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THE MODERATING EFFECTS OF EVALUATION
APPREHENSION AND GROUP GOALS
ON SOCIAL LOAFING

A Thesis
Presented to the
Department of Psychology
and the
Faculty of the Graduate College
University of Nebraska

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
University of Nebraska at Omaha

by
Thomas Rauzi
August, 1988

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THESIS ACCEPTANCE

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University of Nebraska, in partial fulfillment of the
requirements for the degree of Master of Arts, University of
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Abstract

The social loafing effect, that subjects work harder alone than in groups, was contrasted against the use of two motivational techniques. Subjects were 80 undergraduate students at a midwestern university. A 2 x 2 factorial design was employed contrasting the use of group goals with the salience of evaluation apprehension. Subjects, working in groups of four, were asked to generate possible uses for common objects during two timed work periods.

Results provided support for an Interaction Hypothesis: that group goal or evaluation apprehension conditions are sufficient to increase performance over a social loafing replication condition. However, the actual presence of evaluation apprehension and social loafing was questioned. The study also supports the contention that goals and evaluation pressure may contain similar motivational elements.

Chapter I

Introduction

The English language contains a prodigious number of maxims that praise the qualities of collective effort. "Two heads are better than one", and "Many hands make light the work" are examples of an implicit understanding that work can be accomplished faster and more efficiently if more than one person helps to perform a task. Contrary to notions of common sense, but perhaps more consistent with reality, may be the old saw, "Too many cooks spoil the broth", since it is often found that an overabundance of workers can actually lead to decrements in efficiency and, hence, spoiled broth.

Relatedly, social psychologists interested in group performance have identified one aspect of inefficient collective effort called social loafing. Social loafing occurs when individuals decrease their effort at a task when working in a group. Recently, Harkins (1987) proposed that people loaf only when their performance cannot be evaluated. This paper explores the social loafing phenomenon and details an experimental attempt to combine the social loafing/evaluation processes with a goal setting motivational technique.

A History of Social Loafing

Interest in the differences between individual and group performance in work behaviors has spawned considerable experimental research. Around the turn of the century, Max Ringelmann (1913a, b), a French agricultural engineer, performed an experiment that examined differences in individual and group performance. In this classic study, subjects, working alone or in groups ranging in size from pairs of individuals to teams of eight subjects, were asked to pull on a rope attached to a strain gauge. Individual and group effort was measured via the strain on the rope as detected by the gauge. Surprisingly, Ringelmann (1913a, b) found a linear decrement in average individual effort as group size increased. In other words, if total individual effort when working alone can be described as 100%, Ringelmann's results showed that when working in pairs subjects averaged 93% of their total effort, 85% in groups of three, 63% in groups of six, and only 49% of total effort in groups of eight workers. Thus, according to Ringelmann (1913a, b), individuals pulled less hard during the rope-pulling task when their effort was combined with the effort of others.

In the time since Ringelmann's original studies were conducted, his work has regularly been cited by social psychologists studying group performance and small group behavior (Allport, 1924; Davis, 1969; Kravitz & Martin,

1986; Moede, 1927; Steiner, 1972; Zajonc, 1966). It was almost ninety years after Ringelmann's research, however, before experimental interest in the "Ringelmann effect" was renewed. Ingham, Levinger, Graves, and Peckham (1974) replicated Ringelmann's (1913a, b) original findings using the same rope-pulling task, and attempted to understand the "Ringelmann effect" in terms of Steiner's (1972) typology of tasks. In Study I of their work Ingham et al. (1974) used groups of subjects ranging in size from one to six individuals. Once again, individual average performance at the rope-pulling task decreased significantly from groups of one to three subjects, but the addition of a fourth, fifth, and sixth co-worker did not lead to further decrements in individual performance. Thus, a leveling off of individual performance was discovered, contrary to Ringelmann's (1913b) linear effect.

In a second part of their research, Ingham et al. applied Steiner's (1972) typology of group production tasks and theories of group productivity to the loss of effort evidenced in the "Ringelmann effect".

According to Steiner (1972), a task such as rope-pulling can be defined in terms of several task characteristics. First, the task is maximizing, where success is dependent on how quickly a task is accomplished or how much effort is expended in the process, as opposed to an optimizing task where precision, accuracy, and quality of performance are

essential. Second, the rope-pulling task is additive, that is, task production is the combination, or sum, of individual efforts, and not dependent on the performance of any one member. Finally, the task is unitary, it cannot be divided into a series of separate subtasks to be performed by different group members. For a maximizing, additive, and unitary task like rope-pulling, therefore, it is logical to assume that a group of six individuals exerts six times as much force on a rope as a single worker.

More importantly, Steiner (1972) posited that successful productivity is dependent on three factors: the demands of the task, individual and group resources to accomplish the task, and the process by which the resources are used. The combination of the first two factors determines potential group productivity. Therefore, discrepancies between potential and actual group productivity can be attributed to faulty social processes, the third factor. According to Steiner (1972), faulty processes within a group could be produced by inefficiencies in the physical or mechanical processes of the task ("coordination loss"), or by decrements in real effort or motivation to perform on the part of the workers ("motivation loss").

In Study II of their research, Ingham et al. (1974) examined possible sources of performance loss by separating the "coordination loss" and "motivation loss" factors. Intermember uncoordination was eliminated by having subjects

pull rope in "pseudo-groups" where subjects were led to believe that they were pulling the rope along with from one to five others while actually they pulled only by themselves. Even with the uncoordination factors removed, linear decrements in individual performance were detected for "groups" of one to three workers. Again, the addition of a fourth, fifth, and sixth co-worker did not lead to further significant decreases in effort.

Ingham, Levinger, Graves, and Peckham (1974) concluded that the "Ringelmann effect" was indeed due to losses in individual motivation. They believed that subjects felt they could "hide-in-the-crowd" when their own effort was submerged during group efforts at the task. Whatever their explanation, the rigid controls and theoretical applications introduced by Ingham et al. (1974) served to legitimize Ringelmann's work, and laid the foundation for further experimental research on the topic.

The introduction of the "social loafing" effect (coined in deference to Latane's social impact theory (Latane, 1981)) to modern experimental literature led to a plethora of research on this rediscovered phenomenon. In many different settings and with a number of different tasks, social loafing was shown to be a very robust phenomenon.

The different tasks used in the social loafing literature have mainly fallen into two categories: cognitive and physical tasks. Cognitive tasks have included having

subjects evaluate poems and stories (Petty, Harkins, Williams, & Latane, 1977), evaluate therapists (Petty, Harkins, & Williams, 1980), brainstorm (Harkins & Petty, 1982), use decision-making strategies in multi-attribute judgements (Weldon & Gargano, 1985), cognitively work mazes (Jackson & Williams, 1985), and write opinions about essays (Brickner, Harkins, & Ostrom, 1986).

Physical tasks in the social loafing literature include shouting and clapping (Harkins, Latane & Williams, 1980; Jackson & Harkins, 1985; Latane, Williams, & Harkins, 1979; Williams, Harkins, & Latane, 1981), sphygmograph bulb-pumping (Kerr & Bruun, 1981), folding paper moon tents (Zaccaro, 1984), and button-pressing (Yamaguchi, Okamoto, & Oka, 1985).

More important than the simple replication of the social loafing effect, these studies helped to define the breadth of the social loafing phenomenon. Along with this work several researchers have attempted to explain the pervasiveness of social loafing while trying to fit the effect into a larger theoretical framework.

Theories of Social Loafing

In one of several possible explanations for social loafing, Latane, Williams, and Harkins (1979) hypothesized that social loafing may occur because individuals feel they are able to "hide-in-the-crowd" (Davis, 1969) and defer responsibility for the total group effort. If individuals

can conceal their effort in a group total, and therefore receive neither credit nor blame for their performance, they will decrease their efforts at a task. In an important study that examined this hypothesis, Williams, Harkins, and Latane (1981) posited that individuals would not loaf at a task if their individual output was constantly monitored. Consequently, when identifiability of an individual's output was held constant across individual and group trials, social loafing within the groups disappeared. Subjects who were told that their output would always be individually monitored produced the same amount of noise (by clapping) in groups as when they clapped alone, and individuals who believed that their output would never be individually monitored expended little effort at the task, even in the alone condition (Williams, Harkins, & Latane, 1981).

The moderating effect of output identifiability has received widespread support in the social loafing literature (Brickner, Harkins, & Ostrom, 1986; Harkins & Jackson, 1985; Harkins & Petty, 1982; Jackson & Harkins, 1985; Jackson & Williams, 1985) and was concluded to be a true moderator of social loafing.

A second explanatory mechanism of the social loafing effect, proposed by Jackson and Harkins (1985), holds that individuals loaf because they expect others in the group to loaf as well. According to this implicit inferential process, individuals quite naturally expect others to work

hard alone and to loaf in groups. Therefore, while desiring to maintain an equitable distribution of effort by not making up for the loafing of others, they will loaf as well.

In their experiment, Jackson and Harkins (1985) led subjects in a group condition to believe that their partner, of equal ability at the task, intended to try as hard as possible, or to hardly try at all during shouting trials. As predicted, subjects in both conditions matched the effort levels they expected from their partners. For example, subjects paired with partners who intended to hardly try put forth less effort at the shouting task in both the alone and group conditions.

Jackson and Harkins (1985) concluded that of all the proposed variables that have been shown to modify social loafing (discussed below), only identifiability and the expected effort of others are true moderators of social loafing. These variables, when held constant across experimental conditions eliminate alone/group differences in performance. Other moderator variables do not exhibit this characteristic, and are therefore only limitations on the breadth of the social loafing phenomenon.

Other theorists have attempted to reconcile social loafing research with the processes that explicate another social psychological phenomenon, social facilitation (Harkins, 1987; Jackson & Williams, 1985; Yamaguchi, Okamoto, & Oka, 1985). Harkins (1987) concluded that the

research findings on these phenomena, heretofore studied separately, are actually quite complementary. The social facilitation paradigm (that working in the presence of others stimulates performance) is typically explained as a function of either mere presence effects, or the effects of evaluation apprehension. Harkins and Jackson (1985) found that evaluation effects may underlie social loafing as well. In their experiment, comparability of output (and, thus, the possibility of performance evaluation) was crossed with output identifiability (performance was either individually identifiable, or pooled). Consistent with previous loafing research, their findings suggested that when output was identifiable subjects worked as hard in a pooled condition as when working alone. However, this difference only emerged when a worker's individual output could be evaluated through comparison with a co-worker's performance. When performance was not comparable participants loafed while alone and in groups, even when their output was individually identifiable.

In an experiment designed to reconcile the loafing and facilitation explanations, Harkins (1987) accommodated the experimental conditions of the loafing and facilitation research into three cells of a 2 (Alone vs. Coaction) X 2 (Evaluation vs. No Evaluation) design. In two experiments Harkins (1987) found that, consistent with previous loafing findings, with number of workers held constant, subjects

whose output could be evaluated outperformed subjects whose output could not be evaluated. Inconsistent with descriptions of social loafing, however, pairs of subjects outperformed subjects who worked alone. This pattern of results suggests that both mere presence and the potential for evaluation affected performance. Moreover, these findings advance the idea that social loafing and facilitation are complementary processes in group productivity (Harkins, 1987).

Apart from research designed to uncover the central processes responsible for social loafing exists a considerable amount of research devoted to identifying the boundaries of the loafing phenomenon. These boundaries are variables that, by themselves, seem to effectively curtail social loafing in group tasks.

Limitations of Social Loafing

Harkins and Petty (1982), and Zaccaro (1984) identified several characteristics of physical and cognitive tasks that limit the presence of social loafing. In four experiments Harkins and Petty (1982) tested the idea that if individuals are made to feel that individual output at a task is a worthwhile contribution to group performance, loafing will be reduced even if output is unidentifiable. Two task characteristics, task uniqueness and difficulty, were manipulated such that subjects believed their work to be challenging, or their contribution to the group to be

unique. In these situations collective endeavors did not lead to decreases in individual effort. Harkins and Petty (1982) concluded that social loafing is not the inevitable result of unidentifiable individual effort. Instead, the presence of social loafing may reveal the extent to which participants feel that they can make a definite contribution to the collective performance.

Zaccaro (1984) hypothesized that other forces internal to the group, in this instance the attractiveness of the task, interacted with group size to affect social loafing. High task attractiveness, according to Zaccaro, increases individual commitment to the task, and task commitment increases intragroup pressures to perform that serve to dampen the social loafing effect. As predicted, subjects who were told that the task was important and could lead to personal benefit (High Task Attractiveness condition) did not evidence social loafing. In a related vein, Brickner, Harkins, and Ostrom (1986) concluded that tasks which had personal meaning or otherwise personally involved subjects also eliminated social loafing.

One aspect of social loafing that has not been explored involves the robustness of the social loafing effect in the face of a motivational program. If loafing results from losses in individual motivation to perform, will social loafing occur in situations where motivation to perform is artificially elevated? More specifically, can social

loafing be overcome by a well supported motivational technique like goal setting?

The Goal Setting Technique

In the twenty years since Locke (1968) began his detailed research program on goals, goal setting has become one of the most active areas of research within the applied behavioral sciences field. Empirical support for the goal setting motivational technique has been generous within both academic psychology and applied management research. For example, in their useful literature review on goal setting, Locke, Shaw, Saari, and Latham (1981) found that 90% of the studies examined supported the tenets of the goal setting technique. Similarly, Tubbs (1986) meta-analyzed eighty-seven goal setting studies and found that the basic hypotheses of goal setting were well supported.

Webster's New World Dictionary (1980) defines a goal as "an object or end that one strives to attain" (p. 598). Locke and his colleagues (1981) described a goal as a level of task proficiency attained within a specified time limit. The latter, more relevant definition is similar in meaning to some performance standard, objective, deadline, or quota.

In its simplest form, goal setting posits that the acceptance of difficult performance goals motivates performance in the direction of the goal. Individuals will work harder in order to attain some performance goal than if no goal were present. Latham and Locke (1975), for

instance, found that logging crews performed better when they had a hard goal to accomplish than if they were assigned an easier goal, or no goal at all.

Essentially, Locke et al. (1981) hypothesized that goals affect performance through the direction, amplitude, and duration of performance behavior. Direction of performance implies that goals guide attention and action. Reynolds, Standiford, and Anderson (1979), for instance, found that subjects spent significantly more time reading prose passages that were relevant to their goal than non-relevant passages.

Goals also influence the amplitude or effort of performance. Since some goals require more effort than others, the amount of effort expended on a task becomes proportional to the difficulty of the goal. According to Locke et al. (1981), "higher goals produce higher performance than lower goals or no goals because people simply work harder for the former" (p. 132).

Third, goals affect the amount of time spent in performing tasks that are goal-directed (persistence). In the Reynolds et al. (1979) example subjects spent greater amounts of time performing goal-relevant behaviors than behaviors that were not directed toward a goal.

In order for goals to influence performance via these mechanisms, several important characteristics of goals must be present. First, goals must be difficult. As already

noted, goals tend to increase the amount of effort expended at some task. Locke (1968) hypothesized that difficult goals (if accepted) lead to a higher level of task performance than easy goals.

Since goals also direct attention and action, it follows that specific, quantifiable hard goals should serve to concentrate attention and produce more effortful performance than vague, "do-your-best" instructions, or no goals at all.

Both the goal difficulty and the goal difficulty/specificity hypotheses have been widely supported in the goal setting literature. In their narrative review of the goal setting literature, Locke et al. (1981) reported that 84% of the laboratory and field studies that they reviewed supported the goal difficulty hypothesis, while 96% of these studies supported the goal difficulty/specificity hypothesis. Two meta-analyses of goal setting research (Mento, Steel, & Karren, 1987; Tubbs, 1986) also found these essential goal setting hypotheses to be well substantiated empirically.

Goal acceptance is the third necessary component for elevated performance to occur. Locke et al. (1981) argue that goals are successful only if they are accepted by the person attempting the goal.

A final important consideration for effective goal setting is the presence of feedback, or knowledge of results (KR). Initially, theorists considered KR as only a mediator

of goal effects (Locke, 1967, 1968). Later research concluded, however, that the effects of goal setting and feedback could not be separated. Feedback was found to be a necessary component for successful goal setting (Erez, 1977; Locke, 1980; Locke et al., 1981).

One potentially important area of goal setting that has not been adequately addressed in the literature concerns group productivity within the goal setting paradigm. Traditionally, goal setting has focused on individually set and attained goals, and how moderators of the goal effect (e.g., specificity, difficulty, feedback, etc.) influence individual productivity. Research on the goal effect using groups of individuals has received inconsistent attention. Certain early theories of group functioning contain the concept of groups achieving particular outcomes in its environment (Barnard, 1938; Homans, 1950). French's (1951) studies of group productivity, for example, make explicit use of the concept of group goals, distinguishing them conceptually from individual goals. Since Locke's (1967, 1968) early work on goal theory, however, the idea of group goals has received little stringent, laboratory experimentation that could shed light on the robustness of the goal effect in group settings. Most studies of goal setting and group productivity have been conducted as field studies in organizations (Latham & Yukl, 1975). Moreover, these studies have not been presented as studies of groups

in goal settings so much as studies of goal setting which happened to include groups.

Empirical studies of group goals are not entirely lacking, however. Matsui, Kakuyama, and Onglatco (1987) studied groups of two persons at a numerical counting task and found that subjects with group goals outperformed subjects who set individual goals alone. Matsui et al. (1987) reported that group goal setting resulted in both higher goal difficulty levels (and thus higher performance levels) and increased acceptance of individual goals. Further, they also believed that the setting of group goals overcame any social loafing paralysis of group effort, although no data to confirm these beliefs were presented.

As confirming as these group goal results seem to be, Matsui et al. (1987) posit that the study may suffer from certain methodological constraints. For instance, the possibility of cultural artifacts may limit the generalizability of these findings. According to their argument, attitudes toward striving for, and adhering to group performance standards in the Japanese culture, including the subjects in their study, may differ considerably from their counterparts in the United States. More specifically, cultural attributes emphasizing the attainment of group over individual performance, like those found in Japan, may have unduly increased goal acceptance.

Further, Matsui et al. (1987) argue that the high goal

acceptance found in the study may also have resulted from the small size of their experimental groups (i.e., two-member teams). Larger groups may have lead to lower levels of goal acceptance than was evidenced in their research.

Goal Setting and Social Loafing

Given the parameters of goal setting and the knowledge of why goals motivate behavior, parallels between goal setting and research on group productivity become evident. It is the contention of the author that goal setting captures some of the motivational processes that limit losses in individual motivation due to social loafing. Furthermore, the use of group goals may lead to increases in group performance above the increases found in evaluative work situations (Harkins, 1987). The latter contention forms one hypothesis of the present study.

One similarity between the implications of goal setting and the social loafing research focuses on individual perceptions of the task. Harkins and Petty (1982), for example, found that social loafing is overcome when subjects perceive their task to be challenging, or when they believe their contribution to a group effort to be vital. Similarly, studies of goal setting have revealed that difficult or challenging goals lead to greater increases in performance than less difficult goals (Mento, Steel, & Karren, 1987; Tubbs, 1986). Moreover, since people

typically face individually-tailored goals, they may sense their work as unique and vital, a function of their own performance against their own goal.

Zaccaro (1984) found that perceptions of task attractiveness moderate commitment to the task, which in turn inhibits social loafing. The more worthwhile, interesting, or otherwise attractive a task is, the more committed participants become to the task. As commitment increases, intragroup pressures to perform increase, and social loafing is discouraged.

Goal setting encompasses these results in two respects. Mossholder (1980) found that for boring tasks (but not for interesting tasks), goals increase task attractiveness. Hence, goals can elevate, perhaps through the challenge they represent, individual interest in the task. Second, goal commitment, implying commitment to the task, is essential to goal setting. According to Campion and Lord (1982) goal commitment implies the extension of effort, over time, toward the accomplishment of the goal. Without commitment, goals may be abandoned or lowered. Since goal commitment implies effortful task performance, goal commitment also implies task commitment.

Finally, Harkins (1987) concluded that both evaluation potential and mere presence effects underlie the social facilitation/loafing processes. Loafing occurs when individual performance (alone or coacting) cannot be

evaluated, either by the experimenter or by direct comparison to the performance of others.

Correspondingly, goal setting implicitly provides some evaluation of output. Since goals are normally assigned or participatively set with some other authority, performance becomes identifiable. Additionally, the use of difficult goals implies the contrast of goal performance against some past standard of performance; performance is comparable. Thus, goal setting meets Harkins' (1987) criteria for successful performance evaluation.

Several main issues may now be addressed more concisely. First, what is the impact of a group goal on group performance? Can group performance standards curb individual motivation loss (i.e., social loafing)? The impact of goal setting on individual performance has been well documented. There is also support for the idea that goals can increase group performance (Matsui et al., 1987). The present study is partly designed to uncover the robustness of the goal setting paradigm under group performance conditions.

Further, given the kinship between the goal setting technique and the factors known to inhibit social loafing (e.g., task attractiveness, commitment, evaluation potential), the motivational effects of a group goal should prevent individual motivation loss from occurring. Empirical scrutiny of this conclusion is needed.

A third concern involves both group goals and the evaluation component of the social loafing/facilitation processes. Similarities between these processes have already been described. White, Mitchell, and Bell (1977) crossed output evaluation with individual goals and found that in a combined condition, their effects were additive. But what of a group goal situation? Can the additive goal/evaluation relationship be maintained when group output is the standard of performance? Models of goal setting and evaluation apprehension predict, statistically speaking, main effects for both motivational techniques.

Alternatively, if the processes that underlie goal setting are contained within the evaluation apprehension processes (i.e., identifiability, comparability), then a combination of these strategies would only result in redundant effects. Consequently, an evaluation/group goal manipulation should not result in additive main effects. Instead, this hypothesis projects that increases of performance in an evaluation/group goal condition should not exceed performance increases expected from these factors alone. That is, both goals and evaluation potential are sufficient cause for performance increases, but their combination should not lead to additional increases in group output.

The present study was conducted to address these hypotheses regarding social loafing, group goals, and the

potential for evaluation. In a 2 (Goal vs. No Goal) X 2 (Evaluation vs. No Evaluation) design groups of four subjects worked at a brainstorming task (an "additive" task in Steiner's (1972) typology) in two timed work periods. In the task, subjects were asked to independently generate as many uses for common objects as possible. In the "No Goal" condition the group of subjects were asked to "do their best", while in the "Goal" condition a group performance goal was assigned. Evaluation potential was manipulated by inducing the perception of output identifiability and comparability in the "Evaluation" conditions.

The present design was chosen since it afforded the experimental advantage of being concise. More specifically, the design was simple, yet permitted the testing of two contrasting hypotheses.

Additive Main Effect Hypothesis:

Main effects for both group goals and evaluation such that:

- a. groups assigned a goal should generate more uses than groups not assigned a goal.
- b. groups whose output can be evaluated should produce more uses than groups in non-evaluative conditions.

Interaction hypothesis: Group goal and evaluation effects such that evaluation/no goal, no evaluation/group goal, and evaluation/group goal conditions produce higher performance than a social loafing replication condition (no evaluation/no goal).

Chapter II

Method

Subjects

Thirty-six male and 52 female undergraduate students enrolled in an introductory psychology class at a midwestern university volunteered to participate in this study. These subjects received extra credit applicable to their coursework in return for their participation.

Overview of Procedure

Experimental sessions were represented in a 2 X 2 design contrasting use of a group goal with the presence of performance evaluation. An additional Individual Performance condition (in which subjects worked at the task alone) was also presented.

Each experimental session consisted of four subjects performing an object-use generation task in two timed work periods of five and ten minutes, respectively. To rule out any possible effects of males and females working together, only same-sexed work groups were used. This resulted in eight male and twelve female work groups. Prior to the start of any experimental session, the experimenter randomly determined the condition to which the work group would be assigned.

Upon arrival, subjects were seated around two large rectangular tables. The tables were positioned in a V-shape, with the open end facing the front of the room. Wooden

partitions prevented participants from seeing one another, but allowed the experimenter an unimpeded view of each subject. Present at each work station was a felt-tipped pen (of a different color for each subject) and the open end of a hollow tube running from the work station into a rectangular box lying on the floor. Each of the four tubes were connected to the same box. At the front of the room, and in full view of all subjects was a large, moveable chalkboard.

Following the administration of the informed consent form (Appendix A) and a brief introduction, and prior to the start of the five minute work period, subjects in all conditions were informed that the experimenter was interested in the performance of individuals and groups at a brainstorming task. In the task they would be given the name of an object and given five minutes to generate as many different uses for the object as they could imagine. The participants were told not to be concerned about the quality of their reactions, the uses could be as ordinary or uncommon as they wished. They were to simply write as many uses as they could. The subjects were then informed that each use would be written on a slip of paper, and the slip inserted into the hollow tube in front of them. The experimenter then demonstrated how each tube ran into a large collection box.

Pretesting of the object-use generation task identified several common objects that could successfully be used in the present manipulations. Among these, "comb" resulted in an

average of 9.35 uses in the five minute work period, while "detached doorknob" elicited an average 13.35 uses per subject in the ten minute work period. Pearson correlation analysis of the pretest data revealed a coefficient of .68 between the objects. Although the experimenter was actually interested in uses created only during the second, 10-minute work period, it was determined that the correlation yielded a firm foundation for assigning group goals using the object "detached doorknob". Finally, in experimental conditions in which subjects were instructed to expect a different object for each worker, all subjects actually received the name of the same object.

Manipulations

Evaluation. Harkins (1987) suggested that two conditions must be met for performance evaluation to be possible. First, an individual's output must be identifiable; second, the output must be comparable to some standard of performance.

To insure comparability in the Evaluation conditions, subjects were told that they would each generate uses for the same object. Identifiability of performance was made salient by revealing (during the initial instructions) that the collection box was divided into four separate compartments. The experimenter demonstrated how each hollow tube led to a different compartment, making each worker's output identifiable.

No Evaluation. No Evaluation conditions emphasized the absence of the performance evaluation criteria. Subjects in these conditions were told that they would each receive a different object for which to generate uses. Further, the subjects were told that the experimenter was interested in having the task performed for a wide range of objects, and that since some of these objects were easy and some were difficult to imagine uses for, the number of uses a person created could not be compared to the number of uses generated by other members of the group.

Unidentifiability of performance was induced by informing the subjects that since the experimenter was interested in total group performance, uses would be collected in a common collection box lying on the floor. Here, the experimenter demonstrated that the interior of the box was without partitions, and thus, paper slips would be combined. The fact that object-uses were being written with different color pens was unknown to subjects.

Group goal. The criteria for successful use of individual goals also apply to the use of group goals. Consequently, specific, difficult goals should be used. Moreover, goals set for a group should be accepted by all members of the group as set performance standards. Last is the issue of feedback. Matsui et al. (1987) found in group goal situations that feedback concerning group goals led to higher performance than individual goal feedback information.

alone. Thus, group goal feedback seems to be an important component for increased group performance through goal setting.

In the present study, group goals were established after baseline performance in the five minute work period was tallied. Goals were established at two and one-half times baseline group performance. This percentage was chosen since its application would result in difficult goals, a prerequisite for effective goal setting. Group goals were prominently written on the chalkboard at the front of the laboratory room. In this way specific, difficult performance goals were provided for the group.

Feedback of performance was provided in two ways. Individual feedback was conveniently dispensed by the numbered slips of paper used to record object uses. Thus, subjects were provided with a running tally of the number of uses individually created. Feedback of group performance was provided by the experimenter, who kept a visual count of the number of paper slips dropped into the collection box. Midway through the ten minute work period the experimenter wrote the current group performance total on the chalkboard, directly beneath the group goal display. This was the only time at which group performance feedback was given.

Experimental Conditions

Evaluation/Goal. After the initial Evaluation manipulations were presented, subjects in this condition were

asked to select a small envelope from a box containing twenty such envelopes. They were reminded that it did not matter which envelope they chose since each contained the name of the same object. Subjects were informed that each envelope also contained numbered slips of paper on which the uses were to be written. After being reminded of the purpose of the task, subjects were invited to open the envelope, remove its contents, note the identity of the common object, and begin working.

After the results of the five minute work period had been tallied, and the collection box emptied, the experimenter determined the goal number of uses to be produced during the ten minute period. The subjects were then given these instructions:

During the five minute work period this group created a total of _____ uses. Based on this number I have determined a certain "goal" number of uses that I would like the group to produce during this next, ten minute work session. This is the number of uses I would like this group to create. (Here, the experimenter wrote the group goal on the chalkboard.) Is everyone willing to try to reach this goal? (At this point the experimenter looked to each subject for a response.)

In order to help you keep track of how close the group is to the goal, I will keep a visual count of

the number of uses you create, and at the end of five minutes I'll write that total here on the chalkboard.

The participants were then instructed to choose from another set of envelopes, and were reminded that the group would again work on a common object. The subjects were then asked to open their envelopes and begin working.

Evaluation/No Goal. After the five minute work period, subjects were informed of the number of uses created by the group. No mention was made of a group performance goal. Subjects were simply informed they would again generate uses for a common object, although in this session they would work for ten minutes.

No Evaluation/Goal. Prior to the five minute work period subjects in this condition were told that although they would each produce uses for a different object (some easy, some difficult), the experimenter was actually interested in the total number of uses generated by the group. Thus, individual output would be pooled.

For the ten minute work period group goals were assigned using the same procedure as in the previous goal condition.

No Evaluation/No Goal. This condition attempted to replicate the social loafing effect. According to Harkins (1987) this required subjects to believe that task performance could not be evaluated. Thus, manipulations consistent with non-evaluative conditions were presented. Further, no group goal was assigned for the ten minute work

period.

Individual Performance. This supplementary condition was introduced to check for the presence of social loafing in the no evaluation/no goal condition of the design. In this condition subjects (n=8) simply worked by themselves at the object-use task for the two work periods. No evaluation apprehension or goal manipulations were introduced.

Following the second work session all participants were asked to respond to a set of ancillary measures (Appendix B). The questionnaire used in non-goal conditions consisted of 19 items. These items measured such reactions to the object-use generation task as: task enjoyment, output identifiability, output comparability, meaningfulness of the task, task effort, group cohesiveness, and the presence of individual goals. Goal condition subjects responded to an additional number of questions regarding reactions to the introduction of the group goal. All of the items for both questionnaires, except for two dichotomous items, used 9-point Likert-type scales in which a "1" generally corresponded to "Very Much", while a "9" corresponded to "Not at All."

Upon completion of the post-experimental questionnaire, subjects were debriefed, thanked, and dismissed.

Chapter III

Results

Statistical analyses of the object-use generation task and ancillary item data were performed using individuals as the unit of analysis. This is predicated on the analysis of variance assumption that individual subject responses should be independent, or uncorrelated with one another. Although subjects in the present study worked at the task in a group setting, the separation of subjects by partitions and the independence of task performance should have suppressed the effects of group participation. Such uncorrelated individual scores should not result in the violation of ANOVA assumptions, and, thus, are appropriate as the unit of analysis.

Manipulation Checks

Output Identifiability. Identifiability of task output, as part of the evaluation apprehension manipulation, was assessed through two items of the post-experimental questionnaire (see Appendix B). Item 4, "To what extent was your contribution to the group's performance identifiable by the experimenter?", and item 5, "To what extent do you think the experimenter could evaluate the uses that you created?", measured the extent to which subjects perceived that object-uses could be traced back to the author. Coefficient alpha derived for the two items showed a moderate reliability

($\alpha = 0.59$). The average response for the two items served as the dependent variable in a 2 (group goal versus no group goal) X 2 (evaluation apprehension versus no evaluation apprehension) analysis of variance. A summary table of this analysis may be found in Table 1. Contrary to predictions, individuals in evaluation ($M=4.09$) and non-evaluation ($M=4.05$) conditions expressed similar perceptions of identifiability (i.e., output was perceived as moderately identifiable).

Since these identifiability measures were found to be only moderately correlated, analyses of variance were separately performed for the two items. No significant evaluation or group goal main effects were discovered for either item, however the analysis for item 5 revealed a significant interaction of evaluation and goal conditions, $F(1,76)=6.12$, $p<.01$. Scrutiny of cell means indicated that, surprisingly, both the evaluation/group goal and the no evaluation/no goal conditions yielded lower average responses (and thus higher perceived evaluation potential) than conditions in which evaluation apprehension or group goals appeared by themselves. This pattern of results is not entirely understood. It is quite puzzling that the evaluation/group goal condition should result in such weak perceptions of identifiability. Consequently, given the lack of main effects and the nature of the interaction, a most likely explanation is that item 5 is a poor, perhaps

Table 1

ANOVA: Perceived Identifiability of Output

Independent Variables = Group Goal (GOAL)
 Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
MAIN EFFECTS	0.563	2	0.281	0.089
GOAL	0.450	1	0.450	0.142
EVAL	0.113	1	0.113	0.036
2-WAY INTERACTION				
GOAL EVAL	5.000	1	5.000	1.583
EXPLAINED	5.563	3	1.854	0.587
RESIDUAL	240.125	76	3.160	
TOTAL	245.688	79	3.110	

Note. No comparison reached significance at $p < .05$.

ambiguous measure of identifiability.

Output Comparability. A second part of the evaluation apprehension manipulation measured subjects' perceptions of the comparability of output to the performance of others. Perceptions of comparability were tapped by item 6 ("In the 10-minute work period, was your object the same, or different, from the objects that others in your group created uses for?") and item 7 ("To what extent could your performance be compared to that of other members of your group?") of the questionnaire. Since item 6 required a dichotomous response, composite scores of responses to these items were not calculated.

Item 6 was a measure of the same/different object manipulation of the evaluation condition. Subjects were simply asked to indicate whether the group had received similar or different objects to work with during the ten-minute session. It is apparent that some subjects were either suspicious or inattentive to this manipulation, since thirteen subjects (or 17% of total respondents) responded opposite to the same/different manipulation used in their group. For example, for the evaluation conditions, in which subjects were told that each member of the group would work with the same object, five subjects indicated the belief that group members worked on different objects. Regardless of the suspicions of some subjects, a 2 X 2 analysis of variance with this item (see Table 2) indicated that the

Table 2

ANOVA: Same/Different Object Manipulation

Independent Variables = Group Goal (GOAL)
 Evaluation Apprchension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
MAIN EFFECTS	8.066	2	4.033	27.217*
GOAL	0.092	1	0.092	0.618
EVAL	7.997	1	7.997	53.969*
2-WAY INTERACTION				
GOAL EVAL	0.000	1	0.000	0.001
EXPLAINED	8.066	3	2.689	18.145*
RESIDUAL	10.521	71	0.148	
TOTAL	18.587	74	0.251	

* $p < .0001$

manipulation produced different perceptions of object dispersion between the evaluation conditions, $F(1,71)=53.97$, $p<.0001$.

One potential problem in using the analysis of variance with dichotomous dependent variables is that scores are not normally distributed, and that an assumption of the F test is violated. Research has indicated (Lunney, 1970; Hsu & Feldt, 1969), however, that when sample size is equal between groups, the actual significance levels found using dichotomous variables are quite close to nominal significance levels. Given the equivalent number of subjects between conditions and the need for the analysis, the analysis of variance was felt to be appropriate for this, and other dichotomous items of the post-experimental questionnaire.

Item 7 of the questionnaire was intended to tap perceptions of output comparability, based on the same/different manipulation. It was intended that subjects in "same-object" conditions would sense a higher degree of comparability than subjects in "different-object" conditions, since the number of uses created by members of the group could easily be weighed against one another. A 2 X 2 analysis of variance, using item 7 as a dependent measure, indicated that subjects did not differ in their perceptions of output comparability across the evaluation conditions (see Table 3). On the average, subjects perceived output to be only moderately comparable ($M=4.34$, $SD=2.24$).

Table 3

ANOVA: Perceived Comparability of Output

Independent Variables = Group Goal (GOAL)
 Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
MAIN EFFECTS	3.968	2	1.984	0.393
GOAL	0.161	1	0.161	0.032
EVAL	3.827	1	3.827	0.757
2-WAY INTERACTION				
GOAL EVAL	8.820	1	8.820	1.745
EXPLAINED	12.788	3	4.263	0.844
RESIDUAL	378.984	75	5.053	
TOTAL	391.772	78	5.023	

Note. No comparison reached significance at $p < .05$.

For the purposes of the experiment, the strength of the same/different object manipulation would have only been of practical use had it resulted in perceptual differences in output comparability across evaluation conditions. Contrary to intentions, this did not seem to be the case. Of course, this contention may only be true if item 7 was indeed an accurate measure of output comparability. It may be the case that item 7 is actually a poor measure of such feelings, or that it may instead tap the perceived comparability of the content of the object-uses created. Perhaps, in hindsight, the question should have more clearly regarded the number of uses generated.

Coupled with the output identifiability manipulation check, these results seem to suggest that subjects either perceived a similar amount of evaluation apprehension in both evaluation conditions, that evaluation apprehension was not present, or that the questionnaire failed to adequately measure the components of evaluation apprehension. It is also possible that the evaluation manipulations produced some effect other than intended and that this new variable may have somehow affected performance. Unfortunately, these questions cannot be entirely answered from the available data. The implications of this ambiguous result shall be discussed later.

Goal Characteristics. Group goals assigned during the 10-minute work period ranged from 73 to 105 object-uses.

subjects receiving a group goal responded to additional questions concerning the necessary components of the goal setting paradigm (i.e., goal difficulty, feedback of results, and goal acceptance). Item 19 ("Did your group receive an assigned performance goal?") checked the salience of the goal assigned to the group. Of the ten groups ($n=40$) assigned a goal, one subject responded that a performance goal had not been assigned. This subject, however, went on to respond to the remaining group goal items, indicating that the subject may not have understood the original question.

Goal difficulty was assessed through item 20: "How difficult was the performance goal for the group?". Responses to the nine-point scale (where "1" corresponded to "Very Difficult") indicated that group goals were considered difficult ($M=3.70$, $SD=2.15$) by subjects. This finding supports the idea that the group goals were difficult but attainable, as intended by the design of the task.

Feedback on group goal performance was offered midway through the 10-minute work session. For the goal conditions, feedback ranged from 32 to 59 object-uses, representing an average level of goal completion of 47% ($SD=7.96$) of the group goal. The feedback manipulation was checked in item 21 of the questionnaire: "While the group was attempting to reach the goal, was any information provided to the group concerning how well the group was doing?". Ninety-five percent of subjects exposed to the group goal conditions

answered "Yes" to this dichotomous item, revealing the salience of the feedback offered.

A third component of goal setting, goal acceptance, was measured by three items of the post-experimental questionnaire. Items 22, 23, and 24 were each designed to measure a different aspect of goal acceptance. Coefficient alpha reliability calculated for the three items was .73. Based on their relatively high reliability, composite scores of goal acceptance were derived by averaging responses to the questions. Subjects, on the average, evidenced a high degree of goal acceptance ($M=3.02$, $SD=1.61$). Composite goal acceptance scores were then used as a dependent variable in a oneway analysis of variance across the levels of evaluation. Results of the oneway analysis (see Table 4) revealed, as desired, no significant difference in goal acceptance between evaluation conditions ($F(1,38)=0.104$, $p>.70$). This result suggests that even for groups of workers, high acceptance of a goal can be realized.

Performance Manipulations

An analysis of performance by condition for the five minute work period revealed no significant differences among experimental conditions. This result implies a lack of pre-existing differences among subjects, and increases confidence in results obtained for the 10-minute work session. Additionally, an analysis of median performance in the experimental conditions indicated that outliers in

Table 4

ANOVA: Goal Acceptance

Independent Variable = Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
MAIN EFFECTS				
EVAL	0.278	1	0.278	0.104
RESIDUAL	101.044	38	2.659	
TOTAL	101.322	39	2.598	

Note. No comparison reached significance at $p < .05$.

performance probably did spuriously inflate obtained variance. This implies that differences found between experimental conditions for 10-minute performance are not due to a small number of subjects who generated an inordinately high number of object-uses during their work period.

Table 5 summarizes the means and standard deviations of the four groups representing evaluation and group goal conditions for the 10-minute work period. The table also includes summary data for the fifth condition, individual performance. Figure 1 graphically depicts the means of all conditions.

Using output for the ten minute work session as a dependent variable, a 2 X 2 analysis of variance was computed for evaluation apprehension and group goals. Results of the analysis are detailed in Table 6. The lack of significant main effects in the analysis indicates that neither group goal nor evaluation apprehension conditions produced greater numbers of object-uses for the second work session. These results do not support the contentions of the Additive Hypothesis that both evaluation and group goals would, by themselves and in combination, produce superior performance.

In order to test the Interaction Hypothesis, the presence of group goals or evaluation apprehension was contrasted against the no evaluation/no goal (social loafing replication) condition using a pooled-variance t -test. Table 7 outlines the results. The analysis indicates that the

Figure 1.
Means of Experimental Conditions

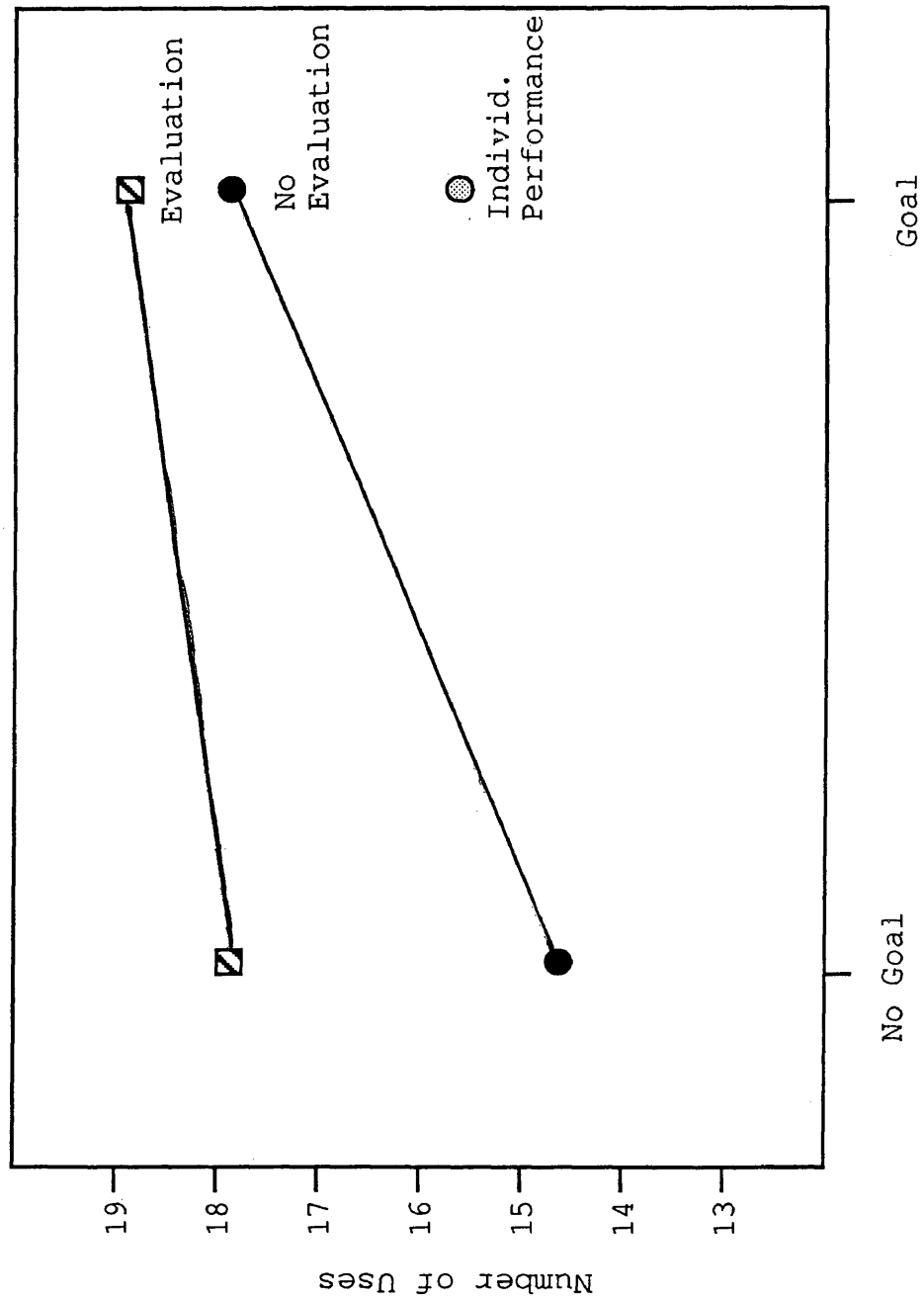


Table 5

Means and Standard Deviations*: 10-Minute Work Period

	Goal	No Goal
Evaluation		
<u>M</u>	18.80	18.00
<u>SD</u>	6.45	8.29
No Evaluation		
<u>M</u>	17.85	14.55
<u>SD</u>	5.02	6.64

Individual Performance - M=15.75, SD=5.80

* Note. Means represent number of object-uses created.

Table 6

ANOVA: Evaluation X Group Goal Conditions

Independent Variables = Group Goal (GOAL)
 Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
MAIN EFFECTS	180.85	2	90.425	2.015
GOAL	84.05	1	84.050	1.873
EVAL	96.80	1	96.80	2.157
2-WAY INTERACTION				
GOAL EVAL	31.25	1	31.25	0.696
EXPLAINED	212.10	3	70.70	1.575
RESIDUAL	3410.70	76	44.878	
TOTAL	3622.80	79	45.858	

Note. No comparison reached significance at $p < .05$.

Table 7

ONEWAY ANOVA: T-Test, Evaluation, Group Goal
Conditions Versus No Evaluation/No Goal Condition

Independent Variable = Group Conditions

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
BETWEEN GROUPS	212.100	3	70.700	1.5754
WITHIN GROUPS	3410.700	76	44.8776	
TOTAL	3622.800	79		

CONTRAST	POOLED VARIANCE ESTIMATE			
	M DIFF	ST. ERROR	DE	T VALUE
CONTRAST	-3.6667	5.1891	76	-2.120*

* $p < .05$

presence of either group goals or evaluation apprehension was sufficient to elicit higher task performance than a condition in which these variables were absent, $t(1,76)=-2.13$, $p<.05$; $\omega^2=0.042$. This result is consistent with the predictions of the Interaction Hypothesis; that is, the presence of either motivational procedure is sufficient to provoke increased effort at the task. Thus, group goals and evaluation conditions were able to counteract the reductions in performance expected for situations in which social loafing may occur. It must again be stressed, however, that strictly speaking evaluation apprehension may not have occurred in the experiment. Nevertheless, motivational elements present in the evaluation conditions resulted in heightened performance.

Notably, ω^2 revealed that only 4% of total variance was accounted for by the evaluation and group goal manipulations. Although these experimental conditions seemed to stimulate performance, their effects accounted for a relatively small portion of the variance in responses among participants.

Analysis of variance (see Table 8) revealed a marginally significant main effect for sex of subject in task performance ($F(1,72)=3.77$, $p<.06$; $\omega^2=0.03$), with males ($M=18.72$) producing more object-uses than females ($M=16.08$). A significant interaction of sex of subject with evaluation and group goals was also found, $F(1,72)=4.89$, $p<.03$; $\omega^2=.043$. Further analysis revealed that the performance of male subjects accounted for a large portion of the variance of the

Table 8

ANOVA: Task Performance X Sex of Subject

Independent Variable = Sex of Subject (SEX)
 Group Goal (GOAL)
 Evaluation Apprehension
 (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
MAIN EFFECTS	334.983	3	111.66	2.729
SEX	154.133	1	154.133	3.767*
GOAL	84.050	1	84.050	2.054
EVAL	96.800	1	96.800	2.366
2-WAY INTERACTIONS				
SEX EVAL	14.700	1	14.700	0.359
SEX GOAL	95.408	1	95.408	2.332
EVAL GOAL	31.250	1	31.250	0.764
3-WAY INTERACTIONS				
SEX GOAL EVAL	200.208	1	200.208	4.893*
EXPLAINED	676.550	7	96.650	2.362
RESIDUAL	2946.250	72	40.920	
TOTAL	3622.800	79	45.858	

* $p < .05$

dependent measure. T-test analysis of the Interaction Hypothesis using only the responses of male subjects resulted in a marginally significant difference, $t(3,28)=1.87$, $p<.07$; $\omega^2=.07$. Conversely, a similar contrast using only female subjects was not significant, $t(3,44)=1.30$, $p>.20$; $\omega^2=0.01$. Thus, it appears that the performance of male subjects may have made the larger contribution to the significance of the Interaction Hypothesis.

A check for the presence of the social loafing effect was performed by comparing the social loafing replication condition of the experiment to the individual performance condition. Drawing from the social loafing literature, it was hypothesized that if the social loafing effect were present subjects in the no evaluation/no goal condition would produce significantly fewer uses than subjects working by themselves. A t -test between the conditions revealed that the number of uses produced in the groups did not differ significantly, $M=15.15$ ($t(1,83)=0.43$, ns.; see Table 9). It appears that social loafing did not occur as expected. Individuals seemed to generate a comparable number of uses regardless of whether they worked alone or in non-evaluative, no-goal groups. Notably, subjects in the no evaluation/no goal condition produced the lowest number of object-uses of any condition of the experiment (see Table 5), with conditions containing either goal or evaluation manipulations resulting in 25% higher performance. Moreover, if social

Table 9

ONEWAY ANOVA: T-Test, Social Loafing Replication
Condition Versus Individual Performance

Independent Variable = Group Condition

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
BETWEEN GROUPS	229.573	4	57.393	1.306
WITHIN GROUPS	3646.200	83	43.930	
TOTAL	3875.773	87		

CONTRAST	POOLED VARIANCE ESTIMATE			
	M DIFF	ST. ERROR	DE	T VALUE
CONTRAST	1.2000	2.7727	83	0.433

Note. No comparison reached significance at $p < .05$.

loafing had occurred, subjects in this condition would have generated an even smaller number of uses than was actually produced. Together these results indicate that both goal and evaluation conditions resulted in quite pronounced increases in task performance. However, since social loafing may not have actually occurred, comparisons of goal and evaluation performance to actual social loafing are tenuous.

Post-Experimental Questionnaire

Task Enjoyability. The three items of the post-experimental questionnaire (see Appendix B) assessing individual task enjoyability (as a limiting variable of social loafing) were averaged to create a composite index of task enjoyability ($M=3.91$). Inter-item reliability between the items was found to be high ($\alpha = .84$). A 2 X 2 analysis of variance (levels of evaluation X levels of group goal) performed on composite task enjoyability scores confirmed a main effect for the group goal manipulation, $F(3,76)=6.23$, $p<.05$ (see Table 10). Subjects assigned a group performance goal were more attracted to the task ($M=3.50$) than subjects who did not receive the goal manipulation ($M=4.37$). Neither the main effect for evaluation nor the interaction of evaluation and group goals was significant.

Task Effort. Subjects indicated their effort at the object-use generation task using items 8, 9, and 10 of the questionnaire. Respectively, these items measured the amount

Table 10

ANOVA: Perceived Task Enjoyability

Independent Variables = Group Goal (GOAL)
 Evaluation Apprchension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
MAIN EFFECTS	13.389	2	6.694	3.126*
GOAL	13.339	1	13.339	6.228*
EVAL	0.050	1	0.050	0.023
2-WAY INTERACTION				
GOAL EVAL	0.050	1	0.050	0.023
EXPLAINED	13.439	3	4.480	2.092
RESIDUAL	162.778	76	2.142	
TOTAL	176.217	79	2.231	

* $p < .05$

of effort exerted at the task (for the ten minute trial), the extent of commitment to task performance, and perceptions of task difficulty. Coefficient alpha indicated that, together, these items were quite reliable ($\alpha = .80$). Composite scores of task effort were calculated as the average response of the three items ($M=2.33$, $SD=1.37$). An analysis of variance revealed no effects (see Table 11). Thus, subjects perceived a similar amount of effort in performing the task irrespective of the motivational effects of evaluation or group goals.

Task Meaningfulness. Indices of task meaningfulness (as a possible boundary of social loafing) tapped the extent of personal identification with the experimental task. Four items of the questionnaire represented measures of perceived task importance, worth, meaning, and personal task identification (coefficient alpha = .79). Averaged responses to the items ($M=2.01$) were used as the dependent variable in a 2 X 2 analysis of variance (see Table 12). A significant main effect for group goals revealed that subjects not assigned a group goal perceived the task to be less meaningful than subjects receiving a goal ($F(1,79)=3.73$, $p<.05$).

Group Cohesiveness. Three items of the questionnaire assessed aspects of individual perceptions of group commitment and effort. The design of these questions did not allow their integration into composite scores. Item 15, "How

Table 11

ANOVA: Perceived Effort Toward the Task

Independent Variables = Group Goal (GOAL)
 Evaluation Apprchension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F
MAIN EFFECTS	1.669	2	0.835	0.613
GOAL	0.501	1	0.501	0.368
EVAL	1.168	1	1.168	0.858
2-WAY INTERACTION				
GOAL EVAL	2.112	1	2.112	1.552
EXPLAINED	3.782	3	1.261	0.926
RESIDUAL	103.439	76	1.361	
TOTAL	107.221	79	1.357	

Note. No comparison reached significance at $p < .05$.

Table 12

ANOVA: Perceived Meaningfulness of the Task

Independent Variables = Group Goal (GOAL)
 Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F
MAIN EFFECTS	10.363	2	5.181	2.123
GOAL	9.113	1	9.113	3.734*
EVAL	1.250	1	1.250	0.512
2-WAY INTERACTION				
GOAL EVAL	0.003	1	0.003	0.001
EXPLAINED	10.366	3	3.455	1.416
RESIDUAL	185.481	76	2.441	
TOTAL	195.847	79	2.479	

* $p < .05$

much would you like to continue to work with this group?", was designed to measure general affect toward the work group. Interestingly, subjects' average response revealed that group cohesiveness was only moderate ($M=4.59$; $SD=1.67$). This result indicates that the nature of group participation in the experiment (e.g., use of partitions, etc.) may have reduced any sense of group belongingness. Analysis of variance revealed no main effect or interaction for the group goal and evaluation variables (see Table 13).

Item 16 asked: "How much effort do you think others in your group put forth at the task?". This question was intended to assess individual perceptions of group worth. The average response to the item ($M=3.45$; $SD=1.66$) indicates that subjects perceived the performance of others in the work group to be mostly effortful. A marginally significant main effect for group goals resulted from a 2 X 2 analysis of variance using item 16 as the dependent variable, $F(1,76)=3.08$, $p<.08$ (see Table 14). Groups not assigned a goal tend to perceive less effort on the part of co-workers ($M=3.78$) than groups receiving a performance goal ($M=3.13$). Neither a main effect for evaluation, nor a group goal and evaluation interaction were significant.

Item 17, "Do you feel that you put forth more or less effort at the task than others in your group?", was intended to measure the perceived relationship of individual effort to group output. Using the 9-point scale, a low-number response

Table 13

ANOVA: Perceived Work Group Cohesiveness

Independent Variables = Group Goal (GOAL)
 Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F
MAIN EFFECTS	0.625	2	0.313	0.109
GOAL	0.613	1	0.613	0.214
EVAL	0.013	1	0.013	0.004
2-WAY INTERACTION				
GOAL EVAL	1.013	1	1.013	0.350
EXPLAINED	1.637	3	0.546	0.189
RESIDUAL	219.750	76	2.891	
TOTAL	221.388	79	2.802	

Note. No comparison reached significance at $p < .05$.

Table 14

ANOVA: Perception of Task Effort of Others in Work Group

Independent Variables = Group Goal (GOAL)
 Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F
MAIN EFFECTS	8.50	2	4.250	1.549
GOAL	8.450	1	8.450	3.080*
EVAL	0.050	1	0.050	0.018
2-WAY INTERACTION				
GOAL EVAL	0.800	1	0.800	0.292
EXPLAINED	9.300	3	3.100	1.130
RESIDUAL	208.500	76	2.743	
TOTAL	217.800	79	2.757	

* $p < .08$

to this item indicated a perception of more effort by the individual than others in the group, while a high number indicated a belief that the subject put forth less effort than others in the work group. The mean of all evaluation and group goal conditions was 4.37 ($SD=1.22$), suggesting that, on the average, subjects believed that they expended an equivalent amount of effort as others in the group.

Table 15 summarizes a 2 X 2 analysis of variance using item 17 as a dependent measure. The analysis revealed no significant main effect differences between goal and evaluation conditions, and a non-significant interaction.

Presence of Individual Goals. One item of the questionnaire (item 18) gauged the presence of individual performance goals during the ten-minute work period. Although the use of individual goals was neither encouraged nor discouraged in any of the experimental conditions, it was expected that the assignment of group goals would facilitate the setting of individual performance goals. Forty-six percent of all subjects indicated that they had set an individual performance goal. A 2 X 2 analysis of variance revealed that the use of these goals did not differ significantly between evaluation or group goal conditions (see Table 16). Apparently, subjects were equally likely to assign for themselves an individual performance goal regardless of the presence of a goal for the group, $F(1,76)=0.435, ns.$

Table 15

ANOVA: Perceived Individual Effort Compared to the Effort
of Others in the Work Group

Independent Variables = Group Goal (GOAL)
Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DE	MEAN SQUARE	F
MAIN EFFECTS	0.369	2	0.184	0.121
GOAL	0.364	1	0.364	0.239
EVAL	0.004	1	0.004	0.003
2-WAY INTERACTION				
GOAL EVAL	2.002	1	2.002	1.317
EXPLAINED	2.370	3	0.790	0.520
RESIDUAL	113.984	75	1.520	
TOTAL	116.354	78	1.492	

Note. No comparison reached significance at $p < .05$.

Table 16

ANOVA: Presence of Individual Performance Goal

Independent Variables = Group Goal (GOAL)
 Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F
MAIN EFFECTS	0.225	2	0.113	0.435
GOAL	0.113	1	0.113	0.435
EVAL	0.113	1	0.113	0.435
2-WAY INTERACTION				
GOAL EVAL	0.013	1	0.013	0.048
EXPLAINED	0.237	3	0.079	0.306
RESIDUAL	19.650	76	0.259	
TOTAL	19.888	79	0.252	

Note. No comparison reached significance at $p < .05$.

Subjects who had set an individual performance goal were asked to rate their commitment to the goal via item 18a, which asked: "How committed were you to attaining this individual goal?". An averaged response to this item ($M=2.38$, $SD=1.16$) indicates that these subjects were highly committed to the goal they had created. Analysis of variance revealed no significant differences among the goal or evaluation manipulations (see Table 17).

Table 17

ANOVA: Individual Performance Goal Commitment

Independent Variables = Group Goal (GOAL)
 Evaluation Apprehension (EVAL)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F
MAIN EFFECTS	0.268	2	0.134	0.091
GOAL	0.264	1	0.264	0.180
EVAL	0.000	1	0.000	0.000
2-WAY INTERACTION				
GOAL EVAL	0.031	1	0.031	0.021
EXPLAINED	0.299	3	0.100	0.068
RESIDUAL	48.404	33	1.467	
TOTAL	48.703	36	1.353	

Note. No comparison reached significance at $p < .05$.

Chapter IV

Discussion

Manipulation Checks

Evaluation apprehension. Harkins (1987) holds that for evaluation pressure to be perceived, two conditions must be met: first, task output must be identifiable; second, output must be comparable to some performance standard. Evidence regarding the presence of these components in the present study yielded mixed results for the evaluation apprehension manipulation. First, perceived identifiability of subject output remained constant across evaluation/no evaluation conditions. That is, despite the 4-compartment collection box/pooled conditions, subjects sensed that the experimenter had a reasonable chance of tracing an object-use back to its source.

Output comparability was induced by prompting subjects to believe that group members created uses for the same object. Consequently, subjects should perceive that the output of one worker could be directly compared to the output of others in the group. Subjects in no evaluation (and, thus, no-comparability) conditions were led to believe that group members were issued different objects, some easy, some difficult to use in the task. A direct check of the same/different object manipulation revealed that subjects were well influenced by this treatment. However, a direct

measure of output comparability (Item 7 of the questionnaire; see Appendix B) indicated that subjects perceived a similar amount of comparability across evaluation conditions. Either subjects did not make the intuitive leap from the nature of the group object to output comparability, or perhaps this item of the questionnaire was an insensitive measure of output comparability. Taken together, these indices of evaluation pressure suggest that the manipulation did not have as strong an influence as was expected. Why did this occur? One suspicion implicates the nature of the task in inducing perceptions of identifiability. Although the task was explained as a "group" project, subjects were separated by partitions and responded to the task using individual tubes. Further, the experimenter had an unobstructed view of each subject during the work sessions. Hence, despite the "pooled" condition, subjects may have concentrated on individual performance, and generalized feelings of isolation to identifiability of individual effort.

Group goals. Simply stated, Locke (1968), posits that difficult, specific goals can lead to increases in motivation to perform if goals are accepted by workers, and if performance feedback is supplied. Checks of these goal setting components in the current study revealed that:

- 1) goals were perceived to be specific and difficult, 2)
- subjects accepted group goals as a performance standard, and
- 3) subjects recognized that feedback was provided. These

results clearly indicate that goals were successfully implemented. The viability of these group goals will be discussed below.

Evaluation and Goal Hypotheses

Of central interest in the research are the competing hypotheses derived from the combination of the social loafing, evaluation apprehension and goal setting literature. Specifically, the Additive Hypothesis stated that both evaluation apprehension and group goals would result in main effects, with more uses produced in groups receiving a goal or evaluation pressure. However, neither group goal nor evaluation conditions produced significant main effects; thus, the hypothesis was not supported.

Results were supportive, however, for the alternative postulate, the Interaction Hypothesis. According to this hypothesis the presence of evaluation apprehension, group goals, or their combination, would yield higher task performance than an experimental condition in which these manipulations were absent. Consistent with these expectations, subjects produced significantly more object-uses in evaluation/no goal, no evaluation/group goal, and evaluation/group goal conditions than a no evaluation/no goal condition (see Table 7). Thus it would appear that either motivational technique is sufficient to counteract decrements in performance attributable to social loafing, although the amount of evaluation apprehension present is not known. It

must be recognized, however, that the effect size of the contrast (4% of total variance) was small relative to the total variance of the dependent measure. Although both goals and evaluation pressure stimulated performance, their impact was small in relation to other, unidentified, influences on performance.

Relatedly, task performance in the no evaluation/no goal (social loafing replication) condition did not differ significantly from an individual performance condition in which subjects worked at the task alone. This result suggests that social loafing may not have been truly induced in the experiment, since loafing should have resulted in significantly lower task performance as a function of the group situation. Therefore, support for the Interaction Hypothesis not only suggests that the effect produced in evaluation conditions or group goals results in higher output than individual performance, but that these manipulations would probably have resulted in higher output than a social loafing condition had it occurred (since social loafing would have led to even less output than an individual performance condition).

One possible explanation for such results is that evaluation apprehension and goal setting may contain similar motivational elements. As noted before, goal setting seems to implicitly produce both identifiability of goal-directed performance and the comparability of performance to a

standard; i.e., the goal itself. Thus, perhaps evaluation apprehension is the foundation of the motivating force of assigned goals. Stated differently, goal setting may lead to increased performance by simply enunciating the presence of evaluation pressure. This hypothesis is clearly consistent with results in favor of the Interaction Hypothesis of the experiment. These results, however, seem to contradict the findings of White, Mitchell, and Bell (1979), who determined that when used in combination evaluation and individual goals produced additive effects.

Even if goal setting and evaluation apprehension seem to increase performance through similar processes, goal setting does seem to result in some effects that cannot be attributed to evaluation pressure. Several items of the post-experimental questionnaire revealed that the introduction of group goals heightened subjects' enjoyment and perceived meaningfulness of the object-use generation task. Increased meaningfulness could have resulted from the explicitness of the specific goal. Enjoyment of the task may have been heightened simply by the added incentive to perform, or, perhaps, by the utter novelty of the goal situation. In a related vein, Mossholder (1980) found that goals increased task attractiveness for boring tasks but not for tasks that already held some attraction for subjects. In the current experiment, goals heightened task enjoyability for a task that was perceived as interesting in all

conditions. The lowest mean enjoyability rating of any condition was 3.50, corresponding to "good" task enjoyability. The conclusion that the results of Mossholder (1980) conflict with the present study is not entirely justified, however. Direct comparison of these results is difficult, since the studies differ considerably in design, purpose, and the nature of the tasks employed. For example, Mossholder (1980) manipulated task attractiveness using physical tasks (erector set construction of interesting and boring objects), while the present study utilized a cognitive task. It is quite possible that the qualities of task attractiveness differ in regard to the nature of the task used. In this respect, the studies may have measured different aspects of task attractiveness.

Another facet of the study of particular relevance to goal theory was the use of true group goals in the study. Groups receiving an assigned goal, meeting the elemental criteria of goal setting and diffused over a number of workers, still managed to effect higher performance than groups receiving neither a goal nor evaluation pressure. This result is congruent with those reported by Matsui et al. (1987), who also found evidence for the robustness of group goals. Notably, a "group" for Matsui, et al. consisted of only two subjects, while the present experiment employed four subjects per group. Even with increased group size, and thus higher diffusion of the goal, workers will increase effort to

achieve an assigned performance standard.

What implications do these findings hold for applied settings? Perhaps the most significant contribution of the study implies that even for work situations in which group unity, cohesiveness, or "groupiness" is low, evaluation apprehension or group goals can sufficiently counteract decrements in individual performance expected from social loafing. Subjects in the present study, ostensibly working in a group, reported only a fair amount of group cohesiveness; yet these manipulations resulted in higher output. Production line work, for example, sometimes involves non-interacting "groups" of workers who work at individually-unidentifiable, similar tasks. Work situations of this design are vulnerable to the harmful influences of social loafing. Decrements in performance may be avoided quite easily by changing the job design to include group goals, or, alternately, to increase evaluation pressure (e.g., increased output identifiability and comparability).

The viability of assigned group goals also has attractive implications for group task performance even when group members work on different portions of an "additive" (Steiner, 1972) group task. For the no evaluation/group goal condition of the present study, participants were told that each subject would receive a different object, yet were expected to contribute to an overall group performance goal. The increased performance found under these conditions

implies that group goals engender a commitment to group performance standards even for individually different tasks.

Methodological Flaws

One methodological concern addresses the presence of uncontrolled noise resulting from the performance of the object-use generation task. During pretrial tests of the task it was noticed that while writing object-uses on slips of paper, subjects produced a considerable amount of localized noise. It was also discovered that slips of paper sliding through the plastic collection tubes also created a sound that was loud enough to be noticed. It is possible that hearing the response rate of other members of the work group could have prompted subjects to increase performance independent of the presence or absence of certain experimental manipulations. More specifically, such sounds could have raised perceptions of both identifiability and comparability of output. In response to the problem a small electric fan was introduced in the experimental situation in an attempt to help "drown out" the unruly noise. Unfortunately, during the course of experimentation several subjects still reported noticing the random sounds of others' work.

Future Research

The clear ability of the motivational techniques of the present study to increase group productivity suggests that this course of research may yield stimulating insights into

the mechanisms of group performance. Evaluation apprehension and group goals, at least in this setting, led to heightened group motivation. The mechanisms that underlie these techniques are complex, and much work remains to be done to unravel these processes.

The most striking implication for future research is that group goals and evaluation apprehension may share similar motivational processes. Research is needed to separate goal effects from increases in motivation due to identifiability or comparability of performance. Such work should focus on comparing and contrasting the processes that underlie both techniques. The results of such work should have interesting implications for both goal theory and social facilitation research.

Of further interest would be research concentrating on the nature of group goals. Although the present study supports the contention that using group goals is a viable method of increasing effortful performance, much work remains to be done to uncover the precise influences of group membership on goal elements. For example, how is goal acceptance affected by using group goals? What is the role of individual goals when group goals are administered? In effect, much of the research that uncovered the processes inherent in individual goals may be contrasted with similar research on group goals.

Finally, what of social loafing? Unfortunately, social

loafing was not altogether reproduced in the study. Thus, the extent of increases in performance due to evaluation and goals over a social loafing condition could not be fully gauged. This suggests that more stringent experimental controls may yield more exact contrasts of social loafing decrements to these motivational procedures.

References

- Allport, F. H. (1924). Social Psychology. Boston: Houghton Mifflin.
- Barnard, C. I. (1938). The functions of the executive. Cambridge: Harvard University Press.
- Brickner, M. A., Harkins, S. G., & Ostrom, T. M. (1986). Effects of personal involvement: Thought-provoking implications for social loafing. Journal of Personality and Social Psychology, 51, 763-769.
- Campion, M. A., & Lord, R. G. (1982). A control systems conceptualization of the goal setting and changing process. Organizational Behavior and Human Performance, 30, 265-287.
- Davis, J. H. (1969). Group performance. New York: Addison-Wesley.
- Erez, M. (1977). Feedback: A necessary condition for the goal setting-performance relationship. Journal of Applied Psychology, 62, 624-627.
- French, J. R. P. (1951). Group productivity. In H. Guetzkow, (Ed.), Groups, leadership, and men. Pittsburgh: Carnegie Press.
- Harkins, S. G. (1987). Social loafing and social facilitation. Journal of Experimental Social Psychology, 23, 1-18.

- Harkins, S. G., & Jackson, J. M. (1985). The role of evaluation in eliminating social loafing. Personality and Social Psychology Bulletin, 11, 457-465.
- Harkins, S. G., Latane, B., & Williams, K. D. (1980). Social loafing: Allocating effort or taking it easy? Journal of Social Psychology, 16, 457-465.
- Harkins, S. G., & Petty, R. E. (1982). Effects of task difficulty and task uniqueness on social loafing. Journal of Personality and Social Psychology, 43, 1214-1229.
- Homans, G. C. (1950). The human group. New York: Harcourt, Brace.
- Hsu, T., & Feldt, L. S. (1969). The effects of limitations on the number of criterion score values on the significance level of the F-test. American Educational Research Journal, 6, 515-527.
- Ingham, A. G., Levinger, G., Graves, J., & Peckham, V. (1974). The Ringelmann effect: Studies of group size and group performance. Journal of Experimental Social Psychology, 10, 371-384.
- Jackson, J. M., & Harkins, S. G. (1985). Equity in effort: An explanation of the social loafing effect. Journal of Personality and Social Psychology, 49, 1199-1206.
- Jackson, J. M., & Williams, K. D. (1985). Social loafing on difficult tasks: Working collectively can improve performance. Journal of Personality and Social

- Psychology, 49, 937-942
- Kerr, N. L., & Bruun, S. E. (1981). Ringelmann revisited: Alternative explanations for the social loafing effect. Personality and Social Psychology Bulletin, 7, 224-231.
- Kravitz, D. A., & Martin, B. (1986). Ringelmann rediscovered: The original article. Journal of Personality and Social Psychology, 50, 936-941
- Latane, B. (1981). The psychology of social impact. American Psychologist, 36, 343-356.
- Latane, B., Williams, K. D., & Harkins, S. (1979). Many hands make light the work: The causes and consequences of social loafing. Journal of Personality and Social Psychology, 37, 822-832.
- 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., & Yukl, G. A. (1975). Assigned versus participative goal setting on performance and job satisfaction. Journal of Applied Psychology, 61, 166-171.
- Locke, E. A. (1967). Motivational effects of knowledge of performance: Knowledge or goal setting? Journal of Applied Psychology, 51, 324-329.
- Locke, E. A. (1968). Toward a theory of task motivation and incentives. Organizational Behavior and Human

- Performance, 3, 157-189.
- Locke, E. A. (1980). Latham versus Komaki: A tale of two paradigms. Journal of Applied Psychology, 65, 16-23
- Locke, E. A., Shaw, K. N., Saari, L. M., & Latham, G. P. (1981). Goal setting and task performance: 1969-1980. Psychological Bulletin, 90, 125-152.
- Lunney, G. H. (1970). Using analysis of variance with a dichotomous dependent variable: An empirical study. Journal of Educational Measurement, 7, 263-269.
- Matsui, T., Kakayuma, T., & Uy Onglatco, M. L. (1987). Effects of goals and feedback on performance in groups. Journal of Applied Psychology, 72, 407-415.
- 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.
- Moede, W. (1927). Die Richtlinien der Leistungs-Psychologie [Guidelines of performance psychology]. Industrielle Psychotechnik, 4, 193-209.
- Mossholder, K. W. (1980). Effects of externally mediated goal setting on intrinsic motivation: A laboratory experiment. Journal of Applied Psychology, 65, 202-210.
- Petty, R. E., Harkins, S. G., & Williams, K. D. (1980). The effects of group diffusion of cognitive effort on attitudes: An information-processing view. Journal of Personality and Social Psychology, 38, 81-92.

- Petty, R. E., Harkins, S. G., Williams, K. D., & Latane, E. (1977). The effects of group size on cognitive effort and evaluation. Personality and Social Psychology Bulletin, 3, 579-582.
- Reynolds, R. E., Standiford, S. N., & Anderson, R. C. (1979). Distribution of reading time when questions are asked about a restricted category of text information. Journal of Educational Psychology, 71, 183-190.
- Ringelmann, M. (1913a). Appareils de cultur mecanique avec treuils et cables (resultats d'essais) [Mechanical tilling equipment with winches and cables (results of tests)]. Annales de l'Institut National Agronomique, 2e serie-tome XII, 299-343.
- Ringelmann, M. (1913b). Recherches sur les moteurs animes: Travail de l'homme [Research on animate sources of power. The work of man]. Annales de l'Institut National Agronomique, 2e serie-tome XII, 1-40.
- Steiner, I. D. (1972). Group process and productivity. New York: Academic Press.
- Tubbs, M. E. (1986). Goal setting: A meta-analytic examination of the empirical evidence. Journal of Applied Psychology, 71, 474-483.
- Webster's New World Dictionary. (1980). New York: Simon and Schuster.

- Weldon, E., & Gargano, G. M. (1985). Cognitive effort in additive task groups: The effects of shared responsibility on the quality of multiattribute judgments. Organizational Behavior and Human Decision Processes, 36, 348-361.
- White, S. E., Mitchell, T. R., & Bell, C. H. (1977). Goal setting, evaluation apprehension, and social cues as determinants of job performance and job satisfaction in a simulated organization. Journal of Applied Psychology, 62, 665-673.
- Williams, K. D., Harkins, S. G., & Latane, B. (1981). Identifiability as a deterrent to social loafing: Two cheering experiments. Journal of Personality and Social Psychology, 40, 303-311.
- Yamaguchi, S., Okamoto, K., & Oka, T. (1985). Effects of coactor's presence: Social loafing and social facilitation. Japanese Psychological Research, 27, 215-222.
- Zaccaro, S. J. (1984). Social loafing: The role of task attractiveness. Personality and Social Psychology Bulletin, 10, 99-106.
- Zajonc, R. B. (1966). Social psychology: An experimental approach. Belmont, CA: Brooks/Cole.

Appendix A
Informed Consent

CONSENT FORM

page 1 of 2
Fall, 1987

GROUP PERFORMANCE AT A BRAINSTORMING TASK

INVITATION TO PARTICIPATE

You are invited to participate in this research because you are a student at the University of Nebraska at Omaha. This is the only eligibility requirement for this study.

Should you decide to participate in this study, your participation will satisfy one of several options available for obtaining extra credit in your psychology course. Alternative extra credit options are available from your instructor.

PURPOSE OF THE STUDY

The purpose of this study is to compare group performance at a brainstorming task. The groups will differ in their approach to the brainstorming task.

EXPLANATION OF PROCEDURES

As a participant in this study you will be asked to think of possible uses for ordinary objects, write the uses on slips of paper, and deposit the slips into a collection box. You will perform this task during two timed work sessions, of five and ten minutes, respectively. After the work sessions you will be asked to respond to a questionnaire concerning performance at the task.

POTENTIAL RISKS OF PARTICIPATION

No significant risks are involved in this research.

POTENTIAL BENEFITS OF PARTICIPATION

The benefits of participation in this study are simply those of having an opportunity to see how a research project of this type is conducted and to learn something about an area of current interest in psychology.

ASSURANCE OF CONFIDENTIALITY

Your responses during the study are completely confidential. Your name will not be associated in any way with the information that you provide. The information
(cont.)

page 2 of 2

obtained in this study may be published in scientific journals or presented at scientific meetings, but your identity will be kept strictly confidential.

WITHDRAWAL FROM THE STUDY

Participation is voluntary. Your decision whether or not to participate will not affect your relationship with the University of Nebraska. If you decide to participate, you are free to withdraw your consent and discontinue participation at any time. Furthermore, you have the right to withdraw your data from the study following the completion of any stage of the research should you decide to do so.

OFFER TO ANSWER QUESTIONS

If you have any questions please ask the experimenter now. If you have any questions later on, please feel free to contact me at my office (554-2704) or home (558-6757).

If you have any additional questions concerning the rights of research subjects you may contact the University of Nebraska Institutional Review Board (IRB), telephone 402/559-6463.

YOU ARE MAKING A DECISION WHETHER OR NOT TO PARTICIPATE. YOUR SIGNATURE INDICATES THAT YOU HAVE DECIDED TO PARTICIPATE HAVING READ THE INFORMATION PROVIDED ABOVE. YOU MAY HAVE A COPY OF THIS FORM TO KEEP.

Thomas Rauzi
Graduate Student
Department of Psychology
University of Nebraska at Omaha
Office phone: 554-2704

Date

Wayne Harrison, Ph.D.
Associate Professor
Department of Psychology
University of Nebraska at Omaha
Office phone: 554-2452

Participant's Signature

Investigator's Signature

Investigator's Signature

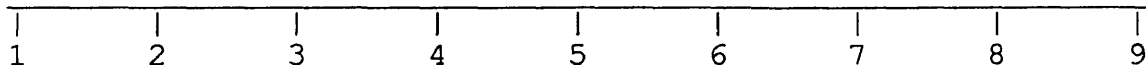
Appendix B
Post-Experimental Questionnaire

5. To what extent do you think the experimenter could evaluate the uses that you created?

Was able to
evaluate

Somewhat able
to evaluate

Not able to
evaluate



6. In the 10-minute work period, was your object the same, or different, from the objects that others in your group created uses for?

SAME

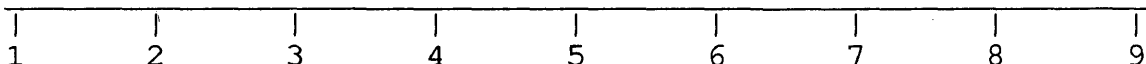
DIFFERENT

7. To what extent could your performance be compared to that of other members of your group?

Very
comparable

Moderately
comparable

Not at all
comparable

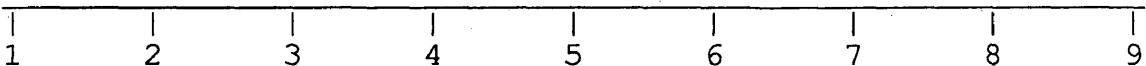


8. For the second work period, how much effort did you put forth at the task?

A lot of
effort

Moderate
effort

No
effort

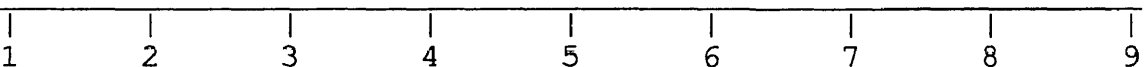


9. For the second work period, how committed were you to performing the task?

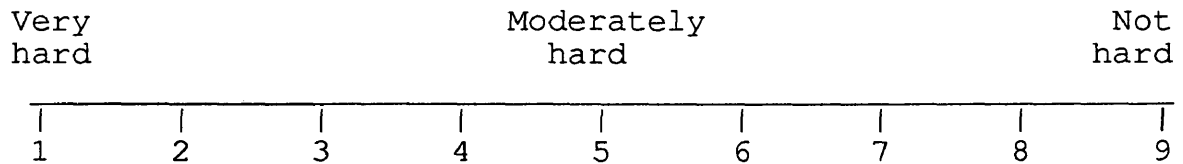
Very
committed

Moderately
committed

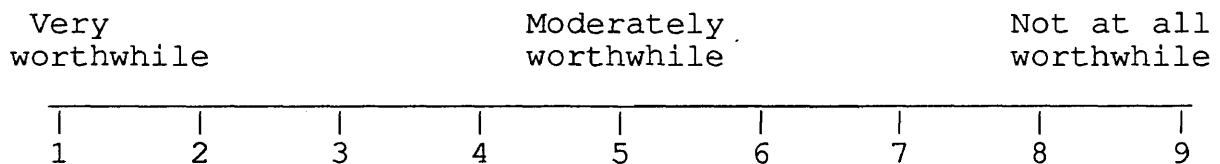
Not at all
committed



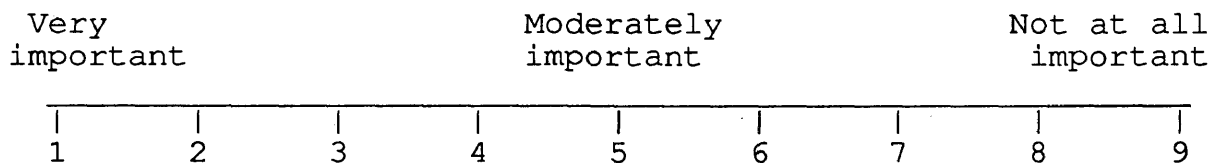
10. For the second work period, how hard did you try to come up with object uses?



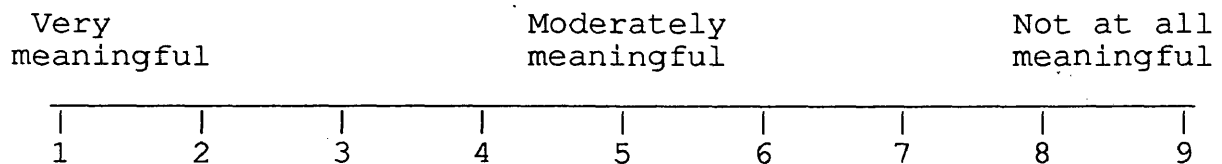
11. To what degree do you feel that the task was worthwhile?



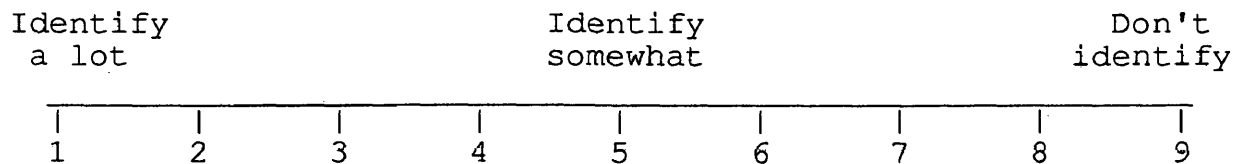
12. To what extent do you feel that the task was important?



13. Did the task seem meaningful to you?



14. To what degree do you personally identify with your work group?



19. Did your group receive an assigned performance goal?

YES

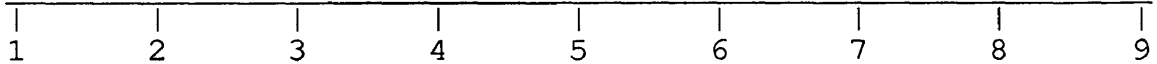
NO

20. How difficult was the performance goal for the group?

Very
difficult

Moderately
difficult

Not at all
difficult



21. While the group was attempting to reach the goal, was any information provided to the group concerning how well the group was doing?

YES

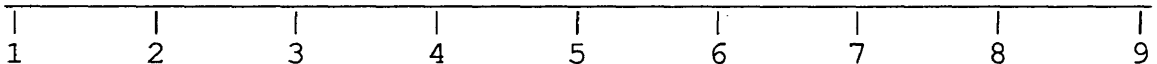
NO

22. How hard did you try to meet the assigned group goal?

Very
hard

Moderately
hard

Not at all
hard

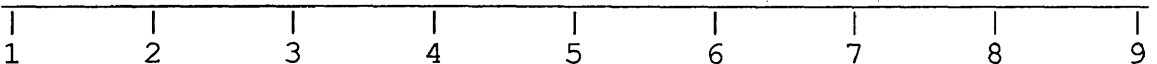


23. How much did you desire to reach the goal assigned by the experimenter?

Very
much

Moderately

Not at all



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THE SITUATIONAL ROLE OF FIREARMS IN VIOLENT ENCOUNTERS

by

William Wells

A Dissertation

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Philosophy

Major: Criminal Justice

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