



THE EFFECTS OF SEX OF SUBJECT, SEX OF
EXPERIMENTER, AUDIENCE DURING WARM
UP, AND AUDIENCE DURING MEMOR-
IZATION ON THE LEARNING AND
PERFORMANCE OF VERBAL TASKS

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ABSTRACT

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In his theory of social facilitation, Zajonc predicts that the presence of an audience hinders learning and facilitates the performance of learned tasks. He suggests that the presence of an audience increases "drive" which, in turn, facilitates the performance of well-learned, dominant responses.

The purpose of this research was twofold: first, to test the drive theory predictions of Zajonc against the alternate explanation that previous results might have been due to a contrast effect imposed by the temporal sequence of events; second, to examine the effect on audience phenomena of variables relevant to social role theories.

The major hypothesis (I) predicted that the temporal order of events would be more of an influence on behavior than the type of behavior (i.e. learning or performing). It was suggested that if audience conditions were changed from the first of two tasks to the second, subjects would infer the relative importance of the second task by comparing audience conditions during the first task with those during the second task. It was felt that subjects

would when adjust their motivation toward the second task to a level appropriate to their perception of its relative importance.

Specifically, it was predicted that subjects would excel on the second of two tasks if they had been alone during the first task and before the audience during the second task. This hypothesis was supported but only with the subjects of male experimenters. However, the experiment was designed such that the subjects first performed one task and then learned another. Since subjects learned more before the audience than alone, these results are in direct conflict with Zajonc's theory of social facilitation. The results for the subjects of female experimenters did not support either the present hypothesis or Zajonc's theory.

The second hypothesis (II) predicted that the situational variable, sex of experimenter, and the personal variable, sex of subject, would influence audience effects. Audience effects were discussed in terms of the compatibility of a person's behavior with the behaviors defined as appropriate for that role. It was suggested that there are at least four factors affecting this compatibility---type of behavior, kind of task, personal variables, and situational cues. Zajonc has only investigated the effects of two types of behavior, learning and performing.

Hypothesis II(a) predicted that subjects might be affected differently by male and female experimenter-observers. This hypothesis was supported by two of the three

response measures. Subjects performed better for female experimenters. However, audience effects were only found with the subjects of male experimenters.

Hypothesis II(b) predicted that male and female subjects might be affected differently by the presence of an audience. This hypothesis was also supported by two of the three response measures. During the first task males performed better than females if alone and there was a trend for females to perform better than males in the audience condition. No difference was found between the audience effect for males and females during the second task.

Hypothesis II(c) predicted that there might be an interaction of sex of subject and sex of experimenter-observer. This was found only with one of the three response measures, intrusions (i.e. incorrect responses). However, the interaction with this response measure was highly significant with subjects making approximately two and one half times as many intrusions before an observer of the same sex as subjects before an observer of the opposite sex.

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INTRODUCTION

Social psychology is based on the axiom that people can be studied not only as units but as social beings who interact and influence each other's behavior. A part of the discipline of social psychology is devoted to studying how people behave in aggregates or groups in which personal or situational variables are manipulated or are known to exist.

Within this general area, much of the emphasis of research has been directed toward the understanding of how the behavior of other persons affects the behavior of a subject. However, this paper is concerned with what has been called the "audience effect". That is, how does just being observed by other persons influence the subject's behavior? Before considering the goals of the present study, a brief summary of research relevant to the study of audience effects is presented below.

According to Jones and Gerard (1967), the first systematic attempts to study the effect of the presence of others on individual performance were carried out by educators between 1898 and 1914. The interest of these educators was in empirically testing an applied question: could school work be better performed by a student working alone or in the presence of others? The first psychologist to attempt

to answer this question was Floyd Allport (1924). Following a series of experiments from 1916 through 1919, he concluded that the presence of others increases the quantity and vigor of responses at the expense of their intellectual quality.

In 1930 a student of Allport's renewed interest in audience effects. Dashiell (1930) demonstrated facilitation of simple multiplication and serial word association tasks when the subjects were observed by an audience. However, Pessin and Husband (1933) conducted an experiment which demonstrated that an audience hindered the learning of finger mazes. It is not obvious how one could predict these results from Allport's explanation.

Pessin (1933) gave 60 subjects three lists of seven nonsense syllables and found that during the learning phase (i.e. until each subject mastered the list) the subjects who learned before an audience took longer to learn the list and made more mistakes than a group that learned the list alone. After training the subjects to a criterion, he excused them for a few days. After five familiarization trials, he found that the group performing before the audience relearned faster, and thus had a higher "saving score".

Zajonc (1965,1966) has theorized that an audience "inhibits learning" and "facilitates performance". He formulated an explanation of the phenomenon which draws upon two earlier findings. First, Mason and Brady (1964) have demonstrated that the presence of others is closely related to

increased adreno-cortical activity which in turn is believed to be associated with "drive". Secondly, Spence (1956) theorized that increased "drive" facilitated the performance of dominant responses.

Thus Zajonc deduced that the presence of an audience increases drive and as such facilitates the performance of learned responses. The audience would, however, inhibit learning of new responses since irrelevant responses which were dominant before the training would be facilitated. In this way, Zajonc has reconciled many paradoxical results of earlier experiments. In support of this position Cottrell, Wack, Sekerak, and Rittle (1968) have recently shown social facilitation of verbal responses which were made relatively dominant by varying the number of learning trials for each item.

In concluding his review of experiments dealing with audience and co-action¹ effects, Zajonc (1965) advised:

"If one were to draw one practical suggestion from the review of the social-facilitation effects which are summarized in this article he would advise the student to study all alone, preferably in an isolated cubical, and to arrange to take his examinations in the company of many other students, on stage and in the presence of a large audience. The results of his examination would be beyond his wildest expectations, provided, of course, he had learned his material quite thoroughly."
(p. 274)

¹Co-action studies do not use an audience per se but involve two or more subjects working on a task in the presence of each other.

The existence of a relationship between learning, performing, and audience effects is not questioned in this study. However, what is at issue is whether this relationship accounts for a sufficient amount of the variance in the subject's behavior to warrant the general advice that Zajonc (1965) has offered. It is suggested here that if variables relevant to other theories in social psychology are manipulated, the learning-performing distinction might prove to be relatively unimportant. In this study manipulations were made to examine relationships which follow from two traditions in psychology---contrast or comparison theories and role theories.

In psychology contrast or comparison theories have been concerned with the effects of a stimulus situation in relation to preceding or contemporaneous stimuli. One comparison theory in social psychology is that of Thibaut and Kelley (1959). They have theorized that individuals set comparison levels, based on previous outcomes, which they use to evaluate their present situation. For example, in an absolute sense a child would be rewarded if he were given a dollar per week as an allowance. However, if he had been accustomed to receiving five dollars per week, the comparison might serve as a cue for resentment rather than gratitude.

In the present context, the comparison effect of changing audience conditions will be considered in a hypothetical two part experiment. If one group of subjects

remained before the audience during both parts of the experiment and another group remained alone throughout the experiment, differences in performance on the second part could be explained as being due to audience effects.

However, if still another group were before the audience during the first task and were left alone during the second task, it could be expected that performance on the second task would be affected by the change per se. Thus the audience would provide a comparison level and the change to the alone condition might provide a cue for a change in behavior. In the present situation, the subject might infer that what he was doing in the second task is not as important to the experimenter. This is because people presumably attend to that which they consider important. As such, subjects might lower their motivation toward the task to a level which they consider appropriate for the perceived importance of the task.

If a final group were added in which the subjects performed the first part alone and the second part before the audience, performance on the second task might again be influenced by the change. Here relative to the alone condition, the audience might serve as a cue that the second task was more important. Thus, subjects might increase their motivation to a level appropriate to their perceived importance of the task.

To summarize the contrast effect of changing audience cues, one would expect the best performance on the second

task if the subjects performed the first task alone and the second before the audience since it is the only condition that would result in an increment of perceived relative importance of the second task. Likewise, one would expect the worst performance on the second task if the subjects performed the first task before the audience and the second task alone since it is the only condition that would result in a decrement in the perceived importance of the second task.

In his advice quoted above, Zajonc (1965) suggests that a person will perform best if he first learns alone and then performs before an audience. However, this assertion confounds the behavioral sequence (i.e. learning then performing) with the temporal sequence (i.e. the first task alone and the second task before the audience). Therefore, a survey was made of the studies mentioned either in Zajonc (1965) or Zajonc (1966) to determine the extent to which these experiments studied or controlled for this confounding.

First, it was found that in many of the studies there was only one part. That is, the subjects learned or performed either alone or before the audience. Thus there was no opportunity for a comparison effect. However, in the remaining studies, the behavioral sequence was always confounded with the temporal sequence. That is, learning was always the first task and performing was always the second task. Thus, if the effect of the temporal sequence is as discussed above, this would tend to bias results in the

direction of supporting the learning-performing distinction.

In the present experiment the behavioral sequence was reversed. As such, the subjects first performed one task either alone or before the audience and then learned another task either alone or before the audience. Zajonc's theory predicts that the audience facilitates performance but hinders learning.

The present comparison interpretation predicts better performance on the second of two tasks if the subjects were alone during the first task and before the audience during the second. Since in this experiment the performing task preceded the learning task, contrary predictions are made by Zajonc's theory and this comparison hypothesis.

Turning from contrast and comparison notions, the relevance of role theories was considered. It was noted that Zajonc's theory makes general predictions about the effects of audiences on individuals. However, such generality ignores the possibility that differences in individuals and audiences may greatly influence audience phenomena.

Goffman (1959) has developed a dramaturgical conceptualization of interpersonal behavior which relates the maintenance of social roles with audience phenomena. His basic assumption is that individuals give performances in the presence of others as a means of presenting themselves in a certain way for a certain class of observers. He uses the term "performance" to refer to "...all the activity of an individual which occurs during a period marked by his

continuous presence before a particular set of observers and which has some influence on the observers." (p. 22) He also notes, "The pre-established pattern of action which is unfolded during a performance and which may be presented or played through on other occasions may be called a 'part' or 'routine.'" (p. 16) He goes on to define a social role in terms of the parts or routines "... presented by the performer on a series of occasions to the same kind of audience or to an audience of the same persons." (p. 16) Thus Goffman (1959) suggests that an individual's behavior is influenced by the social role that he adopts in the presence of an audience and that the role, in turn, is influenced by characteristics of the audience.

Although Goffman (1959) did not elaborate on the mechanics of role maintenance, Jones and Gerard (1967) have made the following observations:

"Roles are shared norms concerning the behavior of certain persons in certain settings. Men confront different social expectations-are constrained by a different set of norms-than women. Adults differ from children, leaders from followers, waiters from customers, in the norms relevant to their roles."
(p. 177)

Thus, Jones and Gerard suggest that when a person adopts a particular role, he must limit his behavior to a subset of behaviors which conform to the social expectations for that role.

It is suggested here that audience effects be considered as a special case of role conflict. That is, audience effects should occur when the person's behavior is in

conflict with the behaviors which are defined as appropriate for the role that he assumes before the audience. For instance, it might be expected that a person who curses in private and among close friends would inhibit cursing while giving a speech if he considered cursing to be an inappropriate behavior for the role of speaker. Moreover, it would be expected that although the individual might swear when he is among peers, he might inhibit this behavior around his parents. That is, the behavior could be appropriate for the role of friend but inappropriate for the role of son. Thus the compatibility of specified behaviors with the behaviors that the person defines as appropriate for the role which he assumes before the audience must be examined. As such, there seems to be at least four factors that would influence this compatibility---the type of behavior, the nature of the task, characteristics of the individual subjects, and the kind of cues provided by the stimulus situation.

Zajonc has stated that the audience hinders learning and facilitates performance. This relationship is compatible with the present formulation. This could be interpreted to mean that one type of behavior, performing learned tasks, is compatible with the role of performer while another behavior, learning new tasks, is not. On face value, this seems to be a plausible relationship since the performer role involves the emission of overt behavior which can be observed and evaluated. The performance of a learned task

also involves overt behavior while learning is essentially a covert behavior. As mentioned above, the existence of a relationship between learning, performing, and audience effects is not questioned in this study. However, it was noted that Zajonc's predictions consider only one variable, type of behavior. It is, therefore, suggested that if task, personal, and situational variables are also manipulated, the learning-performing distinction might prove to be relatively unimportant in predicting the subjects actual behavior.

Looking first at the nature of the task, it can be seen that Zajonc might have overgeneralized his findings. Many well-learned behaviors become dominant but are inhibited in the presence of an audience. People may become sexually aroused at a party, dance, or theater, but most postpone sexual behavior until there are conditions of privacy. Likewise, burglars notoriously look for houses in which the occupants are away rather than breaking into the nearest house. Thus dominant responses which are contrary to the norms, customs, or laws of a society tend to be inhibited in public.

Personal variables may be important since they may influence the type of roles that the person assumes. For instance, Travis (1928) has shown that "normals" are facilitated and "stutterers" are hindered by the presence of an audience during a written free association task. Since the stutterers had a speech difficulty, they had probably

learned to assume nonverbal roles in the presence of others in order to avoid exhibiting their handicap. If so, performing the verbal task before the audience would be a task which was incompatible with the nonverbal role we would expect them to assume.

For the present study, the subjects' sex was selected as a personal variable. First, it was felt that, since Zajonc intended that his theory be quite general, it should apply to both males and females. Secondly, Jones and Gerard (1967) point out, "Men confront different social expectations-are constrained by a different set of norms-than women." As such, males are limited to a different subset of behaviors than females. Therefore, it is suggested that this might influence the compatibility of task-required behaviors with role-expected behaviors. Thirdly, males and females differ in their abilities with various tasks as described in Anastasi and Foley (1949). Thus, it might be expected that males and females would be affected differently by the presence of an audience since they might assume different roles which prescribe different behavioral repertoires.

Situational variables might also have an influence on the audience effect. Zajonc (1965) briefly alludes to the cue function of the audience. He points out that in co-action experiments the subjects provide cues and they might, therefore, imitate each other. Although imitation cues might be important in some experiments, the concern here

is with situational cues which provide information about the type of role that the subject should adopt. For example, one might want to see whether audience effects are different when children serve as observers since people adopt different roles vis-a-vis children than they do vis-a-vis adults.

In this study the sex of the experimenter, and therefore the audience, was selected as the situational variable. First, if the generality that Zajonc attributes to his theory is justified, it is necessary that similar audience effects occur with male and female observers. Secondly, if the role interpretation has merit, it might be expected that subjects would adopt different roles before male observers than before female observers. As discussed above, these role differences might lead to differences in the audience effect.

Since the present study focused upon the possible effects of personal and situational variables on audience effects, it was necessary to determine the extent to which previous research studied or controlled for these variables. Therefore a survey was made of the studies mentioned either in Zajonc (1965) or Zajonc (1966) which dealt with audience or co-action effects with humans.² An attempt was made to

²Zajonc intended that his theory be relevant to all organisms. Since the present formulation uses the concept "role", it limits itself to explaining human behavior. However, this restriction is justified since studies of animal behavior have failed to show that "audience effects" exist separate from "competition effects".

ascertain the sex of the subjects and the sex of the observers in each study.

Table 1 is a classification of these studies along the dimensions of sex of subject and sex of observer. Four categories were designated for each of these dimensions: female, mixed (i.e. both male and female), male, and unspecified (i.e. the sex of the individuals was not mentioned in the article). The letters in parentheses specify the type of experiment: audience (A), or co-action (C).

Note that in none of the experiments was the audience composed solely of females. Likewise, none of the studies reported audience effects for female subjects separately from male subjects. In contrast, eight of the thirteen experiments employed a strictly male audience (or co-actor) and seven used only male subjects (or co-actors). Of these, six used both male subjects and observers or male co-actors. Upon examining the remaining studies in Table 1, it was found that none reported comparisons of male and female subjects or male and female observers.

To summarize, none of the studies which were reviewed have investigated the effects of a female audience separate from the effects of a male audience. In addition, none of these studies considered audience effects for female subjects separate from male subjects.

In an unpublished study by Good (1968), hypotheses relevant to the present formulation were investigated. Twenty male and twenty female introductory psychology

Table 1- Human audience and co-action studies mentioned either in Zajonc (1965) or in Zajonc (1966)

<u>Sex of Observer</u>	<u>Sex of Subject</u>			
	Female	Mixed	Male	Unspecified
Female				
Mixed		Allport (1920) (C) Allport (1924) (C)	Travis (1925) (A)	
Male		Pessin (1933) (A)	Ader & Tatum (1963) (C) Bergum & Lehr (1963) (A) Gurnee (1939) (C) Meumann (1904) (A) Seidman et. al. (1957) (C) Triplett (1897) (C)	Pessin & Husband (1933) (A)
Unspecified				Dashiell (1930) (C) Travis (1928) (C)

students served as subjects. Half of the males and females first performed a warm up task before an extended audience which consisted of a television camera and a microphone. The warm up task was similar to the game Scrabble but the subjects were asked to form cross-words which contained the letter B. They were given five minutes for this task. The other subjects did not warm up at all. This design, of course, confounded familiarity with the audience with warm up per se. Therefore, the effect of the temporal sequence could not be assessed.

After a two-minute delay, all subjects were given five minutes to learn as many of 50 one-syllable English nouns as they could. This learning took place either alone or before the audience. After another two-minute delay, all subjects were asked to recall as many words as they could. All subjects performed before the audience during the recall phase.

The first result relevant to the present discussion is that a significant interaction of the sex of the subject and audience conditions was found ($p \leq .05$). Upon further analysis, it was found that the audience effect was only shown for male subjects. This result is important both because it suggests that males and females may be affected differently by the audience and because it demonstrates audience effects with the extended audience.

Secondly, an overall sex difference was found in which females performed significantly better than males ($p \leq .005$). However, since only a male experimenter was used, it is

impossible to separate the effects due to the sex of the subjects and the effects due to the interaction of the sex of the subject with the sex of the experimenter.

It was suggested that the interaction of the sex of the subject and the audience conditions might have been due to the fact that the experimenter, and presumably the audience, was male. Thus, females may have defined their role with the male experimenter differently than the male subjects. More importantly, they might have defined their role differently if the experimenter had also been female. Therefore, the present study is basically a replication of this study with two important changes. First, all subjects performed the warm up task but only half did so before the audience. Since the first task was a performing task and the second was a learning task, the order of the behavioral events was reversed by using two separate tasks. Thus, the effect of the temporal sequence of events could be evaluated. Secondly, half of the subjects participated in an experiment for a female experimenter and were presumably observed by a female audience while the other subjects participated for a male experimenter and audience. Thus, the effect of the situational variable, sex of experimenter, was investigated in this study.

Based upon the arguments presented above, the following two hypotheses were generated:

HYPOTHESIS I: It was predicted that the temporal order of events would be more of an influence on behavior than the

type of behavior in which the subjects were engaged (i.e. learning or performing). As such, it was predicted that the subjects would excel during the second of two tasks if they had been left alone during the first and were before an audience during the second. However, since in the present design, the first task involved mainly performance and the second task involved mainly learning, it was predicted that subjects would learn more if they had performed alone and then learned before an audience. Since it was predicted that subjects would learn more if they were before the audience, this hypothesis predicts results directly contrary to the predictions of Zajonc's theory of social facilitation.

HYPOTHESIS II: It was predicted that the personal variable, sex of subject, and the situational variable, sex of audience, would influence audience effects. Since, as documented above, there is a lack of information surrounding the existence of audience effects with females, this prediction is made without specifying the directionality of the effect of these variables. However, any effects found due to the situational or personal variables would be contrary to the intended generality of Zajonc's theory.

There are three possible first-order interactions of these variables---sex of experimenter with audience effects, sex of subject with audience effects, and sex of experimenter with sex of subject. These three relationships will be considered separately.

(a) Subjects might have been affected differently by male and female audiences. For example, subjects might have perceived the female observer's role as neutral onlooker, but perceived the male observer's role as evaluator. On the other hand, subjects might have interpreted observation by a male as a cue to his being conscientious while interpreting the same behavior by a female observer as a sign of her being curious.

(b) Male and female subjects might have been affected differently by the presence of an audience. For instance, the audience might have increased the male subjects' need for achievement while increasing the female subjects' fear of failure. On the contrary, since females tend to be more competent on verbal tasks, they might experience less conflict between verbal behavior and the behaviors prescribed by their role before the audience.

(c) There might have been an interaction of the sex of the subject and the sex of the experimenter. For example, subjects might have been more apprehensive about being observed and evaluated by a same-sex observer since he might have been perceived as more of a peer. On the other hand, subjects might consider failure before a member of the opposite sex to be more threatening.

METHOD

Subjects

Forty-nine male and 51 female volunteers enrolled in introductory psychology at Michigan State University served as subjects for experimental credit.

Experimenters

Two male and two female students at Michigan State University served as experimenters. The author was one of the male experimenters. In addition, the author obtained the names of students in a junior-level social psychology class who were interested in working on an ongoing research project for course credits in psychology. From these names the author randomly selected a male and two females. Thus experimenter selection biases were minimized since the experimenters were chosen before they were met personally by the author.

Apparatus

A television camera, a microphone, a tape recorder, and an electric light-push button signaling system were used in this experiment.

Manipulations

As in the pilot study mentioned above, the extended audience was used in this experiment. In conditions which required an audience manipulation, the television camera situated across the table from the subject was turned on. The camera was directed toward the subject and a red indicator light on the front of the camera was functioning. In addition a large microphone was situated directly before the subject. Cables from the camera and microphone were plugged into a labeled wall receptacle in the view of the subject.

In the alone conditions the subjects remained in the same room. However, the camera was turned off and pointed toward the wall. The microphone was moved to a shelf to the left of the subjects. The cables from the television camera and the microphone were disconnected and wound around the apparatus.

Procedure and Experimental Design

A four-way factorial design with one nested factor was used in this study. The independent variables were sex of the subject, performing the scrabble task (warmup) either alone or before the audience, learning the English nouns (memorization task) either alone or before the audience, and individual experimenters nested within sex of experimenter. All subjects were asked to recall the learned material before the audience.

The primary dependent variable was the number of English

nouns recalled following the learning phase of the experiment. An additional response measure was the number of words formed during the warm up or scrabble task.³ Also, the number of intrusions were analysed. An intrusion was defined as any response which was not counted as a correct response during the recall of the English words. These included incorrect responses, misspelled responses, and repetitions of correct responses.

When each subject arrived for the experiment, he was taken to a small laboratory room. The experimenter asked the subject to be seated, to put on the earphones provided, and to wait for tape recorded instructions.⁴ The experimenter then left the room. A separate set of instructions had been recorded by each experimenter. The text of each experimenter's recorded instructions was identical except that male experimenters said that video tapes of the subjects' behavior would be reviewed "...by the other men in our research team." Female experimenters substituted the word "women" for "men" in their instructions.

The experimenters were not in the same room as the subjects during the instructions or tasks. Thus, a communication system had to be devised by which the experimenter could

³Since the scrabble task preceded the memorization task, the analysis of the scrabble task did not include a factor for audience conditions during learning.

⁴A transcript of recorded instructions is presented in Appendix A.

ascertain the subjects' understanding of the instructions while not violating the privacy of the alone conditions. Therefore, an electric light-push button signaling system was used with a control box in the room with the subject. However, it was felt that subjects in audience conditions might question the necessity for the control box in view of the microphone and television camera. Therefore, the following recorded instructions were given:

"All instructions for this experiment are tape recorded. ... After each time that instructions are given, the amber light on the control box to your left will come on automatically. At that time you should press the appropriate button to indicate whether you understand or do not understand the instructions."

Thus, it was subtly suggested to the subject that apparatus connected to the tape recorder turned on the light at the end of a set of instructions and that pressing the button advanced the recorder.

In the first recorded message subjects were told that the experiment consisted of three separate parts. Subjects were also instructed on the use of the control box.

The second recorded message then explained what will be called the warm-up or scrabble task. Before each subject was a deck of fifty $2\frac{1}{2}$ " x 3" cards with a letter of the alphabet stenciled on each card using 1" Roman letters. In the deck were three of each vowel, ten B's, and twenty-two other consonants. Each subject was told that he would have seven minutes to play a crossword game which was similar to the game Scrabble. He was to lay the cards on the table and spell as many

words as possible which contained the letter B. However, after making the first word, each new B-word had to share a letter with one of the preceding words. An example which illustrated the technique with X-words was provided. In addition, each subject was asked to say each word out loud as he formed it.⁵ When the subject indicated that he understood the instructions, he was told to begin.

When the subject was instructed to stop, the experimenter reentered the room and counted the number of words spelled by each subject. He then made any appropriate changes in the room to create the desired audience manipulation and he provided materials for the learning task. Then the experimenter again left the room.

Lying on the table before each subject was a deck of fifty 5" x 8" note cards with a one-syllable English noun on each card.⁶ Each subject was told that he would be allowed seven minutes to memorize as many words as he could in any order that he desired. The cards were, however, presented in the same random order for all subjects.

Also, each subject was instructed to say the words out loud as he was memorizing. In addition, he was told that he would be asked to recall the words in the final part of

⁵Cottrell et.al. (1968) have shown that audience effects are obtained only if the others present can conceivably observe and evaluate the subject's behavior. This requirement insured that the subject was emitting behavior that could conceivably be observed by an audience.

⁶A list of these words is presented in Appendix A.

the experiment. When the subjects indicated that they understood the instructions, they were told to begin.

When each subject was told to stop, the experimenter again entered the room. He made any appropriate changes in the room to create the audience condition for all subjects, and he substituted materials appropriate for the recall phase of the experiment. The experimenter then left the room.

Each subject was then instructed to recall as many words as he could by printing one response on each sheet of paper, and then turning that sheet face down. In addition, each subject was asked to say each word out loud as he was writing his responses. The subjects were also instructed to leave the room when they had recalled as many words as they could.

Upon leaving the room each subject was asked to fill out a six-question post-experimental questionnaire.⁷ Three questions were concerned with the subject's perception of the experiment, suggestions for improving the experiment, and the subject's perception of any deceptions during the experiment. These questions served as criteria for eliminating subjects from the analyses. Three other questions concerned with the subject's personal feelings during the experiment were included as filler items.

In order to insure that subjects did not communicate the purpose of the experiment to subsequent subjects, they were not debriefed after each experimental session. However,

⁷The post-experimental questionnaire is reproduced in Appendix A.

interested subjects were mailed a brief summary of the purpose of the study after all subjects had participated.

RESULTS

Of the 51 female and 49 male subjects who participated in this experiment, four subjects were excluded from the analyses. One female indicated on the post-experimental questionnaire that she believed that the purpose of the experiment was to study audience effects. Another female stated that she believed that she had been observed during an alone condition. One male and one female did not follow directions during recall. Thus, 48 males and 48 females remained in all analyses reported below.

Separate analyses of variance were calculated for each dependent variable and analyses of variance for simple effects were calculated for each interaction which was significant or marginally significant.⁸

Results Relevant to Hypothesis I

In Hypothesis I, it was predicted that the temporal sequence of events would be more of an influence on behavior

⁸Both marginally significant ($.10 \leq p < .05$) and significant ($p \leq .05$) results were indicated in tables and discussed in the text. First, since in Hypothesis I Zajonc's theory and the present formulation predict results in opposite tails of the distribution, an alpha of .10 may be considered as a one-tail test of each hypothesis at the .05 level. Secondly, since Hypothesis II is essentially exploratory, results at the .10 level were included in order to suggest hypotheses for further research.

than the type of behavior (i.e. learning or performing). The results support this hypothesis but only with the subjects of male experimenters.

The response measure used to test this hypothesis was the number of English nouns recalled. The analysis of variance for English noun recall is presented in Table 2. It was predicted that subjects would recall more nouns if they had performed the warm-up task alone and then learned the nouns before the audience. Although the means were in the predicted direction⁹, neither the main effect for audience conditions during warm-up (C) nor the effect for audience conditions during learning (D) was significant in Table 2. However, two interactions of audience conditions and the sex of the experimenter were noted.

First, the interaction of the sex of the experimenter and audience conditions during warm-up (A x C) was significant ($p \leq .01$). An analysis of variance for the simple effects of the audience conditions was calculated and is presented in Table 3. An effect for audience conditions during warm-up was found only for the subjects of male experimenters ($p \leq .05$). The cell means for this interaction are presented in Table 4. It can be seen that subjects of male experimenters recalled more English nouns when warm-up had been alone than when warm-up had been before the audience.

⁹Tables of cell means, for each level of each independent variable used in the analysis of each response measure, are presented in Appendix B.

Table 2- Analysis of variance for English noun recall

Source of Variability	df	MS	F	p
Sex of Experimenter (A)	1	192.67	5.30	.05
Sex of Subject (B)	1	287.04	7.90	.01
Audience during Warm-up (C)	1	13.50	0.37	n.s.
Audience during Learning (D)	1	28.17	0.78	n.s.
Individual Experimenters (E/A)	2	82.60	2.27	n.s.
A x B	1	8.17	0.22	n.s.
A x C	1	273.38	7.52	.01
A x D	1	108.38	2.98	.10
B x C	1	24.00	0.66	n.s.
B x D	1	0.17	0.00	n.s.
B x E/A	2	54.19	1.49	n.s.
C x D	1	30.38	0.84	n.s.
C x E/A	2	192.02	5.28	.01
D x E/A	2	5.44	0.15	n.s.
A x B x C	1	18.38	0.51	n.s.
A x B x D	1	84.38	2.32	n.s.
A x C x D	1	2.67	0.07	n.s.
B x C x D	1	70.04	1.93	n.s.
B x C x E/A	2	44.27	1.22	n.s.
B x D x E/A	2	31.60	0.87	n.s.
C x D x E/A	2	11.35	0.31	n.s.
A x B x C x D	1	10.67	0.29	n.s.
B x C x D x E/A	2	29.52	0.81	n.s.
Error	64	36.34		
Total	95			

Table 3- Analysis of variance for the simple effects of audience conditions in the interaction of sex of experimenter and audience conditions during warm-up (A x C) for the response measure, English noun recall

Source of Variability	df	MS	F	p
Audience conditions for Male Experimenters	1	204.19	5.62	.05
Audience conditions for Female Experimenters	1	82.69	2.28	n.s.
Error	64	36.34		

Table 4- Cell means for the interaction of sex of experimenter and audience conditions during warm-up (A x C) for the response measure, English noun recall

<u>Warm-up Conditions</u>		
<u>Sex of Experimenter</u>	Alone	Audience
Female	19.25	21.88
Male	19.79	15.67

Secondly, there was an interaction of the sex of the experimenter and audience conditions during learning ($p \leq .10$). An analysis of variance for the simple effects of audience conditions was calculated and is presented in Table 5. Audience conditions during learning were shown to have an effect only with the subjects of male experimenters ($p \leq .10$).¹⁰ The cell means for this interaction are shown in Table 6. Subjects of male experimenters recalled more English nouns when learning had been before the audience than when learning had been alone.

To summarize, it was found that the subjects of male experimenters learned more English nouns if they had warmed up alone and if they had learned the nouns before the audience. No audience effects were found with the subjects of female experimenters. Thus, none of the results showed learning to be hindered by the presence of the audience.

Results Relevant to Hypothesis II

In Hypothesis II it was predicted that the personal variable, sex of subject, and the situational variable, sex of experimenter, would influence audience effects. This hypothesis received support from the measures of B-word formation, English noun recall, and intrusions. As in the statement of the hypothesis, the results for each of the three first-order interactions will be presented separately.

¹⁰ $p \leq .05$ for the directional hypothesis

Table 5- Analysis of variance for the simple effects of audience conditions in the interaction of sex of experimenter and audience conditions during learning (A x D) for the response measure, English noun recall

Source of Variability	df	MS	F	p
Audience conditions for Male Experimenters	1	123.52	3.40	.10
Audience conditions for Female Experimenters	1	13.02	0.36	n.s.
Error	64	36.34		

Table 6- Cell means for the interaction of sex of experimenter and audience conditions during learning (A x D) for the response measure, English noun recall

Learning Conditions

		Alone	Audience
<u>Sex of Experimenter</u>	Female	21.08	20.04
	Male	16.13	19.33

Results Relevant to Hypothesis II(a) It was predicted that subjects might be affected differently by male and female audiences. Interactions were found with both the audience manipulation during warm-up (A x C) for English noun recall and B word formation and with the audience manipulation during learning (A x D) for English noun recall.

An interaction of sex of experimenter and audience conditions during warm-up (A x C), for the measure of English noun recall, is found in Table 2. This is one of the interactions that was presented in the previous section. However, here an analysis of variance for the simple effects of sex of experimenter was calculated and is presented in Table 7. It can be seen that the sex of the experimenter had an effect during the audience condition ($p \leq .001$) but not during the alone condition. The cell means in Table 4 show that subjects recalled more English nouns for a female experimenter than for a male experimenter in the audience condition.

An interaction of sex of experimenter and audience conditions during learning (A x D) was also found in Table 2. This is the other interaction presented in the previous section. An analysis of variance for the simple effects of sex of experimenter was calculated and is presented in Table 8. An effect was found for the sex of the experimenter in the alone condition ($p \leq .01$) but not in the audience condition. The cell means in Table 6 show that subjects in the alone condition recalled more nouns for female experimenters than for male experimenters.

Table 7- Analysis of variance for the simple effects of sex of experimenter in the interaction of sex of experimenter and audience conditions during warm-up (A x C) for the response measure, English noun recall

Source of Variability	df	MS	F	p
Sex of Experimenter for Audience Condition	1	462.52	12.73	.001
Sex of Experimenter for Alone Condition	1	3.52	0.10	n.s.
Total Error	64	36.34		

Table 8- Analysis of variance for the simple effects of sex of experimenter in the interaction of sex of experimenter and audience conditions during learning (A x D) for the response measure, English noun recall

Source of Variability	df	MS	F	p
Sex of Experimenter for Audience Condition	1	6.02	0.17	n.s.
Sex of Experimenter for Alone Condition	1	295.02	8.12	.01
Total Error	64			

The analysis of variance for B-word formation is presented in Table 9. The interaction of sex of experimenter and audience conditions during warm-up (A x C)¹¹ was marginally significant ($p \leq .10$). An analysis of variance for the simple effects of sex of experimenter was calculated and is presented in Table 10. An effect for the sex of the experimenter was found in the audience condition ($p \leq .05$) but not in the alone condition. The cell means for this interaction are presented in Table 11. In the audience condition, subjects formed more B-words for a female experimenter than for a male experimenter.

The results of the analysis of variance for the response measure, intrusions, is shown in Table 12. Neither the interaction of the sex of the experimenter and audience conditions during warm-up (A x C) nor the interaction of sex of experimenter and audience conditions during learning (A x D) was significant.

To summarize, subjects formed more B-words and recalled more English nouns when warm-up had been before a female experimenter-audience. Subjects also recalled more English nouns when learning had been alone for a female experimenter. There were no interactions of the sex of the experimenter and audience conditions either during warm-up or during learning with the measure of intrusions.

¹¹As noted above, since the scrabble (warm-up) task preceded the memorization (learning) task, a factor for audience conditions during learning was not included in the analysis of B-word formation.

Table 9- Analysis of variance for B-word formation

Source of Variability	df	MS	F	p
Sex of Experimenter (A)	1	26.04	2.95	.10
Sex of Subject (B)	1	2.67	0.30	n.s.
Audience during Warm-up (C)	1	2.67	0.30	n.s.
Individual Experimenters (D/A)	2	26.21	2.97	.10
A x B	1	6.00	0.68	n.s.
A x C	1	24.00	2.72	.10
B x C	1	57.04	6.46	.01
B x D/A	2	1.08	0.12	n.s.
C x D/A	2	18.42	2.09	n.s.
A x B x C	1	3.38	0.38	n.s.
B x C x D/A	2	10.21	1.16	n.s.
Error	80	8.83		
Total	95			

Table 10- Analysis of variance for the simple effects of sex of experimenter in the interaction of sex of experimenter and audience conditions during warm-up (A x C) for the response measure, B-word formation

Source of Variability	df	MS	F	p
Sex of Experimenter for Audience Condition	1	50.02	5.66	.05
Sex of Experimenter for Alone Condition	1	.02	0.00	n.s.
Total Error	80	8.83		

Table 11- Cell means for the interaction of sex of experimenter and audience conditions during warm-up (A x C) for the response measure, B-word formation

		<u>Warm-up Conditions</u>	
		Alone	Audience
<u>Sex of Experimenter</u>	Female	10.83	11.50
	Male	10.79	9.45

Table 12- Analysis of variance for intrusions

Source of Variability	df	MS	F	p
Sex of Experimenter (A)	1	0.04	0.03	n.s.
Sex of Subject (B)	1	0.00	0.00	n.s.
Audience during Warm-up (C)	1	0.67	0.48	n.s.
Audience during Learning (D)	1	0.38	0.27	n.s.
Individual Experimenters (E/A)	2	1.69	1.22	n.s.
A x B	1	15.04	10.94	.002
A x C	1	1.04	0.76	n.s.
A x D	1	0.67	0.48	n.s.
B x C	1	6.00	4.36	.05
B x D	1	0.04	0.03	n.s.
B x E/A	2	1.10	0.80	n.s.
C x D	1	1.04	0.76	n.s.
C x E/A	2	0.52	0.38	n.s.
D x E/A	2	0.94	0.68	n.s.
A x B x C	1	2.04	1.48	n.s.
A x B x D	1	1.50	1.09	n.s.
A x C x D	1	0.17	0.12	n.s.
B x C x D	1	1.04	0.76	n.s.
B x C x E/A	2	2.60	1.89	n.s.
B x D x E/A	2	0.27	0.20	n.s.
C x D x E/A	2	1.35	0.98	n.s.
A x B x C x D	1	0.00	0.00	n.s.
B x C x D x E/A	2	0.35	0.26	n.s.
Error	64	1.38		
Total	95			

Results Relevant to Hypothesis II(b) It was predicted that male and female subjects might be affected differently by the presence of an audience. Interactions were found with the audience manipulation during warm-up (B x C) but not with the audience manipulation during learning (B x D).

In Table 9 the interaction of sex of subject and audience conditions during warm-up (B x C) was significant ($p \leq .05$) for the response measure, B-word formation. An analysis of variance for the simple effects of sex of subject was calculated and is presented in Table 13. A significant effect for the sex of the subject was found only in the alone condition ($p \leq .05$). The cell means for this interaction are presented in Table 14. In the alone condition, male subjects formed more words than female subjects. Note, however, that there was a nonsignificant ($p \leq .20$) trend in the opposite direction in the audience condition.

In Table 12, a significant interaction of sex of subject and audience conditions during warm-up (B x C) for the response measure, intrusions ($p \leq .05$). An analysis of variance for the simple effects of sex of subject was calculated and is presented in Table 15. The effect of the sex of the subject was nonsignificant ($p \leq .20$) in both the alone and audience conditions. Upon examining the cell means in Table 16, it is noted that the trend in the alone condition is in the opposite direction as the trend in the audience condition.

No interactions of sex of subject and audience conditions were found in Table 2 with the response measure, English noun recall.

Table 13- Analysis of variance for the simple effects of sex of subject in the interaction of sex of subject and audience conditions during warm-up (B x C) for the response measure, B-word formation

Source of Variability	df	MS	F	p
Sex of subject for Audience Condition	1	17.52	1.98	n.s. (.20)
Sex of subject for Alone Condition	1	42.19	4.78	.05
Total Error	80	8.83		

Table 14- Cell means for the interaction of sex of subject and audience conditions during warm-up (B x C) for the response measure, B-word formation.

		<u>Warm-up Conditions</u>	
		Alone	Audience
<u>Sex of Subject</u>	Female	9.88	11.08
	Male	11.50	9.88

Table 15- Analysis of variance for the simple effects of sex of subject in the interaction of sex of subject and audience conditions during warm-up (B x C) for the response measure, intrusions

Source of Variability	df	MS	F	p
Sex of Subject for Audience Condition	1	3.00	2.17	n.s. (.20)
Sex of Subject for Alone Condition	1	3.00	2.17	n.s. (.20)
Total Error	80	1.38		

Table 16- Cell means for the interaction of sex of subject and audience conditions during warm-up (B x C) for the response measure, intrusions

		<u>Warm-up Conditions</u>	
		Alone	Audience
<u>Sex of Subject</u>	Female	0.58	1.25
	Male	1.08	0.75

To summarize, interactions of the sex of the subject and audience conditions during the warm-up task were found with the response measures, B-word formation and intrusions. No interactions of sex of subject and audience conditions during learning were found. No interactions of the sex of the subject and audience conditions were found with the response measure, English noun recall.

Results Relevant to Hypothesis II(c) It was predicted that there might be an interaction of the sex of the experimenter and the sex of the subject. This hypothesis was supported by the measure of intrusions but not by the response measures, B-word formation or English noun recall.

In Table 12 a significant interaction was found with the measure of intrusions ($p \leq .002$). Analyses of variance for the simple effects of both sex of subject and sex of experimenter were calculated and are presented in Tables 17 and 18. In Table 17, the effect for sex of experimenter is found with both male and female subjects ($p \leq .05$). Table 18 shows that the effect for sex of subject was found for both male and female experimenters ($p \leq .05$). The cell means for this interaction are shown in Table 19. It is noted that the most intrusions were made when the subjects were of the same sex as the experimenters and that the fewest intrusions were made when the subjects were of the opposite sex as the experimenters.

In Tables 2 and 9, the interaction of sex of experimenter and sex of subject was found to be nonsignificant for

the response measures, B-word formation and English noun recall.

To summarize, the interaction of sex of subject and sex of experimenter was found only with the dependent variable, intrusions.

Table 17- Analysis of variance for the simple effects of sex of experimenter in the interaction of sex of experimenter and sex of subject (A x B) for the response measure, intrusions

Source of Variability	df	MS	F	p
Sex of Experimenter for Female Subjects	1	8.34	6.04	.05
Sex of Experimenter for Male Subjects	1	6.75	4.89	.05
Total Error	80	1.38		

Table 18- Analysis of variance for the simple effects of sex of subject in the interaction of sex of experimenter and sex of subject (A x B) for the response measure, intrusions

Source of Variability	df	MS	F	p
Sex of Subject for Female Experimenters	1	7.52	5.45	.05
Sex of Subject for Male Experimenters	1	7.52	5.45	.05
Total Error	80	1.38		

Table 19- Cell means for the interaction of sex of experimenter and sex of subject (A x B) for the response measure, intrusions

		<u>Sex of Experimenter</u>	
		Female	Male
<u>Sex of Subject</u>	Female	1.33	0.50
	Male	0.54	1.29

DISCUSSION

In Hypothesis I it was predicted that the temporal sequence of events would be more of an influence on behavior than the type of behavior in which the subject was engaged (i.e. learning or performing). This hypothesis was supported for the subjects of male experimenters.

In examining the results, no audience effects were found for the subjects of female experimenter-observers. This result, in itself, leads one to question the generality of Zajonc's theory. However, as discussed earlier, none of the human-subject experiments mentioned by Zajonc (1965, 1966) actually investigated the effect of a female audience. Therefore, this finding could represent the absence of audience effects with female observers or the conflict of audience effects with temporal order effects. Further research with female observers is needed to clarify this issue.

With male experimenter-observers, subjects learned more English nouns when they had warmed up by performing the scrabble task alone rather than before the audience. They also learned more nouns if learning had been before the audience. Thus, subjects of male experimenters excelled on the second task when they had accomplished the first task alone and the second before an audience. The results support Hypothesis I

and the contrast model.

These results are also contrary to the relationship posited by Zajonc since subjects learned more nouns when they were before the audience than when they were alone. That is, by merely reversing the temporal sequence of behavioral events, results were obtained in the direction opposite that predicted by Zajonc's theory of social facilitation (1965).

Since this is the first experiment to test for the effects of the temporal sequence, since results were obtained only at the .10 level (.05 directional test), and since audience effects were obtained only with male experimenters, this finding must be accepted with a degree of caution. It is also suggested that further research might investigate the effects of the temporal sequence independent of the behavioral sequence. For example, one might include four conditions such that the first task is either learning or performing and the second is either learning or performing. Another possibility is having longer chains of tasks such that data can be obtained within individual subjects.

In Hypothesis II it was predicted that the personal variable, sex of subject, and the situational variable, sex of experimenter, would influence the audience effect. This hypothesis received support from the measures of B-word formation, English noun recall, and intrusions.

It was predicted in Hypothesis II(a) that the sex of the experimenter might influence audience effects. The results

revealed that subjects formed more B-words and recalled more English nouns if warm-up had been before a female experimenter-observer than before a male experimenter-observer. In the alone condition, no effect was found for the sex of the experimenter.

In the audience condition the subjects had a salient relationship with both the task and the audience. That is, the subjects had to exhibit certain behaviors to accomplish the task and had to limit themselves to a domain of behaviors defined by their roles vis-a-vis the audience.

However, in the alone condition the relationship with the task is salient but the subjects' roles vis-a-vis the experimenter probably were not. If the subjects were not maintaining this role, it is not expected that characteristics of the experimenter would influence their behavior any more than other roles not salient in the situation (e.g. son, customer, lover, etc.).

With regard to the earlier discussion which considered audience effects in terms of the compatibility of roles with ongoing behavior, it is noted that the question of compatibility is only relevant when the subject had assumed a role vis-a-vis another person (i.e. was in the audience condition). Thus the differences in the audience condition might have been due to one or both of the following factors. First, there might have been a facilitation effect before the female audience if roles assumed vis-a-vis a female observer tended to exclude behaviors, irrelevant to the task, in which the

subject might engage if he were left alone (e.g. daydreaming, visual exploration of the room, etc.). Secondly, roles adopted vis-a-vis a male observer might have had the effect of subordinated task-oriented behaviors to other behaviors (e.g. attempting to impress the experimenter, trying to discover the purpose of the experiment, demonstrating a unique system of memorization, etc.).

In the interaction of sex of experimenter and audience conditions during learning, it was found that subjects recalled more nouns in the alone condition if the experimenter was female rather than male. However, in the audience condition there was no difference between the subjects of male and female experimenter-observers. Thus, subjects continued to perform better before a female experimenter but did so in the alone condition rather than the audience condition. This result is contrary to the preceding discussion. However, it is in line with the discussion of Hypothesis I (i.e. no audience effects were found with subjects of females but subjects learned less when working alone than before the audience for a male experimenter-observer). Thus, in this particular interaction the comparison model and the role interpretation lead to predictions of contrary effects. Since the results support the comparison model, it can be tentatively accepted that the comparison effects had a stronger influence on behavior. That is, the changing of audience conditions may have had a greater influence on the audience effect than the sex of the experimenter.

It was predicted in Hypothesis II(b) that male and female subjects might have been affected differently by the presence of an audience. Interactions were found with the audience manipulation during warm-up but not with the manipulation during learning.

Significant interactions of sex of subject and audience conditions during warm-up were found with the response measures, B-word formation and intrusions. Males formed more B-words than females in the alone condition. This is contrary to the predictions of sex differences by Anastasi and Foley (1949). Since the subjects were alone, differences can not be explained by role differences. Thus, no explanation is offered for this finding. In the audience condition, there was a non-significant trend in the opposite direction. Likewise, there was a trend for males to subsequently make more intrusions when warm-up had been alone and a trend for females to make more intrusions when warm-up had been before the audience.

Thus, with regard to the audience manipulation during warm-up, the interaction of subject's sex and audience effects was given some support. However, the analyses of simple effects show mostly nonsignificant trends. Thus, although the sex of subject may influence audience effects, this factor may have only a relatively weak influence on actual behavior.

There was no interaction of sex of subject and audience conditions during learning with either the measure of English

noun recall on the measure of intrusions. This finding is contrary to the results found in the earlier study (Good, 1968). There are at least two possible reasons why this might be.

First, it may be that the temporal sequence or contrast effect influenced both male and female subjects, but that only males were affected by the audience per se. Contrast effects were not investigated in the pilot study. Secondly, since in the present study both male and female experimenters were used, some of the variability found in the pilot study might be accounted for by a higher-order interaction in the present study.¹²

In Hypothesis I(c) it was predicted that there might be an interaction of the sex of the subject and the sex of the experimenter-observer. This hypothesis received support but only with the measure of intrusions. The interaction was highly significant with subjects making approximately two and one half times as many intrusions before an experimenter-observer of the same sex as one of the opposite sex. There are at least two possible explanations for this interaction. First, it might have been that the subjects were more careful before experimenter-observers of the opposite sex, and, therefore, they may have made fewer mistakes. On the other hand, subjects might have tried harder for experimenter-observers of the same sex, and, therefore, they may have simply

¹²Note that in Table 2 there was a nonsignificant ($p \geq .20$) second-order interaction of sex of subject, sex of experimenter, and audience conditions during learning (A x B x D).

made more guesses.

Upon reconsidering the experimental situation, it may have been inappropriate to expect an interaction with the response measures, B-word formation and English noun recall. In the first place, audience conditions were counterbalanced such that only half of the subjects would be expected to have assumed a role vis-a-vis the experimenter during the performance of the scrabble task and half during the learning of the English nouns. Thus, with the response measures for these tasks, half of the subjects are expected not to have been maintaining a role. However, since intrusions could only be made during recall before the audience, it is expected that all subjects had assumed a role vis-a-vis the audience.

Secondly, the response measures, B-word formation and English noun recall, are undoubtedly influenced by the persons' abilities at the task. Thus if this factor had a relatively stronger influence on behavior, it would tend to mask the interaction of the sex of the subject-performer and the sex of the experimenter-observer. However, the number of intrusions is the number of incorrect responses that the subject made independent of the number of correct responses. That is, the number of intrusions is the number of responses that the person attempted beyond his ability to recall. Therefore, the measure of intrusions allowed a more direct test of the relationship predicted in the hypothesis than the other measures.

To summarize, the results show that both hypotheses in this study received support. Thus, both the comparison model and the social role model are supported as viable approaches to the study of audience phenomena. In addition, the results provided evidence contrary to the predictions of Zajonc's (1965) theory of social facilitation.

OVERVIEW

The area of audience effects has shared a problem with the rest of the field of group dynamics and much of psychology in general. This is the assumption that behavior can be explained in terms of main effects or simple interactions. As Messé (1969) has suggested, it is doubtful whether any main effects exist in the "real world", and there are probably few, if any, simple interactions.

Many earlier studies of groups have failed to obtain consistent findings. For instance, Bird (1940) made an extensive examination of research relevant to leadership traits. He found that only about five percent of the discovered traits were common to more than three studies. The problem seems to stem from the fact that the investigators were interested in finding common attributes applicable to "the group" where "the group" might be anything from a street gang to a presidential cabinet.

A more rewarding approach, however, might be trying to ascertain what kinds of behavior are exhibited by what kinds of groups working on what kinds of tasks in what kinds of situations. Here a "kind" is merely defined as a subgroup in which the relationship in question is believed to hold. The process of research then advances by further subdividing

these subgroups until no higher order interactions can be found.

In the area of audience phenomena the question has been: What is the effect of "the audience"? It is proposed that a more rewarding question might be: What is the effect of a certain kind of audience on a certain kind of person engaged in a certain kind of behavior to complete a certain kind of task in a certain kind of situation? Such a question is awkward to state and more difficult to answer. However, the results of this study indicate that subgroupings, at least at this rudimentary level, must be made before we can begin to understand the subtleties and complexities of audience phenomena.

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APPENDICES

APPENDIX A

EXPERIMENTAL MATERIALS

EXPERIMENTAL MATERIALS

Transcript of Recorded Instructions

Preliminary Instructions:

"All instructions for this experiment are tape recorded. Therefore, you are to remain seated and continue to wear the earphones until the entire experiment is completed. This experiment is divided into three separate parts with separate instructions for each part. After each time that instructions are given, the amber light on the control box to your left will come on automatically. At that time you should press the appropriate button to indicate whether you understand or do not understand the instructions. Incidentally, I will monitor part of this experiment by means of the closed circuit audio-visual system that you see in this room. In addition, video tapes will be made for review by the other men (women) in our research team. Before we begin, please indicate whether or not you understand these preliminary instructions."

(5 second pause)

Warm-up Task Instructions:

"Before you is a **deck** of 50 cards with one letter of the alphabet on each card. When I tell you to begin, you are to arrange the letters into words. The words are to read either down or across such that after making the first word,

at least one letter of each new word is shared with one of the preceding words as in the example provided.

(5 second pause)

In this example all of the words contain the letter 'X'. However, your task is to construct as many words as you can which contain the letter 'B' as in 'baker'. In addition, I want you to say out loud each word that you form. You will be given seven minutes to perform this task. You will be told when to begin and when to stop. Before we begin, please indicate whether or not you understand these instructions.

(5 second pause)

"Remember, you are to spell-out as many words as you can which contain the letter 'B', and also remember to say each word out loud as you are working...Ready...Begin.

(7 minute delay)

"Stop! Remain seated and continue to wear the earphones. There will be a short delay while I prepare for the second part of the experiment."

(Delay to allow 2 minutes from "Stop" above to "Begin" below)

Memorization Task Instructions:

"Before you is a deck of fifty five-by-eight cards. A one-syllable English noun is printed on each card. When I tell you to begin, you are to remove the cover sheet and begin memorizing. You will be given seven minutes to memorize as many words as you can, in any order that you desire. In addition, I want you to say the words out loud as you are looking at them and while you are thinking about them. You

are not expected to memorize all of the words. However, you should spend the entire seven minutes trying to memorize as many of the words as possible. I will tell you when to begin. When I tell you to stop, you are to turn the cards face down. Before we begin, please indicate whether or not you understand the instructions.

(5 second pause)

"Remember, you are to spend the entire time memorizing and also remember to keep saying the words out loud as you are memorizing...Ready...Begin.

(7 minute delay)

"Stop! Remain seated and continue to wear the earphones. There will be a short delay while I prepare for the third part of the experiment."

(Delay to allow 2 minutes from "Stop" above to "Begin" below)

Recall Instructions:

"You are now asked to recall as many words as you can in any order that you desire. When you are told to begin, say the first word you can recall out loud and then print your response on the paper provided using the 'magic marker'. Print only one word on each sheet of paper and turn each sheet face down after you have made a response. Continuing this procedure, take as much time as you need in order to recall as many words as you can. When you are finished, you may remove the earphones and leave the room. Before we begin, please indicate whether or not you understand the instructions.

(5 second pause)

"Remember, you are to respond both by saying the words out loud and by printing the words on the sheets of paper provided....Ready....Begin."

English Nouns for Memory Task*

1. FAITH	19. WEALTH	37. FUR
2. OAK	20. BAR	38. BOWL
3. KEY	21. AUNT	39. GUN
4. TRUCE	22. TAIL	40. NOOSE
5. MAID	23. CAP	41. FLIGHT
6. TASK	24. LEAGUE	42. SERF
7. CAKE	25. HORN	43. PRIDE
8. SILK	26. STUB	44. SALE
9. DAWN	27. RANK	45. TROOP
10. HEEL	28. ROUTE	46. BUSH
11. PACK	29. PAN	47. CROP
12. AID	30. NOISE	48. SWORD
13. GAS	31. KNIFE	49. LAMP
14. RAIL	32. NUT	50. BAND
15. NEST	33. LOG	
16. BOOK	34. GIFT	
17. DUST	35. FAME	
18. DOOR	36. DEBT	

*The words are presented in the same random order that the cards were arranged for each subject.

1. What do you think was the purpose of this experiment?
2. Based on your answer to question #1, what would you change about this experiment?
3. During this experiment, did you feel that you were deceived in any way? If yes, explain.
4. How pleasant or unpleasant was this experiment for you?
- /...../...../...../...../...../...../...../
Quite Rather Somewhat Somewhat Rather Quite
Pleasant Unpleasant
5. How interesting or uninteresting was this experiment for you?
- /...../...../...../...../...../...../...../
Quite Rather Somewhat Somewhat Rather Quite
Uninteresting Interesting
6. To what extent did it bother you to be observed during this experiment?
- /...../...../...../...../...../...../...../
Not at Slight- Some- Moder- Consid- Very Extreme-
All ly what ately erably Much ly
Bothered Bothered

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APPENDIX B

TABLES OF CELL MEANS

Table 20- Cell means for the response measure, B-words

		<u>Sex of Subject</u>			
		Female		Male	
		<u>Sex of Experimenter</u>			
		Female	Male	Female	Male
<u>Warm-up</u>	Alone	17.83	18.75	21.75	19.75
	Audience	13.58	19.50	17.75	24.25

Table 21- Cell means for the response measure, English noun recall

		<u>Warm-up</u>		<u>Learning</u>		<u>Sex of Experimenter</u>		<u>Sex of Subject</u>	
Alone	Audience	Alone	Audience	Alone	Audience	Female		Male	
						Female	Male	Female	Male
16.33		19.33		13.67	13.50				
18.50		19.00		18.83	20.16				
20.83		22.67		13.67	21.83				
22.50		17.00		24.50	24.00				

Table 22- Cell means for the response measure, intrusions

				<u>Sex of Subject</u>			
				Female		Male	
				<u>Sex of Experimenter</u>			
				Female	Male	Female	Male
Alone	<u>Warm-up</u>						
	Alone	Audience	Audience				
Learning							
	Alone	Audience	Alone	Audience			
	1.50	1.33	1.33	1.00	0.50	0.33	1.50
	0.00	0.83	0.67				
	0.83	0.67	0.33				
	0.83	0.67	2.33				

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