz and H. Grant (Eds.), *The Psychology of Goals* (pp. 77-97). New York: Guilford Press.

MANUSCRIPTS UNDER REVISION

Gelety, L. S., and Grant, H. (undergoing revision for resubmission). *The impact of achievement goals and difficulty on mood, motivation, and performance.*

Grant, H., Baer, A. R., Gelety, L. S., and Dweck, C. (undergoing revision for resubmission). *Is depressed affect good or bad for performance? The moderating role of achievement goals.*