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The Effect of Intrinsic and Extrinsic Motivation on Social Loafing

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A Thesis

in

The John Molson School of Business

**Presented in Partial Fulfillment of the Requirements
For the Degree of Master of Science in Administration at
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Abstract

The Effect of Intrinsic and Extrinsic Motivation on Social Loafing

Silvia Bonaccio

Decreased performance in group settings, labeled social loafing, has previously been attributed to the lack of identifiability of individual performance. However, some research indicates that the power of identifiability may depend on motivational orientation. The purpose of this laboratory experiment was to understand the effects of different motivational styles on social loafing. Specifically, motivation was thought to moderate the relationship between identifiability of individual outputs and performance. Participants were subjected to a priming manipulation intended to elicit intrinsic or extrinsic motivational states. They also worked under one of three group settings, which were intended to create a condition conducive to social loafing, and two control conditions. It was expected that extrinsically motivated participants working in a group where their individual efforts would be unidentifiable would show the highest levels of social loafing. Results indicate that the priming manipulation was unsuccessful, which explains why the main hypothesis was not supported. The value of using a motivational analysis in social loafing research is discussed.

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THE EFFECT OF INTRINSIC AND EXTRINSIC MOTIVATION ON SOCIAL LOAFING

A multitude of common activities revolve around working with others. Sports teams and music orchestras are composed of individuals pooling their effort, talent and knowledge to achieve a result that no single person can reach. It is now common in work environments to use teams, since projects are designed, and often re-designed, to be completed by a group of employees. In all these situations, it is assumed that people working together will use their resources for the benefit of the quality and quantity of a common goal, the final product. Therefore, “many hands make light the work” (Latané, Williams, & Harkins 1979, p. 822). However, in their seminal article, Latané et al. (1979) showed how this old saying can have a second, and much different meaning. Their article is amongst the first of an impressive line of research studies that show how group performance is not always conducive to great performance by individual members. Latané et al. (1979) demonstrated how group work can be, and often is, affected by a process known by social psychologists as “social loafing”. Social loafing has been defined as the “sizeable decrease in individual effort when [people perform] in groups as compared to when they perform alone” (Latané et al., 1979, p.822). Stated differently, social loafing is the “reduction in motivation and effort when individuals work collectively compared with when they work individually or coactively” (Karau & Williams, 1993, p.681). Thus, when groups operate, many hands do make light the work, in the sense that each person works less than if they were working individually (Latané et al., 1979). The present study seeks to broaden our understanding of this phenomenon by examining the role that motivational processes play.

Determining how social loafing is affected by motivational processes can be especially valuable for organisations, where social loafing may have many negative consequences. For example, Comer (1995) reasoned that as a result of loafing on the part of some group members, it will become increasingly difficult for the non-loafing employees to manage the resulting increase in their workload. This, in turn, will lead to tense interpersonal and inter-group relations, which is detrimental to long-term organisational performance. Social loafing can also negatively affect other employees' productivity. In fact, repeated loafing on the part of some group members can lead other group members to loaf as well (Kerr, 1983, as reported in Comer, 1995). In these instances, loafing can occur because the remaining employees refuse to be taken advantage of, or feel that their individual input no longer makes a difference towards the group goal (see Comer, 1995, for a discussion).

Social loafing as a group process has been investigated widely (Karau & Williams, 1993). Interestingly, a great deal of research on social loafing has viewed this process as brought about by group dynamics (e.g., Williams, Harkins & Latané, 1981; Harkins & Jackson, 1985). These authors view social loafing as a result of conditions present in the contextual setting that affect performance. For example, making participants' outputs identifiable (Williams et al., 1981) and potentially evaluated by someone (Harkins & Jackson, 1985) decreases their propensity to loaf. Therefore, the focus of this line of research has mostly been on situational determinants of social loafing (i.e., factors that are present in the social context).

However, social loafing has yet to be conceptualized and fully understood as an outcome of motivational processes, which could act as mediators or moderators of the

situational factors. To the best of my knowledge, current motivational theories have rarely been used as explanations for social loafing. Initial research with a motivational framework has suggested that some motivational processes could be related to social loafing (e.g., Shepperd & Taylor, 1999). Karau and Williams (1993) have proposed a motivational model, based on expectancy theory, to explain social loafing in groups. Their model proposes some useful implications for group motivation losses, but does not account for the fact that, nor explain why, many variables moderate social loafing. Thus, there are still many unexplored avenues of research investigating the moderating effects of motivation on social loafing.

Bridging current motivational theories with what we know of social loafing will help our understanding of the psychological processes at work in this group phenomenon. It will also help design interventions aiding managers develop practices that decrease the occurrence of social loafing in their organisations, other than constant monitoring of work performance.

Accordingly, the goal of this study is to investigate the role of different forms of motivation on social loafing. Intuitively, the idea that social loafing stems from individual motivational processes is appealing. It is intuitively easy to imagine a link between reduced individual motivation and reduced individual effort. Thus, the main contribution of the present research will be to start filling the existing gap in the social loafing literature with the use of a controlled experimental study. Adding a motivational perspective to this research will allow explaining the underlying processes of social loafing. Self-determination theory (Deci & Ryan, 1991) will be used as the motivational framework, as it proposes two forms of motivation that differently affect behaviour. I was

specifically interested in exploring the impact of intrinsic and extrinsic motivation on social loafing.

Social Loafing: The First Empirical Studies

When studying group phenomena, it is important to distinguish between working coactively and collectively. When individuals work collectively, their outputs are combined with the output of other participants to form a single, pooled, group product. On the contrary, when participants work coactively, individuals are still working in the company of other participants, but their output is kept separate from that of others (Karau & Williams, 1995).

Social loafing is by no means a modern social psychological concept. In fact, one of the first accounts of social loafing comes from Max Ringelmann, a French agricultural engineer, who conducted his research between 1882 and 1887 (Kravitz & Martin, 1986). Interestingly, numerous misconceptions have been published about Ringelmann. Early authors, including Ingham, Levinger, Graves and Peckham (1974) who used Ringelmann's observations as a foundation for their own research, believed that Ringelmann was a German psychologist working in the 1920s who worked under the supervision of Walther Moede, an industrial psychologist. However, Moede was born in 1888, which clearly indicates that Ringelmann was not his student, but a predecessor.

In spite of these confusing reports about Ringelmann's origins, his work has considerable weight in the social loafing field, as it is the earliest scientific account of the phenomenon. Ringelmann asked his participants, 28 male students, to pull on a rope. He was interested in the maximum force exerted by individuals working alone and in groups,

as measured with dynamometers. He found that when participants pulled alone, they exerted an average force of 85.3 kg/person, when they pulled as part of a 7 men group, they exerted an average force of 65.0 kg/person, and when they worked in groups of 14, they exerted an average force of 61.4 kg/person. In other words, men working in groups of 7 exerted only 76% of the effort they exerted working on their own. This percentage dropped to 72% when they were working in groups of 14. Ringelmann believed that the loss of coordination attributable to an increase in group size explained the drop in performance. Interestingly, he also acknowledged the possible effects of motivation loss in group work, but did not discuss this possibility at length.

Although Ringelmann's findings were overlooked for almost a century, in the early 1970's they sparked many researchers' interests and gave rise to an impressive body of literature. Social loafing has, since then, been replicated for a variety of tasks such as physical (e.g., rope pulling), perceptual (e.g., monitoring radar signals on a screen), cognitive (e.g., rating the quality of poems), and creative (e.g., listing thoughts) (Karau & Williams, 1995).

The earliest study, designed by Ingham et al. (1974, study 2), was intended to replicate Ringelmann's early work. These researchers asked male college students to pull a rope in groups of 1, 2, 3, 4, 5, and 6, while taking care to control for fatigue effects. The primary interest of this study was to determine whether the drop in performance was due to coordination difficulties, or a decrease in individual effort, or both. Participants' perceptions of group size were manipulated by leading them to believe that they were pulling the rope as part of a group, when in fact, they were pulling on their own (for this

purpose, five confederates were trained to give the impression they were pulling the rope).

The results showed that as soon as one confederate was pulling with the participant, the latter showed a 10% decrease in effort compared to the individual condition. When two other confederates “pulled” with the participant, his average performance was 85% of the alone condition. When all five confederates worked with the participant, his average performance was still 86%, which suggests that, at least in this study, the addition of new coworkers may not increase the loafing effect after a point. This marginal decrease in performance following the addition of participants would be in line with Social Impact Theory, which has been proposed as an explanation for social loafing (Latané et al., 1979).

Thus, controlling for coordination loss, performance decreased when participants worked in groups as opposed to when they worked on their own. However, as highlighted by Latané et al. (1979), there was a confounding factor: when a participant was pulling in the alone condition, five confederates were watching him. This situation had the potential to give rise to social facilitation (Cottrell, 1972): when individuals work on a simple task in front of an audience, their performance tends to increase. Thus, it is not clear if the difference in effort found between the alone and group conditions was due to a decrease in effort when participants were pulling as part of a group (social loafing), or due to an increase in effort in the alone condition (social facilitation). Latané et al. (1979) tried to correct this confound in subsequent experiments.

A Central Study in Social Loafing: Latané, Williams and Harkins (1979)

Latané et al. (1979) were the first authors to coin the term “social loafing” to refer to the apparent reduction in motivation and effort that occurs with increased group size. In order to determine whether Ringelmann’s results could be replicated in domains other than rope pulling, they designed an experiment that asked male university students to shout or clap as loud as they could either individually or in groups. Participants were all seated in the same room and received instructions to clap or cheer, depending on the trial. The number of people shouting or clapping (one, two, four or six) was also varied and counterbalanced across trials. Results showed that as group size increased, the average sound intensity produced per participant decreased. Thus, even if the group’s total intensity increased according to group size, individual participants were exerting less effort than when clapping or shouting alone. However, the results from this first experiment were, like the original Ringelmann findings, confounded by the possibility of coordination loss. Thus, they designed a second experiment, based on an improved version of Ingham et al.’s (1974) methodology to determine whether coordination loss or effort reduction were the cause of performance loss.

In experiment 2, the authors arranged the laboratory protocol so that participants’ perceptions of group size varied: participants always shouted on their own, but were led to believe that on some occasions, two or six other participants were shouting with them. Participants wore headphones transmitting a pre-recorded taping of confederates shouting to signal the start of the trial. The recording was, in fact, used so that participants were not aware of the number of other participants shouting with them. Blindfolds were also used for the same purpose. Since participants were unable to hear or see each other shout,

the confound with Ingham et al.'s (1974) methodology was corrected in this experiment. Participants shouting in actual groups of two and six shouted at only 66% and 36% of their alone capacity. In order to control for coordination loss, the authors compared this output to the output of the pretend groups. Any difference in intensity between the real and pseudo groups would represent the decrease in output due to coordination problems. The results showed that, again, individuals generated less noise when they believed they were shouting in a group than when they were shouting alone. When participants believed to be shouting with one other person, they shouted at 82% of the intensity at which they were shouting when doing so alone. When they believed to be working with five other participants, this intensity dropped to 74% (Latané et al., 1979). This design allowed Latané et al. (1979) to identify a true social loafing phenomenon, while setting it apart from coordination problems, which have a greater detrimental effect on outputs.

Other Empirical Findings

Williams et al. (1981, experiment 2) furthered our understanding of social loafing by examining the moderating role of identifiability. They reasoned that participants whose output is unidentifiable might exert less than maximum effort because rewards for good performance are unlikely to come forth, and punishments for not working hard enough are improbable. Participants were asked to shout either individually or as part of a group of two or four. They were also randomly assigned to three identifiability conditions. In the always identifiable condition, they were told that their individual microphone would record their own output when they worked alone as well as when they shouted as a group. In the never identifiable condition, participants were told that the equipment was set up in

such a way as to not allow experimenters to determine participants' individual outputs, even when they shouted alone. In the identifiable only when shouting alone condition, participants were told that their individual output could not be identified when they worked as part of a group but it could be when they shouted alone.

Williams et al. (1981) found that when participants believed that their performance was identifiable only when they worked alone, but not in the group setting, the standard loafing effect was present: when they were alone and identifiable, their sound pressure reached almost 9 Dynes/cm². However, in the unidentifiable group condition, their performance dropped as group size increased, reaching below 7 dynes/cm² in the group of four. When participants believed that their output was always identifiable, they also shouted at almost 9 dynes/cm², regardless of group size. Participants who believed that their output was never identifiable (either alone or in groups), exerted an almost constant effort, regardless of group size, at approximately 7.5 dynes/cm².

Thus, group size negatively influenced participants' outputs only when they were told that their individual effort could be monitored. Therefore, when participants felt that they could "get away" (Williams et al., 1981, p.303) with their decreased effort, they loafed.

In early loafing research, participants were required to perform simple and boring tasks (e.g., shouting, as in Williams et al., 1981) and all participants in each of these studies were required to perform the same tasks. As such, "if the task itself does not enhance subjects' motivation to perform their best, social loafing will occur if not detected" (Harkins & Petty, 1982, p. 1216). To test this proposition, Harkins and Petty (1982) asked participants to work on a challenging task (i.e., finding uses for a detached doorknob) or an easy task (i.e., finding uses for a knife) either individually, where

individual effort was identifiable, or in a pooled condition, where individual effort was not readily identifiable by the experimenter. For the easy task, participants whose output could not be identified by the experimenter loafed more than those whose output was identifiable, thereby replicating the standard loafing effect. However, when the task was challenging, participants in both conditions generated a similar number of uses, which, given the difficult nature of the task, was lower than for the easy object. Thus, the challenge of the task overrode the effect of identifiability. Harkins and Petty (1982) found the same results when they manipulated the uniqueness of the task. In the non-identifiability condition, participants loafed when they worked on a redundant task with other group members (i.e., everyone found uses for the same object), but did not loaf when they were working towards a unique task (i.e., everyone generated uses for what they believed to be different objects). When participants felt that they were working towards a challenging task or towards a task whose outputs would not be duplicated by other group members, the propensity to withhold effort was lost.

Although this study was not designed to directly test participants' motivation, the findings suggest that feeling intrinsically involved in a task, whether it is because the task is challenging, enjoyable or meaningful, can reduce the tendency to loaf. On the other hand, when participants feel that their contribution is not critical to the group's performance, a state of amotivation, and consequently loafing, may occur: "if anyone can do [the task], why should an effort be made" (Harkins & Petty, 1982, p.1219).

In sum, these early social loafing experiments set the stage for future studies in terms of methodological processes. The experiments showed that, as group size increases, individual performance declines. Importantly, the social loafing effect was shown to be

distinct from coordination loss associated with larger groups, as well as being distinct from social facilitation. One key finding of these early research pertains to the identifiability of individual efforts. In fact, social loafing was shown to occur mostly when participants were led to believe that their individual effort would be hidden from the experimenter (Williams et al., 1981). Thus, participants in collective settings are likely to engage in social loafing because of the lack of identifiability inherent in the situation. However, the last studies mentioned show that identifiability may not be the only influence on performance. Other factors, such as challenge, also influence the likelihood of social loafing, and may even override the effects of identifiability. This idea is discussed below using a motivational approach.

Motivational Explanations for Social Loafing

Motivational explanations for social loafing have been put forth by early theorists (e.g., Harkins & Petty, 1982). Even Ringelmann, the first researcher to conduct a study on social loafing, stated the possible involvement of motivation in the reduction of effort he observed in his participants. Surprisingly, however, a very small portion of the literature on social loafing has explored the role of motivation in a sound methodological manner. Most social loafing theorists (e.g., Harkins & Petty, 1982) hint at the role that motivation could play in social loafing, but fail to look at it directly. In most early research, the possible motivational determinants of social loafing were only discussed post-hoc, perhaps because no motivational framework was used to design the experiments. Instead of grounding the main variables in a motivational theory, these studies looked at task and environmental characteristics, such as uniqueness and

identifiability. Furthermore, no motivational measures were included to determine the processes behind the performance reduction in collective versus coactive settings. However, a few studies did investigate social loafing from a motivational point of view.

Latané et al. (1979) argued that reward and punishment processes were related to social loafing. In fact, they believe that social loafing emerges from the lack of clear contingencies between one's performance and the outcome of the activity. Thus, when performing in group settings, participants may feel that they can "hide in the crowd" (Davis, 1969, as reported in Latané et al., 1979, p. 830), thereby not receiving any blame for not performing with maximum effort. On the other hand, when participants work individually, their output is clearly identifiable and therefore can be rewarded or reprimanded accordingly. However, this explanation does not account for other factors that influence social loafing, such as when participants are asked to work on a challenging task.

The Collective Effort Model (CEM), intended to explain individual effort in collective contexts, proposes an interesting motivational interpretation of social loafing (Karau & Williams, 1993). The authors conceptualize social loafing in group settings as originating from expectancy theory and "group-level social comparison" (Karau & Williams, 1993, p. 682). The CEM revolves around the instrumentality principle. Like in classic expectancy theory, motivation will be high when individuals perceive that their effort will be instrumental in gaining valued outcomes. The CEM proposes a set of contingencies that must be satisfied for individual motivation to be high in group settings. Participants must perceive that their individual effort will translate into individual performance. This individual performance must, in turn, significantly affect group

performance. Group performance must then bring group outcomes. Finally, group outcomes must lead to individual outcomes that are personally valued by the individual. If one of these contingencies is less than optimal, social loafing will occur.

Shepperd and Taylor (1999) based their social loafing research on expectancy theory and tested two contingencies proposed by the CEM: the contingency between individual performance and group performance and the contingency between group performance and group outcome. In a first experiment, some participants were led to believe that their group would probably achieve good performance, and others were told that it would not. Crossed with this manipulation, one group of participants was told that their individual output would be identifiable by the experimenter, while a second group was told their output would be pooled. Shepperd and Taylor (1999) found that loafing was most likely when participants' output was non-identifiable and when they believed that their group would not reach the desired outcomes. On the other hand, when participants believed that their groups would reach the desired outcomes, then the performance level was as high in the identifiable and the pooled conditions. Thus, people worked hard as long as their group would be likely to reach the desired performance level (i.e., individual-group performance contingency).

In a second experiment, Shepperd and Taylor (1999) verified the existence of a second contingency, the one between group performance and group outcomes. The same design as in experiment 1 was used, but now, some participants were led to believe that it was likely that group performance would bring outcomes, whereas others were told that it was unlikely that group performance would lead to outcomes. Again, under low instrumentality of group performance-outcome, loafing was detected when participants'

outputs were pooled, but not when they were identifiable. When participants were told that it was likely that good performance would lead to group outcomes, then their performance was as high when their efforts were identifiable than when they were pooled. In other words, when reaching a valued outcome was probable, participants worked hard, regardless of the identifiability of their efforts.

The CEM and expectancy theory are appealing for social loafing researchers since it highlights the importance of understanding individual effort within a group, while understanding that ultimately, effort will depend on the value the person attaches to the individual outcomes. However, the model has some shortcomings that must be underlined. Firstly, the CEM defines outcome valence as a factor people will work hard to attain, and includes task meaningfulness as one kind of outcome valence. However, as shown by George (1995), and as reported below, task meaningfulness is actually a moderator of the relationship between the identifiability of output and performance. Thus, within the CEM model, it is difficult to understand how “the effects of identifiability of inputs [...] may interact with factors such as personal relevance of the task [and] task meaningfulness” (Karau & Williams, 1993, p.701) when meaningfulness is clearly an *outcome* in the model and not presented as a potential moderator.

The CEM also presents a second shortcoming in that expectancy theory, on which it is based, is rooted in extrinsic motivation, viewing individuals as “behav[ing] hedonistically and maximiz[ing] the expected utility of their actions” (Karau & Williams, 1993, p.684). However, motivation is not a unitary construct, and different forms of motivation have different effects on behaviour (Deci & Ryan, 1991). Karau and Williams (1993) acknowledge that different types of motivation may exist and even shortly discuss

their different influence on behaviour. However, the contingencies on which the CEM is based leave little place for a definition of motivation that is not so “instrumental” and extrinsic. For example, someone who engages in a task for its pure enjoyment may not be affected by identifiability in the same manner as someone who engages in the task in order to obtain a reward. Thus, using the CEM as the only explanation of social loafing limits our understanding of the motivational processes operating in these situations. We would therefore benefit from exploring social loafing using a different motivational perspective.

Intrinsic Versus Extrinsic Motivation

Self-determination theory proposes that there are two basic types of motivation: intrinsic and extrinsic motivation. Individuals are intrinsically motivated when they are performing an activity for “its own sake [...], for the reward that is inherent in the activity itself” (Deci, 1995, p.21). For example, a person who completes a puzzle because it is an activity she enjoys is intrinsically motivated. Thus, this person’s primary concern would be the enjoyment and interest felt during the process of performing the activity. The outcome of the activity is secondary and bears much less importance. In fact, one author has captured the sensation of intrinsic motivation by talking about the “flow” or absorption experienced while performing an activity (Csikszentmihalyi, 1997). On the other hand, individuals are extrinsically motivated when they engage in an activity for reasons external to it, such as to receive a positive outcome or avoid a negative one. Thus, individuals engage in activities because they have to, because they are being rewarded for their output, or because they would be punished if they did not perform the

task (Deci, 1995). For instance, a person who completes a puzzle in order to receive payment for every successfully completed puzzle is extrinsically motivated. Thus, the motivation in this setting stems from the outcome that the activity will bring about. The activity itself, and the process of performing it, is simply instrumental to attain the outcome.

The theory acknowledges both that the situation can trigger intrinsic and extrinsic motivational states, and also that individuals can develop, through experience, a propensity to be more or less chronically intrinsically or extrinsically motivated across situations. These “chronically active” motivational states have been shown to influence affect and behaviour when engaging in activities (Lévesque & Pelletier, 2001). In the present study, I will concentrate on the effects of situationally induced motivational states on the propensity to engage in social loafing.

A good deal of research shows that being intrinsically or extrinsically motivated has different consequences for performance. When individuals are extrinsically motivated, they often become fixated on the outcome of their actions, not on the process of engaging in the activity (Deci, 1995). For example, individuals become more interested in receiving their pay check than in doing the work itself. In fact, in the long run, extrinsically motivated individuals may develop a habit of performing only the minimal work that is expected of them. In these situations, shortcuts, or even sabotage can be used to reach the desired outcomes faster. On the other hand, intrinsically motivated individuals perform an action in situations where the outcomes are secondary to the enjoyment produced by the action. The behaviour often brings feelings of “excitement, accomplishment, and personal satisfaction” (Deci, 1995, p.21). This has been shown to

lead to increased performance quality (in terms of creativity), increased cognitive performance (in terms of problem-solving and conceptual learning), and increased persistence in a task, compared to extrinsic motivation (Koestner, Ryan, Bernieri & Holt, 1984; Benware & Deci, 1984).

I can easily extrapolate these findings to a group situation where individual performance is unidentifiable and hypothesize that social loafing would be more likely to occur when individuals are extrinsically motivated. Some research, presented below, indicates that this hypothesis is probable.

An early study by Zaccaro (1984) underlines the importance of understanding the effect of task attractiveness on social loafing. Involvement in the task was manipulated by making participants either attracted or unattracted to the task. The former group was promised an extra course credit for good performance (an extrinsic incentive) and read an article related to the cover story, which increased the significance of the task (a more intrinsic incentive). The other group received neither. Crossed with this manipulation, some participants worked in groups of two, and some in groups of four. Contrary to other social loafing designs, participants in this study could see and interact verbally with each other. Therefore, the results of this study should be interpreted with caution since factors such as social facilitation (Cottrell, 1972) could have been at play. Furthermore, no coercive condition nor alone condition were present in order to make Zaccaro's results directly comparable to other social loafing studies (e.g., Harkins & Petty, 1982) as participants were always working collectively towards a group total. Zaccaro (1984) found that participants in the attractive condition loafed less than those in the unattractive condition. He also found that the group size interacted significantly with attractiveness.

Under low task attractiveness, performance decreased as group size increased. However, when participants were attracted to the task, individual performance increased with group size. Zaccaro (1984) reasoned that group pressures to perform were higher in the attractive compared to the non-attractive condition. Although this design is not directly comparable to the standard social loafing studies, and although intrinsic and extrinsic incentives were confounded, the results suggest that motivational states had an impact on social loafing.

A more recent study (Gagné & Zuckerman, 1999) attempted to identify the moderating effects of two goal orientations (the adoption of performance vs. learning goals) on social loafing and social facilitation. Social loafing was defined as being on the same continuum as social facilitation, depending on the degree of identifiability of individual performance. Groups of three participants were assigned to one of three identifiability conditions. In the low evaluation potential condition, social loafing was expected since participants were told that neither the experimenter nor the other group members would be aware of their own output. A social facilitation effect was expected in the high evaluation potential condition, since participants were told that both other group members and the experimenter would be aware of their output. As a comparison, a medium evaluation potential condition, in which only the experimenter could evaluate individual performance, was created. The identifiability conditions were crossed with a manipulation of goal orientations. Some participants were given task instructions that were autonomy supportive and that led to the adoption of a learning goal, in which participants are concerned with improving their competence and mastering the task (Dweck & Legget, 1988). Other participants received controlling instructions that led to

the adoption of performance goals, which led people to focus on receiving positive appraisals of their competence and performance (Dweck & Legget, 1988). There is considerable evidence that these different types of goal adoptions lead to different approaches to effort and different cognitions about one's competence (Dweck & Leggett, 1988). Participants who are concerned with proving their competence (performance goals) often show signs of helplessness in the face of challenge, lowered performance, and self-deprecating, negative thoughts about their abilities. Thus, when they are unsure of their abilities, performance-oriented participants have a tendency to seek easy, unchallenging activities in which they incur no risks of failing (Dweck & Leggett, 1988). When students are concerned with mastering the task, they focus on becoming better, and therefore failure at a task is perceived as a challenge to be surmounted through effort. The self-cognitions are ones of belief in one's potential. Interestingly, learning goals have been shown to bring "intrinsic rewards for meeting challenge with effort" (Dweck & Leggett, 1988, p. 262). Learning goals have also been associated with greater task enjoyment, task involvement (absorption), and more engagement in the task in a free-choice period than are performance goals oriented towards avoiding failure (Elliot & Harackiewicz, 1996, experiment 1). Gagné and Zuckerman (1999) therefore hypothesized that the effect of evaluation potential would be moderated by the goal orientation manipulations, such that participants adopting performance goals would be most affected by the evaluation potential of the context than those working under learning goals. As such, greater social loafing and greater social facilitation were expected in the low and high evaluation potential conditions, respectively.

Replicating the standard loafing and facilitation effects, participants who felt less evaluated generated fewer uses than those who felt more evaluated. There was also some support for the moderating effect of goal orientation, such that social facilitation was higher when under performance goals than under learning goals. This effect, however, was not found for social loafing.

This study is very interesting from the social loafing perspective since it was a first attempt to manipulate motivation in order to look at its potential moderating effects on social loafing in a laboratory study. The manipulation for motivation used in this study was only partially successful according to manipulation checks. Therefore, it would be unfortunate to rule out a possible motivational effect before exploring this idea further in another laboratory study using a different manipulation.

George (1992) examined the effects of intrinsic involvement in one of the rare field studies on social loafing. The complexity of establishing and measuring identifiability of effort in the work context is greater than it is in a laboratory setting (George, 1992). In the latter case, it is sufficient to inform participants that their effort (e.g., the number of uses they list for an object) will or will not be evaluated individually. In reality, workers may have different perceptions of the identifiability of their effort, some believing that their supervisors pay close attention to their individual output, others believing that they do not. Task visibility (Jones, 1984) is thus the operationalization of identifiability. It is the employee's "belief that a supervisor is aware of individual effort on the job" (George, 1992, p. 192). George (1992) hypothesized that when employees believed their task visibility to be high, they would be less likely to loaf. She measured social loafing by

asking supervisors to rate all their employees on items such as “puts forth less effort on the job when other salespeople are around to do the work” (p.201).

Based on the laboratory findings of Harkins and Petty (1982), George (1992) also proposed that social loafing might be negatively related to high intrinsic involvement to work. George (1992) measured intrinsic involvement through questions tapping task significance, task meaningfulness and contribution to the company, reasoning that employees who believe their work to be meaningful, significant, and providing an important contribution to the organization, will be intrinsically involved in it. Consequently, she hypothesised that participants who were intrinsically involved with their work would show fewer tendencies to loaf than those who were not, regardless of whether visibility was high. George's (1992) conceptualisation of intrinsic involvement is closely related to the concept of intrinsic motivation. Gagné, Sénécal and Koestner (1997) showed that experiencing meaningfulness and task significance are significantly correlated with experiencing intrinsic motivation at work.

George (1992) found that employees holding perceptions of low task visibility were judged to loaf more than those who believed their efforts to be identifiable, thereby replicating the laboratory findings in a field setting. She found that task meaningfulness, task significance and contribution were negatively related to social loafing, thus lending support for the idea that high intrinsic involvement is negatively related to social loafing. Moreover, intrinsic involvement acted as a moderator of the task visibility-social loafing relationship. When participants reported low involvement, task visibility and social loafing showed a stronger negative correlation than when participants reported high involvement. In other words, when employees reported high levels of involvement, they

were less likely to loaf regardless of visibility. George's (1992) findings offer a preliminary suggestion that intrinsic involvement should not be considered a direct influence on social loafing, but rather a moderator of the relation between identifiability and social loafing.

Following up and extending on George's (1992) findings, the present study sought to examine the potential moderating effect of intrinsic and extrinsic motivation, as well as the relation between identifiability and social loafing in a laboratory setting. To test the effects of intrinsic and extrinsic motivation on social loafing experimentally, a priming procedure was used to manipulate participants' motivational states.

Priming Intrinsic and Extrinsic Motivation

The concept of priming is based on the premise that not all behaviour is guided by conscious motives; in some instances, individuals may be guided by something outside their consciousness.

A full review of the priming effect is beyond the scope of the present paper (see Bargh & Chartrand, 2000 for a review). However, some details must be provided in order to understand how priming can be, and has been, used to experimentally manipulate motivational states.

In an early priming study, Higgins, Rholes and Jones (1977) asked participants to take part in what they thought was a reading comprehension study. However, prior to taking part in the study, they were asked to complete an "unrelated" perceptual task in which they were exposed to various trait words. Neutral words were interspersed with target words that were either positive traits (e.g., "adventurous"), or negative traits (e.g.,

“reckless”), depending on the experimental condition. Next, participants completed the reading comprehension activity, in which they were asked to read a story about a character named Donald and provide their appreciation of Donald’s desirability. The story was ambiguously written, such that Donald could be interpreted in a positive or negative manner. For example, participants were told that Donald was thinking of “cross[ing] the Atlantic in a sailboat (Higgins et al., 1977, p. 145).

The authors found that participants’ ratings were influenced by the trait categories they had been exposed to during the priming phase. Thus, when participants had been primed with positive trait words they were more likely to characterize Donald in positive terms, and when they had been exposed to negative words, they perceived Donald less favourably. However, there was a twist in the study. Some participants were primed with either positive or negative traits that were not applicable to Donald, i.e., they were unrelated to the story’s context. For these participants, the priming effect did not occur. With unrelated primes, participants who were exposed to the negative words did not form a less favourable opinion of Donald than those who were exposed to the positive words. In other words, the priming effect only occurred when the trait words were applicable to Donald within the context of the story.

As operationalized in the Higgins et al. (1977) study, priming refers to the effect that a recent use of a concept in one task has on a subsequent and seemingly unrelated task (Bargh & Chartrand, 2000). It is “any experience or procedures that bring a particular concept (or any other knowledge structure) to mind” (Higgins, 1996 as reported in Kunda, 1999, p. 22). In the previous case, simply being exposed to trait words that were

related to Donald's description activated attitudes towards the target person in participants' minds and made these attitudes more available for use.

Bargh, Chen, and Borrows (1996) showed that behaviour can also be primed. They asked participants to complete what they thought was a language ability task: a series of scrambled sentences, which contained the target words. The target words primed either politeness, rudeness or were neutral. Participants were instructed to complete the task and then report to the experimenter who stood in a different room. Upon arrival at that room, the experimenter was talking to a confederate and did not acknowledge the participant's presence. Results showed that participants who were primed with the "rudeness" construct interrupted the conversation faster than did participants primed with the "politeness" or the "neutral" construct. In a replication of the findings (Bargh et al., 1996), the target words primed the "elderly" construct or were neutral. This time, the dependent measure was the time it took for participants to cross a hallway. Results showed that participants primed with the "elderly" construct took more time to cross the hallway than did those who read the neutral words.

One requirement for priming to occur is that the concept to be activated needs to be something that people have already acquired and retained in long-term memory. Thus, for the present study, participants should already possess experience with factors that affect intrinsic and extrinsic motivation. Lévesque and Pelletier (2001) have shown that people do have this experience. They primed intrinsic and extrinsic motivation in participants by asking them to unscramble mixed words to form a sentence, which is a commonly used priming method (Srull & Wyer, 1979; Bargh et al., 1996). Interspersed in the neutral words, were some words targeting intrinsic motivation (e.g., delighted, absorbed, and

enjoying), extrinsic motivation (e.g., obligation, evaluated, and pressure), or words unrelated to motivation, depending on the experimental condition. After this first task, participants were asked to work on a second, “unrelated” task, which required participants to work on a crossword puzzle. Participants who had read the intrinsically motivating primes reported greater intrinsic motivation on an intrinsic motivation scale towards the puzzle than participants in the extrinsic conditions. Intrinsically primed participants also reported holding more positive affect towards the crossword puzzle, than the extrinsically motivated individuals, in terms of interest, enjoyment and perception of choice. Finally, performance on the puzzles (measured by the number of words found) was significantly higher for intrinsically motivated participants compared to extrinsically motivated participants. Therefore, the primes had an effect on participants’ self-reported feelings of motivation regarding the puzzle as well as participants’ performance on the puzzle. The present study used a modified version of Lévesque and Pelletier’s (2001) priming manipulation to induce intrinsic or extrinsic motivation in participants.

Overview of the Present Study

The purpose of this study was to examine if motivational states would moderate the effect of identifiability on social loafing. Participants came to the laboratory either alone or in groups of three and were randomly assigned to one of three group conditions. They were asked to work on a brainstorming task alone, in a group of three where each participant’s contribution to the group total was identifiable, or in a group of three where each participant’s contribution to the group total was pooled and thus unidentifiable. Prior to completing the brainstorming tasks, participants were asked to complete what

they believed to be an unrelated task. This task was intended to manipulate their motivational states with the use of the priming procedure. Participants were randomly assigned to either intrinsic or extrinsic primes.

The dependent variable of interest was the number of uses for a shoe that each participant generated. A main effect for group condition was expected, where the group-pooled condition would differ from both the alone and group-identifiability conditions. However, a main effect was not formally hypothesized since if present, it would be qualified by an interaction of group condition with priming. As such, the social loafing effect would occur only under extrinsic primes. Thus, I expected social loafing to be highest in one cell of the 3 X 2 design. This hypothesis is graphically illustrated in Table 1.

Formally stated, it was expected that participants' motivational states would interact with the group conditions. Specifically, an interaction effect was hypothesized to occur between the extrinsic motivation condition and the condition in which individual effort was unknown. The following hypothesis is proposed:

Hypothesis: Social loafing will be at its highest when extrinsically motivated participants are working in a group but their individual effort is not known.

Table 1: Hypothesized interaction between motivational states and identifiability.

Group Conditions			
Motivation	Work alone (no group) (individual effort is known)	Work in group-identifiable (individual effort is known)	Work in group-pooled (individual effort is not known)
Intrinsic motivation			
Extrinsic motivation			Social loafing at maximum

METHODOLOGY

Sample

One-hundred seventy-six commerce undergraduate students and 20 first-year graduate students in education from a Canadian university participated in exchange of a lottery ticket. Since participants were expected to dedicate 45 minutes to the task, and had to come to the laboratory, compensating them was necessary to maximize recruitment and gather the sample required for this study. Most social loafing studies have compensated participants either with extra course credits (e.g., Gagné & Zuckerman, 1999) or with a monetary reward (e.g., Brickner, Harkins, & Ostrom, 1986).

Participants were first recruited from their first year commerce undergraduate courses. However, a severe shortage of participants forced us to recruit from higher level commerce courses as well as from the education department. Early in the course of the research, it became apparent that a lottery ticket was not enough of an incentive to attract students since there was a sign-up proportion of about 12% of the potential pool of participants. Therefore, three professors agreed to offer two extra course marks to their students in exchange for their participation in the study, which brought the response rate close to 100%. In total, 118 participants received extra credits for their participation in the research, and 78 obtained only the lottery ticket. Analyses will be done to compare the motivation and performance of participants who received the extra credits and those who did not.

Seven participants had to be eliminated from the initial sample since 6 did not follow the instructions and 1 was suspicious of the manipulation, which yielded a total of N = 189 participants.

The final sample was composed of 107 female participants and 82 male participants. Sixty-two participants reported their native language to be English, 48 said it was French, 77 said it was another language, and 2 omitted to report such information. The average age at which non-native English speakers had learned English was 8.78 years old (SD = 5.67).

Procedure

Participants were randomly assigned to a 3 (work alone, work in a group where individual output is identifiable, work in a group where individual output is pooled) x 2 (intrinsic vs. extrinsic motivation primes) between-subjects design with the use of an internet-based randomiser software. Since I had to give the instructions to participants, I could not be blind to the group condition. I was, however, blind to the motivational prime given to participants. This was achieved through preparing all the randomized prime material in advance and keeping them in a folder. Since an identical cover letter was used for both conditions, I could not see which primes were given to participants.

Participants came to the laboratory individually or in groups of three¹. Based on previous social loafing research, participants were told that they would take part in a brainstorming experiment (Gagné & Zuckerman, 1999). However, upon arriving to the laboratory, they were asked for their help on behalf of another M.Sc.A. student. They were told that a marketing student needed to pilot a task that he was hoping to use for his thesis. I gave them a packet with a cover letter signed by the student asking them to kindly help him (see Appendix I). The packet contained the priming task intended to elicit motivational states. Participants were given a series of 20 scrambled sentences, which contained target words that were intended to prime either intrinsic or extrinsic

motivation (Lévesque & Pelletier, 2001). Participants either unscrambled sentences containing words representing an intrinsically motivated state or words representing an extrinsically motivated state. All primes were composed of five words, but only four of these words had to be chosen to compose a grammatically correct sentence. In order to control for whether participants used the priming or the neutral word when constructing sentences, I coded the number of priming words they used for later analyses, in the event that this variable would affect the extent to which they were primed. Five priming sentences were added to the original primes (see Appendix I) in order to attempt to make the priming effect stronger. Moreover, the new primes also helped make the extrinsic sentences appear less negative. In fact, many of the original extrinsic primes contained words such as “pressure” or “obligation”, which can be interpreted to have negative connotations. Adding new primes with a more positive undertone ensured that the effect of priming would be due to motivational processes and not mood. These words are: powerful, rewarded, award, prestigious and famous. The corresponding primes for the intrinsic condition are: immersed, fulfilling, surprise, captivating and enchanting.

After thanking them for helping the other student, I put the completed task in a box on the floor that contained other completed packets. Then, I gave the consent form to the participants while remarking that it was the first thing to do for the brainstorming activity and that signing a consent form was a standard practice in all research. (see Appendix II).

After having signed the consent form, I explained the procedure for the actual brainstorming study. Participants were told that the purpose of the task was to look at people’s brainstorming styles. The experimental task consisted of asking participants to

generate uses for an object, namely a shoe. In all three conditions, the instructions were the same. Participants were told :

“During the brainstorming task, you will be asked to generate as many uses as possible for an object. You have slips of paper in front of you. Please use one slip of paper for each use you come up with: remember to write only one use per slip of paper.”

Participants were randomly assigned to one of three social loafing conditions. They either 1) worked alone, 2) worked in a same-sex group where their individual contributions could be identified, or 3) worked in a same-sex group where their individual contributions could not be identified. In Condition 1, participants worked at the task alone and were asked to slip their uses in a box on their desk. In Conditions 2 and 3, participants were in the laboratory in groups of three. In both conditions, they worked at the task alone, and panel screens were used so that they could not see each other. It was very important to ensure that participants could not see the other participants' outputs, since this could give rise to interpersonal forces such as social facilitation (Cottrell, 1972), which would contaminate the results. Therefore, to preserve the integrity of the data, it was necessary that participants' outputs be hidden from one another (see study design in Gagné & Zuckerman, 1999).

In Condition 2, participants were asked to slip their individual uses in a box on their desk. Each participant had his or her own box, which made their individual output clearly identifiable. They were told:

“Once you have written a use for the object, fold the piece of paper in four and slip it in the box on your desk. You can see that you each have a box on your

desk, so your responses will be kept separate from that of your partner. This way, I'll be able to look at the uses each of you has generated" (adapted from Brickner, et al., 1986).

In Condition 3, participants were asked to slip their uses in a tube placed in front of them. The tubes extended to a common box. Participants were given the opportunity to look inside the box before beginning the brainstorming activity. They were told:

"Once you have written a use for the object, fold the piece of paper in four and slip it in the tube in front of you. You can see that your slips of paper will go into the same box as the answers of your partners, so they will be pooled immediately. This way, I'll be able to look at the uses generated by your group as a whole" (adapted from Brickner et al., 1986).

In Condition 3, participants were led to believe that their individual contribution was not known to the experimenter. However, I was able to identify each participant's individual contribution with the use of identification marks done with invisible ink on each slip of paper.

After the experimental task was completed, participants were asked to complete a questionnaire containing manipulation checks. This questionnaire included questions from the Intrinsic Motivation Inventory (Ryan, 1982); questions regarding the identifiability manipulation, as well as the Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988). Participants were also asked to describe (1) the purpose of the scrambled sentences, (2) the purpose of the brainstorming activity,

and (3) whether the two tasks were related or unrelated. These questions allowed us to screen for suspicious candidates and to determine whether or not participants had understood the experimental instructions (see Appendix III).

At the end of the experiment, the objectives of the research as well as the reason for the deception were carefully explained to participants using process debriefing. Participants were led through each step of the research as I explained their purpose (see Appendix IV). Finally, they were given the lottery ticket and thanked for their participation.

Although deception was present at various points in the experiment, it was necessary for the purposes of the study, as well as to avoid the presence of demand characteristics, where participants' behaviour is guided by some information in the experimental session (Whitley, 1996). It was not possible to tell participants that the scrambled sentences were in reality motivational primes intended to affect their performance on the brainstorming task. This would not have allowed them to act naturally, which is essential to get valid results. Moreover, the priming effect is unconscious and requires that participants not connect the priming task to the dependent variable in any way (Bargh & Chartrand, 2000)ⁱⁱ. Also, the true nature of the brainstorming task was not disclosed. Telling participants that the purpose of the activity is to investigate the impact of effort on performance often leads to an inhibition of participants' natural tendency to loaf (Karau & Williams, 1993). Deception was also involved when leading participants in Condition 3 to believe that their individual output will not be identifiable. However, this deception is standard in most loafing studies (e.g., Williams et al., 1981), and is necessary to create a situation conducive to social loafing (Karau & Williams, 1993).

Measures

Performance. The number of non-redundant uses for a shoe generated by participants served as the indicator of effort put forth in the brainstorming task, and the dependent variable. Participants' uses were tallied following a strict coding system. Redundant responses, such as "using shoes to protect the foot from dirt" or "to protect the foot from water", were coded as one use, in this case as "protection". When participants wrote on one single piece of paper two uses that were considered different according to the coding system (e.g., "using a shoe for comfort or protection"), they were counted as two uses, even though the participant had not followed the instructions of writing different uses on separate pieces of paper. When the coder had doubts about the classification of some ambiguous uses, an independent coder was used to check for the level of agreement. Finally, uses were coded twice: once during the data collection phase, and once at the end, to ensure a greater consistency of the coding system ($r = .94, p < .001$).

Intrinsic Motivation Inventory (Ryan, 1982). This questionnaire is composed of five subscales, tapping feelings of pressure, enjoyment, competence, effort and choice. Pressure was tapped with 5 questions such as "I felt pressured during this activity" ($\alpha = .83$). Enjoyment was evaluated with 4 items like "This activity was fun to do" ($\alpha = .90$). Competence was measured with 4 questions such as "I was pretty skilled at this activity" ($\alpha = .86$). Effort was evaluated with 4 items such as "I tried very hard on this activity" ($\alpha = .79$) and choice was tapped with 4 questions like "I did this activity because I wanted to" ($\alpha = .78$). A 1 to 7 scale was used, where 1 indicated "not at all true", 4 represented "somewhat true" and 7 corresponded to "very true".

Identifiability. Participants were asked to respond to three manipulation checks on the identifiability of their individual effort. This was done to ensure that the three conditions needed in social loafing research had been effectively manipulated. These items were: a) “At the end of the experiment, the experimenter will be able to tell how I individually performed on the brainstorming task”; b) “During the experiment, other group members were aware of how many uses for a shoe I generated”; c) “At the end of the experiment, the experimenter will be able to tell how many uses for a shoe I generated”. Both questions regarding identifiability from experimenter (questions a and c) were strongly correlated ($r = .65$; $p < .001$), and therefore their average was used in the analyses. Questions a and c were not correlated with the question regarding identifiability from other group members (r 's $< -.10$; *ns*) and thus this question was kept separate. The same 1 to 7 scale was used.

Incentive to participate. Since an extrinsic motivator was given for participation, two questions were added to determine whether or not receiving the lottery ticket affected their motivation and performance during the experiment. These questions were a) “I feel that getting the lottery ticket is related to the number of uses for a shoe I have generated” and b) “During the brainstorming task, I often thought about the lottery ticket”. The correlation between these items was $r = .30$; $p < .001$, yet they were kept separate in the analyses. Unfortunately, no question was added regarding the effect of receiving the class credits. However, analyses were conducted to determine whether or not it had an effect on the dependent variable and the manipulation checks. Again, the same 7-point scale was employed.

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS is a self-report evaluation of participants' positive and negative mood states. Lévesque and Pelletier (2000) did not include the PANAS in their experiments, and as a result, it could be argued that the priming effect obtained could have been a function of participants' mood. The intrinsic primes used in their article were more "positive" words (e.g., enjoying, captivation) than those used in the extrinsic condition (e.g., coerced, obligation). Therefore, instead of priming motivation, these intrinsic words could have primed a positive mood in participants. However, the existing literature on mood indicates that participants in a positive mood are more likely to rely on heuristic thinking (Worth & Mackie, 1987) and are more likely to reduce the effort they put forth towards an activity (Melton, 1995). Thus, as Lévesque and Pelletier (2001) indicated, if a positive mood had been primed, less effort would have been found for those participants. Instead, participants primed with the intrinsic words displayed more effort towards the task. Nevertheless, the PANAS was included in the present study to rule out the potentially confounding presence of a mood effect. The correlation between the positive and negative items was $r = -.14$; *ns*.

RESULTS

The results of the statistical analyses are reported below. Findings relating to the basic relationships between the measures will be examined first. Then, to verify if the manipulations worked, results regarding the manipulation checks will be examined. Analyses done at the individual level on the main dependent variable, the number of uses for a shoe generated, will subsequently be reported. Analyses concerning possible confounds will be presented, as well as a group analysis using a nested design, to control for dependence within groups. Finally, post-hoc explorations will be reported.

Preliminary Analyses

As can be seen in Table 2, the exploration of means and standard deviations, as well as the skewnesses and kurtoses showed that most dependent variables were normally distributed. Two exceptions were the variables related to the incentive (the lottery ticket), which were positively skewed and leptokurtic. This was to be expected, as most participants should report that the lottery ticket is unrelated to the experimental task. The mean of the negative items on the PANAS was also slightly leptokurtic ($M = 3.10$), as was the number of uses generated for a shoe ($M = 2.23$).

The square root transformation was attempted on the number of uses generated. However, the use of this transformation did not result in any significant changes for the analyses. Therefore, the untransformed data were used for the analyses reported below.

The correlations between all the dependent variables are reported in Table 2. As can be seen in the table, the correlations are consistent with what should be expected. For example, choice, and competence were positively related to the number of uses generated, whereas incentive 1 was negatively correlated. Pressure was negatively correlated with competence and enjoyment. Enjoyment was positively correlated with competence, effort and choice. Competence was positively correlated with effort and choice. Effort was positively correlated with choice but was negatively related to incentive 2. Choice was negatively related to identifiability from group members and incentive 2. Positive affect was positively correlated with number of uses generated, enjoyment, competence, effort, choice, and negatively correlated with pressure. Negative affect was positively correlated with pressure, and was negatively correlated with number of uses generated, competence and choice.

Table 2: Means, standard deviations and correlations amongst the thirteen dependent measures.

Variables	Means	Standard Deviations	Correlations														
			1	2	3	4	5	6	7	8	9	10	11	12			
1. Number of uses for a shoe	11.04	3.94															
2. Pressure	2.59	1.30	-.12														
3. Enjoyment	4.98	1.27	.12	-.19**													
4. Competence	4.34	1.27	.31**	-.37**	.50**												
5. Effort	5.38	1.16	.03	.13	.17*	.20**											
6. Choice	5.76	1.24	.16*	-.14	.35**	.15*	.33**										
7. Positive affect	3.41	.65	.28**	-.15*	.62**	.55**	.37**	.24**									
8. Negative affect	1.35	.41	-.15*	.60**	-.21	-.29**	.08	-.20**	-.14								
9. Identifiability (experimenter)	4.35	1.87	.1	-.08	.13	.05	-.01	.13	.01	-.09							
10. Identifiability (group members)	2.03	1.60	-.13	.05	.01	.07	-.02	-.20**	-.02	.17*	-.06						
11. Incentive 1	1.60	1.21	-.21**	.14	-.03	-.04	-.05	-.10	-.06	.19**	.02	.05					
12. Incentive 2	1.11	.56	-.03	.05	-.12	-.07	-.24**	-.20**	-.16*	.24**	-.03	.12	.30**				
13. Number of prime words used	9.78	2.53	.11	-.05	-.06	.11	-.10	-.02	-.01	-.01	.16*	.05	-.00	.16*			

*p < .05

**p < .01

Individual Analysis

First, analyses were conducted with individuals as the unit of analysis.

Manipulation Checks

To check if the manipulation of identifiability was successful, analyses of the manipulation checks regarding identifiability were subjected to a 3 (alone, identifiable, pooled) X 2 (intrinsic, extrinsic) between-subjects ANOVA.

Participants reported their perception of the experimenter's ability to identify their individual performance. The 3 (group) X 2 (prime) ANOVA was conducted with the aggregate "identifiability from the experimenter" measure as a dependent variable. The analyses revealed a main effect for group condition on perceived identifiability of outputs. $F(2, 183) = 29.11; p < .001; r = .37^{iii}$. A planned contrast analysis revealed that participants in the group condition where efforts were pooled ($M = 3.15$) felt that the experimenter would be less able to evaluate their performance than participants in the identifiable condition ($M = 4.92$) and participants in the individual condition ($M = 5.19$), $t(183) = 7.60; p < .001; r = .49$. The other contrast, comparing the alone condition with the group-identifiable condition was non-significant, $t(183) = .87; ns$. Therefore, the manipulation for evaluation potential from the experimenter operated as planned. When participants were led to believe that their outputs would remain anonymous through the use of the common box, they felt less identifiable than when participants were working alone or in a group where their outputs were kept in separate boxes. The main effect for priming condition as well as the interaction between the group condition and the prime were non-significant, $F(1, 183) = .09; ns$, and $F(2, 183) = .33; ns$, respectively.

Participants were also asked the extent to which other group members would be aware of their performance. The 3 (group) X 2 (prime) ANOVA was conducted with the “identifiability from group members” measure as a dependent variable. The analyses revealed a main effect for the group condition on perceived identifiability of outputs, $F(2, 178) = 8.88$; $p < .001$; $r = .22$. Of interest was whether participants in the group-pooled condition differed from participants in the group-identifiable condition. Planned contrasts revealed that participants in the identifiable condition ($M = 1.71$) reported that their co-workers could evaluate them less than participants in the group-pooled condition ($M = 2.61$), $t(178) = 3.48$; $p < .001$; $r = .25$, although both means were low, which is what was expected given the design. Thus, participants who were asked to pool their efforts felt that others were more aware of the number of uses they generated than participants who were asked to keep their output in separate boxes. The main effect for priming condition as well as the interaction between the group condition and the prime were non-significant, $F(1, 178) = 3.78$; *ns*, and $F(2, 178) = 2.53$; *ns*, respectively.

The 3 (group) X 2 (prime) ANOVA was repeated using manipulation checks for the priming as dependent variables. I expected participants in the extrinsic condition to report higher levels of pressure and lower levels of effort, competence, enjoyment and choice. As can be seen in Table 3, no main effects were found on the dependent variables (pressure, choice, enjoyment, effort and competence) with respect to the priming condition (p 's $> .1$, *ns*), which suggests that the primes did not activate the intended constructs in participants.

Table 3: Dependent variables cell means (and standard deviations) for the intrinsic and extrinsic conditions.

Dependent Variable	Intrinsic Condition	Extrinsic Condition
Pressure	2.68 (1.17)	2.51 (1.42)
Choice	5.71 (1.28)	5.81 (1.20)
Enjoyment	4.97 (1.23)	4.98 (1.31)
Effort	5.37 (1.20)	5.39 (1.12)
Competence	4.44 (1.24)	4.24 (1.29)

A main effect of group conditions was found for choice, $F(2, 183) = 3.06$; $p < .05$; $r = .13$. Since no specific hypotheses had been planned about the effect of group condition on the choice variable, a post-hoc test was conducted, using Tukey's honestly significantly difference test, where $p < .05$ was used as the criterion for significance. Tukey's HSD test revealed that participants in the alone condition ($M = 6.08$) reported feeling more choice than those in the group-pooled condition ($M = 5.51$). The comparison between participants in the alone condition and those in the group-identifiable ($M = 5.78$) condition and between the two group conditions were non-significant.

The 3 (group) X 2 (prime) ANOVA was repeated using positive and negative affect as dependent variables. No significant main effects were found for the priming manipulation, showing that participants who received the intrinsic primes did not differ in mood states compared to those who received the extrinsic primes, $F(1, 183) = .29$, *ns*, and $F(1, 183) = .21$, *ns*, for positive and negative affect respectively. However, a main effect of group conditions was found with respect to positive affect. Tukey's HSD tests showed that participants in the alone condition ($M = 3.60$) reported more positive affect than those in the group-identifiable condition ($M = 3.28$); $p < .05$. Participants in the group-pooled condition reported a mean positive mood of 3.4 but did not significantly differ from either group.

Finally, participants in the six conditions did not differ with respect to their reaction to receiving a lottery ticket, p 's $> .1$, *ns*.

Number of Uses for a Shoe Generated

The main dependent variable, the number of uses for a shoe that were generated by participants, was examined with the 3 (group) X 2 (prime) ANOVA model. Participants generated a range of 3 to 26 uses, with an average of 11.04 uses for a shoe (see Table 4). Examples of the uses generated by participants can be found in Appendix V.

The main effect for the priming condition was non-significant $F(1, 183) = .65; ns$, indicating that the primes did not affect the number of uses generated. A planned contrast done to determine the effect of the priming condition pitting both group conditions under the intrinsic primes against both group conditions under the extrinsic primes was non-significant, $t(183) = 1.60, ns$.

Table 4: Mean (and standard deviations) for the number of uses generated by participants in each condition.

	Work alone (no group)	Work in group-identifiable	Work in group-pooled	Row Means
Intrinsic primes	12.38 (4.81)	11.10 (3.55)	10.86 (3.63)	11.40 (4.01)
Extrinsic primes	13.10 (4.84)	10.64 (3.17)	9.24 (3.16)	10.68 (3.84)
Column Means	12.68 (4.78)	10.84 (3.33)	10.06 (3.48)	11.04 (3.94)

The analysis revealed a main effect for the group condition, $F(2, 183) = 7.25; p < .001; r = .20$. A planned contrast for the group condition was performed to compare the alone versus the group-pooled condition. It revealed that participants in the alone condition generated a greater number of uses than those in the group-pooled condition, $t(183) = 3.77; p < .001; r = .27$. A planned contrast was also conducted in order to compare the group-pooled versus the group-identifiable conditions. The analysis showed that the number of uses generated for a shoe were not significantly different across the two group conditions, $t(183) = 1.27; ns$.

The interaction effect between the group condition and the prime on the number of uses for a shoe was non-significant, $F(2, 183) = 1.36. ns$. Since the interaction was the main hypothesis, a planned contrast was computed nonetheless. This planned contrast, directly testing the main hypothesis (pitting the extrinsic-pooled condition against the 5 others) showed that the extrinsic-pooled condition had a significantly lower number of uses than all the other cells, $t(183) = 3.28; p < .01; r = .24$.

Controlling for Possible Confounds

A number of confounds could have affected the strength of the manipulations and performance, such as the number of prime words used, gender, academic degree, receiving the extra course credits and language ability. Analyses were conducted to control for these possible confounds. They are reported below.

Number of prime words used. Priming of motivational states was conducted through the use of scrambled sentences. Since participants had the opportunity to choose either

the prime word or a neutral word in the sentences they wrote (see Appendix I), an analysis was conducted to determine whether or not this had an impact on the strength of the priming manipulation. A 3 (group) x 2 (prime) ANCOVA controlling for the number of prime words used in the scrambled sentences task was conducted on the main dependent variable, the number of uses for a shoe. It showed that the number of words was not a significant covariate, $F(1, 181) = 1.35; ns$.

Gender. A 3 (alone, group identifiable, group pooled) x 2 (intrinsic, extrinsic) X 2 (male, female) between-subjects analysis of variance was conducted to determine the effect of gender on the dependent variable. Gender of participants did not have an effect on the number of uses for a shoe generated, nor did it interact with group condition or priming condition $p's > .1; ns$.

Degree. Since some participants had to be recruited from the education department's master's program, degree was added as a third factor in the 3 (group) X 2 (prime) X (undergraduate, graduate) ANOVA. Results showed a main effect for degree, $F(1, 177) = 9.41; p = .002; r = .22$, such that education students generated more uses ($M = 13.40$) than the commerce undergraduate students ($M = 10.76$). There was also a significant interaction between the prime and degree, $F(1, 177) = 5.60; p < .05; r = .18$. The interaction contrast was significant $t(177) = 2.27; p < .05; r = .17$, such that graduate students in the extrinsic condition generated more uses ($M = 15.00$) than graduate students in the intrinsic condition ($M = 12.09$) and than the undergraduate students in the extrinsic and intrinsic conditions ($M = 10.22$ and 11.31 , respectively).

The ANOVA model was repeated on the manipulation checks to understand where the graduate students differed from the undergraduate students on performance. Degree did not interact with priming condition on any of the dependent variables (p 's > .1; *ns*).

A main effect for degree was found when the mean of the positive PANAS items were entered as a dependent variable in the 3(group) X 2(prime) X 2(degree) ANOVA, $F(1,177) = 6.20$; $p < .05$; $r = .19$. Undergraduate participants ($M = 3.37$) reported less positive affect than graduate students ($M = 3.71$).

The results for the ANOVA including the degree of participant as a third independent variable should be interpreted with caution. In fact, only 20 participants (i.e., between 2 and 5 per cell) were from the education department, compared to 169 (i.e., between 19 and 34 per cell) from the commerce department, and their degree was confounded with the fact that none of the graduate participants received extra credits for their participation.

Extra credit. A 3(group) X 2(prime) X 2(credit, no credit) ANOVA revealed a main effect for credit on the number of uses for a shoe that were generated, $F(1, 177) = 31.30$; $p < .001$; $r = .39$, such that participants who received the credits tended to generate fewer uses ($M = 9.71$) than those who did not receive such incentive ($M = 13.11$). The presence of extra marks also interacted with the prime condition, $F(1, 177) = 4.50$; $p < .05$; $r = .16$. The difference in number of uses between the credit and no credit conditions was particularly strong in the extrinsic condition. The interaction contrast was significant, $t(177) = 2.20$; $p < .05$; $r = .16$, showing that participants who were subjected to the intrinsic primes generated an average of 12.72 uses, compared to 13.54 for those who read the extrinsic primes, in the no credit condition. However, in the extra credit

condition, participants who read the intrinsic primes generated 10.48 uses, compared to 8.98 uses for those who received the extrinsic primes.

The ANOVA was repeated using the manipulation checks as the dependent variables. There was a main effect for credit on participants' reported level of enjoyment $F(2, 177) = 4.23$; $p < .05$; $r = .15$, such that, participants who received the extra credit reported enjoying the experiment less ($M = 4.74$) than those who did not receive the credit ($M = 5.35$).

Credits affected the amount of choice participant felt they had in the experimental task. The 3(group) X 2(prime) X 2(credit) ANOVA conducted with the level of choice as the dependent variable revealed a main effect for credits $F(1, 177) = 15.97$; $p < .001$; $r = .29$). Participants who did not receive the credits felt they had more choice ($M = 6.25$) than those who received the marks ($M = 5.45$). No other significant findings were found on any other manipulation checks.

The effects of receiving the extra credits should be interpreted with caution, however. Participants who received the extra incentives completed the experiment towards the midpoint to the end of the semester, whereas those who did not receive the credits tended to have completed the experiment earlier. Therefore, the effect of the credit condition could be confounded with time of testing. For instance, participants who signed-up earlier in the semester could have been more conscientious (Stevens & Ash, 2001) and possibly more intrinsically motivated than participants who signed-up later in the semester. A 3(group) X 2(prime) ANCOVA on the number of uses for a shoe, using subject number (which indicates when they participated) as a covariate, was significant, $F(1,182) = 5.57$; $p < .05$, showing that time of testing was a significant covariate of the

number of uses generated. However, when the ANCOVA was performed adding credits as a third independent variable, subject number was no longer a significant covariate, $F(1,176) = .04$, *ns*, which suggests that the presence or absence of credits affected the number of uses generated above the effect associated with the time of testing.

Language ability. Participants were asked at what age they had learned English to control for the effect of language ability on the number of uses generated for a shoe. The average participant had learned English at 5.88 years old, ranging from 0 years old to 30. This variable was not skewed (1.158) and had a normal kurtosis (1.218). A negative correlation between the age at which they learned English and the number of uses found almost reached significance ($r = - .14$; $p = .067$). Therefore, there was a trend for participants who had learned English later in life to generate fewer uses for a shoe.

An ANCOVA 3(group) X 2(prime) was performed to determine the effect of age on the number of uses generated. It revealed that age was a significant covariate $F(1, 177) = 3.85$, $p = .051$. However, the F 's for the main effects and the interactions did not change significantly when age was used as a covariate.

Group Analysis Using a Nested Design

Because the study used a nested design (i.e., participants belonged to a group of 3 in both group conditions), individual observations are not independent. This violates an assumption of the ANOVA model and the *F*-tests. To determine whether individual performances and reactions were in fact dependent on their group assignment, a 3 (group) X 2 (prime) ANOVA was conducted once again on the number of uses for a shoe generated, nesting the groups within the 3 X 2 design (keeping individual cases as a unit of analysis). The analysis was performed without the data from participants who had completed the task alone, since this analysis was concerned with group variance. If the group variance component is significant, Anderson and Ager (1978) suggest to use this component as the error term for the *F*-tests conducted at the individual level. In our design, the group variance component did not reach significance, showing that group variance did not have an effect on the number of uses generated, $F(40, 75) = 1.10; ns$. Therefore, it is acceptable to keep individuals as the unit of analysis and unnecessary to redo the analyses with groups as the unit of analysis.

Post Hoc Explorations

Since the priming manipulation was not successful, a post-hoc examination of the main dependent variable, the number of uses generated, was attempted with participants' responses on the Intrinsic Motivation Inventory. As such, it was assumed that participants' self-reported levels of pressure, effort, enjoyment, competence and choice would reflect their natural tendency to be more or less intrinsically motivated towards the brainstorming activity, rather than the priming effect. A median split was performed on each of the five variables. Then, an ANOVA was performed on the number of uses for a shoe. The first factor of the ANOVA was the group (alone, group-identifiable, group-pooled). The second factor was the median split of each IMI variable, such that participants would fall above or below the median. Therefore, five 3 (group) X 2 (above median, below median) ANOVAs were performed (one for each pressure, effort, enjoyment, competence and choice) using the number of uses for a shoe as a dependent variable. Only the ANOVA using the median split of competence yielded a significant main effect for competence, $F(1,183) = 15.04, p < .001, r = .28$. As can be seen in Table 5, participants whose reports placed them in the upper-median for the competence ratings generated more uses ($M = 12.15$) than participants who reported less competence ($M = 9.99$). None of the other ANOVAs revealed main effects for the median splits, p 's $> .1$, n s, although they were in the expected direction. As such, participants on both sides of the median score for pressure, enjoyment, effort, and choice did not significantly differ in the number of uses for a shoe they generated.

Table 5: Mean (and standard deviations) for the number of uses generated by participants in each Intrinsic Motivation Inventory median-split variable.

IMI variable	Below median split	Above median split	<i>F</i> value	<i>P</i> value
Pressure	11.31 (4.41)	10.72 (3.26)	1.015	.315
Enjoyment	10.62 (3.81)	11.56 (4.05)	.972	.325
Competence	9.99 (3.07)	12.15 (4.43)	15.036	.000
Effort	10.62 (3.59)	11.47 (4.24)	2.446	.12
Choice	10.48 (3.83)	11.65 (3.98)	2.047	.154

DISCUSSION

The study reported above investigated the moderating role motivation on social loafing. Very little social loafing research has incorporated motivation as a variable of interest, although even Ringelmann, the first author investigating the topic, acknowledged that motivation could have an effect on social loafing. Thus, the goal of the present study was to further understand the impact of motivational styles on social loafing. Specifically, motivation was defined not as a unitary construct, as was done in the CEM (Karau & Williams, 1993), but following a multidimensional definition proposed by self-determination theorists (e.g., Ryan & Deci, 2000a). As such, two basic forms of motivation, intrinsic and extrinsic motivation, were used as moderators of the identifiability-loafing relationship. It was hypothesised that social loafing would have been at its highest when extrinsically motivated participants were working in a group but their individual effort was not known.

Manipulation Checks

The primary manipulation of this design was a conceptual replication of previous social loafing studies (Brickner et al., 1986) and involved the identifiability of individual effort. Both laboratory (e.g., Williams et al., 1981) and field (e.g., George, 1992) studies showed that the amount of effort participants or company employees are willing to exert is determined by how identifiable they perceive their own effort to be. Thus, as long as participants feel that a supervisor or an experimenter will be aware of their effort, individual performance will be high, even in groups. On the other hand, when participants feel that their diminished effort will go unnoticed, then performance drops

even for participants working alone (Williams et al., 1981). In the present study, participants' perceptions of identifiability from the experimenter were manipulated with success, although the effects were not as clean as what one would have hoped. The manipulation checks showed that participants who were led to believe that their individual efforts would be pooled with those of other participants (and therefore be hidden from the experimenter) did feel that their performance was less identifiable by the experimenter than participants who were working alone or in the group-identifiable conditions. Importantly, participants who worked alone felt as identifiable as those who worked in a group but were told that their outputs would be kept separate from those of co-workers, which indicated that two adequate control groups with respect to identifiability were established. This is supported by the effect size of $r = .49$ for the contrast comparing the group-pooled conditions versus the alone and group-identifiable conditions.

However, a close examination of the three group means shows that the manipulation was not as robust as it had been planned. In fact, the manipulation was designed such that participants in the alone and group-identifiable conditions would be at the opposite end of the 7 point scale compared to participants in the group-pooled condition. Nonetheless, the three averages were closer to the center of the scale, which shows that even the group-pooled participants felt somewhat identifiable. Therefore, although a significant statistical effect, supported by a large effect size, was found, there was not much practical evidence that the identifiability from the experimenter manipulation was completely successful.

Participants were also asked the extent to which they felt identifiable by other group members. Since partitions were used, no difference was expected between participants

working in the group-identifiable and group-pooled conditions, but the analyses revealed that those in the latter group felt more identifiable. Group-pooled participants were asked to slip their uses in tubes leading to a common box. However, the diameter of the tubes was not large enough for the paper to slip silently in the box. Thus, the noise could have made participants aware of their co-worker's production, although they were not asked if they were or not. Possible confounds generated by this manipulation problem will be discussed in the section relating to the number of uses generated.

The manipulation checks showed that participants in the intrinsic condition did not differ from those in the extrinsic condition. Thus, the priming manipulation was unsuccessful in that it did not elicit the expected difference in reported feelings of pressure, choice, enjoyment, effort and competence. Priming effects are difficult to obtain and perhaps, this manipulation was too subtle. An attempt was made to make the manipulation stronger by adding prime words in each condition, compared to the original Lévesque and Pelletier (2001) primes, but it was not sufficient to yield the priming effect anticipated. Although Lévesque and Pelletier (2001) found significant effects with the primes, even finding differences between the intrinsic condition and a neutral condition, and between the extrinsic and neutral conditions, this effect has not so far been replicated elsewhere (C. Blanchard, personal communication, April 12, 2002) and would require further investigation. Therefore, it is advised to explore the present hypothesis using a different motivational manipulation, such as stronger primes or different instructions.

No difference in positive and negative affect were found between the intrinsic and extrinsic primes. Had I been able to affirm that the priming manipulation was successful, this would have lent support to Lévesque and Pelletier's (2001) assertions that the primes

did not affect mood but only motivation. However, in light of the evidence that the primes did not function as expected, this finding bears much less weight than was hoped.

Interestingly, unexpected differences on the manipulation checks were found amongst the alone and both group conditions. This was contrary to my expectations as I had designed the alone condition as a control group to further understand the experience of participants in the group-individual condition. Specifically, the alone participants were not expected to differ from their group-identifiable counterparts. However, results showed that alone participants seem to have experienced the study very differently. Manipulation checks (competence, enjoyment, choice, effort, positive affect) were all highest in the alone condition (except for pressure and negative affect, both highest in the group-pooled condition), but did not all reach statistical significance. Post-hoc tests showed that alone participants reported feeling more choiceful and experienced more positive affect during the brainstorming task than participants in the group-pooled condition, but not compared to the group-identifiable condition.

The experimental room was very small and became warm, which only became apparent when all three participants were in the room. It is likely that participants were uncomfortable when others were in the room with them. This might explain why participants in the alone condition seem to have reacted more positively to the brainstorming activity than participants working in groups of three.

Main Findings

The main effect for priming on the number of uses generated was non significant. This finding is not surprising since the manipulation checks showed that the primes did not elicit the desired motivational states.

However, a main effect on the number of uses was found for the group conditions. Participants in the group-pooled condition should have generated fewer uses than those in the group-identifiable condition. The difference in the number of uses generated in these two group conditions was not significant, although the trend was in the right direction. This means that in spite of group-pooled participants believing that their individual effort would be hidden from the experimenter, they were prompted to perform as much as those in the group-identifiable condition. Recall that the noise made by the slips of paper sliding down the tubes might have been a problem in the group-pooled condition. This could have given rise to social facilitation. In fact, there is some evidence that being aware of other's output can lead to a social facilitation effect (Gagné & Zuckerman, 1999) Furthermore, the noise could have prompted competition amongst participants, as being aware of other's output could lead to performance pressure. However, it is important to note that no main effect for group condition was found regarding the IMI pressure subscale, $F(2, 183) = .59, ns$, although the trend showed that participants in the group-pooled setting did report greater pressure than alone and group-identifiable participants. Thus, an explanation of the results is that participants in the group-pooled condition worked harder than they would have, had the noise not been present.

An interaction effect was expected between the group and priming condition such that participants in the group-pooled/extrinsic cell would have generated substantially fewer

uses than all other participants. The ANOVA model demonstrated the interaction term to be non-significant. However, a planned contrast, directly testing the main hypothesis of this study supported it. Since, as stated earlier, primes did not function properly, this significant contrast becomes more difficult to interpret. Thus, there is no solid evidence supporting the hypothesis.

One striking result of the experiment is that the number of uses generated were much lower than what would be expected based on previous loafing research. In fact, the average participant only generated 11.04 uses in a 10-minute period. Other social loafing studies found an average of 25 uses per participant (Gagné & Zuckerman, 1999), or a range between 16 and 24 uses, depending on the experimental condition (Shepperd & Taylor, 1999, experiment 2). Thus, it is possible that the object used for this study created a ceiling effect that did not allow for enough variability to find a meaningful difference between the groups. Therefore, it is possible that generating uses for a shoe was a challenging and difficult task.

Harkins and Petty (1982) investigated the effect of task difficulty on social loafing and found that participants asked to generate uses for difficult objects (i.e., a detached doorknob, a burnt-out light bulb) produced as many uses in the group-pooled as in the alone condition. However, when the objects were easy (i.e., a knife, a box), the standard loafing effect was found: less uses were generated by participants in the pooled condition than those in the alone condition. Harkins and Petty (1982) suggested that the challenge inherent in finding uses for a difficult object acted as a safeguard against loafing. Their participants felt that the uses they generated for the difficult object were “more unusual, less likely to be duplicated, and represented a more unique contribution” (p. 1219),

compared to those working with an easy object. This reasoning is in-line with George's (1992) measure of intrinsic involvement. Harkins and Petty (1982) argued their results in term of people's tendency to perceive themselves as above-average (e.g., Myers, 1980, as reported in Harkins & Petty, 1982). Thus, when participants are asked whether or not they are above-average on a particular activity, the tendency is to reply that they are. As such, when faced with an easy task, participants loaf since the belief is that anyone can succeed at the task. Conversely, when the task is challenging, then the contribution from better than average participants (i.e., themselves) is key to success. As in the Harkins and Petty (1982) article, this argument can only be a post-hoc rationalization of the present study's results since there was no comparative condition in which participants worked on an easier task.

Coming back to the present study, participants in the alone condition generated more uses than their group counterparts. This was contrary to expectations since alone participants should have produced a similar number of uses than participants in the group-identifiable condition. Given that alone participants reported more choice than other participants, their superior performance could be due to experiencing the entire session more positively than participants in the group sessions. This is in-line with research on intrinsic motivation that shows that performance tends to be superior when feelings of being controlled are minimal (Deci & Ryan, 1987).

Post-Hoc Explanations

“Working Hard to Get People to Loaf”

Interestingly, one article explained the author’s difficulty in replicating the standard loafing effect (Price, 1993). The primary focus of their study was to examine possible carry-over effects from changing the experimental setting from a collective to coactive one and vice-versa. The instructions and task, a brainstorming activity, were similar to the one used in the present study. In his first experiment, no differences were found between the number of uses generated by collective and coactive participants for a shoelace and a pencil. Like in the present study, Petty (1993) argued that participants might have been challenged by the activity and therefore collective participants did not loaf (Harkins & Petty, 1982). In the second study, he used a box and a knife as brainstorming objects, since they had already successfully been used (Harkins & Petty, 1982). Again, no significant differences were found between participants in the collective and the coactive conditions. Importantly, as in the present study, Price (1993) obtained a significant effect for identifiability between the collective and coactive conditions, in that coactive participants felt more identifiable. One striking similarity between Price’s (1993) study and the present experiment lies in the sample used: both experiments asked business undergraduate students to brainstorm, instead of undergraduate psychology students typically employed in social loafing studies. Price (1993) argued that business students, not being as used to participate in research as psychology students are, could have been “more motivated or aroused” (p. 337) by the experience of participating in research. This could have prevented collective participants from withholding effort, as shown by George’s (1992) study on intrinsic involvement.

Price (1993) added a manipulation to decrease arousal in one group of participants. A loafing effect was found for low-arousal participants in the collective setting. Thus, another post-hoc explanation for the present results might entail that high-arousal could have prevented participants in the collective setting from loafing.

Extrinsic Incentives

As some participants needed to be rewarded with extra credits, a more extrinsic incentive, differences between the groups emerged. In fact, participants who received the extra credit experienced the study differently than those who did not receive the added incentive. Firstly, fewer uses were generated under the extra credit condition than under the no credit condition. Then, extra credit participants reported less enjoyment and choice during the brainstorming activity. These results suggest that extra-credits participants' intrinsic motivation was undermined by receiving the extrinsic reward compared to their no-credit counterparts, which translated into decreased performance, especially under extrinsically motivating primes.

Although these results are post-hoc, they provide additional support to the findings that certain extrinsic rewards undermine intrinsic motivation. In fact, depending on how they are administered, rewards can be perceived as being controlling, pressuring people to behave in a certain manner. Extrinsic rewards can lead people to feel they are “a ‘pawn’ to the source of external rewards” (Deci, 1971, p.105). These rewards are thereby detrimental to intrinsic motivation (Deci & Ryan, 1987). In the present study, the extra-credits were an engagement-contingent reward, a reward given simply for taking part in the activity. Importantly, the reward did not depend on finishing the activity, which

would be a completion-contingent reward, or performing up to a standard, which would be a performance-contingent reward (Deci, Koestner & Ryan, 1999). A meta-analytic review of the effects of rewards on intrinsic motivation showed that engagement-contingent rewards, such as the one given in this study, significantly undermined intrinsic motivation (Deci et al., 1999).

Limitations

A number of limitations must be underlined. Firstly, the noise produced by the slips of paper passing through the tubes in the collective condition most probably prevented social loafing from occurring in the group-pooled condition. As explained, either social facilitation or competition could have been provoked. Thus, future studies must take care to prevent the noise, even as mild as it might appear.

A key limitation in the present study concerns the strength of the primes used. Future studies should use either stronger primes or verbal instructions promoting intrinsic motivation or leading to extrinsic motivation. Pilot testing is also recommended to ensure that the manipulations are affecting participants' behaviour in the manner intended.

The size of the room must also be adequately comfortable for three participants and the experimenter. In order to ensure participants' optimal comfort, the room used in social loafing studies should be, if possible, much larger than the one used in this study.

Finally, the fact that extra-credits had to be offered in order to meet the recruitment challenge, decreased the amount of control present in the experimental design. Students should be compensated for their participation in studies, but it is important to ensure that

the entire sample receives the same form and amount of compensation. Importantly, rewards should not be tied to students' performance in or completion of the experiment (i.e., performance-contingent and completion-contingent rewards). Getting the reward should be dissociated as much as possible from the experiment itself in order to ensure that it does not interfere with the manipulation (see Deci et al., 1999, for a review of the effects of rewards on motivation). Some items regarding the rewards should be included in the post-experimental questionnaire to ensure that the rewards were not perceived as being controlling.

Implications

The design used in the present study will bring interesting perspectives to the social loafing literature. In fact, understanding when and how individual motivation affects group performance will be beneficial for both the theory of work group performance and the practice, that is, real work-groups. There is, however, a striking lack of field research in social loafing, which is unfortunate as this is a phenomenon that can greatly affect organizations. It is of the utmost importance for managers to understand the triggers of social loafing and methods to curb it. Of course, a simple method to discourage loafing is to increase task visibility, or identifiability, as has been shown by laboratory and field studies (e.g., Williams et al., 1981; George, 1992).

However, task visibility may be a double-edged sword, on the one hand ensuring that employees do not loaf, but on the other, leading them to feel overly controlled and monitored. Closely monitoring and controlling employees has been shown to undermine feelings of autonomy and intrinsic motivation both in laboratory and field studies (Deci,

1971; Zuckerman, Porac, Lathin, Smith & Deci, 1978; Deci, Ryan, Gagné, Leone, Usunov & Kornazheva, 2001). Environments supporting autonomy can foster intrinsic motivation (Ryan & Deci, 2000b). On the other hand, environments controlling employees, such as by using extrinsic rewards to increase identifiability, have the potential to undermine intrinsic motivation. In fact, the excessive use of extrinsic motivators can lead to negative organisational consequences, such as employees working only as much as what they are paid for (Deci, 1995). Furthermore, environments fostering intrinsic motivation lead to more positive outcomes for employees than do environments fostering extrinsic motivation. For instance, a study showed that autonomy supportive working conditions were correlated with greater employee overall work satisfaction, greater trust in their corporation, and satisfaction with the opportunity for personal inputs that the work provided (Deci, Connell & Ryan 1989). Moreover, autonomous work environments also foster well-being as it leads to less work-related anxiety and a more positive approach to work (Deci, et al., 2001).

As such, if organizations want to curb social loafing, they should avoid management practices that are experienced by employees as being controlling, such as constant monitoring by a supervisor. Instead, they should invest in practices that foster feelings of autonomy. Cultivating autonomy supportive management practices that lead to intrinsic motivation is especially important in environments where task visibility is low (e.g., through group work where members perform identical behaviours), as shown by George (1992). For tasks high in intrinsic involvement, the manager's role should be to support his or her employees' feelings of self-determination, instead of wasting resources in constantly monitoring employees. Thus, managers should ensure that employees are

continuously feeling challenged by their work and that their tasks allow them to exert creativity and resourcefulness (Deci, 1972). Furthermore, promoting feelings of self-determination can be achieved through providing choice (Deci et al., 1989). Therefore, allowing employees to decide, as much as possible, how or when the work should be performed conveys the idea that controls are minimised.

Conclusion

In sum, the literature reviewed shows that motivation can affect social loafing and therefore, should not be dismissed as a variable of interest simply because this laboratory experiment did not yield the expected results. Had the primes been functional and the noise eliminated, the results would have perhaps supported the main hypothesis. Future social loafing research should pursue the exploration of the moderating role of intrinsic and extrinsic motivation. A replication of this study using the improvements suggested earlier should be conducted. This is particularly important as this type of research has social and organisational implications. As organisations find ways to decrease occurrences of social loafing, group performance will increase. Thus, organisations will be able to use their human resources in more effective manners, which will have positive repercussions on both individual and organisational effectiveness.

END NOTES

- i. All groups except for 3 were same sex groups (the mixed sex groups were done for convenience reasons). Same sex groups were used in order to control for possible social psychological forces generated by mixed-sex work groups. For example, participants in mixed-sex groups could work harder in order to impress other members or for arousal reasons (such as working with an attractive person of the opposite sex). We decided it was best to keep genders separate, as it was done in a previous social loafing study (Gagné & Zuckerman, 1999).

- ii. In a pilot study for this experiment, participants were told that the scrambled sentences were a language structure test to control for the effects of language ability on brainstorming styles. However, the primes did not effectively create the desired motivational states, and consequently, the number of uses generated for the object were not significantly different in the extrinsic and intrinsic conditions. Therefore, Dr. Lévesque advised to change the manipulation in order to make both tasks as unrelated as possible such as to increase the likelihood of finding a significant effect (C. Lévesque, personal communication, January 2002).

- iii. A measure of the effect size, the Pearson r , was computed as :
$$r = \sqrt{[(F_{1,-}) / (F_{1,-} + df_e)]}$$

(Rosenthal & Rosnow, 1984.).

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APPENDIX I

Dear Student,

Thank you for taking a few minutes of your time to help me with my research. I am a second year M.Sc.A. student working on my thesis in marketing.

This task only takes a few minutes to complete and, by working on it, you will help me make sure it is a task I could use later on for my thesis. Please refer to the instructions on the next page, and again, I assure you this will only take a few minutes.

Thank you for your help,

Filip Bartos, M.Sc.A. Marketing.

Scrambled Words Task

Please answer the following question:

What is your native language? _____

If your native language is not English, how old were you when you learned English?
_____ years old.

Instructions:

The following are a series of 20 scrambled sentences. Please write next to each a grammatically correct 4 word sentence with any of the 5 possible words. Remember to write the *first sentence* that comes to your mind.

For example, "sleeping is the here cat" could give "the cat is sleeping" or "the cat is here".

1. is quiet spontaneous very she _____
2. has challenge he chair a _____
3. they speaking interested often were _____
4. he by came today walked _____
5. feeling she involved something was _____
6. was done ready she almost _____
7. was satisfied simple he really _____
8. work finished her fulfilling was _____
9. she immersed tired feeling was _____

Form I

10. were often volunteering they talking _____
11. he surprise a received letter _____
12. invited yesterday them she called _____
13. were it mastering they reading _____
14. often is delighted she here _____
15. were nothing they autonomous feeling _____
16. is there absorbed he really _____
17. dizzy is feeling he competent _____
18. over was activity captivating the _____
19. he enjoying was himself hearing _____
20. was author the young enchanting _____

Scrambled Words Task

Please answer the following question:

What is your native language? _____

If your native language is not English, how old were you when you learned English?
_____ years old.

Instructions:

The following are a series of 20 scrambled sentences. Please write next to each a grammatically correct 4 word sentence with any of the 5 possible words. Remember to write the *first sentence* that comes to your mind.

For example, "sleeping is the here cat" could give "the cat is sleeping" or "the cat is here".

1. is quiet competitive very she _____
2. has obligation he orange an _____
3. they speaking coerced often were _____
4. she powerful tired feeling was _____
5. feeling she evaluated something was _____
6. was done ready she almost _____
7. was constrained simple he really _____
8. work finished her rewarded was _____
9. he by came today walked _____

Form E

10. were often demanding they talking _____
11. he award an received email _____
12. invited yesterday them she called _____
13. were it avoiding they reading _____
14. often is restricted she here _____
15. were nothing they controlled feeling _____
16. is there forced he really _____
17. dizzy is feeling he pressure _____
18. over was activity prestigious the _____
19. he proving was himself hearing _____
20. was author the young famous _____

APPENDIX II

Consent Form to Participate in Research

This is to state that I agree to participate in a program of research being conducted by Silvia Bonaccio as part of her Master's thesis of Management under the supervision of Professor Marylène Gagné at the John Molson School of Business.

A. Purpose

I have been informed that the purpose of the research is as follows: to look at people's brainstorming styles.

B. Procedure

You will be asked to work on a brainstorming task, which is generating uses for an object. At the end of the experiment, you will be asked to respond to a short questionnaire.

It should take you about 45 minutes to complete the entire procedure.

Your participation in this research will not put you at risk nor bring any levels of discomfort.

C. Conditions of participation

I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences. I understand that I will still be fully compensated.

I understand that my participation in this study is confidential (i.e., the experimenter will know, but will not disclose my identity).

I understand that the data from this study may be published. Only aggregated results will be revealed.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND AGREE TO PARTICIPATE IN THIS STUDY.

Name (please print): _____

Signature: _____

Date: _____

Witness signature: _____

APPENDIX III

ID# _____

**For each of the following statements, please indicate how true it is for you, using the following scale:
Please indicate your response by circling the corresponding number next to each sentence.**

1	2	3	4	5	6	7
not at all			somewhat			very
true			true			true

1. I was very relaxed in doing this activity
2. I enjoyed doing this activity very much
3. I was pretty skilled at this activity
4. I put a lot of effort into this activity
5. I felt pressured while doing this activity
6. I did this activity because I had to
7. This activity was fun to do
8. I think I am pretty good at this activity
9. I didn't put much energy into this activity
10. I felt very tense while doing this activity
11. I didn't really have a choice about doing this task
12. I would describe this activity as very interesting
13. After working at this activity for awhile, I felt pretty competent

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

1	2	3	4	5	6	7
not at all true			somewhat true			very true

14. I tried very hard on this activity	1	2	3	4	5	6	7
15. I did not feel nervous at all while doing this activity	1	2	3	4	5	6	7
16. I did this activity because I wanted to	1	2	3	4	5	6	7
17. I thought this activity was quite enjoyable	1	2	3	4	5	6	7
18. I think I did pretty well at this activity, compared to other students	1	2	3	4	5	6	7
19. I didn't try very hard to do well at this activity	1	2	3	4	5	6	7
20. I believe I had some choice about doing this activity	1	2	3	4	5	6	7
21. I was anxious while working on this task	1	2	3	4	5	6	7
22. At the end of the experiment, the experimenter will be able to tell how I individually performed on the brainstorming task	1	2	3	4	5	6	7
23. During the experiment, other group members were aware of how many uses for a shoe I generated	1	2	3	4	5	6	7
24. At the end of the experiment, the experimenter will be able to tell how many uses for a shoe I generated	1	2	3	4	5	6	7
25. I feel that getting the lottery ticket is related to the number of uses for a shoe I have generated	1	2	3	4	5	6	7
26. During the brainstorming task, I often thought about the lottery ticket	1	2	3	4	5	6	7

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you felt this way during the brainstorming activity. Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

___ interested

___ distressed

___ excited

___ upset

___ strong

___ guilty

___ scared

___ hostile

___ enthusiastic

___ proud

___ irritable

___ alert

___ ashamed

___ inspired

___ nervous

___ determined

___ attentive

___ jittery

___ active

___ afraid

Please answer the following questions

This is just to make sure that the purpose of each task was clear to you:

The purpose of the SCRAMBLED SENTENCES was to:

The purpose of the BRAINSTORMING TASK was to:

Were these tasks related or unrelated?

APPENDIX IV

The Role of Extrinsic and Intrinsic Motivation in Social Loafing

Thank you for taking part in this experiment. As you know, this will help me complete my Master's thesis in Management. Your participation was therefore very appreciated.

The main objective of my thesis is to apply a motivation theory to social loafing. A great deal of research has shown that sometimes people will exert less motivation and effort when they work in a group compared to when they work individually. Moreover, when people's output cannot be monitored, there is a tendency to work less, both in individual and group settings. This is what we call social loafing.

Most research has investigated social loafing from a group dynamic perspective. However, my supervisor, Dr. Marylène Gagné, and I believe that individual motivation plays an important role in the amount of work people will perform. This is why we have decided to use self-determination theory as a framework. Self-determination theory proposes that there are different forms of motivation, ranging from intrinsic to extrinsic motivation. When people are intrinsically motivated, they perform the activity for its own sake, for the fun it brings. Conversely, when people are extrinsically motivated, they perform the activity because they will be rewarded for performing it, or punished for not performing it.

The first task we asked you to complete today was the "scrambled words task". This task was in fact a motivational prime. In other words it was used to momentarily induce intrinsic motivation in some participants, and extrinsic motivation in others. If you were in the first group, this exercise probably made you feel that you were engaging in the brainstorming task because it is an enjoyable thing to do. If you were in the extrinsic group, you probably felt that you were compelled to take part in the brainstorming task. However, this process tends to be unconscious, thus you probably were not aware of this change in motivation. As you can imagine, we could not tell you in advance the purpose of the scrambled words task. Telling you how these primes should make you feel would not have allowed you to act naturally, which is important in order to obtain valid results.

After the scrambled sentences, you were asked to brainstorm. This was the actual social loafing measure. You worked at this task either alone or in a group of three. In the group conditions, some participants were told that I could know their individual results, and some were told that I would only look at the group results. However, in all conditions, I will be able to determine how many uses each participant has generated. It is important to have these three groups (work alone, work in group where individual output is known, work in group where individual output is not known) in order to compare my findings to past social loafing research where these conditions are present.

Hypothesis: Social loafing will be at its highest when extrinsically motivated participants are working in a group and they believe that only the group output is known.

Again, thank you for taking part in my research. I hope that you have enjoyed it and have learned something about laboratory experiments.

Silvia Bonaccio, M.Sc.A student.

You may contact me for any questions that you will have: brainstormingstudy@hotmail.com

APPENDIX V

Examples of Uses for a Shoe Generated by Participants

- Running and walking
- Throwing at something/someone
- Book-ends
- To get gum stuck to it
- Place to write crib notes
- Imprint of sole can be used in court cases
- Chew toy for a dog
- Flowerpot
- Serves fashion purposes
- Comfort
- Protect feet (from objects, water, cold...)
- As a monopoly game piece
- To walk all-over my ex-boyfriend
- As a home for small animals
- As a way to wear my favourite colour (red)
- A place to hide small objects (e.g., jewellery..) when you go to the beach