INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

Effect of group goals on group performance

A Thesis Presented
to the
Department of Kinesiology
Lakehead University

In Partial Fulfilment
of the Requirements for the
Degree of Master of Science
in
Applied Sport Science and Coaching

by
Chunfan Zhang

Abstract

The purpose of the present study was to investigate the effect of group goal difficulty and group goal commitment on group performance. In addition, it was also to investigate two mediating processes, effort and cooperation, using Weldon and Weingart's (1993) model of group goals and group performance in the sport and motor domain. Twenty-four groups of three people each performed a 2-minute triangle basketball passing task. The groups were randomly assigned to two different goal conditions: easy goals or hard goals. The design was a 2 (goal conditions) x 2 (pre/posttest) mixed factorial with repeated measures on the last factor. Performance results indicated a significant goal condition by test interaction effect. The post hoc analysis showed that the hard goal groups exhibited significantly more improvement than the easy goal groups. No significant differences were found for goal commitment, effort, or cooperation. Results are discussed in terms of Weldon and Weingart's model and Locke and Latham's goal setting theory as well as some recent research about goal setting in sport setting.

Acknowledgements

First, I would like to express my strong gratitude to my advisor, Dr. Joey Farrell, whose comments on my paper I will never forget. This study could not have been completed without her encouragement, scholarly guidance, endless discussion and correction throughout the course of my research. I also would like to express my sincere appreciation to Dr. Jane Taylor and Dr. Jim McAuliffe, my committee members, who have been helpful in enhancing my understanding of the research process. Appreciation is also to extended to Ms. Kristi Taylor for her warm assistance in editing the text.

I would like to thank all of the high school students from Thunder Bay, whose participation provided the foundation for this investigation. As well, the kindly warm assistance of the principals, the teachers of the high schools, and administrators of the Lakehead Board of Education and the Lakehead District Roman Catholic Separate School Board was vital in making this experiment proceed successfully. I am indebted to my classmates and friends who provided feedback and support throughout this learning process. In particular, I would like to thank Clarkson Newport, Shi Huang, Shi Chen, Huining Yuan, Yuping Ding, and Dave Ibit for their assistance in data collection.

Table of Contents

List of Tables

Table

List of Figures

Figure

INTRODUCTION

According to Locke and Latham (1985) success in competitive sports depends largely upon two factors: skill (including strength and stamina) and motivation (eg., mental attitude and confidence). Therefore, coaches and physical educators have concentrated on delivering ways to motivate athletes to perform to their potential and to sustain maximum effort in order to complete a task successfully. Lindsley (1957) defined motivation as "the combination of forces which initiate, direct, and sustain behaviour toward a goal" (p.48). Similarly, Berelson and Steiner (1964) defined motivation as an "inner state that energizes, activates, or moves, and that directs or channels behaviour toward goals" (p. 240). There are many factors which influence motivated behaviour such as personality factors, social variables, and cognitions. Goal setting has been viewed as the most popular motivational technique for enhancing performance and productivity and effectively improving long-term self motivation through eliciting commitment, perseverance, dedication, and effort (Locke & Latham, 1990). Locke and his colleagues (1981) define a goal simply as "what an individual is trying to accomplish; it is the object or aim of an action" (p. 126). Locke and Latham (1985) also emphasize that every goal includes two basic components: direction and amount or quality of the product. Direction implies choice, specifically the choice about how to direct or focus one's behaviour, whereas amount or quality suggests a minimal standard of performance that must be attained.

Goal setting theory assumes that human action is directed by conscious goals and intentions. There are four goal mechanisms to explain the effect of goals on action (Locke & Latham, 1990): effort, persistence, direction, and task strategies. Locke and Latham (1990) illustrated how a number of studies in the area of business and management science support the

view that goals regulate effort expenditure. They stated that those subjects with specific difficult goals exerted more effort and performed better than those with less-difficult goals, do-your best goals, or no goals.

Locke et al. (1981) extensively reviewed the relevant literature, and reported that 99 of 110 studies surveyed support the effect of goal setting on task performance. With a more recent meta-analyses, Mento, Steel, and Karren (1987) supported this conclusion. However, the conclusive evidence to date has primarily been concentrated on individual performance in the area of business and management sciences or in laboratory settings.

Recently, there has been an interest in the effect of goal setting on task performance at the group level. According to Locke and Latham (1990), many of the concepts used to explain individual goal setting may be generalized to group settings and all the mechanisms of individual goal setting should apply to group and organizational goals. Zander (1971) defined a group goal as an outcome desired by members for the group as a unit. Thus the group goals are based on the output of the whole group, not only of individual members. Zander (1980) suggested that group goals might provide several benefits for groups. Therefore, efficiency and task performance of groups may be increased because group goals may help group members decide what needs to be done and how to do it.

According to Zander (1980), the desire for group success is a situation-specific, group-oriented motive from which the group members obtain pride in performance and satisfaction with the group when they are successful in accomplishing a challenging task. Thus, desire for group success is viewed as a disposition that influences actions or behaviours of group members that are perceived to be pertinent to the attainment of desired goals. The groups' desire for success will be

determined in part by individual motivation to succeed, group unity, and cohesiveness. Desire for group success can be developed or enhanced through a pride-in-team approach in which common goals, valued roles, and team work are emphasized.

As noted above, a group goal is an important component to develop desire for group success which influences group performance. Although research on the effect of group goals is not as extensive as that on individual goal setting, some studies have addressed the issue. Locke and Latham (1990) noted that 41 studies to date had used group goals and 93 percent of these studies indicated that group goals produced positive effects on group performance. Since 1980, group goal research has focused on how group goal processes operate, as opposed to simply establishing the existence of a group goal effect. For example, Weldon, Jehn and Pradhan (1991) investigated processes that mediate the relationship between a group goal and improved group performance. They found that effort, group planning, changes in individual and group performance plans, and reduced concern for quality mediated the quantitive group goal effect.

Weldon and Weingart (1993) integrated studies of individual goals, studies of group goals, and studies of group process and group performance to produce a model of group goals and group performance. Like extant models of group performance (Hackman & Morris, 1975; Gladstein, 1984; Ancona, 1990), Weldon and Weingart's model is also an input-process-output model. Input-process-output models suggest that (a) characteristics of group members and the context in which they work (i.e., input factors) influence their behaviour (group process), which influences group performance (output); and (b) characteristics of a task, such as task complexity, influence the extent to which different facets of group process actually contribute to group performance (see Figure 1).

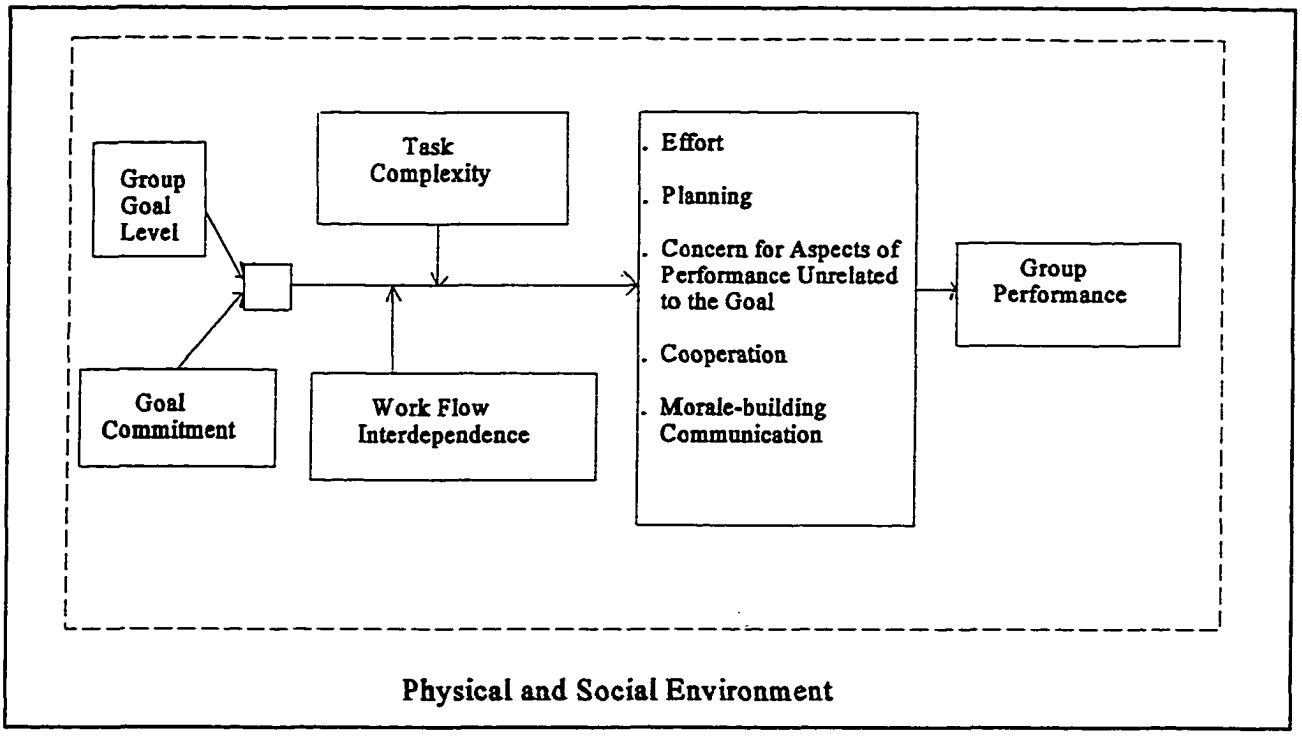


Figure 1. A model of group goals and group performance (Weldon & Weingart, 1993, p. 314)

According to their model, group goal difficulty and commitment are important input variables that influence five facets of group process: (a) effort, (b) planning, (c) concern for aspects of performance unrelated to the goal, (d) cooperation, and (e) morale-building communication. Weldon and Weingart (1993) defined group process as "the behaviour of individuals in the group and the way in which they interact" (p.315). They stated that studies of group goals showed that groups working with specific, difficult goals performed better than those working with easy goals, or no goals. They also stated that group performance increased with goal difficulty; specific, difficult goals generally produced better performance than difficult but vague 'do-your-best' goals; and the group goal effects were robust across tasks, settings, the method used to set the goal, and goals for quality, quantity, and speed. According to their model,

group goal commitment is another input variable which refers to the attachment to the goal and determination of the group to reach the group goal.

In Weldon and Weingart's model, the moderating effect of task complexity is also an important variable, although its role in this model differs from that described in other input-process-output models such as Hackman and Morris' model (1975) and Gladstein's model (1984). In those other models, the relationship between group process and performance is moderated by task complexity in that it determines the extent to which the behaviour of group members influences group performance, as behaviour must be appropriate to the complexity of the task. In Weldon and Weingart's model, task complexity moderates the link between goal level and group process to show that reactions to the goal are influenced by task complexity.

Thus, their model assumes that (a) the group goal motivates the behaviour of group members to improve group performance; (b) the different tactics used for improving group performance vary with task complexity; and (c) goal-directed group members assess task complexity and choose appropriate tactics. Specifically, task complexity influences the extent to which a group member uses individual and group planning to improve performance strategies as a tactic for improving group performance. This link is also moderated by work-flow interdependence. Thompson (1967) defined work-flow interdependence as the extent to which the behaviour of one group member influences the performance. Like task complexity, Weldon and Weingart (1993) assumed that appropriate tactics used by group members varied with work-flow interdependence and group members selected appropriate tactics. Specifically, they believed that work-flow interdependence affected the extent to which group members used group planning to improve the cooperation of the group. Their model also showed that the group's environment

influenced group process and group performance.

Due to some findings of the effects of group goals on group performance in business and administration settings, the model of group goal and group performance should be applied to sport and motor domain. So far, however, a few studies have tested Weldon and Weingart's model in business and management settings. Because of a lack of established group performance results in sport and motor task situations, it is necessary to explore group goal setting mechanisms using Weldon and Weingart's (1993) model. Therefore, in addition to examining the effect of group goal commitment and group goal difficulty on group performance outcome, this experiment was also designed to explore two mediating processes. Due to the simple nature of the task employed in this experiment, planning, concern for aspects of performance unrelated to the goal and morale-building communication were not tested.

Statement of the Problem

The primary purpose of the present study was to explore group goal setting mechanisms using Weldon and Weingart's (1993) model of group goals and group performance in the sport and motor domain. The researcher investigated the effect of group goal commitment and group goal difficulty on the group performance. The researcher also investigated two mediating processes that had been suggested to affect group performance. These two mediating processes consisted of effort and cooperation.

REVIEW OF LITERATURE

A Model of Group Goal and Group Performance

Input Variables

Goal Difficulty

According to Zander (1980), a group goal can be a source of motivation for persons in the group, similar to an individual goal which is considered an important source of self motivation. Locke (1968) and his colleagues have conducted extensive research into the contrasting effects of having or not having a goal. The main premise behind studies done by Locke and his colleagues is that an individual's conscious intentions regulate his or her actions. Thus, when a person has decided on particular plans, goals, or tasks to be performed, this commitment to self guides his or her behaviour. Although Locke has usually investigated the effects of goal setting on individuals, he also believes his theory applies to groups as well as to individuals (Locke & Latham, 1990).

The results of research on goal setting at the group level have shown that group goals can improve group performance. In one set of early studies, it was found that groups (logging crews) in the hard goal condition performed better than those in the easy goal condition (Latham & Saari, 1979; Latham & Yukl, 1975a, 1975b). They emphasized that there was a strong relationship between performance of a group and difficulty of its goal only if all performers accepted that goal. They believed that accepting the goal was as important as establishing an intention to achieve it.

The results of investigations also indicated that a group enhances the performance as its goal becomes more difficult, providing the goal difficulty is not impossible. In a study by Stedry and Kay (1964), work groups were assigned either of two kinds of goals. One goal was at a level similar to what the group had been achieving at least 50 percent of the time in the past six months.

The other goal was at a level the group had achieved only 25 percent of the time. After some experience with these goals, the foreman of each crew was asked to rate the difficulty of his group's goal as either normal, moderately challenging, or impossible. In the following months, there was a 28 percent improvement if the goal was taken to be a challenge, a 16 percent improvement if it was normal, and a 35 percent decrease if the goal was impossible. Obviously, a goal is less motivating if it is too hard. The goal should be moderately challenging, not impossible.

Recent studies also indicated that groups working with hard goals performed better than groups working with easy goals, or no goals. Pritchard, Jones, Roth, Stuebing and Ekeberg (1988) examined the effect of group feedback, goal setting, and incentives on organizational productivity. Five organizational units were asked to conduct the project. A new method of measuring productivity, the Productivity Measurement and Enhancement System (ProMES) was used as a foundation for group-based feedback, goal setting, and incentives. The design of the project consisted of a baseline period of eight to nine months. Next, feedback was given to each unit for five months. Goal setting was then added to feedback for each unit for another five months. Finally, incentives in the form of time off from work were added to feedback and goal setting for another five months. Results showed that an average increased productivity over baseline was 50% for group-level feedback, 75% for group goal setting, and 76% for group incentives.

Another study by Mitchell and Silver (1990) examined the effects of goal setting on the performance of participants working on an interdependent task. The participants were 96 female introductory psychology students who were randomly assigned to 32 groups of three participants each. Four goal-setting conditions were established: (a) individual goal, (b) group goal, (c) individual plus group goal, and (d) no specific goal. Groups were asked to perform the tower

building task for this study. Three participants at a time worked together to build a single tower of blocks. The results indicated that the individual goal condition performed worst when compared with the no specific goal condition, group goal condition, and individual plus group goal condition.

The same findings have been demonstrated many times, using goals for quantity (Emmert, 1978; Latham & Locke, 1975; Weldon et al., 1991) and quality (Becker, 1978; Rowe, 1981) of performance, different tasks (reacting quickly to stimulus light, building tinkertoy structures, and group problem solving), naturally occurring groups (Watson, 1983; Weingart, 1989) and ad hoc laboratory groups (Latham & Yukl, 1975; O'Connell, 1980) in organizational and industrial settings.

Therefore, it is concluded that the members of a group, even more than individual persons, are aware of what they are up to in choosing a group goal or working toward it. Thus, Locke's theory is especially appropriate as a basis for thinking about the impact of a group's goal (Zander, 1980). On the basis of this research, group members in the experimental condition were assigned specific, difficult but attainable group goals.

Group Goal Commitment

Another of the input variables of Weldon and Weingart's model is group goal commitment. Locke and Latham (1990) stated that "it is virtually axiomatic that a goal that a person is not really trying for is not really a goal and therefore cannot have much effect on subsequent action" (p. 124). Only when an individual is really trying for a goal, can he or she be described as being committed to that goal.

Goal commitment should also be important when group goals are involved (Weldon & Weingart, 1993). Commitment refers to the group member's feeling of an attachment to the goal

and the determination to help the group reach the goal. The desire to be attached to the goal motivates group members to put forth a lot of effort, improving group performance.

Whitney (1994) in his study researching the role of group goals and group efficacy in developing a set of meals that meets certain nutritional requirements, established three levels of group goals (do best, moderate, and difficult) and two levels of group efficacy (moderate and high). Groups in the do best goal condition were told to accurately create and price as many meals as they could during the 20 minutes allowed, following all the rules and guidelines. In the moderate goal condition, groups were assigned a goal of 15 meals in 20 minutes; in the difficult goal condition, groups were assigned a goal of 21 meals in 20 minutes. In all goal difficulty conditions, the experimenter stressed the importance of both performance quality and quantity and told groups they would receive separate scores for quality and quantity; however, no specific goals for quality were assigned. The results showed that group goal commitment was higher when assigned goals were congruent with group efficacy beliefs. Whitney also found that group goal commitment was positively related to performance quantity in the difficult goal condition.

A similar result was also found by Klein and Mulvey (1990). They pointed out that group goal commitment was positively related to group task performance, at least for self-set goals. The result for goal commitment at group goal level is consistent with results at the individual level. That is, goal commitment only helps task performance if assigned goals are difficult (Locke & Latham, 1990).

Although goal commitment was found to be positively related to performance at the individual and group level, Hollenbeck and Klein (1987) point out that only three studies tested Locke's (1968) conception of goal commitment as a moderator of the goal difficulty/task

performance relationship and results were inconsistent. They conclude that "future research in the area of goal setting obviously needs to place greater emphasis on assessing goal commitment" (p. 219).

Processes That Mediate the Group Goal Effect

Effort

According to Weldon and Weingart (1993), the group goal effect is believed to be mediated in part by the physical and mental energy that group members invest in their work. That is, specific, difficult group goals can improve group performance in part because group members work faster and longer on the task, focus more attention on the task, and are less distracted by stimuli unrelated to the task (Locke & Latham, 1990).

Several group goal setting studies found that groups with difficult goals exerted more effort and performed better than groups with easy goals, do-your-best goals, or no goals. Weingart (1992) tested a model asserting that goal difficulty and task component complexity influence group performance by affecting the effort, the amount and quality of planning, and timing of planning. Fifty-six groups of four participants each were randomly assigned to easy group goals, difficult group goals, low level of task component complexity, or high level of task component complexity conditions. Groups were required to work for 15 minutes building tinkertoy structures. Effort was measured by the number of task-relevant physical actions performed by each group member. Results indicated that the effort of group members increased with group goal difficulty and influenced group performance.

Another study by Weingart (1989), employing a production task, found that the rate of work (the average number of task relevant acts performed each minute) increased with increasing

goal difficulty, and that the average of the rate of work across group members was an important determinant of group performance. Using the same task, Weldon et al. (1991) also found that self-reports of group members' effort increased with goal difficulty, and that reports of increased effort were correlated with improved group performance. Thus, in each study, effort increased with goal difficulty, and increased effort improved group performance.

Weingart and Weldon (1991) found a different result using an idea-generation task. Three experimental conditions were set up by varying the presence or absence of an assigned group goal for session two and the group's knowledge of results (GRPKR) for session one. These manipulations were presented after session one and before session two. Thus, the three conditions were the goal with group knowledge of results (GOAL/GRPKR), the goal with no knowledge of results (GOAL/NOKR), and no goals. Group members in the goal with group knowledge of results condition received information about the group's performance for session one and a group goal for session two. Group members in the goal with no knowledge of results condition received an assigned goal for session two, but they did not receive information about their group's performance for session one. In the no goal condition, group members were asked to do their best on each trial. No goal was assigned, and group members did not receive information about their group's performance for session one. Because there was no difference in performance across the GOAL/GRPKR and GOAL/NOKR conditions, these two groups were combined and treated as a one goal-present treatment group in the analyses. Group members were asked to work independently to generate ideas for a common object. Group performance was measured by adding up the number of uses produced by each group member. As well self-reports were used to evaluate the effort of group members. The results showed that group members with the presence of a group

goal increased effort, but reports of effort were not correlated with group performance. They explained that increased effort is unimportant for idea generation because new uses for an object are generated by linking disparate ideas. Therefore, developing a strategy for making unusual, creative links is the primary determinant of success.

Weldon and Weingart (1993) pointed out that effort may mediate the group goal effect for some tasks but not for others. They concluded that "in future research, task-type should be varied to assess the role of effort across tasks" (p.321).

Decreased Quality

Weldon and Weingart (1993) also pointed out that the quality of the group's performance is expected to decrease when a goal for quantity is involved. Several studies of goal setting at an individual level showed that quality dropped with increasing goal difficulty for quantity (Bavelas & Lee, 1978; Rosswork, 1977). The reason for this drop in quality may be an unintended consequence of working faster or a conscious strategy for meeting the goal (Locke & Latham, 1990).

One study by Weldon et al. (1991) examined the concern for quality at the group goal level. Groups of three participants each were asked to build abstract structures using tinkertoys, styrofoam balls, popsicle sticks, aluminum foil, macaroni, popcorn, glue, scissors, a needle, and thread. Groups were randomly assigned to high and low goal treatment conditions. The concern for quality was measured by (a) discussion of quality among group members and (b) the number of adjustments per structure. The results showed the number of adjustments in the high goal condition reduced when difficult goals for quantity were assigned. However, only goals for quantity were analysed in this experiment. The number of misses was measured for a control.

Cooperation

According to Weldon and Weingart (1993), increased cooperation is also believed to play a role in the group goal effect. This effect is suggested by studies examining the impact of cooperative reward structures on group process and group performance. Results of these studies showed that cooperative reward structures motivated group members to work together to improve the group performance. It was inferred that group goals should produce similar results because group goals and cooperative reward structures create similar types of outcome interdependence. A cooperative reward structure ties individual rewards to the group's performance or links individual goals so that each individual meets his or her goals only when the goals of other group members are met (Kelley & Thibaut, 1969). A group goal creates the same type of interdependence because individual motives aroused by the presence of the goal can be satisfied only when the group performs well. In addition, the group goal links individual goals because each individual's satisfaction depends on group success. The resulting interdependence among group members created by a group goal is similar to that produced by a cooperative reward structure. Therefore, group goals and cooperative reward structures should have similar influences on group process and group performance (Weldon & Weingart, 1993).

Mitchell and Silver (1990) examined the effects of individual and group goals on cooperation of group members working for an interdependent task. Groups of three participants each were randomly assigned to individual goal, group goal, individual plus group goal, or no specific goal (do-your-best) conditions. A self-report item was used to assess feeling of cooperation. Results indicated that participants in the individual goal condition tended to be less cooperative than those in the other three conditions.

One more study by Weldon et al. (1991) has also tested the effect of goal level on cooperation of group members. In that study, cooperation was measured by counting offers to help and requests for help made by group members working toward high or low goal levels. The results showed no significant difference between high and low goal conditions. However, Weldon and Weingart (1993) argued that Weldon et al.'s test of the group goal effect on cooperation was deficient in two ways. First, a narrow operationalization of cooperation was used, and second, group members might help each other without talking about it. Therefore, they emphasize that additional research is required to test the role of cooperation in goal-directed groups.

A triangle basketball passing task was used in this study because a group goal can motivate group members to work harder at their interdependent assigned task, develop more efficient performance strategies, and promote cooperation among group members (Weldon & Weingart, 1988).

Goal Setting in Sport and Exercise

Individual Goals

Goal Setting Hypotheses

Despite a number of consistent findings from the organizational literature at the individual and group goal level, there is a lack of studies investigating the goal setting-performance relationship in sport and exercise settings. An important turning point, however, came with the publication of Locke and Latham's (1985) article on the application of goal setting to sport, which began a more systematic and concerted effort to study this relationship at the individual level.

Locke and Latham (1985) stated that "tasks performed in organizational and laboratory settings have much in common with sports activities, in that both involve mental and physical

actions directed toward some end" (p.206). They believed that goal setting would work equally well in the realm of sport. "In fact, we believe that goal setting could work even better in sports than in organizations since the measurement of an individual's performance - a precondition for the positive effects of goal setting - is typically easier in sports than it is in organizational settings" (p. 206). Based on the organizational literature, they suggested 10 specific hypotheses concerning how goals can work in sport settings:

1. Specific goals will regulate action more precisely than general goals.

2. For quantitative (specific) goals, the higher the goal the better the performance, assuming sufficient ability and commitment (see hypothesis 7).

3. Specific, difficult goals will lead to better performance than goals of "do your best" or no goals.

4. Using short-term goals plus long-term goals will lead to better performance than using long term goals alone.

5. Goals will affect performance by directing activity, mobilizing effort, increasing persistence, and motivating the search for appropriate task strategies.

6. Goal setting will be most effective, if not only effective, when there is feedback showing degree of progress in relation to the goal.

7. With goals that are difficult, the higher the degree of commitment the better the performance.

8. Commitment can be affected by asking the individual to accept the goal, showing support, allowing participation in the setting of the goal, training, selection, and incentives and rewards.

9. Goal attainment will be facilitated by a suitable plan of action or strategy, especially when the task is complex or long-term.

10. Competition will improve performance to the degree that it leads to the setting of higher goals and/or increases in goal commitment.

Goal Specificity and Goal Difficulty

A review of the literature indicates that sport psychology researchers have predominantly focused on the hypotheses in the areas of goal specificity and goal difficulty. A few of the studies have found a positive effect of specific, difficult goals on sport performance. Barnett and Stanicek (1979) investigated the relationship of specific participative goal setting to achievement in archery over a scheduled 10 week instructional period. The subjects, who were students in beginning archery classes, were randomly assigned to either a group conference with goal setting condition or a group conference only condition. Subjects in the group conference with goal setting condition were instructed to set and record individual verbal and numerical goals at the end of each weekly 10 minute conference period, using a printed goal setting sheet. The subjects in both conditions met twice a week for archery instruction and once a week for a 10 minute conference with the instructor. Subjects were tested shooting from a distance of 20 yards, and the tests were taken during the first, sixth, and tenth week of instruction.

The subjects in the goal setting condition had significantly higher archery scores than the subjects participating in the non-goal setting condition. The results support the conclusion that specific participative goal setting can be effective in promoting archery performance improvement.

Hall and Byrne (1988) found support for the goal specificity hypothesis using a 3-minute sit-up task. Specifically, on all three experimental trials the two groups with either experimenter-set

or subject-set subgoals differed significantly from the control group assigned do-best goals. By the third trial, those subjects assigned long-term goals improved performance to a level that approached significance over those in the control group. The result of post experimental questionnaires indicated that the group assigned experimenter-set subgoals would have tried much harder than the long-term goal group had they been assigned harder goals.

Finally, in one of the few laboratory studies, Hall, Weinberg, and Jackson (1987) examined goal specificity and endurance performance using a hand dynamometer endurance task and found that both specific, hard goal groups exhibited significantly more improvement than the "do your best" group. Other studies also provided support that subjects who set specific, difficult goals perform better than the subjects who set general goals (Boyce, 1990; Tenenbaum, Pinchas, Elbaz, Bar-Eli, & Weinberg, 1991; Weingerg, Bruya, Longino, & Jackson, 1988).

Conversely, there are a growing number of studies that have brought into question these findings, reporting no significant differences between subjects assigned specific difficult goals and those instructed to do their best. Weinberg, Bryan, and Jackson (1985) examined the difference in performance between subjects with specific difficult goals and "do your best" goals and the importance of goal proximity on the performance of the 3-minute sit-up test. Two experiments were conducted with subjects matched on ability and then randomly assigned to one of the following conditions: (a) short-term goals, (b) long-term goals, (c) short-term plus long-term goals, and (d) "do your best" goals. Performance results from both experiments revealed no significant between-group differences throughout the 5-week experimental period.

Another study by Weinberg, Bruya, Garland, and Jackson (1990) using a 3-minute sit-up and a hand dynamometer tested the effect of goal difficulty on endurance performance in laboratory

and field settings. In experiment 1, subjects were matched based on the results of five weeks of performing the 3-minute sit-up test and then randomly assigned to one of the following four experimental conditions and two no treatment conditions including a do-your-best goal condition and a control condition. Participants practised the sit-ups on Mondays and Wednesdays throughout the 15-session, five-week (trials) study. Results indicated no significant main or interaction effects for the goal setting conditions.

In experiment 2, subjects were required to squeeze a hand dynamometer for as long as they could. They were randomly assigned to one of four goal conditions: (a) moderately difficult goals, 40-second improvement; (b) difficult goals, 80-second improvement; (c) unrealistic goals, 160-second improvement, or (d) do-your-best goals. Subjects were asked to perform the three trials. Results again indicated no significant between-subjects main effects or interactions.

A further study (Bar-Eli, Levy-Kolker, Tenenbaum, & Weinberg, 1993) examined the effect of goal difficulty on performance of aerobic, anaerobic, and power tasks in both laboratory and field settings. Male subjects performed the tasks of hill run, horizontal bar, parallel bars, rope-climbing, 3000m run, an obstacle course, and dynamometer grip, whereas female subjects performed the tasks of hill run, rope-hanging, situps, 2000m run, an obstacle course, and dynamometer grip. All subjects were given pre and post questionnaires assessing goal acceptance, goal commitment, effort, and goal difficulty. Subjects were matched on baseline performance and randomly assigned into four experimental groups ("easy", "moderate", "hard" and "very hard" goal difficulty levels), and two control groups ("do" and "do your best" conditions). Results revealed that performance scores on all physical tasks did not vary among all experimental conditions and controls. Other studies also found no significant difference between hard goals and easy goals, or

no goals (Barnett, 1977; Garland,Weinberg, Bruya, & Jackson, 1988; Miller & McAuley, 1987; Weinberg, Bruya, Jackson, & Garland, 1987).

In summary, the effects of goal specificity on performance have been equivocal with only some of the studies supporting Locke and Latham's proposal that specific hard goals would produce higher levels of performance than no goals or "do your best goals."

Difficult but Attainable Goals

Latham and Locke (1985) also suggested that performers be encouraged to strive for goals that are difficult but attainable. Furthermore, Locke also argued that unrealistic goals should be avoided because if goals are so difficult that they result in continuing failure, motivation will drop and subsequent performance will deteriorate. This goal attainability assumption has had an influence on physical educators and coaches to set realistic performance goals in sport and exercise settings.

The goal attainability assumption was tested by Weinberg et al. (1987) in two separate studies in a physical activity setting. Two experiments were conducted to test if unrealistically high goals will produce performance decrements. In experiment 1, subjects were randomly assigned to an easy (improve by 15), moderate (improve by 30), or extremely hard (improve by 45) goal condition, performing sit-ups over a five-week period. Results indicated no significant performance difference between the goal conditions. In experiment 2, subjects were randomly assigned to an extremely hard (improve by 45), highly improbable (improve by 60), or a do-your-best goal condition, performing the same task as experiment 1. Results again produced no significant performance difference between the goal groups.

Similarly, Weinberg, Fowler, Jackson, Bagnall and Bruya (1991) using sit-ups with children

in one experiment and basketball-shooting with college students in another determined if setting unrealistic goals would produce any significant decreases in motivation and performance. Subjects were matched on baseline assessments and randomly assigned to one of several goal-setting conditions from goals that were easy to those that were unrealistic and virtually impossible. A do-your-best control condition was employed in each experiment. Results from both experiments revealed no significant between-group differences for either the sit-up task or the 3-minute shooting task. Questionnaire results indicated that subjects accepted their goals and tried hard to reach them. Although subjects placed in unrealistic-goal conditions did perceive their goal as being more difficult, this did not produce any decrements in their motivation.

Finally, a recent study by Anshel, Weinberg, and Jackson (1992) examined if intrinsic motivation could be undermined if subjects were required to meet a difficult goal, especially when performing a relatively complex motor task. Subjects, learning a motor task they found enjoyable, juggling two (easy task) or three items (difficult task), were placed in either an easy goal (50% better than their previous best score), difficult goals (100% better), own goals, or no goal (control) condition. The number of successful catches, judge's ratings (performance), and the Mayo Task Reaction Questionnaire, a measure of intrinsic motivation served as the dependent variables. The results revealed that the difficult goal condition actually increased intrinsic motivation and did not inhibit performing both easy and more complex juggling skills. Conversely, easy goals decreased intrinsic motivation. In addition, performance improved significantly across trial blocks under all goal conditions. The findings of these studies are inconsistent with the industrial/organizational settings in which performance did not increase as goal difficulty increased. In addition, there was no support for the notion that performance would decrease if goals were unrealistic.

Weinberg (1994) argued that these inconsistent findings might be attributed to the different methodologies employed in goal setting studies or to specific methodological and design limitations along with potential mediating variables. As noted by Locke (1991) one of the recurring problems of goal setting research in sport and exercise is that subjects in the control "do your best" conditions may set specific goals for themselves. He has argued that one of the reasons is that when subjects are given feedback about their past performance, they may use it to set specific goals unless they are specifically prevented from doing so. This problem can be alleviated through the use of two methodological refinements by sport psychology researchers. The first would be to withhold the feedback that is given to subjects in the control group. The second refinement would be to give feedback based on periods of varying lengths, but whose lengths are not revealed to the subjects, so that they cannot calculate their average rate (Locke, 1994). "Thus the first rule of good procedure in goal-setting research is to make sure that do-your-best subjects do not set specific goals" (Locke, 1991, p. 312).

Locke (1991) noted that another major flaw which occurred in sport psychology research is measurement of personal goals. Although people in laboratory settings work toward the goals assigned to them (Locke & Latham, 1990), this is by no means always the case. Thus, to know how a person will perform, it is imperative to know what personal goal each person sets in response to the goal that was assigned. Goal theory (Locke & Latham, 1990) asserts that assigned goals affect performance through their effects on personal goals. Even knowing that a person is not committed to an assigned goal is not very helpful unless one knows what goal was substituted for the assigned one. "Thus the second rule of good procedure is measure personal goals" (Locke, 1991, p. 313).

The third major flaw noted by Locke (1991) is making specific goals difficult. Goal theory

does not claim that specific goals, as such, lead to better performance than do do-your-best goals. The specific goals must also be difficult. Specific goals that are easy actually lead to lower performance than do do-you-best goals (Locke & Latham, 1990); moderate goals usually lead to the same level of performance as do do-your-best goals. "Thus, the third rule of good procedure is make sure that specific goals are actually difficult (e.g., so that no more than 10% of the subjects can reach them)" (Locke, 1991, p. 314).

In order to avoid these potential problems, easy and hard goal conditions were employed in this experiment. According to the literature review of goal setting, participants in the hard goal condition perform better than those in the easy, or "do-your-best" goal conditions. Therefore, only the easy goal condition was used as a control in this study. Furthermore, personal goals were not measured in the experiment. Finally, the researcher assigned the group goal to each group based on the results of the pilot study. The group goals were specific and difficult.

Group goals

Although the findings of studies on the relationship between goal and performance at the individual level are equivocal, more systematic research is being conducted. However, we still know little about the effect of goal setting on the performance at the group level in the sport domain. A couple of studies have begun to focus on the nature of group goals and some group goal-related variables.

One study by Brawley and Carron (1992) examined the nature of group goals in intact sport teams. Athletes from college and community teams were asked to list up to five team goals for practice and competitive situations. Content analyses showed that the overwhelming majority were general (>70%) rather than specific in nature. For practice situations, process goals predominated

(89.9%), but for competitions, a balance existed between outcome (53.1%) and process (46.9%) goals. Further analyses of the practice goals showed that 66.1% related to skill/strategy, 29.3% to effort, and 4.6% to fitness. For the competition goals, 43.5% related to skill/strategy, 15.0% to effort, and 41.5% to outcomes.

They discussed the results and pointed out that although one fundamental principle emanating from the goal setting literature summarized by Locke et al. (1981) is that specific, difficult goals are superior to general goals; the overwhelming majority of the team goals for practices and competitions listed by the athletes in the present study were general in nature.

Therefore, it is very necessary for sport psychology researchers to investigate if group members who are assigned specific, difficult group goals perform better than group members who are assigned easy group goals and how group goal difficulty influences mediating processes which affect group performance.

Current Experiment

The experiment reported here investigated the hypothesized effects of group goal commitment, and group goal difficulty on group performance. It also investigated two group goal mechanisms when a group goal was assigned for a moderately simple triangle basketball passing task. Group members had some basic skills with the task before the goal was assigned. This experiment was not a complete test of Weldon and Weingart's (1993) model because the moderating effects of task complexity, and work flow interdependence on these processes and the impact of planning, concern for aspects of performance unrelated to the goal, and morale-building communication on the group performance were not tested.

Hypothesis

It was hypothesized that:

1. Group members in the hard goal condition would perform better than those in the easy goal condition.
2. Group members in the hard goal condition would be more committed to the assigned group goals than those in the easy goal condition.
3. Group members in the hard goal condition would exert more effort than those in the easy goal condition.
4. Group members in the hard goal condition would be more cooperative than those in the easy goal condition.

METHODOLOGY

Pilot Study Experiment

The pilot study was designed to evaluate the appropriateness of the task chosen for the main experiment. The task selected was a triangle basketball passing drill. The selection of this task was based on the following considerations: (a) to explore the effect of group goal setting on group performance in sport, a cooperation task was required because it was necessary to evaluate if a group goal could create the outcome interdependence among group members (Weldon & Weingart, 1993), (b) the task chosen was a simple rather than a complex one because the direct relationship between goals and performance should be higher on simple than on complex tasks (Locke & Latham, 1990), and (c) it was necessary that the participants could improve at the task in order to examine the effects of group goals on group performance. After selecting the task, it was necessary to examine the improvement trend of performance and determine goal assignment levels to be used in the main experiment.

Method

Participants

The participants for the pilot experiment were 15 volunteer male high school students who were in grade nine or grade ten. They had a basic skill level for passing a basketball, but they were unfamiliar with this specific task. They were randomly assigned to one of five groups of three people each. They were then asked to perform four trials of a 2-minute triangle basketball passing task.

Task

The triangle basketball passing task was standardized as much as possible. Each member of the group was required to stand on the apex of a triangular pattern on the gymnasium floor. Group members were required to pass a basketball in turn to each other in the triangular pattern in either direction. Any member of the group could start the passing sequence which continued for two minutes. Participants were not allowed to move their back foot from the hoop at the apex of the triangular pattern on the floor while they were performing the task (see Figure 2). An extra basketball was placed on the floor by each participant. If any member of the group did not catch the ball, he picked up the ball beside his feet and continued to perform the task. Two research assistants were needed for the experiment. The first research assistant replaced any basketball picked up due to a miss to ensure that participants had spare basketballs by their feet at all times. This same research assistant chased and retrieved stray basketballs. The second research assistant kept the group score of passes completed as well as the number of passes not completed. The group was told to maximize their score of passes made in two minutes in the triangular pattern while not missing the ball. Missing means a group member dropped the basketball on the floor or his foot left the hoop. Participants were told that they could use the snap, baseball, two-hand overhead, or any other kind of pass. However, they were required to pass the basketball in turn (Figure 2). Three passes were considered one score in the triangle passing task. There was no penalty for incomplete passes in order to emphasize on speed. Each research assistant was briefed explicitly on scoring the task (see Appendix A).

The triangular pattern was the same for all groups. Three hoops were placed on the apex of the triangular pattern. The length of each side in a triangular pattern was 15 feet from the edge of a

hoop to the edge of another hoop. The triangular pattern was lined on the floor of the gymnasium before the experiment started.

Participants were reminded before each trial "be careful, try not to miss the basketball and keep your back foot in the hoop all the time", however, reinforcement and/or encouragement was not provided during the testing period. No indication of time was given to the group, except when to start and when to finish. Also, research assistants were told not to count out loud and not to reveal the score of passes to any of the participants during the testing period. All groups were timed, using a hand held stopwatch, for two minutes while performing the basketball passing task (see Figure 2).

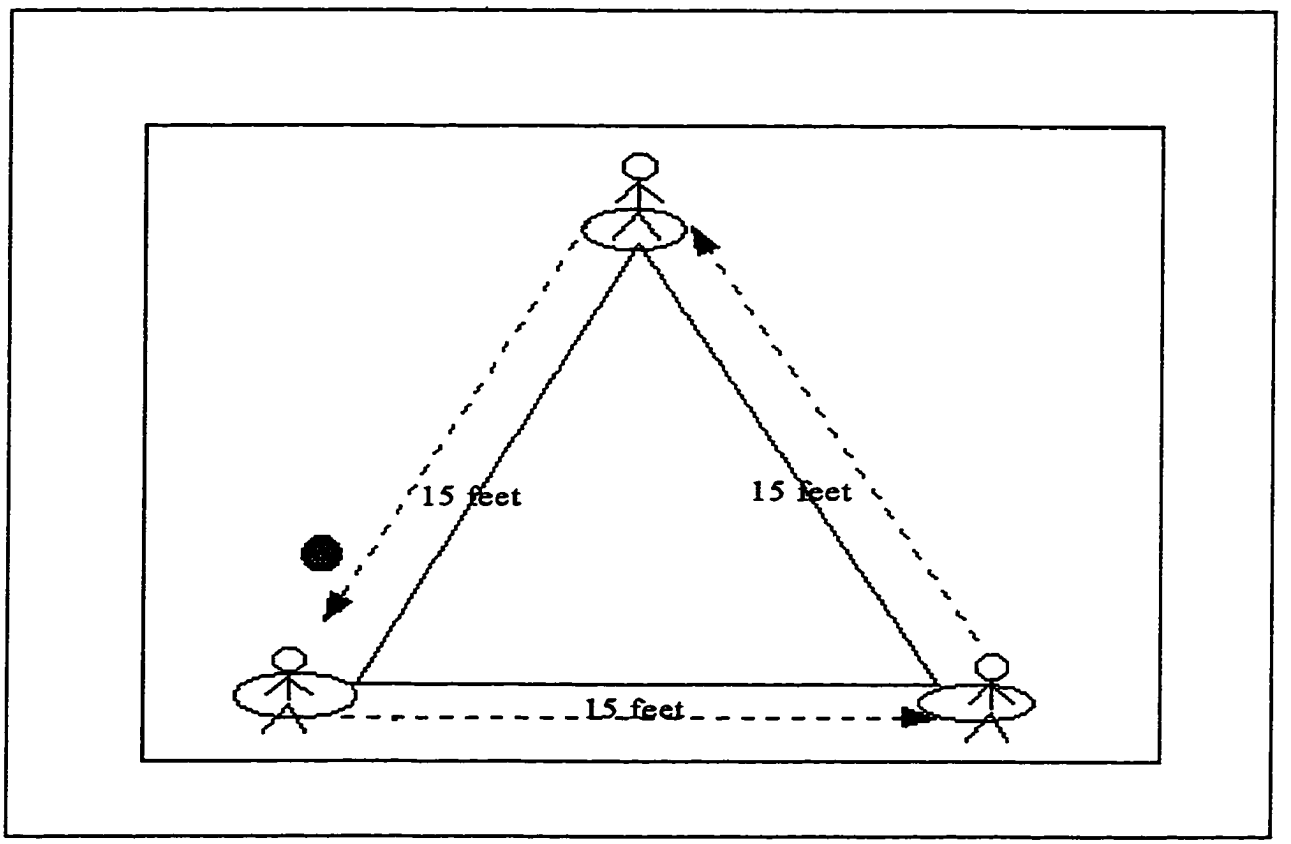


Figure 2. Triangle basketball passing task

Instruments and Measures

A performance assessment measure was used to determine group passing ability, explained in detail in the next section. A questionnaire was developed to determine member perception of goal difficulty. Each member of the group was asked how difficult he felt it would be for three selected group goal levels based on their baseline performance. Each member of the group was also asked to set a group goal based on their first trial, without discussion with the group members, and to indicate the perceived degree of difficulty of the self-set group goal (see Appendix B). The questionnaire measure was used to decide the assigned group goal levels for the main experiment.

Performance measures. The dependent measure obtained from the performance assessment measure was the passing score. The number of misses was also recorded for the performance assessment.

Self-report measures. The dependent measure obtained from the questionnaire was individual perceived difficulty to achieve each of three selected group goal levels. Measurement was also obtained for the self-set group goal level on passing as well as on individual difficulty of the self-set group goal level.

Procedure

Immediately before starting the practice, the procedures of the task were described to the participants at the gymnasium and each group, upon arriving at the gymnasium, was assigned two research assistants. Each group was provided the opportunity to practise until all members of the group understood how to do the task. The practice time was controlled to a maximum of two minutes for each group. Without a break, each group was then tested for the first trial on the triangle basketball passing task. Following the first trial, participants were given a 3-minute rest

during which time the members of the group could practise the task for the next trial or communicate with each other on how to perform better. The instruction given to each group immediately before the second trial was "how many triangular passes can your group do in two minutes?" They were not required to answer this question. The experimenter told the group to "start" and timed the two minutes. At the end of the two minutes, the experimenter told the group to "stop" and their score was recorded privately by the research assistant. This procedure was then repeated for all groups from trial two to trial four. After participants had finished all four trials, they were shown their results and asked to set the group goal and then respond to the questionnaire which was described previously in the dependent measures section.

The groups performed the 2-minute triangle basketball passing task with only the research assistants and experimenter present to avoid any possible influences due to spectators or other participants. Groups were placed in a different position in the gymnasium to avoid any direct observation. The total time required for the pilot experiment was approximately 70 minutes. Three groups were tested first, and then the other two.

Results

The following information was determined from the pilot study:

1. The performance results across four trials to determine the improvement trend.

2. The individual's perceptions of goal difficulty for three selected group goal levels for performance measure.

3. The self-set group goal and perceived difficulty of that goal.

Performance Trends

The average performance score for five groups improved between the first and the last three trials. The first trial was considered a baseline assessment, and performance measures were subsequently examined across the last three trials. The score of passes improved from 53.2 at the second trial to 58.6 at the fourth trial with an average of 55.9 for the three trials (see Figure 3). As anticipated, the number of passes not completed also increased with the trials. The number of passes not completed increased from 0.62 to 1.2 with an average 1.01 for three trials (see Figure 4).

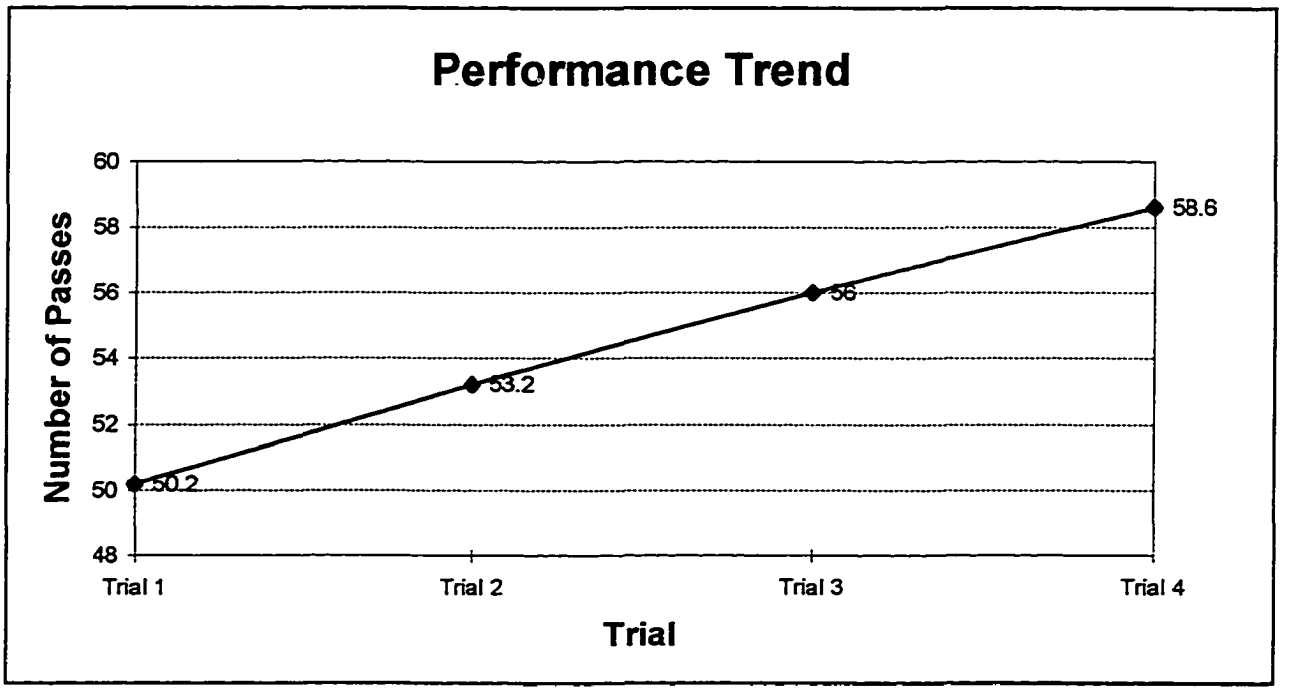


Figure 3. The score of basketball passes completed for pilot study

Perception of Difficulty

The individual's perception of goal difficulty was assessed at three selected group goal levels for the task using a 9-point Likert Scale. The three goal levels selected for the scores of

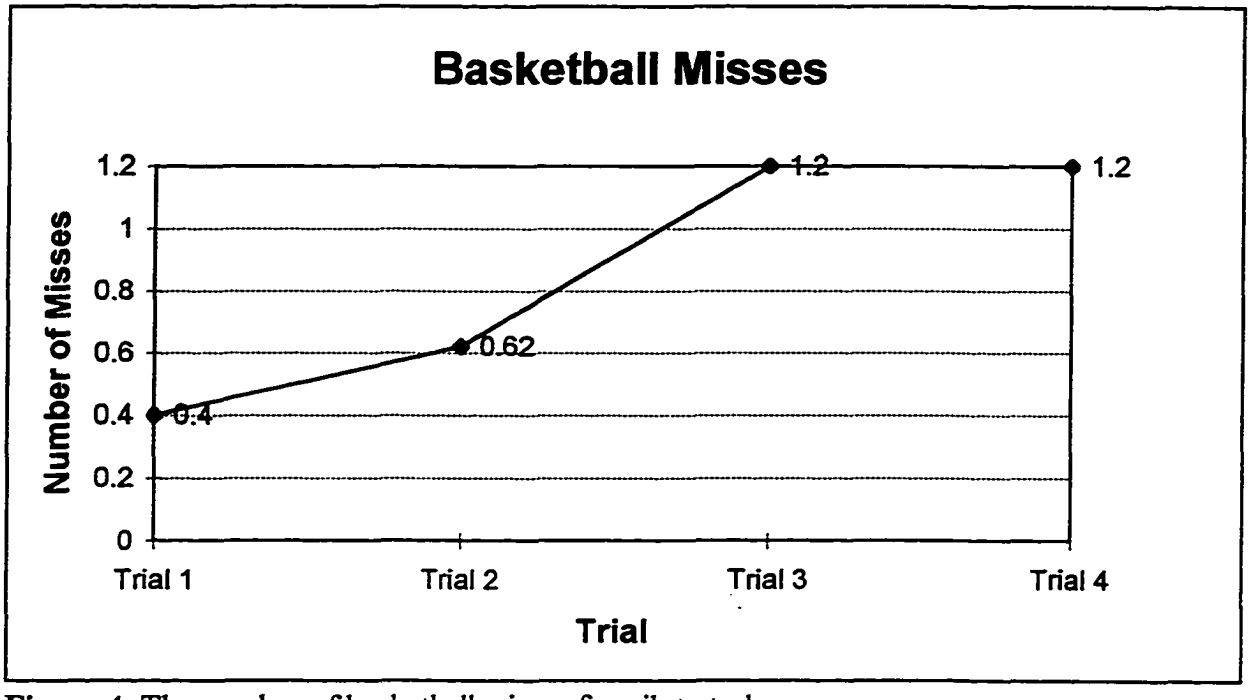


Figure 4. The number of basketball misses for pilot study

passes completed were +2, +5, and +8 above baseline measure. After the individual responded to the difficulty for each level, he was then asked to set group goals for the group. Finally, the individual was required to rank the difficulty of his self-set group goal. The score of difficulty ranking for three selected group goal levels and the self-set group goal level are illustrated in Figure 5. The relationship between goal levels and goal difficulty ratings displayed was subsequently used to determine appropriate goal assignment levels for the main experiment.

The individual's perceptions of goal difficulty for three selected group goal levels and his self-set group goal level were obtained from four questions with responses in a 9-point Likert scale format. The mean score of the self-selected group goals was 5 ± .58 with a range of scores from 4 to 6.

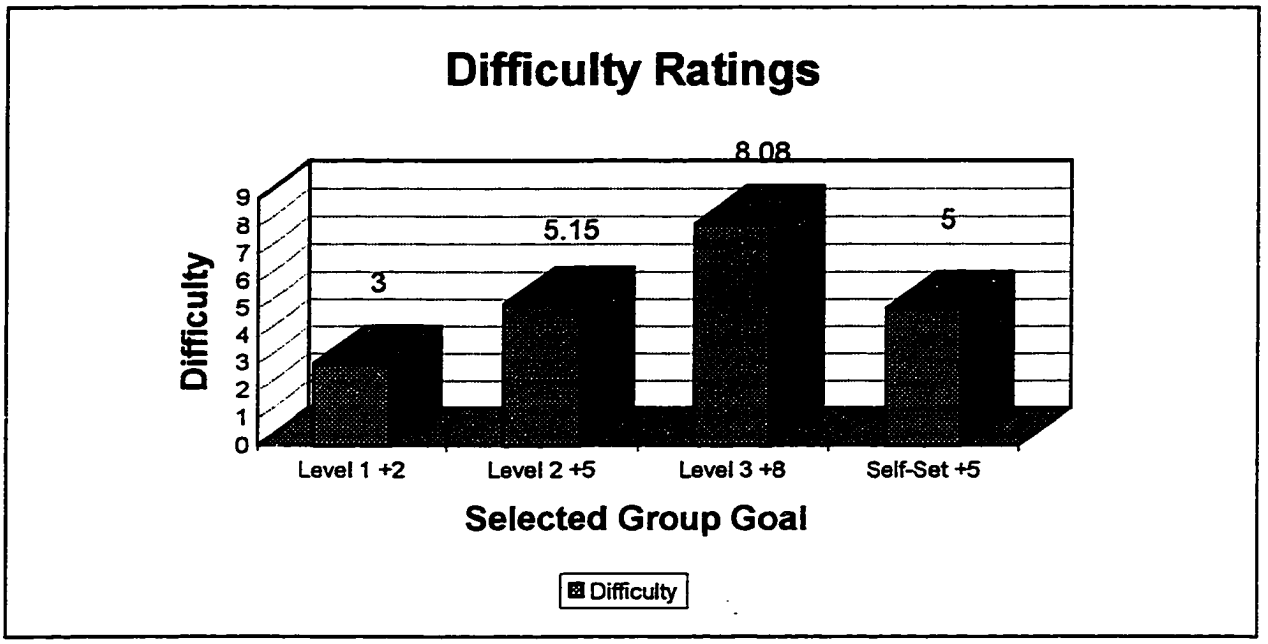


Figure 5. Difficulty ratings for each selected group goal and self-set group goal

Discussion

The pilot study was necessary to ensure that (a) the task could be learned quickly and easily and that improvement occurred progressively after the initial learning phase and (b) appropriate goal levels for the main investigation could be established.

Performance Measure

Only two minutes of practice were allowed. It was not difficult for the participants to learn how to perform the drill. As participants improved performance between the first and the last three trials, the practice was considered adequate for participants to learn the mechanics of the task. The performance results for four trials, which were previously illustrated in Figure 3, indicated a steady improvement. Therefore, it was concluded that the task was easily learned and that improvement would gradually occur with four trials.

Goal Assignment Levels

Group goal levels appropriate to conditions for the main investigation were determined from the pilot study. Easy and hard goal conditions were included in the main experiment according to earlier goal setting studies. A few additional factors were considered in determining the goal assignment levels. First, participants in the pilot study reported their perceived difficulty for each of three selected group goal levels. Second, participants self-selected a group goal level and rated the difficulty of the self-set group goal level (see Figure 5).

According to Farrell (1991), the difficulty ratings from the selected goal levels and the self-set goal should be assessed in relation to the actual performance in order to establish easy and hard group goals within a range that has meaning to the participants. For the self-set group goal level, the difficulty ranking approximated just below 5, the midpoint of the scale. Therefore, the easy group goal for the main study should approximate a less than average difficulty ranking and conversely, the hard goals should approximate a greater than average difficulty ranking relative to the group's performance. Farrell (1991) also pointed out that "the easy goals assigned should be greater than the actual performance level so that some indication of improvement was necessary, even if it was minimal"(p. 77). It was defined that any goal should be in excess of the participants current ability level. Otherwise, if the member of the group has already achieved the group goal, its motivation properties naturally would not be great. Finally, as the self-set group goal level approximated an average level of difficulty rating, the easy group goal should be less than and the hard group goal greater than the self-set group goal level. With these parameters in mind, easy and hard group goal levels for the main study were determined based on the average results obtained from the pilot experiment. These group goal levels are presented in Table 1.

Table 1
Group goal level increased to be used in the main study.

Goal Level	Score of Passes increased
Easy Group Goal	+3
Hard Group Goal	+7

In relation to the difficulty level reported, the hard group goal level simulates a difficulty rating of approximately 7.5 and the easy group goal level approximately 4.0. These group goal levels, as compared to the difficulty ratings previously discussed, are illustrated in Figure 5.

Main Experiment

There were several purposes in the present investigation. First, the experiment was designed to examine group goal setting related to a simple interdependent task. Second, it was designed to investigate the effects of group goal difficulty and goal commitment on group performance across a pre/post test. Finally, the purpose of this investigation was to explore two mediating processes that affect group performance across a pre/post test. The mediating variables which were examined in this investigation were effort and cooperation.

Method

Participants and Design

The sample for this investigation consisted of 72 male volunteer high school students from physical education classes of five Thunder Bay high schools. They were randomly assigned to one of 24 groups of three people each. Each group of three participants was asked to perform a 2-minute triangle basketball passing task to establish a baseline test. The groups were then ranked

according to their score of passes at the baseline test and separated into two different goal conditions: easy goals or hard goals, using a match-paired method. The following week, each group was asked to perform a posttest. The design was a 2 (goal conditions) x 2 (pre/posttest) mixed factorial with repeated measures on the last factor.

Task

A triangle basketball passing task was used. The mechanics of the task were examined and described in the pilot experiment (see Figure 2).

Instruments and Measures

Performance measures were recorded by the research assistant assigned to each group. Questionnaires were completed at each of the two sessions to obtain self-report measures on individual perceived task difficulty, goal difficulty, goal commitment, and mediating variables using a 7-point Likert scale ranging from strongly disagree to strongly agree (see Table 2). The pretest questionnaires were completed at the end of session 1 (part1) and the beginning of session 2 (part 2). The posttest questionnaire was completed at the end of session 2.

Table 2.
An outline of the procedure for main experiment

Session 1	Session 2
• warm up • familiarize students with procedures • practice • a baseline test • pretest questionnaire (part 1) effort and cooperation task difficulty • set up treatment conditions	• warm up • assign group goals • pretest questionnaire (part 2) goal commitment goal difficulty • posttest • posttest questionnaire (part 3) effort and cooperation goal commitment task difficulty goal difficulty

Performance. The dependent measure obtained from the performance assessment measure was the passing score. The number of misses was also recorded for the performance assessment. This measure was identical to the performance measure used in the pilot experiment.

Task difficulty. The task difficulty measure was obtained from the questionnaire. Participants responded to one item regarding their perceived difficulty of performing the passing task. The question was asked using a 7-point Likert scale following the pretest and posttest performance (see Appendix D).

Goal difficulty. The goal difficulty measure was also obtained from the questionnaire. Participants responded to one item regarding their perceived difficulty toward achieving their group goal assignment. The question was asked using a 7-point Likert scale following the assigned group goals and following the posttest performance (see Appendix D).

Goal commitment. Goal commitment was measured through the questionnaire using a 7-point Likert scale. Participants responded to four items for goal commitment (Weingart & Weldon, 1991). The questions were asked following the assigned group goals and following the posttest performance (see Appendix D).

Mediating variable measures. Dependent measures to evaluate the mediating variables of effort and cooperation were evaluated through the questionnaire following the pretest and posttest performance (see Appendix D). Participants responded to four items for effort (Weingart & Weldon, 1991) and two items for cooperation using a 7-point Likert scale. As group goals were not assigned to each group at the end of the pretest performance, the last two items of effort asked group members how hard they had worked to help the group perform well after the pretest instead of achieving their group's goal and contributing to goal attainment after the posttest.

Mean ratings for each variable were determined for each group member and each session. A mean was then determined across group members to produce a group score for each variable and each session.

Procedure

In session 1, the investigation was described, and informed consent was obtained from participants. Upon arriving, participants were given a 5-minute warm-up period before being randomly assigned to groups of three people each. Each group was assigned two research assistants whose responsibilities were identical to the pilot experiment. After finishing the warm-up activity, the participants were given instructions regarding the mechanics of the task. The group was then instructed to complete a 2-minute practice trial. They were told that this practice was strictly a practice to help them learn the mechanics of performing the task. This practice was necessary to ensure that all participants understood the mechanics of the task. Following the practice, a baseline test was conducted to measure the group ability to perform the task. The performance measure used in the main experiment was identical to the baseline test as described in the pilot study. Participants were asked to respond to Part 1 of the questionnaire after they finished performing the task. This procedure was repeated for all groups. The data of session 1 for all the groups were collected in one week. The total time of session 1 for each group was approximately 15 minutes.

After the baseline measure was established, the groups were then placed in rank order based on the passing score and matched to equalize skill level across the two treatment conditions. The group goal levels that were assigned were determined from the pilot experiment (see Table 1).

The following week, prior to the posttest measure, all groups were given a 5-minute warm

up period. Participants were then assigned their specific group goals based upon baseline performance and asked to complete Part 2 of the questionnaire. After completing the questionnaire, groups performed a posttest performance which was a repeat of the pretest performance. This was followed by Part 3 of the questionnaire. The instruction given to each group immediately before the posttest performance was "you have to reach your group goal" to emphasize the nature of assigned goals. This procedure was repeated for all groups and the data of the posttest for all the groups were collected one week after session 1. The total time of session 2 for each group was approximately 15 minutes. The procedure for both sessions is outlined in Table 2.

Data Analysis

Main means and standard deviations of dependent variables for each goal condition and each test were computed. Since the match-paired method does not ensure equal means, the independent T-test was computed to determine if significant differences existed on the pretest scores between the easy goal and hard goal conditions.

A 2 (goal conditions) x 2 (pre/posttest) factorial ANOVA with repeated measures on the last factor was computed to determine if any significant main effects existed on dependent variables for goal condition and time and if any significant interaction effects existed for goal condition by time.

Results

Manipulation Checks

Task difficulty. Participants were asked to indicate their perceived degree of difficulty of performing the task immediately following the pretest and posttest. This question was asked so that it would be possible to assess whether the task chosen was easy to perform for both sessions. A 2

(goal conditions) x 2 (pre/posttest) factorial ANOVA was used to analyse the results of task difficulty measure. There was no significant main effect for goal condition or interaction effect for goal condition by time. A significant main effect was observed for time ($F(1,21) = 14.57$, $p < .01$). It was a interest to note that participants perceived the task harder to perform after the posttest performance. It is possible that assigned group goals influenced their feeling of task difficulty. Although significant, it should be noted that the task difficulty level was lower than the midpoint of the scale for both the pretest ($M = 1.61$) and posttest ($M = 2.13$). Therefore, we can conclude that the task chosen was considered easy to perform for both sessions (see Table 3).

Table 3
Summary of statistics for dependent variable measures across pretest and posttest

Variables			Pretest		Posttest	
	F		M	SD	M	SD
Performance	81.29	***	42.25	4.54	46.35	4.22
Number of Misses	.37		1.29	1.27	1.67	2.82
Task difficulty	14.57	**	1.61	1.01	2.13	.89
Goal difficulty	7.85	*	2.81	1.36	3.70	1.61
Goal commitment	.71		6.33	.51	6.29	.58
Effort	4.10		6.15	.61	6.38	.53
Cooperation	.01		6.54	.48	6.54	.69

Note 1. *p < .05, **p < .01, ***P < .001
Note 2. df =1, 21

Goal difficulty. A 2 (goal conditions) x 2 (pre/posttest) factorial ANOVA was also used to analyse the individual perceived difficulty to achieve the group goals. Results indicated that there was a significant main effect for goal condition ($F(1,21) = 7.98$, $p < .05$) and for time ($F(1, 21) = 7.85$, $p < .05$). There was no interaction effect of goal condition by time on goal difficulty. As can be seen from Figure 6, the hard goals group consistently indicated that their group goals were more

difficult than indicated by the easy goals group. It is also clear that groups in both goal conditions reported more difficulty after the posttest performance. However, the absolute level of means (M = 4.41) in the hard goal condition on posttest is little above midpoint of scale and suggests that the hard group goals might be a little easy to achieve (see Table 3, 4).

Table 4
Summary of statistics for dependent variable measures between goal conditions.

Variable		Easy goal		Hard goal	
	F	M	SD	M	SD
Performance	.05	43.79	4.14	44.54	4.56
Number of misses	1.17	1.13	1.17	1.83	1.95
Task difficulty	1.11	1.89	1.03	1.96	.86
Goal difficulty	7.98 *	2.56	1.04	3.89	1.20
Goal commitment	.09	6.28	.56	6.34	.52
Effort	.03	6.20	.46	6.30	.60
Cooperation	.44	6.48	.48	6.61	.57

Note 1. *p <.05
Note 2. df = 1, 21

Performance

An independent T-test on the pretest scores between the easy goal and hard goal conditions revealed no significance at p = .05 level, thereby, suggesting that the match-paired method was effective in producing equal group conditions.

The results from a 2 (goal conditions) x 2 (pre/posttest) analysis of variance for the performance measure revealed a significant main effect for time ($F(1, 21) = 81.29$, $p < .001$). A significant interaction effect of goal condition by time was also found ($F(1, 21) = 4.77$, $p < .05$). The post hoc analysis (Tukey's Test) for each goal condition across time showed that the easy and

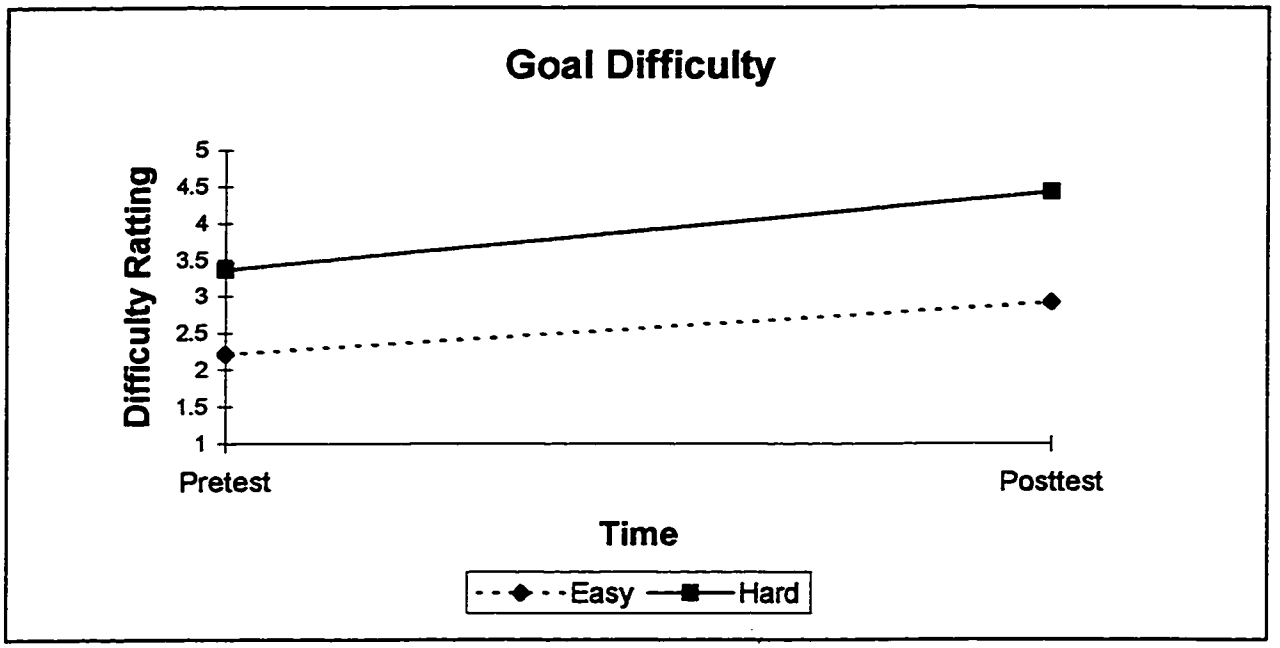


Figure 6. Goal difficulty across time

hard goal groups improved significantly from pretest to posttest, $p < .01$. In addition, concerning differences between goal setting conditions at each time, the Tukey's Test revealed no significant differences on pretest. However, on posttest the hard goal groups were significantly better than the easy goal groups, $p < .05$. As can be seen from Figure 7, the mean improvement for the easy goal condition ($M = 3.22$) was considerably less than for the hard goal condition ($M = 4.92$).

Results from a 2 (goal conditions) x 2 (pre/posttest) factorial ANOVA analysis indicated that there were no significant main effects for goal condition and time on the number of misses. The interaction effect for goal condition by time did not approach significance.

In addition to testing for significance, the relation of actual posttest performance to the assigned group goals should be considered. It should be noted that three hard goal groups (25%) met their group goals and eight easy goal groups (73%) reached their group goals (see Appendix E). This finding also suggests that assigned group goals for the hard goal condition were not as

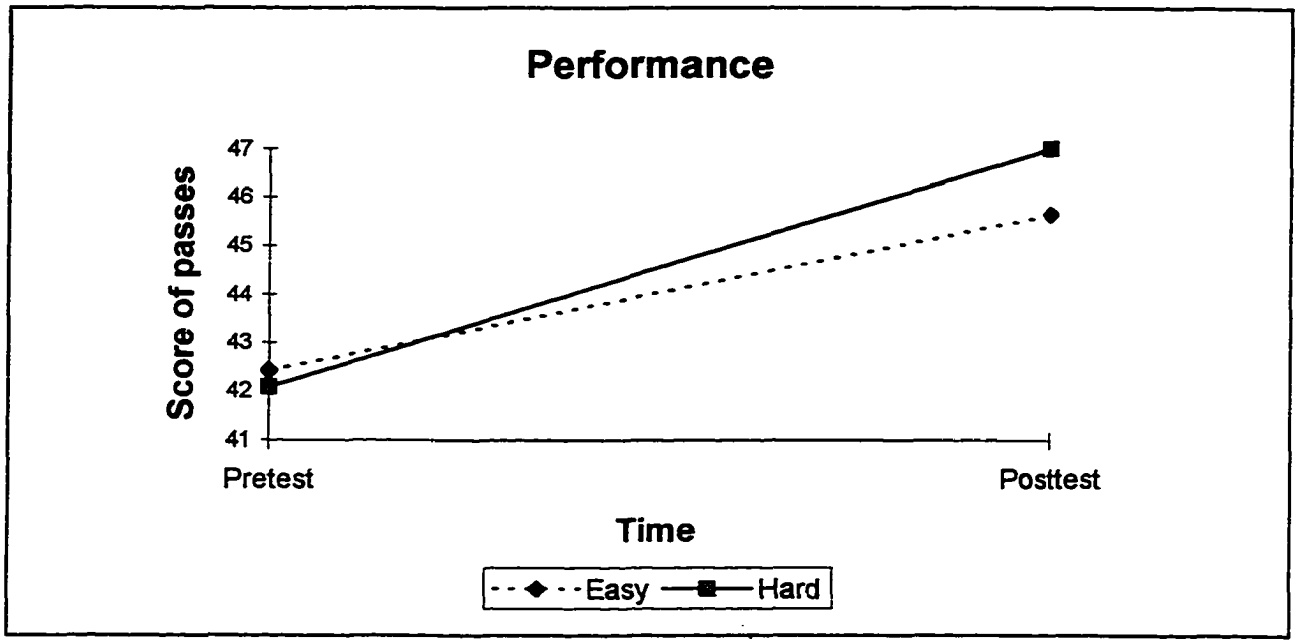


Figure 7. Performance across time

difficult as predicted, since Locke has suggested that goal difficulty level should be a 10% chance of goal attainment.

Goal Commitment

A 2 (goal conditions) x 2 (pre/posttest) factorial ANOVA was used to analyse goal condition and time for differences in goal commitment. No main effects or interaction effect were observed for goal condition and time. However, participants in both goal conditions reported relatively high goal commitment ($M = 6.31$).

Mediating Variable Measures

Effort. A 2 (goal conditions) x 2 (pre/posttest) factorial ANOVA was conducted to analyse goal condition and time for differences in effort. Results indicated that there were no significant main effects for goal condition and time. Though not significant, the main effect for time was approaching significance at $p = .056$. No interaction effect was observed for effort (see Table 3).

Cooperation. Results for the cooperation of group members showed that there were no significant main effects for goal condition and time. The interaction effect for group goal condition by time did not reach significance.

Discussion

Performance

As predicted in the hypothesis, the results from the present experiment support the findings from the industrial psychology literature that group members in a hard goal condition perform better than group members in a easy goal condition (Locke & Latham, 1990). Although previous studies have shown that group members with hard goals worked better in the industrial and organizational settings (Pritchard et al., 1988; Mitchell & Silver, 1990), this study was one of a few studies to test this hypothesis at the group level in the sport and motor domain. Furthermore, the significant main effect across time for performance indicated that all groups in both goal conditions significantly improved their performance (see Figure 7). The results were expected because easy goal groups were used as a control for this experiment.

In response to such findings a number of observations require further discussion. First, the actual performance results of groups in relation to the assigned group goals should be noted. The posttest goal for hard goal groups was to increase their pretest score by +7. Although all groups improved on their posttest score compared to their pretest score, only one group managed to equal and two groups achieved one score better than their posttest goals (see Appendix E). Locke (1991) suggested that goal setting theory does 'not' claim that specific goals, as such, lead to better performance than easy goals or do-best goals. These specific goals must also be difficult (e.g., so no more than 10% of subjects can reach them). In this study, 25% of group subjects in the hard

goal condition managed to attain or improve upon their posttest goal. This indicates that the group goal was not as difficult as Locke suggested although the assigned hard group goal was carefully developed based on the pilot study. Due to the different participants between the pilot and main experiment, it is possible that a variation of perception of goal difficulty existed even though they were chosen from the same age group. Although 25% goal attainment is not as difficult as Locke suggested, the results from the present study show that the goal is still difficult and realistic. This is consistent with a number of studies which suggested the difficult goals should be realistic (Botteril, 1978, 1979, 1980; Gould, 1986; Harris & Harris, 1984; McClements & Botteril, 1979). The posttest group goal for the easy goal condition was to increase their pretest score by +3. Ten of 11 groups improved compared to their pretest score with eight groups, or 73% reaching their group goals for the easy goal condition. Although the easy group goals were not very difficult to attain, it is possible that they still had a motivational effect on the performance of easy goal groups. Garland (1982) found that when subjects are assigned low performance standards, they invariably overshoot them and perform above the level of the assigned goal. This could explain why six groups of the easy goal condition performed above their posttest group goals in this study. However, even though six of 11 groups in the easy goal condition overshot their group goals, they still exhibited lower improvement than the hard goal groups.

An additional factor which may also be noted is the number of misses. As reviewed before, although only quantity of group goal was measured, the number of misses was also used for the performance assessment in order to better analyse the results of each group's performance. Although there was no significant difference between the easy goal and hard goal conditions on the number of misses, hard goal groups missed 26 times and easy goal groups missed 14. One group in

the hard goal condition missed the ball 13 times during the posttest performance. This result is consistent with the hypothesis in the pilot study which is the number of misses will increase with goal difficulty. This might have decreased the speed of passes and influenced number of passes completed for the hard goal groups although they still exhibited more improvement than the easy goal groups.

A further factor which may influence the performance of group members is feedback. As we know little about group goal effect in the sport and motor domain, this experiment was designed to examine the effect of group goal setting alone on the group performance. Therefore, performance feedback and knowledge of results were not provided during the posttest performance. Although KR was not provided by the researcher, the group members knew the results of the pretest performance and their assigned group goals. Schmidt (1988) defined knowledge of results as verbal, terminal, extrinsic feedback about the outcome of the movement in terms of the environmental goal. He also suggested that knowledge of results has three properties: motivation, reinforcement, and information. Therefore, the feedback from the pretest results and the assigned group goals might reinforce group performance for this experiment. In addition, it is possible that the group members got feedback automatically from counting themselves during the posttest performance because they knew how to count score. Therefore, the feedback from counting themselves might motivate the group members to work hard for this experiment. Finally, it might be speculated that results would have been even better if group members had been told how much time had passed (o.g., after 1 minute) because goal theory recommends feedback be given.

Goal Commitment

Contrary to the hypothesis that the group goal commitment did not play an important role for the hard goal condition. The results from this experiment indicated that the group goal commitment level for both goal conditions was almost the same and very high immediately after the group goals were assigned and after the posttest performance. Results from the pretest questionnaire revealed that all participants in the easy or hard goal condition stated high levels of commitment to their group goals ($\underline{M}$ = 6.33). Posttest questionnaire information indicated that participants continued to commit to their group goals throughout the task ($\underline{M}$ = 6.29). Farrell (1991) explained that a high level of commitment for the easy goal group is due to the close parallel between their goals and their actual performance. She also suggested that it is difficult to understand the reason why the hard goals group would be so committed to their goals when they were assigned very difficult goals. Garland (1983) explained that if the cost of failure is relatively low, people will try to achieve rather abandon even extremely difficult goals. Bandura (1988) substantiates this finding and further isolates the conditions under which it is more probable to occur: in a laboratory setting where the costs of failure are low, only a brief period of effort is required, and no opportunities exist for alternative activities. This may be the reasons why 25% groups in the hard goal condition and 73% groups in the easy goal condition were able to achieve their group goals.

Mediating Variables

Effort. Results from this experiment did not support the hypothesis that group members in the hard goal condition would exert more effort than those in the easy goal condition. However, although there were no significant differences for goal condition or for time in the effort, time was

approaching significance at $p = .056$. This finding suggests that the effort of group members appeared to increase with the performance from pretest to posttest.

As reviewed before, the effort of group members increased with goal difficulty and influenced the group performance. Although the hard group goal was not as difficult as Locke suggested, it was still difficult as only 25% achieved goals for this experiment. In order to achieve their group goals, group members in the hard goal condition put in more effort when they were performing the task. However, it is interesting to observe that easy goal groups also put in more effort during the posttest performance. Three explanations for the lack of differences between goal conditions can be suggested. First, as discussed above, the easy goal groups might exert more effort to invariably overshoot assigned group goals. Second, it is possible that the easy goal groups reported higher individual perception of effort. Third, there is not going to be much variation for effort in such a short time period.

In addition, although effort is expected to improve group performance, the strength of this relationship is believed to wary with the appropriateness of the task strategy used, task complexity, and the nature of the work flow interdependence among group members (Weldon & Weingart, 1988). Hackman and Morris (1975) suggested that effort was important determinant of group performance but that the impact of effort on group performance was moderated by the appropriateness of the task strategy used. It is possible that the nature of this task is such that the same task strategies are used and do not result in any difference for effort between the goal conditions. However, although both goal groups reported the high effort, hard goal groups, in fact, worked harder than the easy goal groups so that they performed better during the posttest.

Cooperation. Although Weldon and Weingart (1993) believed that increased cooperation

played a role in the group goal effect, the result from this investigation did not support the hypothesis that group members in the hard goal condition would be more cooperative than those in the easy goal condition. As reviewed before, Weldon and Weingart (1993) suggested that task complexity mediated the relationship between goal level and group process to show that reactions to the goal are affected by task complexity. In particular, task complexity influences the extent to which group members used group planning to improve the cooperation of the group. Although the nature of the task used in the experiment is relatively simple, group members for the both goal conditions report high individual perception of cooperation. It is possible that group goal levels do not influence the cooperation of group members for the simple task or the same tactics used for the both goal conditions do not result in the difference of cooperation. Assuming nobody refused to pass, cooperation simply meant performing the task as assigned. It is simply that there was probably no variance in cooperation. In addition, group members might not provide accurate reports of cooperation or two items measure for cooperation might be too weak. Therefore, it can be concluded that group goal levels may not affect cooperation of group members for the relatively simple task.

CONCLUSION

In conclusion, the interaction effect from this experiment illustrated that groups with hard goals improved their performance significantly more than groups with the easy goals for the triangle basketball passing task. This finding provides valuable information about the effects of group goals on group performance in the sport and motor domain. In addition, for other dependent measures, although there were no significant differences between the easy and hard goal conditions, it is valuable to note that the effort of group members was approaching significance across time.

Importantly, although assigned group goals for the hard goal condition were not as difficult as Locke suggested, they were still difficult as only 25% of groups achieved the goals. This result provides a strong explanation for the significantly improved performance of groups the hard goal condition compared to groups in the easy goal condition. Therefore, it can be concluded that the group goals for this experiment were moderately difficult and 25% chance of goal attainment may be suitable for coaches and physical educators to assign group goals to group members even though it is less difficult than Locke's recommendation. It was evident that group members were responding in some manner to the assigned goals based on the changes in their perception of goal difficulty (Farrell, 1991).

Future Considerations

Treatment conditions other than easy and hard goals such as do-your-best goal and no goal should be considered in future group goal setting experiments in order to obtain strong and extensive support for group goal hypotheses in the sport and motor domain. Although the findings from this experiment supported, to some extent, the hypothesis by Locke and Latham that groups with hard goals outperform groups with easy goals, it is necessary to further test if hard goal

groups perform better than do-your-best groups, or no goal groups.

Future studies directed specifically at increasing our understanding of the effect of group goal setting on the mediating processes is also proposed. In this study, two mediating variables were explored in an attempt to explain them based on Weldon and Weingart's model. Effort was measured through self-report measures and indicated that the groups with goals may put more effort into achieving group goals than groups without goals. Although there were no significant differences in group cooperation between the two goal conditions, some valuable information was provided. Furthermore, in order to better understand Weldon and Weingart's model in the sport and motor domain, other mediating variables such as planning, concern for aspects of performance unrelated to the goal, and morale-building communication should be examined across settings, populations, and tasks. Finally, the mediation of the model also need to be tested in future studies.

Future research might also focus on the forms and timing of feedback in the group goal setting experiment in the sport and motor domain. Although there is little doubt that feedback plays a critical role in both learning and performance in the sport and motor performance literature (Newell, 1974; Schmidt, 1988), it can be presented in various forms and at different times. Hall and his colleagues (1987) stated that the forms or timing of feedback might have different effects on task performance due to the requirements of a particular motor skill. Concurrent feedback occurring during the performance may regulate the moment-to-moment performance of particular tracking skills such as catching, throwing to a moving target, or steering a car (Stallings, 1982). Terminal feedback occurs following a performance and is much more widely used in aiding motor performance than is concurrent feedback because administering feedback during performance is often difficult. Stallings (1982) suggested that physical educators tend to rely on terminal feedback

as their only alternative. However, skills involving performance against a clock are likely to improve if feedback is provided during the event. Thus, the concurrent feedback could be provided to each group during their performance to make group goal setting more effective in future studies.

Finally, the individual perception of goal commitment, effort, and cooperation for the group should be concerned for future studies. Although the most review of literature uses the group mean of the individual measures to analyse the results, the group measures as a unit should be considered in order to obtain accurate measure result for the group.

REFERENCES

Ancona, D.G. (1990). Outward Bound: Strategies for team survival in an organization. Academy of Management Journal, 33, 334-365.

Anshel M.H., Weinberg, R., & Jackson, A. (1992). The effect of goal difficulty and task complexity on intrinsic motivation and motor performance. Journal of Sport Behavior, 5, 159-176.

Bandura, A. (1988). Self-regulation of motivation and action through goal systems. In V. Hamilton, G. H. Bower & N. H. Frijda (Eds.), Cognitive perspectives on emotion and motivation (pp. 37-61). Dordrecht: Kluwer Academic Publishers.

Bar-Eli, M., Levy-Kolker, N., Tenenbaum, G., & Weinberg, R.S. (1993). Effect of goal difficulty on performance of aerobic, anaerobic and power tasks in laboratory and field settings. Journal of Sport Behavior, 16, 17-30.

Barnett, M.L. (1977). Effects of two methods of goal setting on learning a gross motor task. Research Quarterly, 48, 19-23.

Barnett, M.L., & Stanicek, J.A. (1979). Effect of goal setting on achievement in archery. Research Quarterly, 50, 328-332.

Bavelas, J.B., & Lee, E.S. (1978). Effects of goal level on performance: A tradeoff of quantity and quality. Canadian Journal of Psychology, 32, 219-240.

Becker, L.J. (1978). Joint effect of feedback and goal setting on performance: A field study of residential energy conservation. Journal of Applied Psychology, 63, 428-433.

Berelson, B., & Steiner, G.A. (1964). Human behavior: An inventory of Scientific findings. New York: Harcourt, Brace & World.

Botterill, C. (1978). The psychology of coaching. Coaching Review, 1, 1-8.

Boyce, B.A. (1990). Effects of goal specificity and goal difficulty upon skill acquisition of a selected shooting task. Perceptual and Motor Skill, 70, 1031-1039.

Brawley, L.R., Carron, A.V., & Widmeyer, W.N. (1992). The nature of group goals in sport teams: A phenomenological analysis. The Sport Psychologist, 6, 323-333.

Davis, J.H. (1973). Group decision and social interaction: A theory of social decision schemes. Psychological Review, 80, 97-125.

Emmert, G.D. (1978). Measuring the impact of group performance feedback versus individual performance feedback in an industrial setting. Journal of Organizational Behavior Management, 1, 134-141

Farrell, J.M. (1991). Effect of individual perceptions on goal setting antecedents and mechanisms. Unpublished doctoral dissertation, University of Waterloo, Ontario.

Garland, H. (1982). Goal levels and task performance: A compelling replication of some compelling results. Journal of Applied Psychology, 67, 245-248.

Garland, H. (1983). The influence of ability, assigned goals, and normative information on personal goals and performance: A challenge to the goal attainability assumption. Journal of Applied Psychology, 68, 20-30.

Garland, H., Weinberg, R., Bruya, L., & Jackson, A. (1988). Self-efficacy and endurance performance: A longitudinal field test of cognitive mediation theory. Applied Psychology, An International Review, 34, 381-394.

Gladstein, D. (1984). Groups in context: A model of task group effectiveness. Administrative Sciences Quarterly, 29, 499-517.

Gould, D. (1986). Goal setting for peak performance. In J. Williams (Ed.), Sport psychology: Mental skills for physical people (pp. 133-148). New York: Leisure press.

Hackman, J. R., & Morris, C.G. (1975). Group tasks, group interaction process and group performance effectiveness: A review and proposed integration. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 8, pp. 45-99). San Diego, CA: Academic Press.

Hall, H.K., & Byrne, A.T.J. (1988). Goal setting in sport: Clarifying recent anomalies. Journal of Sport & Exercise Psychology, 10, 184-198.

Hall, H.K., Weinberg, R.S., & Jackson, A. (1987). Effects of goal specificity, goal difficulty, and information feedback on endurance performance. Journal of Sport Psychology, 9, 43-54.

Harris, D.V., & Harris, B.L. (1984). Sports psychology: Mental skills for physical people. New York: Leisure Press.

Hollenbeck, J. R., & Klein, H. J. (1987). Goal commitment and the goal-setting process: problems, prospects, and proposals for the future. Journal of Applied psychology, 72, 212-220.

Kelley, H. & Thibaut, J. (1969). Group problem solving. In G. Lindzey & E. Aronson (Eds), The Handbook of Social Psychology. 2nd ed., pp. 1-101. Reading, MA: Addison-Wesley.

Klein, H. J., & Mulvey, P. W. (1990). The setting of goals in groups: An examination of processes and performance. Unpublished manuscript, Ohio State University, Columbus.

Latham, G.P., & Locke, E.A. (1975). Increasing productivity with decreasing time limits: A field replication of Parkinson's law. Journal of Applied Psychology, 60, 524-526.

Latham, G.P., & Sarri, L.M. (1979). The effects of holding goal difficulty constant on assigned and participatively set goals. Academy of Management Journal, 2, 163-168.

Latham, G.P., & Yukl, G.A. (1975a). Assigned versus participative goal setting with educated and uneducated woods workers. Journal of Applied Psychology, 60, 299-302.

Latham, G.P., & Yukl, G.A. (1975b). A review of research on the application of goal setting in organizations. Academy of Management Journal, 18, 824-845.

Lindsley, D.B. (1957). Psychology and Motivation. In M.R. Jones (Ed.), Nebraska Symposium on Motivation. Lincoln, Nebraska: University of Nebraska Press.

Locke, E.A. (1968b). Toward a theory of task motivation and incentives. Organizational Behavior and Human Performance, 3, 157-189.

Locke, E.A. (1991). Problems with goal-setting research in sports-and their solution. Journal of Sport & Exercise Psychology, 8, 311-316.

Locke, E.A. (1994). Comments on Weinberg and Weigand. Journal of Sport & Exercise Psychology,16, 212-215.

Locke, E.A., & Latham, G.P. (1985). The application of goal setting to sports. Journal of Sport Psychology, 7, 205-222.

Locke, E.A., & Latham, G.P. (1990). A theory of goal setting and task performance. Englewood Cliffs, NJ: Prentice-Hall.

Locke, E.A., Shaw, K.N., Saari, & L.M., Latham, G.P. (1981). Goal setting and task performance: 1969-1980. Psychological Bulletin, 19, 125-152.

McClements, J.D., & Botterill, C.B. (1979). Goal setting in shaping of future performance of athletes. In P. Klavora & J. Daniel (Eds.), Coach, athlete and the sport psychologist. Toronto, Ontario: University of Toronto.

Mento, A.J., Steel, R.P., & Karren, R.J. (1987). A meta-analytic study of the effects of goal setting on task performance: 1966-1984. Organizational Behavior and Human Decision Processes, 39, 52-83.

Miller, J.T., & McAuley, E. (1987). Effects of goal setting training program on basketball free-throw, self-efficacy, and performance. The Sport Psychologist, 1, 103-113.

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.

Newell, K.M. (1974). Knowledge of results and motor learning. Journal of Motor Behavior, 6, 235-244.

O'Connell, A.N. (1980). Effects of manipulated status on performance, goal setting, achievement motivation, anxiety, and fear of success. Journal of Social Psychology, 112, 75-89.

Pritchard, R. D., Jones, S. D., Roth, P.L., Stuebing, K. K., & Ekeberg, S. E. (1988). Effects of group feedback, goal setting, and incentives on organizational productivity. Journal of Applied Psychology, 73, 139-145.

Rosswork, S.G. (1977). Goal setting: The effects on an academic task with varying magnitudes of incentive. Journal of Educational Psychology, 69, 710-715.

Rowe, B.J. (1981). Use of feedback and reinforcement to increase the telephone reporting on independent automobile appraisers. Journal of Organizational Behavior Management, 3, 35-40.

Schmidt, R. (1988). Motor control and learning: A behavioral emphasis. Champaign, IL: Human Kinetics.

Stallings, L.M. (1982). Motor learning: From theory to practice. St. Louis: C.V. Mosby.

Stedry, A., & Kay, E. (1964). The effects of goal difficulty on performance. Crotonville, N.Y.: Behavioral Research Service, General Electric Company.

Tenenbaum, G., Pinchas, S., Elbaz, G., Bar-Eli, M., & Weinberg, R. (1991). Effects of goal proximity and goal specificity on muscular endurance performance: A replication and extension. Journal of Sport & Exercise Psychology, 13, 174-187.

Thompson, J.D. (1967). Organizations in Action. Chicago: McGraw-Hill.

Watson, C. (1983). Motivational effects of feedback and goal-setting on group performance. Paper presented at the meeting of American Psychological Association, Anaheim, CA, August.

Weinberg, R.S. (1994). Goal setting and performance in sport and exercise setting: A synthesis and critique. Medicine and Science in Sports and Exercise, 26, 469-477.

Weinberg, R., Bruya, L., Garland, H., & Jackson, A. (1990). Effect of goal difficulty and positive reinforcement on endurance performance. Journal of Sport & Exercise Psychology, 12, 144-156.

Weinberg, R., Bruya, L., Longino, J., & Jackson, A. (1988). Effect of goal proximity and specificity on endurance performance of primary-grade children. Journal of Sport &Exercise Psychology, 10, 81-91.

Weinberg, R., Bruya, L., & Jackson, A. (1985). The effects of goal proximity and goal specificity on endurance performance. Journal of Sport Psychology, 7, 296-305.

Weinberg, R., Bruya, L., Jackson, A., & Garland H. (1987). Goal difficulty and endurance performance: A challenge to the goal attainability assumption. Journal of Sport Behavior, 10, 82-92.

Weinberg, R., Fowler, C., Jackson, A., Bagnall, J., & Bruya, L. (1991). Effect of goal difficulty on motor performance: A replication across task and subjects. Journal of Sport & Exercise Psychology, 13, 160-173.

Weingart, L.R. (1989). Group goals, effort, planning, and group performance. Unpublished doctoral dissertation, Northwestern University, Evanston, IL.

Weingart, L.R. (1992). Impact of group goals, task component complexity, effort, and planning on group performance. Journal of Applied Psychology, 77, 682-693.

Weingart, L. R., & Weldon, E. (1991). Processes that mediate the relationship between a group goal and group member performance. Human Performance, 41, 33-54.

Weldon, E., Jehn, K.M., & Pradhan, P. (1991). Processes that mediate the relationship between a group goal and improved group performance. Journal of Personality and Social psychology, 61, 555-569.

Weldon, E., & Weingart, L.R. (1988, August). A theory of group goals and group performance. Paper presented at the annual meeting of the Academy of Management, San Francisco.

Weldon, E., & Weingart, L. R. (1993). Group goals and group performance. British Journal of Social psychology, 32, 307-334.

Whitney, K. (1994). Improving group task performance: The role of group goals and group efficacy. Human Performance, 7(1), 55-78.

Zander, A. (1971). Motives and goals in groups. New York: Academic Press.

Zander, A. (1980). The origins and consequences of group goals. In L. Festinger (Ed.), Retrospections on social psychology. New York: Oxford University Press.

APPENDICES

Appendix A:

Pilot Experiment Trial Scores

2-Minute Triangle Basketball Passing Task Profile

Scoring for this basketball passing task is standardized where three passes (regardless if caught) equals to one score for the group. A research assistant will be responsible for counting the score of the triangle basketball passing task and number of passes not caught. However, passes not caught are not penalized against passes made.

Group Number:_____

Trial	Score	Misses
1		
2		
3		
4		

Appendix B:

Pilot Experiment Goal Questionnaire

Perceived Difficulty of Three Selected Group Goals and Self-set Group Goals

Name: _____

The following questions are designed to assess your perception of difficulty about three selected goal levels and self-set group goal. There are no right or wrong answers. Please circle a number from one to nine to indicate your response to each of the questions. The scale used is:

1 2 3 4 5 6 7 8 9
not difficult difficult

1. How difficult do you feel it would be to increase your score by 2 triangular passes?

1 2 3 4 5 6 7 8 9

2. How difficult do you feel it would be to increase your score by 5 triangular passes?

1 2 3 4 5 6 7 8 9

3. How difficult do you feel it would be to increase your score by 8 triangular passes?

1 2 3 4 5 6 7 8 9

4. Your group was asked to set a group goal. How many triangular passes the group goal set was an increase of _____ scores over trial 1?

5. How difficult do you feel your group goal was?

1 2 3 4 5 6 7 8 9

Appendix C:

Main Experiment Score Sheet

2-Minute Triangle Basketball Passing Task Profile

Scoring for this basketball passing task is standardized where three passes (regardless if caught) equals to one score for the group. A research assistant will be responsible for counting the score of the triangle basketball passing task and number of passes not caught. However, passes not caught are not penalized against passes made.

Name of Team: _____

Name of Participants: _____

Group Number: ___ _____

Test and Goals	Score	Number of Misses	Rank	Experiment Condition
Pretest				
Goals for Posttest				
Posttest				

Appendix D:

Main Experiment Questionnaire

PART 1

*Name:*_____ *Name of Team:* _____*Group #:* _____

The following questions are designed to assess your perception of task-related variables. There are no right or wrong answers. Please circle a number from one to seven to indicate your response to each of the questions. The scale used is:

1 2 3 4 5 6 7
strongly disagree strongly agree

1. I tried as hard as I could to pass the basketball.

1 2 3 4 5 6 7

2. I did not exert much effort to pass the basketball.

1 2 3 4 5 6 7

3. I put forth a great deal of effort to help the group perform well.

1 2 3 4 5 6 7

4. I tried hard to help the group perform well.

1 2 3 4 5 6 7

5. I tried my best to cooperate with my group members.

1 2 3 4 5 6 7

6. Our group members cooperated with each other as a team.

1 2 3 4 5 6 7

7. I felt it was very difficult to perform the passing task.

1 2 3 4 5 6 7

PART 2

Name: _____ *Name of Team:*_____ *Group #:* _____

The following questions are designed to assess your perceptions of goal-related variables. There are no right or wrong answers. Please circle a number from one to seven to indicate your response to each of the questions. The scale used is:

1 2 3 4 5 6 7
strongly disagree strongly agree

1. I will strongly commit to pursuing the group's goals.

1 2 3 4 5 6 7

2. Quite frankly, I don't care if my group achieves its goal or not.

1 2 3 4 5 6 7

3. I will be highly motivated to help my group to meet our assigned goal.

1 2 3 4 5 6 7

4. It is very important to me that the group meets the assigned goal.

1 2 3 4 5 6 7

5. I feel it will be very difficult to achieve the assigned group goal.

1 2 3 4 5 6 7

PART 3

Name: _____ *Name of Team:* _____ *Group #:*_____

The following questions are designed to assess your perceptions of the task and group goal setting program. There are no right or wrong answers. Please circle a number from one to seven to indicate your response to each of the questions. The scale used is:

1 2 3 4 5 6 7
strongly disagree strongly agree

1. I tried as hard as I could to pass the basketball.

1 2 3 4 5 6 7

2. I did not exert much effort to pass the basketball.

1 2 3 4 5 6 7

3. I put forth a lot of effort to achieve my group goal.

1 2 3 4 5 6 7

4. I tried hard to contribute to goal attainment.

1 2 3 4 5 6 7

5. I tried my best to cooperate with my group members.

1 2 3 4 5 6 7

6. Our group members cooperated with each other as a team.

1 2 3 4 5 6 7

7. I committed strongly to pursuing the group's goals.

1 2 3 4 5 6 7

8. Quite frankly, I didn't care if my group achieved its goal or not.

1 2 3 4 5 6 7

9. I was highly motivated to help my group to meet our assigned goal.

1 2 3 4 5 6 7

10. It was very important to me that the group met the assigned goal.

1 2 3 4 5 6 7

11. I felt it was very diff. icult to achieve the assigned group goal.

1 2 3 4 5 6 7

12. I felt it was very difficult to perform the passing task.

1 2 3 4 5 6 7

Appendix E:

Main Experiment Performance Data Sheet

Performance of Easy Goal Condition

Group	Pretest Performance	Pretest Misses	Goals	Posttest Performance	Posttest Misses
1	40	0	43	Missing	0
2	52	0	55	54	0
3	49	3	52	47	4
4	42	2	45	43	3
5	44	1	47	47	0
6	43	0	46	47	0
7	44	0	47	48	0
8	42	2	45	46	2
9	38	3	41	42	1
10	42	1	45	45	1
11	36	0	39	42	1
12	37	1	40	41	2

Performance of Hard Goal Condition

Group	Pretest Performance	Pretest Misses	Goals	Posttest Performance	Posttest Misses
1	41	0	48	46	0
2	41	0	48	44	0
3	53	1	60	59	0
4	42	1	49	49	0
5	42	5	49	48	0
6	45	1	52	47	2
7	44	1	51	48	4
8	43	2	50	47	4
9	44	1	51	46	13
10	34	2	41	38	3
11	38	1	45	46	0
12	38	3	45	46	0

Appendix F:

Participant Consent Form

Participant Consent Form

Consent:

I,_____, agree to participate in a research project by Chunfan Zhang, a Lakehead University Masters student and Dr. Joey Farrell, faculty advisor involving testing on a 2-minute triangle basketball pass task conducted on two separate days. I agree to participate in exercise testing to the best of my ability and I understand that I may withdraw from the study at any time, or discontinue any test procedure if I experience unusual discomfort. I also understand that prior to performing any of the tasks required, the research staff will have explained thoroughly the exact procedures to be followed and that I will have the opportunity to ask any questions that I may have. I acknowledge that I have read this form and that I understand the test procedures.

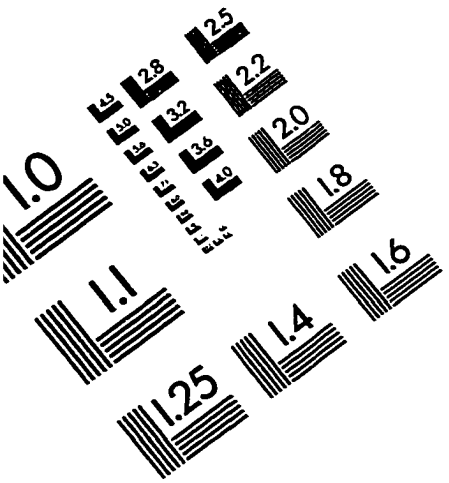
Name of Team:_____

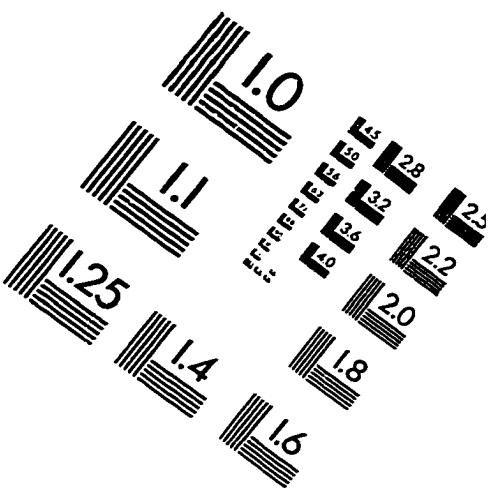
Participant:

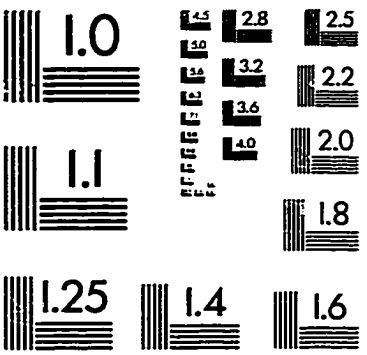
Name:_____ Signature: _____
(Please print)

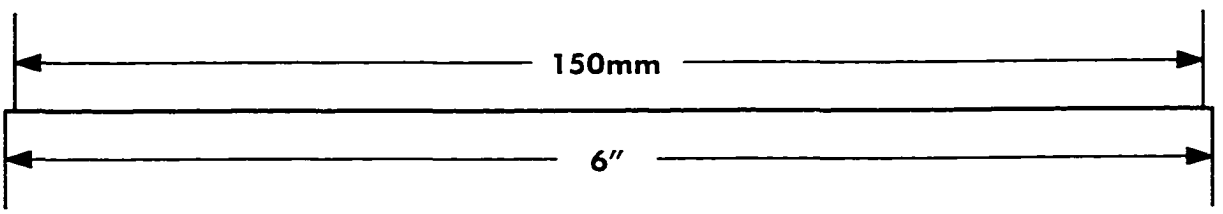
Date: _____ Tel: _____

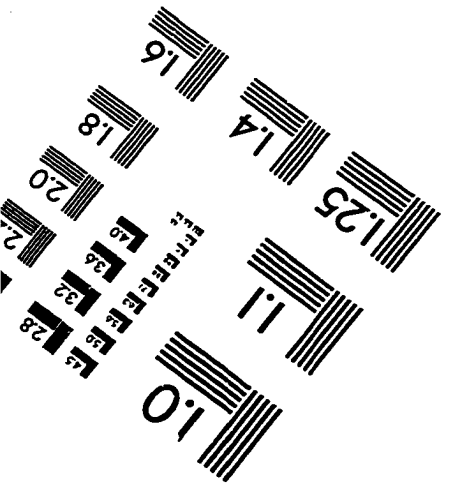
IMAGE EVALUATION TEST TARGET (QA-3)

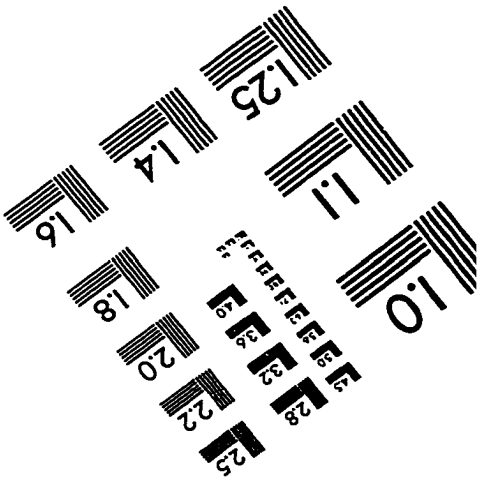












APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989