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## **Social Loafing in Interactive Groups: The Effects of Identifiability on Effort and Individual Performance in Floorball**

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### **ABSTRACT**

This study investigated whether effort and performance in interactive teams are influenced by identifiability of individual motivation and effort. The subjects participated in a floorball tournament under conditions of non-identifiability and identifiability. Measures of self-reported effort, heart rate, individual performance and perceived social loafing were collected. The results indicated that, under identifiability conditions, the participants improved their performance, subjective feelings of effort increased, and they perceived less social loafing in their teammates. No changes in heart rate were detected. Results are discussed in relation to previous research, and study limitations, practical implications, and further research directions are also outlined.

### **Introduction**

Most sport activities take place in group settings. Even athletes who participate in individual sports, and who are solely responsible for their performance in competitions, are usually members of a team (Carron, Hausenblas, & Eys, 2005; Lordanoglou, 1993). In team sport competition, the task must be accomplished by a group of athletes who work together in order to combine individual efforts to create a single product. Obviously, all sports do not require the same degree of cooperation among and between athletes. For example, Cox (1990) refers to an interactive-coactive continuum to explain this relationship. In interactive sports, close teamwork is required for success, whereas co-active sport requires little individual interaction. Another aspect of team sport is the opportunity to measure the athletes' efforts and performance and athletes' contribution to the team's results. In an athletics relay, for example, it is possible to measure each

athlete's performance exactly (by lap time). However, in interactive sports, such as football, it can be difficult to measure each player's contribution to the team performance exactly, or whether an athlete's effort in the competition is the maximum of their potential.

In competitive sport, maximizing performance or "winning" are the main objectives or goals (Lordanoglou, 1993). For the coach, therefore, it is essential to prepare athletes physically, technically, tactically, and mentally in order for optimal performance to occur. As Pat Williams, executive vice-president of the basketball team Orlando Magic, asserts; "TEAM is not just a word, it's an acronym for a powerful truth: 'Together Everyone Achieves More'" (Williams, 1997, p. 5). The statement encapsulates a common belief: a team inspires and motivates individuals to maximize their potential and work especially hard.

In order to explain why a group of individual athletes do not reach a theorized level of maximum performance, Steiner (1972), in his model of group effectiveness points out that actual group productivity often falls short of potential productivity. Steiner identifies two sources for reduced productivity:

- a) co-ordination losses, which are a group's failure to co-ordinate optimally the contributions of the individual members.
- b) motivation losses, when the members do not exert maximal effort in group settings.

A reduction in motivation and effort when individuals work collectively, compared to when they work individually, is described as *social loafing* (Latané, 1986). It is also relatively clear that social loafing has the potential to reduce the likelihood of an athletic team's success (Everett, Smith, & Williams, 1992).

Ringelmann initially observed the social loafing effect during tug-of-war competitions. In his study he found that differences between actual performance and predicted performance of a group increased as the number of group members increased (Ingham, Levinger, Graves, & Peckman, 1974). Social loafing has been studied extensively in a wide variety of situations, and it seems that social loafing is a robust phenomenon across both task and gender (Karau & Williams, 1993).

Latané (1986) and Hardy and Latané (1988) contend that the social loafing may be a function of the individuals' desire to economize their effort when performing in group situations, because they can "hide in the crowd" and escape recognition or blame because their individual efforts are not identifiable. Other factors have also been identified to moderate the magnitude of social loafing effect: a) individuals perceive they are making a unique contribution to the team's effort, or performing a task perceived as difficult b) individuals perform with friends as opposed to strangers c) the task involves the performer personally (Bartis, Szymanski, & Harkins, 1988; Hardy & Latané, 1988; Harkins & Petty, 1982). Based on these factors, it can be asserted that social loafing may be restricted to tasks that are seen as unimportant, meaningless, lacking in intrinsic motivation or performed by relative strangers in non-competitive contexts.

In sport settings, the effect of social loafing has been demonstrated in co-active groups such as cheerleaders, swimmers, rowers, and sprint relay participants. In a study on swimming relay

teams, Williams, Nida, Baca, and Latané (1989) demonstrated that individuals who did not know their lap times were slower in relay conditions than in individual conditions. Where lap times were identified, swimming times for the relays were faster than for the individual efforts. They concluded that social loafing may occur when the individual performances in a group are not identified, and that individual efforts may improve when the results are made known to other group members. Hardy and Latané (1988) found the same effect in their studies on cheerleaders.

Everett et al. (1992) made an attempt to replicate the findings for Williams et al. (1989), i.e. that social loafing occurs in competitive swimming under low identifiability conditions. They also extended the study to investigate gender differences in proportion to social loafing and examine the relationship between team cohesion and social loafing. The study failed to replicate that identifiability will reduce social loafing in competitive sport. Nor could they find any gender differences. On the contrary, Everett et al. (1992), found that group cohesion and especially task cohesion were negatively related to social loafing in females. This was not the case for males. One reason for this relationship may be that in groups with high cohesion, individual performance may not be influenced by identifiability. According to this study, the cohesion effect has greater influence on performance for females than males. This is in line with the conclusion in the meta analyses conducted by Carron, Coleman, Wheeler, and Stevens (2002).

In a study on rowers, Hardy and Crace (1991) found that competence moderates social loafing. Skilled rowers reported that they expended more effort when working alone as compared to working as a team. Unskilled performers (non-rowers), on the other hand, exerted significantly less effort, even under solo conditions, and were more likely to loaf than skilled rowers. Using skilled rowers, Anshel (1995) found that social loafing is a function of task duration. A social loafing effect was found for group tasks lasting 10 minutes, but not in tasks of shorter duration (one stroke or 1 ½ minutes). The results indicated that a longer duration of the criterion task may promote the social loafing effect, and furthermore that social loafing can occur in tasks that are meaningful or important, have intrinsic interest, and involve competition.

Even though there is some inconsistency in the identifiability findings in sport-related research, lack of identification and evaluation still seems to be a significant factor in explaining the social loafing effect (Forsyth, 1999; Karau & Williams, 1993; Swain, 1996; Weinberg & Gould, 1999). An untested area in the social loafing literature is the investigation of social loafing in interactive team sports such as football, handball, or floorball. One reason for this may simply be the method used in earlier studies, namely comparing individual and collective efforts. The problem in studies of social loafing in interactive sports within this methodological framework would be how to assess the individual effort independent of the team effort. Also, in interactive sports, optimum effort may not be synonymous with maximum physical exertion. Jackson and Williams (1985), for example, have shown that when working collectively with a difficult task, a reduction in effort improves the performance.

An alternative suggestion for solving this methodological problem in studies of social loafing, is to focus on perceived social loafing (Høigaard, Sjøkkeland, & Johansen, 2003; Mulvey & Klein, 1998). Mulvey & Klein (1998) suggested that perceived social loafing and actual social loafing may have almost the same effect on athletes. Social loafing refers to an effect when individuals actually reduce their effort; perceived loafing is the perception within the team that

one or more group members are contributing less than they could to the group performance. Although perception of reduced effort may reflect actual reduced effort, perceived loafing and actual reduced effort may not always co-vary. It is likely that social loafing may occur without other group members being aware of this, or that group members may perceive loafing even when all group members are contributing fully. The latter is especially likely in cases involving frustration with respect to the team's achievement (e.g., losing to a lower-ranked team). In cases when social loafing is perceived, no matter what the link to reality, it is likely that this perception will have a negative effect on group members' motivation. In fact, perceived loafing may have the potential to reduce the likelihood of a team's success. Questions that emerge based on this reasoning are how perceived social loafing is linked to actual social loafing, and how identifiability of individual effort influences the perception of loafing.

The purpose of this study is to examine the social loafing phenomenon in an interactive sport context under competitive conditions and among skilled athletes who perceive the criterion task as intrinsically motivating and meaningful. The main research question is to investigate how identifiability influences effort and performance and perceived social loafing in floorball competition tournaments. Based on theory and research associated with social loafing and identifiability, the following hypotheses for this study are:

1. Identification of the athlete's effort and contribution to the team increases the athlete's effort and performances
2. Identification of effort and performances decreases the athlete's perceived social loafing in the team.

## **Method**

### *Participants*

The participants were 24 male students (mean age = 18.4 yrs, range 17.1-19.5 yrs,  $SD = 0.7$  yrs.), recruited from undergraduate sport classes from a college in South Norway. The participants all had played floorball for at least seven years at the recreational level. The subjects were randomly assigned to four floorball teams, each composed of 6 members. The team organized themselves with one goalkeeper and five players on the field. Each player kept the same position for all games on both days of the experiment. Three participants dropped out because of injury after the first day. They were replaced with three substitutes. Only the players who participated on both days form part of the further analyses.

### *Instruments*

*Subjective effort:* The participant used a 7 point Likert scale to rate their own perceived level of effort in the games after Day 1 and Day 2. The scale consist of four items ranked from strongly disagree (1) to strongly agree (7). Typical items are: "I put a lot of effort into this floorball game". "I tried very hard while playing floorball games". The  $\alpha$ -coefficient in the present study is .71 for Day 1 and .63 for Day 2.

*Objective effort:* Heart rate (HR) was used as an indicator of objective effort and measured

with Polar, S-610 watches. All the field players were fitted with a heart rate watch during the game. The heart rates were registered as averages for every five seconds during a five-minute period in each match.

*Individual performance:* A composite measure of individual performances was developed, based on the work of Olsen (1988), Olsen, Semb and Larsen (1994) and Sonstroem and Bernardos (1982). The individual performance index measures play interaction, skills and performances, which may be important for each player's contribution to the team performance. A performance index (PI) was calculated based on the following formula:

$$PI = (GO + SH + AS + SN + TAC + CE) - LO$$

where GO = goals per game, SH = Shots on goal per game, AS = Assists per game, SN = snatch per game, TAC = Tackles and retain the ball per game, CE = Centre the ball per game, LO = Lose the ball to the other team per game. To construct an individual performance index, 1 point was given for every accomplished attempt according to the selected performance indicators (a goal gives 2 points). The points were then summarized and the attempt minus LO (lose the ball to the other team) gives the index for that game. The individual performance indexes were then summarized each day as an overall index.

*Perceived social loafing:* The Perceived Social Loafing Questionnaire (PSLQ) (Høigaard, 2002) was used to assess the athletes' perception of loafing in the teams. The PSLQ consists of five items, and a typical item is: "Members in my team are contributing less than I anticipated". Each item was rated on a 5 point Likert scale ranging from strongly disagree (1) to strongly agree (5). Several studies have demonstrated the validity and reliability for the PSLQ scale (Høigaard, Skjekkeland, & Johansen, 2003; Høigaard & Ommundsen, 2005; Høigaard, Säfvenbom, & Tønnessen, in press) The  $\alpha$  for this scale was .49 for Day 1 and .65 for Day 2.

*Competence and interest:* An adapted version of two subscales from Intrinsic Motivation Inventory (IMI) (McAuley, Duncan, & Tammen, 1989; Ryan, 1982) was used to ensure the athletes' perceived competence and interest enjoyment for the task. Both subscales consist of five items rated on a 7- point Likert scale ranging from strongly disagree (1) to strongly agree (7). Examples of items are: "I think I am pretty good at floorball" and "Playing floorball was fun". McAuley, Duncan, and Tammen (1989) reported adequate validity and reliability for the IMI. The  $\alpha$  for the competence scale was .62 and .85 for the interest-enjoyment scale .

*Attitude towards the tournament:* Two questions were used to measure the athletes' attitude towards the tournament and games: " How serious are you about this tournament?" and "How much effort will you put into this tournament?" The  $\alpha$  for these two questions was .59.

*Identifiability:* In order to assess the perceived identifiability of their own effort, the participants also had to answer the following question after the tournament on both days: "How identifiable were your effort and performance during the competition today?" The participant assess the item with a 7 point Likert scale ranging from not identifiable (1) to very identifiable (7).

## *Design and Procedure*

To test the hypotheses, two group conditions, low identifiability and high identifiability, were manipulated during the two-day floorball tournament. In the low identifiability conditions (Day 1) the experiment leader explained that this was a tournament where the main aim was to compete against other teams and to win. There were no indications that there would be any registration of individual effort and performance. To reduce the social facilitation effect based on spectators, only the team player who is playing was allowed to be in the hall. Furthermore the experiment leaders (four persons) were the same on both days. All games were recorded with a video camera. On the first day, the video camera was hidden from the participants.

On the second day, under high-identified conditions, we explained why and how we wanted to measure individual performance and effort. We then showed the video camera and how performances would be registered, and also gave an explanation of the use of the heart rate watch.

Before the tournament started on the first day, the participants were seated in teams and given information about playing rules (main international floorball rules) and how the tournament was organized. A playing schedule for both days was given to each participant. All teams were to compete against each other twice, giving a total of six games per team. The length of each game was 8 minutes. They were also told that they would be required to complete some questionnaires during the tournament. At the end of the information session, it was highlighted that the intention was to have a realistic competition, and that the athletes' effort and performance should be maximal. In an effort to enhance the athletes' motivation, the athletes were told that there would be a prize for the best team. After this briefing, the teams organized themselves and also had to choose who should be the goalkeeper, defender and attacker. They were told that the players had to keep the same playing positions on both days.

## **Results**

With regard to perception of their own competence, the subjects reported that they considered themselves as relatively competent in floorball ( $M = 5.0$ ,  $SD = 1.07$ ). Overall they also seemed to enjoy the games and felt that it was interesting to participate in the games ( $M = 5.5$ ,  $SD = 1.0$ ). Further, the players also reported a high degree of seriousness ( $M = 6.0$ ,  $SD = 0.8$ ) and willingness to pull their weight in the tournament ( $M = 6.6$ ,  $SD = 0.7$ ).

### *Manipulation Checks*

As hypothesized, the manipulation check for identifiability demonstrated that during Day 1 (low identifiability conditions) the participant felt less identifiable ( $M = 2.5$ ,  $SD = 0.8$ ) than during Day 2 (high identifiability conditions) ( $M = 6.0$ ,  $SD = 0.8$ ). According to a student t-test, the difference was significant [ $t(19) = -15.897$ ,  $p < .001$ ].

### *Effort, performance, and social loafing*

Table 1 presents means and standard deviations for the main variables: subjective effort, objective effort, performance index, and perceived loafing. In general the participants reported

relatively high subjective effort on both days. This impression is also confirmed by the participants' objective effort (heart rate) level during the tournament and the level of perceived social loafing.

There was a statistically significant increase from the first to the second experimental condition (non identifiable / identifiable) for the variables of performance index [ $t(15) = -2.68, p < .01$ ] and subjective effort [ $t(19) = -2.21, p < .025$ ]. For the variable *Perceived social loafing* there was a statistically significant decrease [ $t(19) = 2.90, p < .005$ ] between the two conditions. There were no significant changes between the two conditions for *Objective effort* [ $t(15) = 0.54, p > .025$ ]. One tailed test were used because the changes are in accordance with the hypothesis.

## Discussion

The aim of this study was to create a competitive climate in a floorball tournament with skilled and motivated participants in order to investigate whether differences in identification have an effect on individual effort, performance, and perception of social loafing.

First, the results indicate a competitive climate during the tournament was created. The participants confirmed that they made serious efforts and were in a competitive state of mind during the tournament. Further, they also (according to identification scale) confirmed that they were not aware that their individual effort and performance were being observed on the first day of the tournament.

The results from the experiment partly support the first hypothesis that the identifiability condition increases the athletes' performance and also their subjective feeling of effort. However, identifiability has no effect on objective effort (i.e., measured HR). The findings furthermore support hypothesis two, that identifiability will reduce perceived social loafing.

There was no change in objective effort between the two identification conditions. This result is in accordance with the findings of Everett et al. (1992), but contrary to what Hardy and Latané (1988) and Williams et al. (1989) report, as they report an increased effort as a result of increased identifiability.

In interpreting these seemingly contradictory results, it might be helpful to keep in mind certain methodological constraints in the present study compared to previous studies. All the measurements in this study were done in a group setting. The team members' "baseline effort" was their effort during the non-identified group condition, and this was later compared to the team members' effort during the identified group condition. This is different from the previous studies where the baseline effort was set by an individual attempt, which was later compared to effort in different group conditions in order to investigate social loafing in the group conditions (Karau & Williams, 1993).

The present study aimed to create an investigation with high ecological validity, based on

play in a natural context. The applied design represents a methodological advantage compared to previous studies, as the two conditions compared do not vary on differences in situational constraints not under experimental control. The present design thereby gives us the possibility to decide to what extent effort is a function of identifiability. When no such effects are observed, i.e. there is a lack of change in objective effort during high and low identified condition, we suggest two possible explanations. First, it may indicate that the participants did not exert maximal effort during the game. The amount of social loafing may have been constant, and not affected by identification. Second, another explanation may be that the effort was up to a maximum both days, and that social loafing was minimal. The latter explanation may then be a result of both the competitive conditions and motivation among the participants being so high that identification had no effect. This would be in line with the explanations suggested by Hardy & Latané (1988), namely that social loafing will be eliminated with skilled and motivated persons during competitions. Support for the second explanation, that social loafing was minimal, is also found in the participants self-reported level of effort and the objective effort (level of HR). Even though effort was not at its maximum, it was optimal and adequate in relation to the demands present. As Weinberg and Gould (1999) point out, higher effort could contribute to a choking effect that could be negative for the overall performance. In a study conducted by Jackson and Williams (1985), they point out that, in some cases, maximal effort is not optimal and claim that “Social loafing has now been shown to underlie enhanced performance and possible reduced stress when individuals work collectively on difficult tasks... One can point out that there are circumstances in which loafing (trying less hard) may improve performance” (p.941). This explanation is of interest when it can be observed that increased identification does contribute to increased individual performance.

Identification of individual contribution may therefore have been an important factor in the process of directing the effort in an efficient and goal-directed way to benefit the total team efficacy. This explanation may be of interest in an applied perspective where focusing on individuals in the team is actually good for the team. Hardy (1990) stated: “...on the phenomenon of social loafing, I suggest that the productivity of sport teams is enhanced by mobilizing the “I” in the “TEAM”” (p.322). It must be emphasised, however, that increased individual performance in this study in the identified condition may be a result of the team having played together, and that experience in teamwork may enhance the efficacy of the team. The improved performance may then be explained as reduced coordination losses.

Another interesting implication of this, even though the objective effort did not change, is that the players report that their own efforts increased and that social loafing was reduced as a function of identifiability. One explanation has been that subjective effort and perceived social loafing are at a certain degree understood in relation to different dimensions of performance e.g., to contribute to improved interaction in the team. Such an explanation implies that the phenomenon of social loafing in interactive sports must be differentiated to a much greater degree to cover than the physical effort itself. Another remarkable phenomenon is that even among motivated and skilled athletes some social loafing is obvious during competitions, but at the same time the results show that identification seems to be a stimulus for their own efforts, which is reflected in a reduction of perceived social loafing.

This is interesting from an applied perspective as identification can contribute to an

experience of both oneself and other contributing more to the total effort of the team. Over time, this may increase motivation because the impression is that the team effort increases. Based on the level of objective effort, subjective effort, perceived social loafing, and the interaction between these two last factors give us an indicator that perceived social loafing reflects on real social loafing to a certain extent. This means that perceived social loafing may be a good alternative for assessing social loafing in interactive sports.

### *Perspectives*

The current experiment indicates that identification of the individual contribution in interactive teams has a positive effect on performance, self-evaluation of effort, and the opinion of social loafing in the group. However, it also shows that identification does not affect objective effort measures such as heart rate. From an applied perspective, the results are interesting as they point to the possibility that focusing on each and every group member will have a positive effect on several group functions, related to both individual effort and the contribution to the team performance. This study has demonstrated that investigating social loafing in interactive sports is challenging. This applies both to the way that individual performance and effort can be mapped and in relation to the individuals' potential. It will be important for further research on the phenomenon of social loafing to test new and alternative ways of mapping social loafing in interactive groups and to investigate to what extent and in which way social loafing manifests itself in different interactive sports. Finally, a further challenge is to decide what is real social loafing and what can be described as a "strategic rest".

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