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Don't bring me down: People, puzzles, and social loafing

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Don't bring me down: People, puzzles, and social loafing

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Abstract

Identifiability (others knowing an individual's effort) and social cohesion (personal attachment to a group) are both established influencers of social loafing (decreased effort when in a group). Much of the evidence indicates that identifiability and social cohesion are negatively correlated with social loafing. One hundred and sixty undergraduate students at a private northeast Ohio university participated in this experiment to examine the effect of identifiability and face-to-face contact on social loafing. There were independent groups of two variables: identifiability (yes or no) and group presence (present or absent). Participants worked on a puzzle for 15 minutes after which completed pieces were counted as the measure of effort. Results indicate there was no interaction between identifiability and presence of a group on social loafing and no significant main effect for either variable.

Don't Bring Me Down: Puzzles, People, and Social Loafing

"When I die, I want my group members to lower me into my grave so they can let me down one last time."

"Group projects make me understand why Batman works alone."

"Group projects are like *The Hangover*, except everyone but me is that guy on the roof."

Jokes lamenting the trials of group work are popular on the Internet. To most, they are simply a relatable experience, but to anyone with a background in psychology they possess another aspect: the experience these jokes refer to is a well-studied pattern of behavior called social loafing. Jassawalla, Sashittal, and Malshe (2009) define social loafing as "the reduction of physical, perceptual, or cognitive effort in the presence of others" (42) when in a group, defined by Forsyth as at least two people who share a social relationship oriented toward either common goals or personal fulfillment (2010). As reported by Simms and Nichols (2014), social loafing was originally studied by Ringelmann (1913) during an experiment with tug-of-war. In his experiment, Ringelmann found that when people pulled on a rope as a group they exerted less force than when each person performed the exact same action alone.

Repeated experiments since Ringelmann's (1913) have confirmed social loafing as a pervasive factor in group work. Karau & Williams' (1993) meta-analysis found social loafing consistently in both genders and a wide variety of different tasks, seen in some of its most well-known studies: having participants play tug-of-war alone and with a group (Ringelmann, 1913); clapping and shouting in an empty and filled room (Latané, Harkins, & Williams, 2006); participants reviewing poems and editorials believing they were alone and in groups (Petty, Harkins, Williams, & Latané, 1987); and participants swimming in a competition-style event alone and in groups (Everett, Smith, & Williams, 1992). Thus, social loafing's presentation in a

plethora of tasks and under different circumstances makes it a key factor to study concerning groups.

As social loafing has been found in so many tasks and types of groups, so too have variables that affect its influence. One such variable is a group's cohesion, specifically social. Carron (1982) defined cohesion as the tendency of a group "to stick together and remain united" (124), using a model proposed by Festinger, Schachter and Back (1963). In it, cohesion is a sum of forces keeping a group together with two main sources: the benefits gained by membership and its inherent attractiveness. This inherent attractiveness is also called social cohesion: the personal enjoyment a member gets from being in a group, or the feelings of closeness its members have.

To test the impact of social cohesion on social loafing, Høigaard, Tofteland, and Ommundsen (2006) created two groups of undergraduate students. Over the course of two days, one group performed various exercise activities to increase social cohesion: personal introductions, cooperative exercises, and forming team roles; the other did not. Then the groups ran 30-meter sprint relays with their times recorded as a benchmark for effort. The experimenters found that groups from the high social cohesion condition performed significantly better on the sprints, meaning they put forth more effort than the groups with low social cohesion. Their results indicate that high social cohesion can significantly increase effort and, in doing so, decrease social loafing.

Another variable that significantly affects loafing is identifiability, which is a continuum describing the extent to which other people will know an individual's effort ranging from a high extreme (everyone in the vicinity publicly knowing) to a low (only the individual knows how hard they truly worked. Williams, Nida, Baca, and Latané (1989) examined this influence

through collegiate swim teams. They recruited 16 swimmers at the Ohio State University and divided them into four even teams, with two teams designated "low identifiable" and two "high identifiable." Williams et al. (1989) manipulated identifiability as "the knowledge, public and private, of an individual lap time" (76), so the highly identifiable swimmers would have their times announced out loud while the low would not. The experimenters also had the swimmers race individually as a control. With 100-meter swim time as a measure, they found that the highly identifiable group performed significantly better than the low and individual ones, while the low-identifiable group performed significantly worse than the individual. Williams et al. (1989) concluded that identifiability has a negative relationship with social loafing and a positive one with effort: the higher identifiability is, the less loafing occurs.

During a more recent study, Høigaard and Ingvaldsen (2006) found results consistent with Williams et al. (1989). The pair enlisted experienced floorball players for a two-day tournament. The first day was dedicated to low identifiability: experimenters told a low identifiable group of players that the experiment was only concerned with beating the other team; they gave no indication that individual effort was a measure and secretly recorded the games. The second day was for high identifiability: experimenters told the participants that they would measure each person's heart rate to indicate how hard they worked. The students that worked hardest, as measured by objective heart rate and a subjective Likert scale, were the ones that were the most identifiable. The experiments from Williams et al. (1989) and Høigaard and Ingvaldsen (2006) both suggest that having more identifiability in a group leads to more effort and less social loafing.

Simms and Nichols (2014), in a review of studies of social loafing to date, suggested that the reason less identifiability leads to more social loafing is due to diffusion of responsibility;

people in groups mentally distribute ownership of the result to other members. They assume that

the 'other' will assume the responsibility. When put in a group setting, if everyone thinks

someone else is accountable for the outcome, no one will give an optimal performance and the

total result will be diminished. The authors suggest that all it takes is the idea of being in a group

to make each member contribute less.

These impacts of social cohesion and identifiability on social loafing are consistently

present but not absolute; there are circumstances where they do not seem to have the same effect

as would be expected. In another study with collegiate swimmers, Everett, Smith, and Williams

(1992) examined the interactive influence of social cohesion and identifiability on social loafing.

They measured the level of cohesion in the groups of male and female swimmers, then had them

swim relays alone and in groups with varying degrees of identifiability. Although they did find a

significant effect of identifiability, it only applied to females: the more identifiable the female

groups were, the better their times were. The experimenters did not find a significant effect of

social cohesion. Everett, Smith, and Williams (1992) were unsure why these results were not

what they expected. They proposed it was simple variability in behavior or other confounds.

These results and others like them show that, although the overwhelming consensus of data

points to identifiability and social cohesion influencing social loafing, these factors do not

always affect people in the same way.

Past studies have extensively examined social loafing and how it manifests in groups;

however, few have studied an increasingly relevant factor in group work: a lack of personal

contact with group members. For example, in the past, some groups have existed with little

contact between some members (such as separate branches of a company or military units

stationed across regions); these groups acted largely autonomously and not as true groups, with

little immediate reliance on each other. Today, many groups are physically separated but rely on each other because of advancements in technology, making lack of contact between groups a pressing factor to examine. Some modern experiments on social loafing are studying this aspect of group dynamics; groups that do not physically work together are potentially impaired by social loafing without the chance to mitigate it by building identifiability or group cohesion. Suleiman and Watson (2008) constructed a factorial design with the independent variables feedback, anonymity, and group size. Participants completed different tasks on a computer with only digital contact with their partners; the dependent variable was how many tasks participants completed. Results indicated that individuals in these technology-supported teams exhibited loafing (by completing significantly fewer tasks than those who worked alone) even when they were identifiable. The presence of social loafing concurring with the normally-mitigating factor of identifiability suggests that a contributor to social loafing in groups without face-to-face contact is just that: a lack of contact.

Personal contact between group members may be a prerequisite for groups to establish a true sense of social cohesion. It could be more difficult to feel personal connection to others without meeting, seeing, and interacting with them face-to-face. Because of Suleiman and Watson (2008), we know that if a person does not see their group members they are more likely to loaf than those who do, even if experimenters and others will know his or her effort (i.e. without group presence, people are more likely to loaf even when identifiable to others). The purpose of the present study is to investigate whether identifiability and personal contact with a group interact to significantly affect social loafing and effort.

Participants in this study will be tasked with assembling a puzzle, which is a relatively simple task that does not require much experience; it should be an accurate indicator of effort. The measure will be the number of pieces each participant completes.

The variables in this study are identifiability and personal contact. Identifiability has two conditions: identifiable (in which participants know the experimenter will match their output to them) and non-identifiable (in which participants will not know the experimenter will know their output). These conditions differ from other experiments because most previous experiments have had onlookers; highly identifiable conditions have related to the onlookers knowing participants' effort, while in this experiment highly identifiable only relates to the experimenter. Personal contact has two conditions: present (in which participants will perform the experiment with their group in the room with them) and absent (in which participants will not have their group in the room).

Based on the previous studies, there are four hypotheses for this experiment:

H_1: There will be a significant interaction between identifiability and face-to-face contact on number of puzzle pieces completed. It is expected that the identifiable/present group will perform significantly better than all other groups best because both identifiability and presence have historically decreased loafing. In addition, it is predicted that the non-identifiable/absent group will perform significantly worse than the other three groups because a lack of identifiability and face-to-face contact have previously contributed to loafing.

H_2: It is expected that there will be a significant main effect for identifiability such that the participants in the identifiable condition will complete significantly more puzzle pieces than those individuals in the non-identifiable condition.

H3: It is expected that there will be a significant main effect for presence such that participants in the present condition will complete significantly more puzzle pieces than those in the absent condition.

If results show that, when in a group, participants that have personal contact with their partner complete significantly more puzzle pieces than those who do not and identifiable participants place significantly more pieces than those who are not (in the view of the experimenter), implications become more clear: one way to mitigate the possibility of social loafing is to have group members spend time with each other face-to-face and have their effort known to some authority figure.

Method

Participants

One hundred and sixty undergraduate psychology students from a medium-sized private Midwestern university participated in this experiment. All were over the age of 18. Students were given credit in the university's SONA research system as part of a course requirement. All were informed that participation was voluntary and none refused to take part. Before arriving, participants were given minimal information about the nature of the experiment, only that they would work on a puzzle for 15 minutes. After completing it, they were debriefed and asked to keep the procedure confidential until results were posted. They were given the experimenter's email address to ask him any questions. All participants were treated in accordance with APA ethical standards.

Materials

Puzzle. The main materials for this experiment were four 300-piece puzzles. All four puzzles were the same: a house on a beach with flowers and kites scattered throughout. The picture was relatively straightforward, simple, and easy-to-distinguish with diverse colors.

Instructions. The core instructions for each of the four conditions were the same: participants were to complete as much of the puzzle as possible in 15 minutes by working on their own half. Variations depended on which group the participant was in. The identifiable/present condition had two participants in the room together; instructions assigned each participant a color to work on, told them not to talk to each other, and specifically said the experimenter would know how much each member contributed. The identifiable/absent condition required only one participant per room; instructions assigned him or her a color (counterbalancing the two), and said the experimenter would know how much he or she did. The non-identifiable/present condition had two participants at a time; instructions told the group to decide who would work on each half, to not talk to each other, and that the experimenter would not know who did which half of the puzzle. The non-identifiable/absent condition was done by one participant alone; instructions told him or her to pick a half to work on after the experimenter left the room, and said another person would enter once they had left to work on the puzzle before the experimenter counted the pieces.

Procedure

Prior to the start of the experiment, each puzzle was put together by the experimenter. The outermost frames were glued in place while the inner pieces were removed and divided in half down the middle. For the two identifiable conditions, the experimenter drew blue circles on the bottoms of the left halves of the pieces and red ones on the right. This way, participants would get a greater sense of identifiability after being designated a certain color. The two non-

identifiable conditions were marked on the left halves with a pencil to help distinguish pieces that were mixed with another side. The measure would be how many pieces the participants fit into the puzzle; for a piece to count as "fit" it had to be connected to at least one other piece. This measure was intended to serve as a benchmark for the social loafing each participant displayed during the experiment.

Participants were assigned to one of four conditions: identifiable/present, identifiable/absent, non-identifiable/present, and non-identifiable/absent. Up to four participants could sign up at any given time. Whenever two or four were in the same time slot, they were put into the present conditions (this was to ensure there would be at least 80 participants total in the two present conditions). Any individual students were assigned to the one of the two absent conditions.

Participants were taken to the testing room with the prepared puzzle laid out on a table. The experimenter read the instructions then left the room and started the time. After 15 minutes, the experimenter knocked on the door and the participants left the room, were given debriefing sheets, and thanked for their time. The experimenter then entered the testing room and counted how many pieces each participant fit into the puzzle. Aside from the instructions, which varied from condition to condition, the procedure was identical.

Results

I conducted a 2 (identifiable and non-identifiable) x 2 (present and absent) analysis of variance (ANOVA) on the mean number of puzzle pieces completed by each participant. The Identifiability x Presence interaction was not significant: $F(1,156) = .15$, $MSE = 184.82$, $p = .70$ (Table 2). The main effect for identifiability was nonsignificant, $F(1,156) = .94$, $MSE = 184.82$,

$p = .33$ (Table 2). The main effect for presence was nonsignificant, $F(1,156) = .33$, $MSE = 184.82$, $p = .57$ (Table 2).

The group with the best performance, although it was nonsignificant, was non-identifiable/present ($M = 33.45$, $SD = 11.09$) while identifiable/absent performed the worst ($M = 30.13$, $SD = 14.79$). Although nonsignificant, the non-identifiable condition performed better than the identifiable ($M = 32.41$, $SD = 13.04$ compared to $M = 30.33$, $SD = 14.00$) and the present condition performed better than the absent ($M = 31.99$, $SD = 12.29$ compared to $M = 30.75$, $SD = 14.72$) (Table 1).

Discussion

The three hypotheses for this experiment were that there would be a significant interaction between identifiability and face-to-face contact such that the identifiable/present group would perform significantly better than the other three groups and the non-identifiable/absent group would perform significantly worse than the other three groups, that there would be a significant main effect for identifiability such that identifiable participants would complete significantly more puzzle pieces than non-identifiable one, and that there would be a significant main effect for face-to-face contact such that present participants would complete significantly more puzzle pieces than absent ones. None were supported by the collected data. There was no interaction between identifiability and face-to-face contact nor was there a significant main effect of either variable on social loafing.

This study was inconsistent with past general findings on social loafing. Identifiability has repeatedly been shown to significantly decrease the degree of loafing and increase the amount effort put forth by group members (e.g. Høigaard and Ingvaldsen, 2006; Ringelmann, 1913; and Williams et al., 1989). It is possible that participants in both the identifiable and non-

identifiable conditions felt too identifiable for social loafing to influence their behavior. Every

participant saw and interacted with the experimenter, knew that they were involved in research

and that at some point the experimenter would observe their work. Because of this, the non-

identifiable participants might have believed that he would keep track of their work. If

participants in the identifiable and non-identifiable conditions both felt that the experimenter

would know their efforts then, practically, there was no non-identifiable condition.

This experiment used a slightly different definition of identifiability than past ones; this

may have been another reason for identifiability not significantly increasing the number of pieces

completed. In the past, most studies involved onlookers who would know participants' effort

when they were identifiable. In this study, the experimenter was the only difference between

identifiability and non-identifiability, so participants may not have felt influenced by the

difference.

Another possible explanation is the manipulation itself. By the nature of the face-to-face

contact conditions, all the participants in the present condition (80 total) had their partner in the

room with them. This may have made them all feel identifiable to the point that they felt too self-

conscious to loaf and worked hard. The opposite is also possible: participants in both conditions

may not have felt any sense of accountability at all, and therefore both loafed; however, because

there was also no main effect for presence these explanations are unlikely. Because there was no

main effect for identifiability, there were no follow-up tests to determine the direction of an

effect.

This study's findings were also inconsistent with Høigaard, Tofteland, and Ommundsen

(2006), who found evidence that social cohesion decreases the effect of social loafing. This

experiment did not explicitly deal with high and low levels of social cohesion; it examined face-

to-face contact's influence on loafing by considering such contact a baseline for social cohesion. Because of this consideration, the manipulation was weaker than a true social cohesion experiment like was performed by Høigaard et al. (2006). Here, in both face-to-face contact conditions, all participants were led to believe that they were in a group but only the present condition saw their group. "Absent" participants only had the experimenter's instructions to perceive their presence in a group. Contrasting this, Høigaard et al. had participants meet and act as a group or just meet each other. Because this experiment had a weaker manipulation between the present and absent conditions than other experiments into social cohesion, it is possible that the present and absent groups felt no sense of group membership regardless of their condition; aside from exchanging names before reaching the test rooms participants had no verbal interaction. They may not have experienced a sense of camaraderie with their partner; if this is the case than there would have been no impact on behavior based on the manipulation because there would not have perceived themselves as being in a group. Group size may also have been a factor; although Ringelmann (1913) found that two-person groups were large enough for a main effect of identifiability, the population for this experiment may require slightly larger group sizes.

Despite the generally inconsistent results, this experiment does have some common findings with historical studies. Everett et al. (2003) did not find a significant impact of social cohesion on swim relay teams and only saw an impact of identifiability for females, so it is possible that some experiments, for some reason, fail to find effects of identifiability and cohesion.

Certain methodological choices made by the experimenter may have also affected results. To recruit as many students as possible, this experiment was exclusively advertised as "15

minutes to work on a puzzle for SONA credit," so students who signed up may have shown self-selection bias: they could have already enjoyed doing puzzles of their own volition. If this was the case, all participants could have been internally motivated and less inclined to loaf which would have biased the results and prevented social loafing from appearing.

Another potential confound was the process for deciding how to place participants into the present and absent groups of the face-to-face contact condition. The experimenter put the first 40 pairs of participants (that is, the first 40 times two participants signed up during the same time slot) into the present condition to ensure he would get 80 total data points. This presents a potential confound: the first 80 participants may have been more industrious, better at puzzles, or possessed any number of variables that biased results. Any self-selection bias may have furthered this divide, because the earlier students who signed up may have been the ones who most enjoyed puzzles. However, during the time that the first 40 pairs were put through the experiment many individual participants signed up (students who were alone in a time slot). These were placed into one of the two absent conditions. In this system, division was not truly random but it was variable and did not follow any set pattern, and because the experimenter offset these in the two identifiable conditions, it is unlikely that they confounded results.

There are many possible explanations for this experiment's lack of consistent results with most preexisting literature. In real-world environments, the groups frequently have real stakes: sports teams have a desire to win, business groups want to do well to impress the boss, military units want to stay alive and achieve victory. This experiment could not effectively simulate those stakes and results could have been affected by that. Participants felt no external reward in their work; they received the same benefit if they completed 1 piece as if they did 100. Some past experiments offered more tangible rewards: For example, Williams et al. (1989) rewarded the

winners of their swimming relay experiment with T-shirts. If participants had some other reward besides experimental credit that depended on how many pieces the group fit into the puzzle, results may have shown more effort and productivity.

Another possible reason for the lack of significant effects could be the task itself. Almost all the past studies on social loafing have verified social loafing in both intense physical tasks (rope pulling, swimming, floorball, and sprints) and as well as cognitive ones (poetry reading). Reading and reviewing poetry (Petty, Harkins, Williams, & Latané, 1987) is similar to doing a puzzle inasmuch as they are both primarily cognitive tasks, but writing necessitates more involved and thought-out effort. The task used in this experiment was one of less involvement; that may have caused some difference in result. Puzzles, for whatever reason, may be a task that social loafing does not manifest in. Further experiments could recreate studies like Høigaard et al.'s (2006), with the only difference being doing puzzles after cohesion-increasing activities. This would determine if puzzles do lend themselves to loafing or not.

To follow up on possible reasons for current null effects, another design would include two more testing groups for the presence variable: the first would be the participant not being in a group and the second would be a group performing activities to increase its social cohesion before doing the puzzle task. Having a "no-group" condition would provide a baseline measure of effort, while having a high socially cohesive group would have revealed any differences between sight and real interaction with a group. It would also include larger groups to ensure that participants gain more of a sense of group membership, rather than just a partnership. These two groups and larger sizes were not included because of logistical and time limitations.

A follow up to this experiment would also use different recruiting methods. To avoid potential self-selection bias, it would not advertise the actual task involved (assembling a

puzzle). This way, participants who like puzzles would be just as likely to sign up as those who do not.

This follow up would also have to find some way to implement onlookers or bystanders. This may make the identifiable and non-identifiable conditions more distinct and could make participants feel more at stake for their actions in the eyes of others.

The results of this study indicate that face-to-face contact, when matched with identifiability as a second variable and while working on a 300-piece puzzle, does not influence the degree of social loafing that manifests in a group.

Repeated studies modeled off this one would first recreate prior experiments that found evidence of social loafing but changing the task to assembling a puzzle. This would determine whether puzzles are tasks in which social loafing presents. Then, studies would include more conditions to identify any loafing that may have presented compared to individual work, as well as modified recruiting methods and larger groups. This way, results would be able to identify the degree and specific cause of any loafing and would more fully determine if identifiability and face-to-face contact influence social loafing.

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Table 1: Descriptive statistics for all experimental groups

Descriptive Statistics

Dependent Variable: Pieces

Identifiability	Presence	Mean	Std. Deviation	N
Identifiable	Present	30.53	13.351	40
	Absent	30.13	14.788	40
	Total	30.33	14.000	80
Non-identifiable	Present	33.45	11.094	40
	Absent	31.38	14.808	40
	Total	32.41	13.042	80
Total	Present	31.99	12.285	80
	Absent	30.75	14.717	80
	Total	31.37	13.527	160

Table 2: Results of the tests for interaction and main effects

Tests of Between-Subjects Effects

Dependent Variable: Pieces

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	263.619[a]	3	87.873	.475	.700	.009
Intercept	157439.756	1	157439.756	851.863	.000	.845
Identifiability	174.306	1	174.306	.943	.333	.006
Presence	61.256	1	61.256	.331	.566	.002
Identifiability * Presence	28.056	1	28.056	.152	.697	.001
Error	28831.625	156	184.818			
Total	186535.000	160				
Corrected Total	29095.244	159				

a. R Squared = .009 (Adjusted R Squared = -.010)

Figure 1: Display of results

Results

■ Present ■ Absent

| | Identifiable | Non-Identifiable |