

Evaluation Apprehension and the Social Facilitation/Inhibition of Learning

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Sixty female subjects performed a paired-associates learning task either alone or under surveillance by the experimenter, who openly evaluated the subject's performance. To half of the subjects the experimenter described her evaluation as instrumental to the rendering of future help on a similar task; to the remaining half she gave no such promise. Subjects who were evaluated without the expectation of future help performed better than subjects who worked alone when the paired-associates list was easy, but less well when the list was difficult. For both types of list, evaluation with the added promise of future help produced performance no different from that of isolated subjects. Evaluation without the promise of help also produced a higher level of state anxiety than that observed in isolated subjects. The findings were discussed in terms of the effects of evaluation apprehension on the social facilitation and inhibition of learning.

According to one current theoretical explanation of social facilitation, the presence of an observer during performance of a task generates concern on the part of the performer over being evaluated (Cottrell, 1972; Geen, 1981). The arousal that is elicited by this concern acts as a drive that facilitates performance on tasks that are relatively easy but inhibits performance on tasks that are relatively difficult (Zajonc, 1980). This hypothesis has been given extensive support in experiments involving difficult tasks but has received considerably less substantiation from studies in which easy tasks were used. (See Geen & Gange, 1977, for a review.) In one such study,

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Cottrell, Rittle, and Wack (1967) showed that observed subjects learned a noncompetitive paired-associates list more readily than did subjects working alone, but their findings rested upon an internal analysis restricted to subjects classified as "slow learners." Drawing conclusions as to whether social settings facilitate performance on easy tasks is complicated still more by the fact that few studies any longer include task difficulty as a variable. In the absence of operational definitions of "hard" and "easy," we are often at odds to say which of the two descriptions characterizes the tasks that are used.

One purpose of the study reported here was to measure the effects of an observer on performance in paired-associates learning when the list given the subject was either high or low in interresponse competition. Female subjects were given instructions designed to produce a high degree of involvement and motivation to perform well on a P-A task. Each subject then learned either a highly competitive or a less competitive list to a criterion of two successive errorless trials. The subject performed either alone or in the presence of an observing and evaluating experimenter.

A second purpose of the experiment pertains to the theoretical explanation of why concern over being evaluated elevates arousal. Cottrell (1972) proposed that anticipation of the outcomes of evaluation is arousing, whether the expected outcome is affectively positive or negative. Others have disputed this idea, insisting instead that only the anticipation of negative outcomes produces arousal and its consequent effects on behavior (Weiss & Miller, 1971). The evidence supports the Weiss-Miller assertion. Good (1973) showed that expectancy of positive outcomes produced the social facilitation effect. But this has been the only investigator to date to report such a finding. In addition, Good found no such effect among subjects who had been led to expect a negative evaluation. Other studies on the problem have used one of two experimental procedures to create anticipations of outcome. In one, the subject is given the experience of either success or failure on a preliminary task and then tested on a second task alone or before an audience (Geen, 1979; Lombardo & Catalano, 1978; Seta & Hassan, 1980). The results of studies using this procedure indicate that social facilitation effects are due to expectancy of negative outcomes following prior failure at a similar task.

The second type of experiment involves a treatment in which the subject is evaluated, but the evaluation is said to be carried out so that the evaluator can assist the subject in doing better on a subsequent test. The evidence from one study using this design (Geen, 1977) showed that a "helpful" evaluator produced a level of arousal in subjects that was no higher, overall, than that of subjects who worked alone. In the absence of such a promise of help, however, the presence of the evaluator was

associated with significantly more arousal than was shown in isolated subjects. Furthermore, performance on a difficult anagram task was hampered more by the presence of an evaluator who merely judged than by one who assured future assistance. Converting the evaluation to an occasion for anticipating a positive outcome (future help) reduced its potential for arousal.

The present study was designed to replicate and extend the effects of the Geen (1977) study in the context of a paired-associates task involving easy and difficult lists. Subjects performed the task either alone or in the presence of the experimenter, who played the role of an evaluator. Half the subjects in the latter condition were given instructions that the experimenter would later give some evaluative feedback that would be of help in performance of a second task, whereas the other half of the subjects were not. It was predicted that subjects who received evaluation without the promise of help would do more poorly in learning the difficult list than subjects working alone, but that they would perform better than isolated subjects on the easy list. It was further expected that the addition of promised help to the evaluation treatment would attenuate both effects. Subjects assured of future help would thus show less of a decrement in performance on the hard list, and less facilitation on the easy list, than subjects given merely the evaluative treatment.

METHOD

Subjects and Experimenter

Sixty female undergraduate students served as subjects. These students were selected at random from introductory psychology classes and were given course credit for participation. The experimenter was a female undergraduate student.

Procedure

Upon arriving at the laboratory, the subject was seated in a cubicle containing a screen upon which slide projections could be shown, and a small table on which was mounted a microphone. The experimenter informed the subject that the task would measure ability to learn lists of words and that it was part of a battery of intelligence measures being given at the university and other colleges and universities in the area. The subject

was told that she should try to do her best to learn the materials because scores of students at the university would be compared with average scores from other schools and also that scores of males and females would be compared. The P-A task was then described to the subject. Finally, the experimenter informed all subjects that two separate lists would be given, with a short break interposed between the learning of the first list and the beginning of the second. Actually there was no second list. These instructions were given only to provide a justification for the promise of help following the first list. All subjects were informed of the deception during debriefing (see below).

The experimenter then gave the subject the state form of the Spielberger State-Trait Anxiety Inventory (STAI), explaining that a measure of feelings immediately before the task might be of use in interpreting performance later. This test provided a baseline measure of anxiety against which anxiety arising during the treatment phase of the experiment could be compared.

The experimenter continued by giving the subject instructions about the procedure to be followed. To one-third of all subjects, the experimenter explained that she would have to be out of the room during the experiment, and that the subject should give her verbal responses on the P-A task into the microphone on the table before her. It was explained that her responses would be recorded and scored at some later time. The subject was informed that she would be shown the list once, that she should try to remember as many of the associates as possible, and that she should begin anticipatory responding when the list came on for the second time. The experimenter then left the room and, by means of a remote switch, turned on a slide projector that contained slides of the stimulus and stimulus-response items. The lists were taken from those first used by Spence, Farber, and McFann (1956). Half the subjects received a list high in interresponse competition (difficult list) and half received one low in competition (easy list). The low-competition list consisted of the first 12 (out of 15) pairs from List I of Spence et al. (1956); the high-competition list consisted of all 12 pairs from List II of Spence et al. Each slide appeared on the screen for 2 seconds. The projector carousel contained three complete identical sets of slides separated by blanks, so that the list could be presented repeatedly without interruption by the experimenter.

The condition described above will be referred to hereafter as the *alone* condition. The experimenter actually left the room only to take a position in the adjoining room, from where she could hear and record the subject's responses. After the list had been presented once, the experimenter turned off the projector, returned to the subject's cubicle, and gave the subject the state form of the STAI for the second time. When the subject

had completed the questionnaire, the experimenter again reminded her that she could speak her responses into the microphone on every subsequent presentation of the *S* terms. The experimenter then again left the room and reactivated the projector. The subject continued until attaining the criterion of 2 successive errorless trials or until 12 trials had elapsed. The experimenter then ended the session, debriefed the subject, and dismissed her.

The other two-thirds of the subjects were treated in the same way as those in the alone condition, with the exception that the experimenter did not leave the room. Subjects were told that their responses would be recorded but were also told that the experimenter would monitor and personally record performance. The experimenter explained that she would do this in order to find out immediately how well or poorly the subject was doing. Half the subjects were told nothing more than this, and they constituted what will be referred to as the *evaluation-only* condition. The remaining half were told that the experimenter wanted immediate knowledge of performance so that she could give some advice later on about ways in which P-A performance could be improved when the second of the two lists was given. The experimenter went on to say that previous studies had shown that subjects can improve their performance to a significant degree just by knowing some simple mnemonic devices that the experimenter would provide. This condition will be called the *evaluation-help* condition. In both the evaluation conditions, the experimenter stood behind and to the right of the subject so that she was just within the subject's visual field. The experimenter frequently wrote on a pad that she held, and otherwise appeared to be busy observing and recording the subject's responses. As in the alone condition, the experimenter in the evaluation conditions interrupted the procedure after the first trial to give the state form of the STAI.

RESULTS

State Anxiety

Subjects' state anxiety scores from the first administration of the STAI were subtracted from scores from the second administration to yield a change score. No significant differences in state anxiety were found across the six conditions of the study following the first administration. The mean change scores in the six conditions of the experiment are shown in Table I. The change scores were analyzed by means of a 3(evaluation condition) ×

Table I. Mean Changes in A-State^a

List	Treatment		
	Evaluation-only	Evaluation-help	Alone
High competition	9.5 _a	5.0 _{a,b}	1.8 _b
Low competition	3.9 _{a,b}	1.3 _{b,c}	-3.4 _c

^aCells having common subscript are not significantly different at the .05 level by a Duncan multiple-range test.

2(list difficulty) analysis of variance. Both list difficulty and experimenter evaluation contributed to increased anxiety following the presentation of the list for the first time. Main effects were found for both list difficulty ($F(1, 54) = 6.84, p < .05$) and evaluation ($F(2, 54) = 5.51, p < .01$). The presence of an evaluator appeared to wash out anxiety differences due to task difficulty, which were significant only in the alone condition. Nevertheless, the interaction between the two variables was not significant.

Trials to Criterion

The mean numbers of trials required to reach the criterion for P-A learning in each condition are shown in Table II. The total number of trials to criterion for a subject was equal to the number of trials on which that subject made one or more errors. For most subjects this consisted of the number of trials up to, but not including, the two errorless trials that signified criterion had been attained. Four subjects (2 each in the high competition/evaluation only and high competition/evaluation plus help conditions) did not reach the criterion in 12 trials. They were given a score of 12 on the trials measure. This is a fairly small number of subjects failing to reach criterion. However, a previous study involving subjects drawn

Table II. Mean Trials to Criterion^a

List	Treatment		
	Evaluation-only	Evaluation-help	Alone
High competition	8.5 _a	6.8 _{a,b}	6.0 _{a,b,c}
Low competition	3.1 _d	4.1 _{c,d}	4.8 _{b,c,d}

^aCells having common subscripts are not significantly different at the .05 level by a Duncan multiple-range test.

from the same population and carried out in the same laboratory showed comparably small number of subjects not attaining criterion (Geen, 1979). The trials data were analyzed by means of a 3×2 analysis of variance.

An analysis of variance of the trials data revealed a significant main effect for list difficulty ($F(1, 54) = 26.74, p < .001$) and a significant interaction between list difficulty and treatment ($F(2, 54) = 4.20, p < .05$). Learning the difficult list required more trials than learning the easier list only when subjects performed while being evaluated, for whatever reason, by the experimenter. No main effect for the evaluation treatment was found. In general, the data for trials to criterion fail to support the notion that evaluation apprehension influences P-A learning and fail even to show a difference in learning as a function of list difficulty. Trials to criterion may not be the most sensitive measure of acquisition, however. In P-A learning, it is possible for subjects sometimes to fail repeatedly to acquire a small number of the available associates and hence to amass a large number of trials while making few errors. A measure of total errors across the trials might therefore be at least as good an indicator of learning as trials, and possibly a better one.²

Total Errors

The mean number of errors on all trials for each condition is shown in Table III. Analysis of these data revealed significant effects for list difficulty ($F(1, 54) = 67.75, p < .001$) and for the interaction between list difficulty and treatment ($F(2, 54) = 7.11, p < .01$). The difficult list produced more errors than the easy list in all three treatment conditions. In addition, the presence of an experimenter who merely evaluated the subject led to more errors on the difficult list than were made by subjects working alone, but fewer errors on the easy list. The promise of help led to a reduction in errors on the difficult list but an increase in errors on the easy list. In neither case did the evaluation-help condition differ significantly from either of the other two. Nevertheless, the fact that the evaluation-only treatment produced social facilitation of performance within an easy list and inhibition of performance with a difficult list, whereas the evaluation-help treatment did not, is a finding consistent with the expectations of the study.

²Errors were not analyzed on a trial-by-trial basis. Because subjects were not run for the same number of trials but were instead stopped after reaching criterion, the means of errors over trials are based on different N 's and are difficult to evaluate.

Table III. Mean Number of Errors^a

List	Treatment		
	Evaluation-only	Evaluation-help	Alone
High competition	63.7 _a	51.7 _{a,b}	48.0 _b
Low competition	18.0 _d	27.2 _{c,d}	33.3 _c

^aCells having common subscripts are not significantly different at the .05 level by a Duncan multiple-range test.

DISCUSSION

The findings of the study reported here provide further evidence that evaluation apprehension is reduced when subjects are told that an otherwise evaluative observer will be a source of future help. Persons given this information expressed state anxiety intermediate to that reported by subjects who were merely evaluated and those who were not observed, and were no more than anxious than the latter. As has been argued elsewhere (Geen, 1977), such a finding suggests that evaluation apprehension during observation is a function of the anticipation of negative outcomes (cf. Weiss & Miller, 1971). The study also shows that evaluation apprehension resulting from being observed facilitates performance on an easy task even though it inhibits performance on a more difficult one. Such a finding, which is consistent with the Hullian drive-theory analysis of social facilitation proposed by Zajonc (1980), is rare in studies of verbal learning. As was noted earlier, in a previous report of facilitation of learning a simple list during observation, Cottrell et al. (1967) found the predicted effect only among slow learners. Possibly we obtained the more robust effect of the present study because of a higher level of ego-involvement in our subjects. By informing our female subjects that their performances would be compared to those of other males and females from other schools, we may have induced a stronger motivation to succeed than was present in the Cottrell et al. (1967) experiment.

In addition to its theoretical bearing upon the evaluation apprehension theory of social facilitation, the results of the present study may have some practical implications for educational settings. The practice of giving tests for diagnostic and corrective reasons rather than for more pass-fail decisions is often followed in education. The present results indicate that such a procedure is effective in reducing state anxiety associated with being tested. Such a reduction in anxiety could be valuable for students who are being tested over difficult material, even when surveil-

lance of the student must be maintained. On the other hand, when students are called upon to perform easier tasks, it may not be necessary (or even desirable) to allay the small amount of anxiety that would be generated by the presence of an evaluator. Furthermore, because a high level of drive should inhibit the learning of new material while facilitating the performance of well-mastered responses, the use of less purely evaluative testing might be desirable in the former case but not in the latter.

It should be noted that the present study was designed for the specific purpose of testing predictions within the context of a single theoretical viewpoint on social facilitation. It was not designed to compare that viewpoint with alternative ones. The results are therefore interpretable according to approaches other than the one built on the assumption that observation creates evaluation apprehension. It is possible, for example, to explain the results of the present study in terms of the distraction-drive hypothesis advocated by Baron and his colleagues (e.g., Baron, Moore, & Sanders, 1978) simply by assuming that distraction caused by the experimenter is reduced when that person is seen as a potential source of help. When an observer is not regarded as a possible threat, he or she tends to be ignored and therefore is not a distractor (cf. Sanders, 1981, pp. 240-241). Interestingly, the exact opposite can be assumed if we take another theoretical approach that is currently being advocated. According to Carver and Scheier (1981), social facilitation/inhibition of performance is a special case of the more general effects of increased self-awareness induced by the presence of an observer. According to this theory, the behavior of subjects in our evaluation-help condition would probably best be accounted for by assuming that the promise of help shifted the subject's attention *toward* the person making that promise and therefore away from the self. The safest conclusion to be drawn is that the results of this study, while potentially interpretable in terms of either the distraction-drive or self-awareness theories of social facilitation, nevertheless supports the viewpoint that it was specifically designed to test, namely, that the social facilitation/inhibition of performance can be thought of as a result of evaluation anxiety.

REFERENCES

- Baron, R. S., Moore, D. L., & Sanders, G. S. Distraction as a source of drive in social facilitation research. *Journal of Personality and Social Psychology*, 1978, 36, 816-824.
- Carver, C. S., & Scheier, M. F. The self-attention-induced feedback loop and social facilitation. *Journal of Experimental Social Psychology*, 1981, 17, 545-568.
- Cottrell, N. B. Social facilitation. In C. G. McClintock (Ed.), *Experimental social psychology*. New York: Holt, Rinehart & Winston, 1972.

- Cottrell, N. B., Rittle, R. H., & Wack, D. L. The presence of an audience and list type (competitive or noncompetitive) as joint determinants of performance in paired-associates learning. *Journal of Personality*, 1967, 35, 425-434.
- Geen, R. G. The effects of anticipation of positive and negative outcomes on audience anxiety. *Journal of Consulting and Clinical Psychology*, 1977, 45, 715-716.
- Geen, R. G. Effects of being observed on learning following success and failure experiences. *Motivation and Emotion*, 1979, 3, 355-371.
- Geen, R. G. Evaluation apprehension and social facilitation: A reply to Sanders. *Journal of Experimental Social Psychology*, 1981, 17, 252-256.
- Geen, R. G., & Gange, J. J. Drive theory of social facilitation: Twelve years of theory and research. *Psychological Bulletin*, 1977, 84, 1267-1288.
- Good, K. J. Social facilitation: Effects of performance anticipation, evaluation, and response competition on free association. *Journal of Personality and Social Psychology*, 1973, 28, 270-275.
- Lombardo, J. P., & Catalano, J. F. Failure and its relationship to the social facilitation effect: Evidence for a learned drive interpretation of the social facilitation effect. *Perceptual and Motor Skills*, 1978, 46, 823-829.
- Sanders, G. S. Driven by distraction: An integrative review of social facilitation theory and research. *Journal of Experimental Social Psychology*, 1981, 17, 227-251.
- Seta, J. J., & Hassan, R. K. Awareness of prior success or failure: A critical factor in task performance. *Journal of Personality and Social Psychology*, 1980, 39, 70-76.
- Spence, K. W., Farber, I. E., & McFann, H. H. The relation of anxiety (drive) level to performance in competitive and noncompetitive paired-associates learning. *Journal of Experimental Psychology*, 1956, 52, 296-305.
- Weiss, R. F., & Miller, F. G. The drive theory of social facilitation. *Psychological Review*, 1971, 78, 44-57.
- Zajonc, R. B. Compresence. In P. B. Paulus (Ed.), *Psychology of group influence*. Hillsdale, New Jersey: Erlbaum, 1980.