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Many Hands Make Light the Work: The Causes and Consequences of Social Loafing

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Two experiments found that when asked to perform the physically exerting tasks of clapping and shouting, people exhibit a sizable decrease in individual effort when performing in groups as compared to when they perform alone. This decrease, which we call social loafing, is in addition to losses due to faulty coordination of group efforts. Social loafing is discussed in terms of its experimental generality and theoretical importance. The widespread occurrence, the negative consequences for society, and some conditions that can minimize social loafing are also explored.

There is an old saying that "many hands make light the work." This saying is interesting for two reasons. First, it captures one of the promises of social life—that with social organization people can fulfill their individual goals more easily through collective action. When many hands are available, people often do not have to work as hard as when only a few are present. The saying is interesting in a second, less hopeful way—it seems that when many hands are available, people actually work less hard than they ought to.

Over 50 years ago a German psychologist named Ringelmann did a study that he never managed to get published. In rare proof that unpublished work does not necessarily perish, the results of that study, reported only in summary form in German by Moede (1927), have been cited by Dashiell (1935), Davis (1969), Köhler (1927), and Zajonc (1966) and extensively analyzed by Steiner (1966, 1972) and Ingham, Levinger, Graves, and Peckham (1974). Apparently Ringelmann simply asked German workers to pull as hard as they could on a rope, alone or with one, two, or seven other people, and then he used a strain gauge to measure how hard they pulled in kilograms of pressure.

Rope pulling is, in Steiner's (1972) useful classification of tasks, maximizing, unitary, and additive. In a maximizing task, success depends on how much or how rapidly something is accomplished and presumably on how much effort is expended, as opposed to an optimizing task, in which precision, accuracy, or correctness are paramount. A unitary task cannot be divided into separate subtasks—all members work together doing the same thing and no division of labor is possible. In an additive task, group success depends on the *sum* of the individual efforts, rather than on the performance of any subset of members. From these characteristics, we should expect three people pulling together on a rope with perfect efficiency to be able to exert three times as much force as one person can, and eight people to exert eight times as much force.

Ringelmann's results, however, were strikingly different. When pulling one at a time, individuals averaged a very respectable 63 kg of pressure. Groups of three people were able to exert a force of 160 kg, only two and a

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half times the average individual performance, and groups of eight pulled at 248 kg, less than four times the solo rate. Thus the collective group performance, while increasing somewhat with group size, was substantially less than the sum of the individual efforts, with dyads pulling at 93% of the sum of their individual efforts, trios at 85%, and groups of eight at only 49%. In a way somewhat different from how the old saw would have it, many hands apparently made light the work.

The Ringelmann effect is interesting because it seems to violate both common stereotype and social psychological theory. Common stereotype tells us that the sense of team participation leads to increased effort, that group morale and cohesiveness spur individual enthusiasm, that by pulling together groups can achieve any goal, that in unity there is strength. Social psychological theory holds that, at least for simple, well-learned tasks involving dominant responses, the presence of other people, whether as co-workers or spectators, should facilitate performance. It is thus important to find out whether Ringelmann's effect is replicable and whether it can be obtained with other tasks.

The Ringelmann effect is also interesting because it provides a different arena for testing a new theory of social impact (Latané, 1973). Social impact theory holds that when a person stands as a target of social forces coming from other persons, the amount of social pressure on the target person should increase as a multiplicative function of the strength, immediacy, and number of these other persons. However, if a person is a member of a group that is the target of social forces from outside the group, the impact of these forces on any given member should diminish in inverse proportion to the strength, immediacy, and number of group members. Impact is divided up among the group members, in much the same way that responsibility for helping seems to be divided among witnesses to an emergency (Latané & Darley, 1970). Latané further suggests that just as psychophysical reactions to external stimuli can be described in terms of a power law (Stevens, 1957), so also should reactions to social stimuli, but with an exponent having an absolute value less than 1, so that the nth person should have less effect than the $(n-1)$th. Ringelmann's asking his workers to pull on a rope can be considered social pressure. The more people who are the target of this pressure, the less pressure should be felt by any one person. Since people are likely to work hard in proportion to the pressure they feel to do so, we should expect increased group size to result in reduced efforts on the part of individual group members. These reduced efforts can be called "social loafing"—a decrease in individual effort due to the social presence of other persons. With respect to the Ringelmann phenomenon, social impact theory suggests that at least some of the effect should be due to reduced efforts on the part of group participants, and that this reduced effort should follow the form of an inverse power function having an exponent with an absolute value less than one.

The Ringelmann effect is interesting for a third reason: If it represents a general phenomenon and is not restricted to pulling on a rope, it poses the important practical question of when and why collective efforts are less efficient than individual ones. Since many components of our standard of life are produced through one form or another of collective action, research identifying the causes and conditions of inefficient group output and suggesting strategies to overcome these inefficiencies is clearly desirable.

For these three and other reasons, we decided to initiate a program of research into the collective performance of individuals in groups.

Experiment 1

Clap Your Hands and Shout Out Loud

One of the disadvantages of Ringelmann's rope pulling task is that the equipment and procedures are relatively cumbersome and inefficient. Therefore, we decided to keep our ears open for other tasks that would allow us to replicate the Ringelmann finding conceptually and would provide the basis for extended empirical and theoretical analysis. We chose cheering and clapping, two activities

that people commonly do together in social settings and that are maximizing, unitary, and additive. As with rope pulling, output can be measured in simple physical units that make up a ratio scale.

Method

On eight separate occasions, groups of six undergraduate males were recruited from introductory psychology classes at Ohio State University; they were seated in a semicircle, 1 m apart, in a large soundproofed laboratory and told, "We are interested in judgments of how much noise people make in social settings, namely cheering and applause, and how loud they seem to those who hear them. Thus, we want each of you to do two things: (1) Make noises, and (2) judge noises." They were told that on each trial "the experimenter will tell you the trial number, who is to perform and whether you are to cheer (Rah!) or clap. When you are to begin, the experimenter will count backwards from three and raise his hand. Continue until he lowers it. We would like you to clap or cheer for 5 seconds as loud as you can." On each trial, both the performers and the observers were also asked to make magnitude estimates of how much noise had been produced (Stevens, 1966). Since these data are not relevant to our concerns, we will not mention them further.

After some practice at both producing and judging noise, there were 36 trials of yelling and 36 trials of clapping. Within each modality, each person performed twice alone, four times in pairs, four times in groups of four, and six times in groups of six. These frequencies were chosen as a compromise between equating the number of occasions on which we measured people making noise alone or in groups (which would have required more noisemaking in fours and sixes) and equating the number of individual performances contributing to our measurements in the various group sizes (which would have required more noisemaking by individuals and pairs). We also arranged the sequence of performances to space and counterbalance the order of conditions over each block of 36 trials, while making sure that no one had to perform more than twice in a row.

Performances were measured with a General Radio sound-level meter, Model 1565A, using the C scale and the slow time constant, which was placed exactly 4 m away from each performer. The C scale was used so that sounds varying only in frequency or pitch would be recorded as equally loud. Sound-level meters are read in decibel (dB) units, which are intended to approximate the human reaction to sound. For our purposes, however, the appropriate measure is the effort used in generating noise, not how loud it sounds. Therefore, our results are presented in terms of dynes/cm^2, the physical unit of work involved in producing sound pressure.

Because people shouted and clapped in full view and earshot of each other, each person's performance could affect and be affected by the others. For this reason, the group, rather than the individual, was the unit of analysis, and each score was based on the average output per person. Results were analyzed in a $4 \times 2 \times 2$ analysis of variance, with Group Size (1, 2, 4, 6), Response Mode (clapping vs. shouting), and Replications (1, 2) as factors.

Results

Participants seemed to adapt to the task with good humor if not great enthusiasm. Nobody refused to clap or shout, even though a number seemed somewhat embarrassed or shy about making these noises in public. Despite this, they did manage to produce a good deal of noise. Individuals averaged 84 dB (C) clapping and 87 dB cheering, while groups of six clapped at 91 dB and shouted at 95 dB (an increment of 6 dB represents a doubling of sound pressure).

As might be expected, the more people clapping or cheering together, the more intense the noise and the more the sound pressure produced. However, it did not grow in proportion to the number of people: The average sound pressure generated *per person* decreased with increasing group size, $F(3, 21) = 41.5$, $p < .001$. People averaged about 3.7 dynes/cm^2 alone, 2.6 in pairs, 1.8 in foursomes, and about 1.5 in groups of six (Figure 1). Put another way, two-person groups performed at only 71% of the sum of their individual capacity, four-person groups at 51%, and six-person groups at 40%. As in pulling ropes, it appears that when it comes to clapping and shouting out loud, many hands do, in fact, make light the work.

People also produced about 60% more sound power when they shouted than when they clapped, $F(1, 7) = 8.79$, $p < .01$, presumably reflecting physical capacity rather than any psychological process. There was no effect due to blocks of trials, indicating that the subjects needed little or no practice and that their performance was not deleteriously affected by fatigue. In addition, there were no interactions among the variables.

Discussion

The results provide a strong replication of Ringelmann's original findings, using a com-

pletely different task and in a different historical epoch and culture. At least when people are making noise as part of a task imposed by someone else, voices raised together do not seem to be raised as much as voices raised alone, and the sound of 12 hands clapping is not even three times as intense as the sound of 2.

Zajonc's (1965) elegant theory of social facilitation suggests that people are aroused by the mere presence of others and are thus likely to work harder (though not necessarily to achieve more) when together. Although social facilitation theory might seem to predict enhanced group performance on a simple task like clapping or shouting, in the present case it would not predict any effect due to group size, since the number of people present was always eight, six participants and two experimenters. Evaluation apprehension theory (Cottrell, 1972) would also not predict any effect as long as it is assumed that coactors and audience members are equally effective in arousing performance anxiety. Therefore, these theories are not inconsistent with our position that an unrelated social process is involved. The results of Experiment 1 also can be taken as support for Latané's (1973) theory of social impact: The impact that the experimenters have on an individual seems to decrease as the number of coperformers increases, leading to an apparent drop in individual performance, a phenomenon we call social loafing.

However, there is an alternative explanation to these results. It may be, not that people exert less effort in groups, but that the group product suffers as a result of group inefficiency. In his invaluable theoretical analysis of group productivity, Steiner (1972) suggests that the discrepancy between a group's potential productivity (in this case n times the average individual output) and its actual productivity may be attributed to faulty social process. In the case of Ringelmann's rope pull, Steiner identifies one source of process loss as inadequate social coordination. As group size increases, the number of "coordination links," and thus the possibility of faulty coordination (pulling in different directions at different times), also increases.

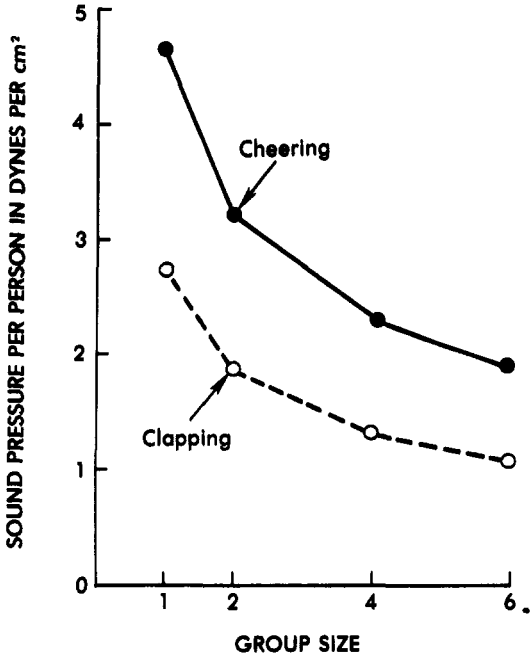

Figure 1. Intensity of noise as a function of group size and response mode, Experiment 1.

Steiner shows that for Ringelmann's original data the decrement in obtained productivity is exactly proportional to the number of coordination links.

Ingham et al. (1974) designed an ingenious experiment to determine whether the process losses found in rope pulling were mainly due to problems of coordinating individual efforts and the physics of the task, or whether they resulted from reductions in personal exertion (what we have called social loafing). First, they conducted a careful replication of Ringelmann's original rope-pulling study and found similar results—dyads pulled at 91% of the sum of their individual capacities, trios at 82%, and groups of six at only 78%.

In a second experiment, Ingham et al. cleverly arranged things so that only the individual's perception of group size was varied. Individuals were blindfolded and led to believe that others were pulling with them, but in fact, they always pulled alone. Under these conditions, of course, there is no possibility of loss due to faulty synchronization. Still there was a substantial drop in output with increases in perceived group size: Individ-

uals pulled at 90% of their alone rate when they believed one other person was also pulling, and at only 85% with two to six others believed pulling. It appears that virtually all of the performance decrement in rope pulling observed by Ingham et al. can be accounted for in terms of reduced effort or social loafing.

With respect to clapping and especially shouting, however, there are several possible sources of coordination loss that might have operated in addition to social loafing: (a) Sound cancellation will occur to the extent that sound pressure waves interfere with each other, (b) directional coordination losses will occur to the extent that voices are projected toward different locations, and (c) temporal coordination losses will occur to the extent that moment-to-moment individual variations in intensity are not in synchrony. Our second experiment was designed to assess the relative effects of coordination loss and social loafing in explaining the failure of group cheering to be as intense as the sum of individual noise outputs.

Experiment 2

Coordination Loss or Reduced Effort?

For Experiment 2 we arranged things so that people could not hear each other shout; participants were asked to wear headphones, and during each trial a constant 90-dB recording of six people shouting was played over the earphones, ostensibly to reduce auditory feedback and to signal each trial. As a consequence, individuals could be led to believe they were shouting in groups while actually shouting alone. Ingham et al. (1974) accomplished this through the use of "pseudosubjects," confederates who pretended to be pulling with the participants but who in fact did not pull any weight at all. That is an expensive procedure—each of the 36 participants tested by Ingham et al. required the services of 5 pseudosubjects as well as the experimenter. We were able to devise a procedure whereby, on any given trial, one person could be led to believe that he was performing in a group, while the rest thought he was performing alone. Thus, we were able to test six real participants at one time.

Additionally, although we find the interpretation offered by Ingham et al. plausible and convincing, the results of their second experiment are susceptible to an alternative explanation. When participants were not pulling the rope, they stood and watched the pseudosubjects pull. This would lead people accurately to believe that while they were pulling the rope, idle participants would be watching (Levinger, Note 1). Thus, as the number of performers decreased, the size of the audience increased. According to Cottrell's evaluation apprehension hypothesis (1972), the presence of an evaluative audience should enhance performance for a simple, well-learned task such as rope pulling, and, although there is little supportive evidence, it seems reasonable that the larger the audience, the greater the enhancement (Martens & Landers, 1969; Seta, Paulus, & Schkade, 1976). Thus, it is not clear whether there was a reduced effort put forth by group members because they believed other people were pulling with them, or an increase in the effort exerted by individuals because they believed other people were watching them. In Experiment 2, therefore, we arranged to hold the size of the audience constant, even while varying the number of people working together.

Method

Six groups of six male undergraduate volunteers heard the following instructions:

> In our experiment today we are interested in the effects of sensory feedback on the production of sound in social groups. We will ask you to produce sounds in groups of one, two, or six, and we will record the sound output on the sound-level meter that you can see up here in front. Although this is not a competition and you will not learn your scores until the end of the experiment, we would like you to make your sounds as loud as possible. Since we are interested in sensory feedback, we will ask you to wear blindfolds and earphones and, as you will see, will arrange it so that you will not be able to hear yourself as you shout.
>
> We realize it may seem strange to you to shout as loud as you can, especially since other people are around. Remember that the room is soundproofed and that people outside the room will not

be able to hear you. In addition, because you will be wearing blindfolds and headsets, the other participants will not be able to hear you or to see you. Please, therefore, feel free to let loose and really shout. As I said, we are interested in how loud you can shout, and there is no reason not to do your best. Here's your chance to really give it a try. Do you have any questions?

Once participants had donned their headsets and blindfolds, they went through a series of 13 trials, in which each person shouted four times in a group of six, once in a group of two, and once by himself. Before each trial they heard the identification letters of those people who were to shout.

Interspersed with these trials were 12 trials, two for each participant, in which the individual's headset was switched to a separate track on the stereophonic instruction tape. On these trials, everybody else was told that only the focal person should shout, but that individual was led to believe either that one other person would shout with him or that all six would shout.

Thus, each person shouted by himself, in actual groups of two and six, and in pseudogroups of two and six, with trials arranged so that each person would have approximately equal rest periods between the trials on which he performed. Each trial was preceded by the specification of who was to perform. The yells were coordinated by a tape-recorded voice counting backwards from three, followed by a constant 90-dB 5-sec recording of the sound of six people shouting. This background noise made it impossible for performers to determine whether or how loudly other people were shouting, or, for that matter, to hear themselves shout. Each trial was terminated by the sound of a bell. This sequence of 25 trials was repeated three times, for a total of 75 trials, in the course of which each subject shouted 24 times.

As in Experiment 1, the data were transformed into dynes/cm^2 and subjected to analyses of variance, with the group as the unit of analysis and each score based on the average output per person. Two separate 3 × 3 analyses of variance with group size (1,2,6) and trial block (1–3) were run, one on the output of trials in which groups actually shouted together, and one on the pseudogroup trials in which only one person actually shouted.

Results

Overall, participants shouted with considerably more intensity in Experiment 2 than in Experiment 1, averaging 9.22 dynes/cm^2 when shouting alone, as compared to 4.73 dynes/cm^2, $t(12) = 4.05$, $p < .01$. There are several plausible reasons for this difference. The new rationale involving the effects of reduced sensory feedback may have interested

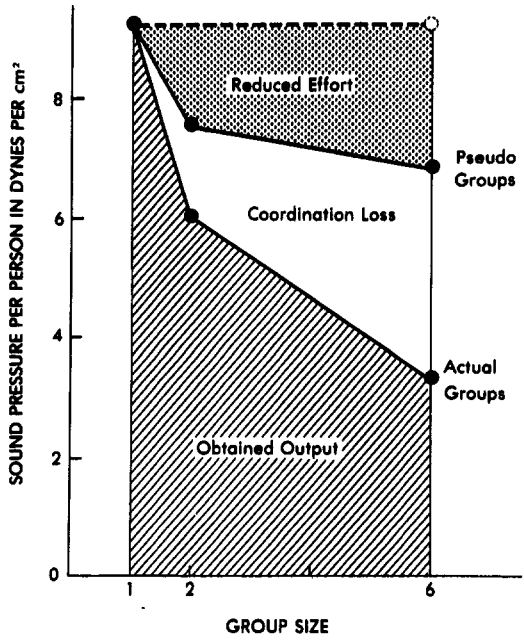

Figure 2. Intensity of sound produced per person when cheering in actual or perceived groups of 1, 2, and 6, as a result of reduced effort and faulty coordination of group efforts, Experiment 2.

or challenged individuals to perform well. The constant 90-dB background noise may have led people to shout with more intensity, just as someone listening to music through headphones will often speak inappropriately loudly (the Lombard reflex). The performers may have felt less embarrassed because the room was soundproof and the others were unable to see or hear them. Finally, through eliminating the possibility of hearing each other, individuals could no longer be influenced by the output of the others, thereby lifting the pressure of social conformity.

As in Experiment 1, as the number of actual performers increase, the total sound output also increased, but at a slower rate than would be expected from the sum of the individual outputs. Actual groups of two shouted at only 66% of capacity, and groups of six at 36%, $F(2, 10) = 226$, $p < .001$. The comparable figures for Experiment 1 are 71% and 40%. These similarities between experiments suggest that our procedural changes, even though they made people unable to hear or see each other, did not eliminate their feel-

ing of being in a group or reduce the amount of incoordination or social loafing.

The line connecting the solid circles in Figure 2 shows the decreased output per person when actually performing in groups. The dashed line along the top represents potential productivity—the output to be expected if there were no losses due to faulty coordination or to social loafing. The striped area at the bottom represents the obtained output per person in actual groups. Output is obviously lower than potential productivity, and this decrease can be considered as representing the sum of the losses due to incoordination and to reduced individual effort.

In addition to shouting in actual groups, individuals also performed in pseudogroups in which they believed that others shouted with them but in which they actually shouted alone, thus preventing coordination loss from affecting output. As shown in Figure 2, people shouted with less intensity in pseudogroups than when alone, $F(2, 10) = 37.0$, $p < .0001$. Thus, group size made a significant difference even in pseudogroups in which coordination loss is not a factor and only social loafing can operate.

When performers believed one other person was yelling, they shouted 82% as intensely as when alone, and when they believed five others to be yelling, they shouted 74% as intensely. The stippled area defined at the top of Figure 2 by the data from the pseudogroups represents the amount of loss due to social loafing. By subtraction, we can infer that the white area of Figure 2 represents the amount of loss due to faulty coordination. Since the latter comprises about the same area as the former, we can conclude that, for shouting, half the performance loss decrement is due to incoordination and half is due to social loafing.

Discussion

Despite the methodological differences between Experiments 1 and 2, both experiments showed that there is a reduction in sound pressure produced per person when people make noise in groups compared to when alone. People in Experiment 1 applauded and cheered in full view of each other, with all the excitement, embarrassment, and conformity that goes along with such a situation. In Experiment 2, no one could see or hear any other person. Only the experimenters could see the people perform. And finally, the rationale changed drastically, from the experimenters' interest in "judgments of how much noise people make in social settings" to their interest in "the effects of sensory feedback on the production of sound in social groups." Yet, despite differences in the task characteristics and supposed purpose, the two studies produced similar results. This points to the robust nature of both the phenomenon and the paradigm.

General Discussion

Noise Production as Group Performance

Although we do not usually think about it that way, making noise can be hard work, in both the physical and the psychological sense. In the present case, the participants were asked to produce sound pressure waves, either by rapidly vibrating their laryngeal membranes or by vigorously striking their hands together. Although superficially similar in consequence, this task should not be confused with more normal outbreaks of shouting and clapping that occur as spontaneous outbursts of exuberant expressiveness. Our participants shouted and clapped because we asked them to, not because they wanted to.

This effortful and fatiguing task resulted in sound pressure waves, which, although invisible, can be easily and accurately measured in physical units that are proportional to the amount of work performed. The making of noise is a useful task for the study of group processes from the standpoint both of production and of measurement—people are practiced and skilled at making noise and can do so without the help of expensive or cumbersome apparatus, and acoustics and audio engineering are sufficiently advanced to permit sophisticated data collection. We seem to have found a paradigm wherein people get involved enough to try hard and become somewhat enthusiastic, yet the task is still effortful

enough so that they loaf when given the opportunity.

The Causes of Social Loafing

The present research shows that groups can inhibit the productivity of individuals so that people reduce their exertions when it comes to shouting and clapping with others. Why does this occur? We suggest three lines of explanation, the first having to do with attribution and equity, the second with submaximal goal setting, and the third with the lessening of the contingency between individual inputs and outcomes.

1. *Attribution and equity.* It may be that participants engaged in a faulty attribution process, leading to an attempt to maintain an equitable division of labor. There are at least three aspects of the physics and psychophysics of producing sound that could have led people to believe that the other persons in their group were not working as hard or effectively as themselves. First, individuals judged their own outputs to be louder than those of the others, simply because they were closer to the sound source. Second, even if everyone worked to capacity, sound cancellation would cause group outputs to seem much less than the sum of their individual performances. Finally, the perception of the amount of sound produced in a group should be much less than the actual amount—growing only as the .67 power of the actual amount of sound, according to Stevens's psychophysical power law (1975).

These factors may have led individuals to believe that the other participants were less motivated or less skillful than themselves—in short, were shirkers or incompetents. Thus, differences in the perception of sound production that were essentially the result of physical and psychophysical processes may have been mistakenly attributed to a lack of either skill or motivation on the part of the others, leading individuals to produce less sound in groups because there is no reason to work hard in aid of shirkers or those who are less competent.

This process cannot explain the results of Experiment 2, since the capacity to judge the loudness of one's own output, much less that of others, was severely impaired by the 90-dB background masking noise used to signal the trials. However, rather than "discovering" social loafing while participating in the experiment, the participants may have arrived with the preexisting notion that people often do not pull their own weight in groups. Thus, despite being unable to hear or see one another, lack of trust and the propensity to attribute laziness or ineptitude to others could have led people to work less hard themselves.

2. *Submaximal goal setting.* It may be that despite our instructions, participants redefined the task and adopted a goal, not of making as much noise as possible, but merely of making enough noise or of matching some more or less well-defined standard. Individuals would clearly expect it to be easier to achieve this goal when others are helping, and might work less hard as a consequence. This, of course, would change the nature of noise production from what Steiner (1972) would term a *maximizing* task to an *optimizing* task. A maximizing task makes success a function of how much or how rapidly something is accomplished. For an optimizing task, however, success is a function of how closely the individual or group approximates a predetermined "best" or correct outcome. If participants in our experiments perceived sound production as an optimizing rather than a maximizing task, they might feel the optimal level of sound output could be reached more easily in groups than alone, thereby allowing them to exert less effort.

The participants in Experiment 2 could hear neither themselves nor others and would not be able to determine whether their output was obnoxious or to develop a group standard for an optimal level. Furthermore, in both experiments, the experimenters reiterated their request to yell "as loud as you can, every time," over and over again. Before the first trial they would ask the group how loud they were supposed to yell. In unison, the group would reply, "As loud as we can!" We think it unlikely that participants perceived the task to be anything other than maximizing.

3. *Lessened contingency between input and*

outcome. It may be that participants felt that the contingency between their input and the outcome was lessened when performing in groups. Individuals could "hide in the crowd" (Davis, 1969) and avoid the negative consequences of slacking off, or they may have felt "lost in the crowd" and unable to obtain their fair share of the positive consequences for working hard. Since individual scores are unidentifiable when groups perform together, people can receive neither precise credit nor appropriate blame for their performance. Only when performing alone can individual outputs be exactly evaluated and rewarded.

Let us assume that group members expect approval or other reward proportional to the total output of a group of n performers, but that since individual efforts are indistinguishable, the reward is psychologically divided equally among the participants, each getting $1/n$ units of reward. Under these assumptions, the average group, if it performed up to capacity and suffered no process loss, could expect to divide up n times the reward of the average individual, resulting in each member's getting $n \times 1/n$, or n/n, units of reward, the same amount as an individual.

Although the total amount of reward may be the same, the contingency on individual output is not. Any given individual under these assumptions will get back only one nth of his own contribution to the group; the rest will be shared by the others. Even though he may also receive unearned one nth of each other person's contribution, he will be tempted, to the extent that his own performance is costly or effortful, to become a "free rider" (Olson, 1965). Thus, under these assumptions, if his own performance cannot be individually monitored, an individual's incentive to perform should be proportional to $1/n$.

Seligman (1975) has shown that animals and people become lethargic and depressed when confronted with tasks in which they have little or no control over the outcomes. Likewise, in our experiments, people may have felt a loss of control over their fair share of the rewards when they performed in groups, leading them also to become, if not lethargic and depressed, at least less enthusiastic about making lots of noise.

Since people were asked to shout both alone and in groups, they may have felt it smart to save their strength in groups and to shout as lustily as possible when scores were individually identifiable, marshalling their energy for the occasions when they could earn rewards. This line of reasoning suggests that if inputs were made identifiable and rewards contingent on them, even when in groups, it would be impossible for performers to get a free ride and they would have an incentive to work equally hard in groups of different sizes.

Social Loafing and Social Impact Theory

Each of these three lines of explanation may be described in terms of Latané's (1973) theory of social impact. If a person is the target of social forces, increasing the number of other persons also in the target group should diminish the pressures on each individual because the impact is divided among the group members. In a group performance situation in which pressures to work come from outside the group and individual outputs are not identifiable, this division of impact should lead each individual to work less hard. Thus, whether the subject is dividing up the amount of work he thinks should be performed or whether he is dividing up the amount of reward he expects to earn with his work, he should work less hard in groups.

The theory of social impact further stipulates the form that the decrease in output should follow. Just as perceptual judgments of physical stimuli follow power functions (Stevens, 1957), so also should judgments of social stimuli, and the exponent of the psychosocial power function should have an exponent of less than one, resulting in a marginally decreasing impact of additional people. Thus, social impact theory suggests that the amount of effort expended on group tasks should decrease as an inverse power function of the number of people in the group. This implication cannot be tested in Experiment 1 or with the actual groups of Experiment 2, inasmuch as coordination loss is confounded with social loafing. However, a power function with an

exponent of −.14 accounted for 93% of the variance for the pseudogroups of Experiment 2. It appears that social impact theory provides a good account of both the existence and the magnitude of social loafing.

The Transsituational and Transcultural Generality of Social Loafing

The present research demonstrates that performance losses in groups occur with tasks other than rope pulling and with people other than prewar German workers. There are, in addition, other instances of experimental research that demonstrate similar cases of social loafing. For example, Marriott (1949) and Campbell (1952) have shown that factory workers produce less per person in larger groups than in smaller ones. Latané and Darley (1970) have found that the likelihood that a bystander will intervene in a situation in which someone requires assistance is substantially reduced by the addition of other bystanders who share in the responsibility for help. Wicker (1969) has found that the proportion of members taking part in church activities is lower in large than in small churches, presumably because the responsibility for taking part is more diffuse. Similarly, Petty, Harkins, Williams, and Latané (1977) found that people perceived themselves as exerting less cognitive effort on evaluating poems and editorials when they were among groups of other unidentifiable evaluators than when they alone were responsible for the task.

These experimental findings have demonstrated that a clear potential exists in human nature for social loafing. We suspect that the effects of social loafing have far-reaching and profound consequences both in our culture and in other cultures. For example, on collective farms (kolkhoz) in Russia, the peasants "move all over huge areas, working one field and one task one day, another field the next, having no sense of responsibility and no direct dependence on the results of their labor" (Smith, 1976, p. 281). Each peasant family is also allowed a private plot of up to an acre in size that may be worked after the responsibility to the collective is discharged. The produce of these plots, for which the peasants are individually responsible, may be used as they see fit. Although these plots occupy less than 1% of the nation's agricultural lands (about 26 million acres), they produce 27% of the total value of Soviet farm output (about $32.5 billion worth) (Yemelyanov, 1975, cited in Smith, 1976, p. 266). It is not, however, that the private sector is so highly efficient; rather, it is that the efficiency of the public sector is so low (Wädekin, 1973, p. 67).

However, before we become overly pessimistic about the potential of collective effort, we should consider the Israeli kibbutz, an example that suggests that the effects of social loafing can be circumvented. Despite the fact that kibbutzim are often located in remote and undeveloped areas on the periphery of Israel to protect the borders and develop these regions, these communes have been very successful. For example, in dairying, 1963 yields per cow on the kibbutz were 27% higher than for the rest of Israel's herds, and in 1960 yields were 75% higher than in England. In 1959, kibbutz chickens were producing 22% of the eggs with only 16% of the chickens (Leon, 1969). The kibbutz and the kolkhoz represent the range of possibilities for collective effort, and comparisons of these two types of collective enterprise may suggest conditions under which per person output would be greater in groups than individually.

Social Loafing as a Social Disease

Although some people still think science should be value free, we must confess that we think social loafing can be regarded as a kind of social disease. It is a "disease" in that it has negative consequences for individuals, social institutions, and societies. Social loafing results in a reduction in human efficiency, which leads to lowered profits and lowered benefits for all. It is "social" in that it results from the presence or actions of other people.

The "cure," however, is not to do away with groups, because despite their inefficiency, groups make possible the achievement of many goals that individuals alone could not

possibly accomplish. Collective action is a vital aspect of our lives: From time immemorial it has made possible the construction of monuments, but today it is necessary to the provision of even our food and shelter. We think the cure will come from finding ways of channeling social forces so that the group can serve as a means of intensifying individual responsibility rather than diffusing it.

Reference Note

1. Levinger, G. Personal communication, June 1976.

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