

COOPERATIVE VS DEFENSIVE EXPERIMENTAL STRATEGIES:

A REINTERPRETATION

---

A thesis  
presented to  
the Faculty of Graduate Studies and Research  
University of Manitoba

---

In partial fulfillment  
of the requirements for the degree  
Master of Arts

---

by  
Brenda Schachter  
October, 1971

© Brenda Schachter 1972



## ACKNOWLEDGEMENTS

The author wishes to express her appreciation to Doctors J. G. Adair and D. Perlman, without whose help and encouragement this research could not have been accomplished.

## ABSTRACT

This study was designed to test the claim by Sigall, Aronson, and Van Hoose (1970) that subjects in psychology experiments would rather "look good" than cooperate with the experimenter. These authors maintained that their study clearly demonstrated that subjects increased their performance to look good, rather than decreased their output to confirm the experimenter's hypothesis. It was contended in the present study, however, that Sigall et al. had failed to ascertain their subjects' perceptions of the hypothesis to decrease and that, in fact, their subjects had perceived that the experimenter wanted them to increase their performance. It was hypothesized, therefore, that if subjects were given a hypothesis which explicitly indicated to them that the experimenter expected a decrease in their rate of performance on a task from "practice" to "test" trial, they would show greater hypothesis-confirming behavior than would those subjects to whom the hypothesis was communicated in the manner presented by Sigall et al. In addition, it was hypothesized that if the lowered illumination was pointed out to subjects, they would more often perceive the hypothesis as requiring increased performance and hence would show less hypothesis-confirming behavior than when the lowered illumination was not pointed out.

Sixty-four subjects were randomly assigned to one of four treatment conditions, consisting of combinations of explicit or implicit hypothesis instructions and whether or not the illumination was pointed

out to the subjects. It was found that the predicted effect of pointing out the lowered illumination to certain subjects was not supported. However, subjects who were explicitly told that a decrease in performance was expected of them responded in a hypothesis-confirming fashion, i.e., they decreased on the "test" trial, while those to whom a decrease was implied in the manner done by Sigall et al. did not. This result was interpreted as being due to the hypothesis being clearer and more accurately perceived in the explicit hypothesis condition. Thus the results replicated those of Sigall et al. where the hypothesis to decrease output was less explicitly stated to their subjects. However, when the hypothesis was more explicitly presented, subjects, as predicted showed a hypothesis-confirming decrease in performance. This interpretation was supported by a detailed analysis of subjects' responses to a post-experimental-questionnaire. These analyses also suggested that all subjects, regardless of the hypothesis they received, responded according to how they perceived that hypothesis rather than according to any motive to look good. It was concluded that the present study, while not demonstrating the cooperative motive in subjects, does strongly question the notion that subjects cooperate only when such behavior makes them appear in a good light.

TABLE OF CONTENTS

CHAPTER		Page
I	INTRODUCTION . . . . .	1
II	METHOD . . . . .	11
	Subjects . . . . .	11
	Experimental Design . . . . .	11
	Procedure . . . . .	12
III	RESULTS. . . . .	17
IV	DISCUSSION . . . . .	32
V	SUMMARY AND CONCLUSIONS . . . . .	37
	REFERENCES . . . . .	39
	APPENDIX A . . . . .	40
	APPENDIX B . . . . .	42
	APPENDIX C . . . . .	51

LIST OF TABLES

TABLE		Page
1	Subject Difference Scores by Sex and Treatment Conditions . . . . .	18
2	Summary of Analysis of Variance of Subject's Difference Scores . . . . .	19
3	Summary of Analysis of Variance of Subjects' Perception of the Hypothesis . . . . .	22
4	Summary of Analysis of Variance of Subjects' Ratings of the Obviousness of the Hypothesis . . . . .	24
5	Summary of Analysis of Variance of Subjects' Ratings of How Hard They Tried to Copy Numbers . . . . .	26
6	Summary of Analysis of Variance of Subjects' Performance According to How They Perceived the Hypothesis. . . . .	29
7	Summary of Analysis of Variance of Subjects' Ratings of the Obviousness of the Hypothesis According to their Perception of the Hypothesis . . . . .	30

LIST OF FIGURES

FIGURE		Page
1	How hard subjects tried to copy as many numbers as possible under each treatment condition . . . . .	27

## CHAPTER I

### INTRODUCTION

In the past decade, research (Argyris, 1968; Holmes, 1967a, 1967b; Masling, 1966; Orne, 1962; Reicken, 1962; and Rosenberg, 1965) has focused on the social nature of the psychological experiment and especially on the person who supplies the data: the human subject. In particular, considerable attention has been devoted to the subjects' role within the experiment. Much of the writing has suggested that subjects are cooperative and merely give the experimenter the data he desires.

Orne (1962), for example, maintains that the subject has a high regard for the aims of science and thus hopes to contribute to the success of the experiment. Since in the subject's naive view, a successful experiment is one in which the experimenter's hypothesis is proved, the subject is alert to cues that communicate the purpose and hypothesis of the experiment. Thus, subjects respond not only to the experimental variable but also to cues indicating the experimenter's hypothesis. Orne terms such cues "demand characteristics". Orne emphasizes this cooperative role attitude by noting that subjects:

"tend to share (with the experimenter) the hope and expectation that the study in which they are participating will in some material way contribute to science... Both subject and experimenter share the belief that whatever the experimental task is, it is important and that as such, no matter how much effort must



be exerted or how much discomfort must be endured, it is justified by the ultimate purpose" (1962, p. 778).

To support his position Orne (1962) reports an informal experiment in which subjects were each given 2000 sheets of paper filled with rows of random numbers and asked to complete 224 additions of each sheet of paper. The subjects were told only that the experimenter would eventually return. Orne expected that subjects would quit after a brief exposure to this tedious task. However, he found that when the experimenter returned after five hours, the subjects were still working. Although Orne suggested that such perseverance was due to their concern about their own self image, he felt that they were most concerned that their behavior serve to validate the experimenter's hypothesis and thus contribute to science. He concluded that people would tolerate high degrees of boredom and discomfort as long as the requests were phrased in terms of performing an experiment.

Reicken (1962) in a slight variation of this theme, has suggested that a subject, when confronted with a task, desires to present himself in the most favorable light, i.e., to "put his best foot forward." He suggests that this is due to a number of variables: the invitational quality of the experiment, the unspecified nature of the invitation's terms, the attributes of the relationship between subject and experimenter, and the one-sidedness of the distribution of information. Reicken postulated that subjects may be evaluated on either task performance or the degree to which they cooperate with the experimenter. Although unlike Orne, he did not conclude that cooperativeness

is the most salient of these two dimensions, he did feel that subjects utilize cues, such as features of the scene and instructions, to define what is going on in the experimental situation. In this way subjects learn what can be done to enable them to succeed at making a favorable impression.

Rosenberg (1965), developing Reicken's notions further, has postulated that subjects suffer from "evaluation apprehension" when confronted by an experimenter. He defines evaluation apprehension as "anxiety-toned concern that he (the subject) win a positive evaluation from the experimenter or at least that he provide no sound grounds for a negative one" [p. 29]. For the most part the subject motivation proposed by Rosenberg is not effectively different from that proposed by Orne. Certainly this is true to the extent that the subjects' apprehension is over an evaluation of his cooperativeness. However, if the subject's primary concern is with his ability to perform the task to impress the experimenter with his ability, then in some instances he may be forced to disconfirm the experimenter's hypothesis and be uncooperative. Such a situation might arise if, in order to confirm the experimenter's hypothesis, the subject had to appear as lacking a desirable quality.

Certainly not all investigators have found subjects to be cooperative, nor have they felt that lack of cooperation was always an expressed desire to look good to the experimenter. For example, Masling (1966) has suggested that a subject may foul up the experimenter's research by responding in a manner opposite to what he thinks

the experimenter wants. In such a situation the subject's lack of cooperation is not due to a desire to look good on an ability dimension, but because he wants to ruin the experiment. Masling suggests that many subjects feel negative about psychology and/or experiments and terms this result the "screw you effect." Argyris (1968) has expressed a similar point of view, equating subjects' behavior in resisting the experimenter to that of low level employees who attempt to "beat" the management in large organizations. As with employees, covert hostility may be displayed by subjects, e.g., high absenteeism, minimal performance, general apathy, or acting contrary to what they are told to do.

Holmes (1967a, 1967b) has also found a lack of subject cooperation in studies of verbal conditioning. He reported that 40% of his subjects who had correctly solved the problem of the reinforcement contingency (i.e., "aware" subjects) stated after participating in the study, that they had consciously not performed in accordance with their hypothesis about what they were supposed to do in the experiment. Their reasons for not confirming the experimenter's hypothesis were varied and did not appear to be systematic. From these examples, however, it is clear that while sometimes subjects are cooperative, this is not uniformly the case and in some instances subjects will consciously work against performing as they think the experimenter wants them to, whether to purposely ruin the experimenter's experiment, to express an independence from the experimenter, or to look good.

A recent study by Sigall, Aronson, and Van Hoose (1970), attempt-

ted to demonstrate that subjects don't ever really cooperate with the experimenter and that, in fact, Orne's notion of a cooperative subject was only a myth. They hypothesized that even when there is evidence of cooperation, it may be due to a desire to look good on an ability dimension and not merely cooperation with the experimenter's expectations. If cooperation failed to put subjects in a good light, they felt the subjects would not behave in accordance with the experimenter's expectations. They attributed this to subjects' concern over being evaluated on a task performance dimension. Thus they felt that a subject's apprehension over an evaluation of his performance ability would be paramount to any apprehension over an evaluation of his cooperativeness.

To test this prediction Sigall et al. asked their subjects to copy a long list of telephone numbers. A "practice" and a "test" trial, each of seven minutes duration, were given to the subjects. The purpose of the "practice" trial was to determine each subject's rate of copying when given no hypothesis regarding performance. The purpose of the "test" trial was to determine subjects' changes in output as a function of the information given to them by the experimenter. The type of information given to the subject varied, depending on the group to which he was assigned. In one group, the Increased-Output Condition, both experimenter and subject benefited from an increase in output, i.e., by subject's cooperation. In this condition, the experimenter increased by about 20% the total amount copied by the subject during "practice" and told the subject that this was the

amount of output expected of him in the test trial. In another group, the Decreased-Output Condition, confirmation of the experimenter's hypothesis and satisfaction of the subject's need to do well or excel on the task couldn't be simultaneously achieved. Subjects in this group were treated identically to those in the Increased Output Condition except that the quantity of telephone numbers given in the experimental hypothesis was approximately 20 less than the subject's practice total. In a third group, the Decreased-Output-Obsessive-Compulsive Condition, a decrease in output benefited both subject and experimenter. In this group, subjects were told that the experimenter had a theory that people who feel compelled to rush at such a trivial, boring task tend to be obsessive-compulsive. The output that was expected of them was computed in the same manner as for subjects in the Decreased-Output Condition. Finally, a Control Condition, in which subjects were not given any hypothesis about the amount of output expected of them, was employed to provide a baseline with which to compare the experimental conditions.

Sigall et al. found that, as expected, subjects adjusted their behavior as a function of the kind of information given. The least amount of change occurred in the Control Condition ( $\bar{X} = 1.9$  numbers), while subjects in the Decreased-Output-Obsessive-Compulsive Condition decreased their output by 8.0 units. Subjects in the crucial Decreased-Output Condition increased their performance the most ( $\bar{X} = 6.2$  numbers) while those in the Increased-Output group were next highest with a mean increase of 5.7 numbers.

From these results Sigall et al. concluded that "subjects look as though they are cooperating with the experimenter only when such cooperation also results in good, effective behavior" (p. 7). This was particularly true in both the Increased-Output and Decreased-Output-Obsessive-Compulsive Conditions where the subject could look good by confirming the experimenter's hypothesis. Sigall et al. further concluded, however, that the subject's behavior was primarily motivated by a desire to look good and that his cooperation was only a secondary effect. This conclusion was based on the Decreased-Output Condition in which subjects, when faced with the alternative (a) to decrease output, thereby helping the experimenter confirm his hypothesis or (b) to work as fast as possible, thereby impressing the experimenter with ability at the cost of disconfirming his hypothesis, chose the latter alternative.

This interpretation of the data, however, is highly dependent upon the accuracy of the assessment by Sigall et al. as to what motivated these crucial subjects. It is especially important to look at what evidence there is to indicate that the subjects did in fact correctly perceive the experimenter's hypothesis and then elected to copy as many numbers as possible because they preferred to "look good". Since these perceptions and motives are private events, the only way to get at this problem is to ask these questions of subjects in a post-experimental questionnaire. Unfortunately, although Sigall et al. had a post-experimental questionnaire, they only focused on the subjects' awareness of the principal investigator's intentions to study the

cooperation versus looking good issue. In absence of relevant information, therefore, it becomes imperative that the basis of the subjects' response be carefully explored.

Sigall et al. claim that subjects in their "crucial" Decreased-Output Condition increased their performance because they chose to look good, i.e., to adopt a defensive strategy, rather than to confirm the experimenter's hypothesis. However, the important question is whether they really communicated to these subjects the hypothesis they intended. It certainly does not appear that way from the virtually identical mean performance of the Increased-Output and Decreased-Output groups which were treated identically except for the output hypotheses they were given. One interpretation of this result is that the attempt to manipulate subjects' performance by different hypotheses failed and that subjects in these groups either did not perceive a consistent hypothesis so they merely did the best they could in accord with their initial "contract" with the experimenter, or increased their output because they actually perceived, in both groups, that they were supposed to increase. If, for either of these reasons, the subjects increased their performances, then a hypothesis which was more explicit in its statement of an expected decrease may yield greater confirmation of the experimenter's hypothesis. This notion will be explored in the present study.

In addition, a variable in the study by Sigall et al. that could have communicated an increasing hypothesis to their subjects was the practice of pointing out the lowered illumination in the experimental

room to only certain groups. Although the lowered illumination was constant for everyone, for some groups it was pointed out just prior to the "test" trials and may have indicated to these subjects that the experimenter's intention was to see if they would increase output in the face of this "difficult" condition. It was noteworthy that in those groups where it was not pointed out, performance decreased (as in the Decreased-Output-Obsessive-Compulsive group) or there was a non-significant increase (as in the Control group). In contrast, those groups for whom the lowered illumination was pointed out (Increased-Output and Decreased-Output groups) increased their output. It certainly appears that trying to do one's best in the face of difficult conditions may have been the hypothesis which was conveyed to the subjects by the lowered illumination. This interpretation is supported by the data for two additional Control groups tested by Sigall et al. After running the experimental groups, Sigall et al. examined the notion that if their subjects were truly motivated to look good, "... then subjects who were merely told by the experimenter that he was interested in the relationship between illuminations and productivity, but not given a specific hypothesis regarding output, should manifest greater increases in output than control subjects" (p. 8). To test this, twenty-four additional subjects were tested, one-half in a replication of the Control condition, and the remainder treated identically to the Increased-Output and Decreased-Output groups, except that no specific hypothesis was given to them. The results showed a significant mean increase in output for the new unspecified hypothesis con-



dition, while in the replicated control condition there was a slight mean decrease in output. Since the lowered illumination was pointed to the former group, it appears, as predicted, that these subjects perceived a hypothesis of increase which they complied with.

It is proposed therefore, that

- (1) if subjects are given a hypothesis which explicitly indicates to them that the experimenter expects decreased performance, then greater hypothesis confirming behavior will be obtained than the "implicit" hypothesis which Sigall et al. communicated to their subjects. In statistical terms, a main effect for the explicitness of the hypothesis is predicted.
- (2) if the lowered illumination is pointed out to subjects they will more often perceive the hypothesis as indicating increasing performance and will increase more than when the lowered illumination is not pointed out. In other words, statistically speaking, a main effect for whether or not the lowered illumination is pointed out, is expected.

## CHAPTER II

### METHOD

#### Subjects

The subjects were 32 male and 32 female students from the Introductory Psychology course at the University of Manitoba. The students were fulfilling their research participation requirement for the course. They were tested individually in one of four conditions to which they were randomly assigned just prior to the second half of the experiment. The only limitation to randomization was that an equal number of subjects of each sex were placed within each of the conditions. Sixteen subjects were assigned to each group.

#### Experimental Design

One-half of the subjects were given a hypothesis which indicated to them in an explicit manner that the experimenter expected them to decrease their rate of phone-number copying. The other half were given the identical hypothesis instructions which Sigall et al.'s 'crucial' Decreased-Output group received, i.e., they received the "implicit" hypothesis to decrease. The variations in the explicitness of the hypothesis were in the instructions for each group. Basically, the more "explicit" hypothesis, in contrast to Sigall et al.'s procedure, told the subjects the level of their practice trial performance and gave them a more explicit rationale for decreasing on the real trial. One-half of both the explicit- and implicit-hypothesis groups had the lowered illumination pointed out to them and one-half of these

groups did not. Thus there were four treatment combination groups:

Group 1: Explicit-hypothesis-Illumination not pointed out

Group 2: Explicit-hypothesis-Illumination pointed out

Group 3: Implicit-hypothesis-Illumination not pointed out

Group 4: Implicit-hypothesis-Illumination pointed out

This latter group was a replication of the Decreased-Output group in Sigall et al.

#### Procedure

An attempt was made to follow the procedures of Sigall et al. as closely as possible. This was especially true for the 'crucial' Decreased-Output group which was replicated in group 4. Therefore, to provide the reader with a complete description of the procedure, the description which follows generally repeats their description of the method.

The experimenter greeted each subject upon their arrival at the experimental room and explained the task to them (see Appendix A for these preliminary instructions). The task consisted of copying telephone numbers and was described as having industrial implications. Blank sheets of paper and a long list of telephone numbers were then handed out for a "practice" trial. The experimenter told the subjects not to rush, but to work at a normal pace. She then set a timer to ring after seven minutes, told the subjects to stop when it sounded, and left the room. When seven minutes had passed, the experimenter returned, collected the "practice" trial papers, and told the subjects to have a rest while she went to get the forms for the "real" trial.

Again the experimenter left the room.

Up until this point very little information had been given to the subjects. In addition, subjects had not yet been assigned to a condition. It was hoped that this would reduce the possibility of experimenter bias affecting practice trial performance by systematic variation in the presentation of the initial instructions. To minimize the possibility of subjects becoming aware of the extent of their "practice" trial output, blank sheets of paper and an extremely long list of telephone numbers typed on a 2 1/2 inch paper tape were utilized. Also, Sigall et al. avoided using ruled paper and numbers as contained in a telephone book to permit manipulation of the output hypothesis for each subject.

When the experimenter left to get the "real" trial forms she went to a room some distance from the experimental room and totalled the subjects' output on the "practice" trial. For every subject she subtracted 20 numbers from their "practice" total and rounded this number to the nearest five to obtain the output that was "predicted" for the "real" trial. At the same time, the experimenter also randomly assigned the subject to one of the four treatment conditions. Upon returning to the experimental room the experimenter gave the subject the forms for the "real" trial, and read the instructions appropriate for each condition. The "real" trial forms (see Appendix B) consisted of numbered lines, arranged so that subjects would be aware at any given time of the number of telephone numbers they had copied.

Explicit-hypothesis-illumination not pointed out: In this

group the experimenter said: "Here are the forms for the real trial. Before you begin, however, let me tell you a little more about what we're doing. We have a theory that due to the fatigue arising out of performing the practice trial, your output on this task would be expected to decrease on this real trial from the "X" numbers you copied during practice. Given this time limit of seven minutes and a trivial, boring task, we feel that if you don't rush you'll do about 'X-20' numbers or 'X-20/7' per minute. You may look at the clock from time to time to see how you're doing."

Explicit-hypothesis-illumination pointed out: The instructions for this group were similar to those for the above group except that prior to giving the subject the hypothesis to decrease performance, the experimenter pointed out the lowered illumination to the subject, saying: "...We have a theory relating the amount of illumination in a room to a person's performance in a room such as this. As you may have noticed only a portion of the available lights are turned on. We want to see the effects of this on your performance. We also have a theory that due to the fatigue arising out of performing the practice trial, your output on this task would be expected to decrease on this real trial from the "X" numbers you copied during practice. With this amount of light, and a trivial, boring task, and given this time limit of seven minutes, we feel that if you don't rush you'll do about 'X-20' numbers or about 'X-20/7' per minute. You may look at the clock from time to time to see how you're doing."

Implicit-hypothesis-illumination not pointed out: To this

group the experimenter merely said: "Here are the forms for the real trial. Given this time limit of seven minutes and a trivial, boring task, we feel that if you don't rush you'll do about 'X-20' numbers or about 'X-20/7' per minute. You may look at the clock from time to time to see how you're doing."

Implicit-hypothesis-illumination pointed out: This group was treated identically to Sigall et al.'s Decreased-Output group. It differed from group 3 in that the lowered illumination was first pointed out to the subjects. That is, the experimenter said: "Here are the forms for the real trial. Before you begin, however, let me tell you a little more about what we're doing. We have a theory relating the amount of illumination in a room to a person's performance in a room such as this. As you may have noticed only a portion of the available lights are turned on. We want to see the effects of this on your performance. With this amount of light, and a trivial, boring task, and given this time limit of seven minutes, we feel that if you don't rush you'll do about 'X-20' numbers or about 'X-20/7' per minute. You may look at the clock from time to time to see how you're doing."

After reading these instructions the experimenter again left the room for seven minutes. Upon returning she collected what the subject had copied and distributed a post-experimental questionnaire (see Appendix C). This questionnaire consisted of nine items, each presented on a separate half page of paper. It was designed to determine 1) if subjects were aware of the experimental hypothesis;

2) why they responded as they did; and 3) how they perceived the task.

## CHAPTER III

### RESULTS

The telephone numbers copied by each subject on the "practice" and "real" trials were separately totalled. The difference between these sums for each subject was computed and constituted the dependent measure for this study. These individual difference scores are presented in Table 1, arranged within each condition by sex of subject. In addition, total mean changes in output from "practice" to "real" trial for each condition were determined and are presented in Table 1.

Two types of hypotheses, an explicit hypothesis and a more implicit hypothesis to decrease, and whether or not the lowered illumination was pointed out to subjects were the manipulated variables. Since responses were also examined according to sex of subject, the data were analyzed in a 2 x 2 x 2 factorial design. The summary of this analysis is presented in Table 2.

It was first hypothesized that if subjects were explicitly told that a decrease in performance was expected of them they would respond in a hypothesis-confirming fashion, i.e., they would decrease on the "test" trial, while subjects to whom a decrease was implied in the manner done by Sigall et al. would not perceive the hypothesis correctly and hence would either increase their output or stay the same. Statistically speaking, a significant main effect for the explicitness of the hypothesis was expected. An examination of Table 2 reveals that this was the only significant effect obtained ( $F = 9.45$ ,  $p < .005$ ).



TABLE 1

## Subject Difference Scores by Sex and Treatment Conditions

FEMALES				
Subject	Condition 1	Condition 2	Condition 3	Condition 4
1	3	9	0	4
2	-4	5	1	0
3	-6	8	7	0
4	-6	-5	3	0
5	-6	8	14	8
6	-7	-13	3	14
7	-12	-13	9	10
8	-3	-5	-2	0
Mean	-4.625	-.75	3.625	4.5
MALES				
1	-2	-8	-3	16
2	10	-27	10	9
3	3	4	-2	-3
4	10	7	-7	0
5	2	4	-3	9
6	-5	-17	1	-12
7	-11	-18	9	7
8	-11	-1	1	14
Mean	1.0	6.875	.75	5.0
Total Means	-1.812	-3.87	2.187	4.75

TABLE 2

Summary of Analysis of Variance of Subjects' Difference Scores

Source	df	MS	F
Illumination (A)	1	1.00	0.01
Hypothesis (B)	1	637.56	9.45*
Sex of Subject (C)	1	9.00	0.13
A x B	1	85.56	1.27
A x C	1	72.25	1.07
B x C	1	3.06	0.05
A x B x C	1	232.56	3.45
Within Cells	56	67.44	
Total	63		

\*p <.005

Thus the results replicated those of Sigall et al. when the hypothesis to decrease output was less explicitly stated to their subjects. However, when the hypothesis was more explicitly presented the subjects showed, as predicted, a hypothesis-confirming decrease in their performance. While it is not claimed that these findings demonstrate that under all conditions subjects will cooperate regardless of whether such behavior makes them appear as lacking in ability, they do strongly question the insistence of Sigall et al. that subjects cooperate only when such behavior makes them appear in a good light.

It had also been predicted that there would be a significant effect for illumination. However, as indicated on the summary of the analysis of variance in Table 2 this variable was not significant. Thus the prediction that pointing out the lowered illumination would challenge subjects to do their best to overcome this obstacle and thus lead to increased output, was not supported. Similarly, no consistent differences according to the sex of subjects was obtained ( $F < 1$ ).

It had been predicted that the explicitness of the hypothesis would be a significant variable because the more explicit hypothesis would appear more obvious to the subjects and so would be more accurately perceived than the same hypothesis presented in the manner of Sigall et al. To check these assumptions subjects' responses to the post-experimental questionnaire were examined. Specifically, two questions provided useful data.

The first of these asked subjects: "How do you think you were supposed to perform on the second trial?", and provided them with three

options: "Increase from what it was on the practice trial," "Decrease from what it was on the practice trial," "Stay the same." The subjects' responses were considered as falling on a continuum of perceived degree of expected performance on the test trial and were assigned a numerical score of 1, 2, or 3 depending on whether the subject perceived he should increase, stay the same, or decrease, respectively. To test that subjects perceived the hypothesis differently depending on the manner in which it was presented, these scores were subjected to a 2 x 2 x 2 analysis of variance according to hypothesis, illumination, and sex of subject variables. The summary of this analysis is presented in Table 3. Once again the only significant result was a main effect for the hypothesis ( $F = 7.08, p < .005$ ). Thus the results indicated that subjects given an explicit hypothesis of decreasing performance showed a significantly greater tendency to perceive than the experimenter expected them to decrease ( $\bar{X} = 1.78$ ) whereas those subjects given an implicit hypothesis, more often thought that they were to increase their output ( $\bar{X} = 2.38$ ).

It has been presumed, of course, that the subjects in the explicit hypothesis groups perceived the hypothesis more accurately because it was more obvious to them. To assess this, the subjects were asked: "How obvious did the results the experimenter wanted, on the test trial, seem to be?" The subjects were given the opportunity to respond on a six point scale ranging from very obvious to not obvious at all. These responses were subsequently quantified on a continuum from 1 to 6, i.e., a 1 was given to those who indicated the hypothesis

TABLE 3

Summary of Analysis of Variance of Subjects' Perception  
of the Hypothesis

Source	df	MS	F
Illumination (A)	1	0.0156	0.02
Hypothesis (B)	1	5.6406	7.08*
Sex of Subject (C)	1	0.0156	0.02
A x B	1	0.0156	0.02
A x C	1	0.1406	0.18
B x C	1	0.1406	0.18
A x B x C	1	0.0156	0.02
Within Cells	56	0.7969	
Total	63		

\* $p < .005$

was very obvious and a 6 was given to those who responded at the other end of the scale. These assigned scores were subjected to a 2 x 2 x 2 analysis of variance, the results of which are presented in Table 4. As predicted, those subjects who were given an explicit hypothesis of decreasing performance found the hypothesis to be more obvious ( $\bar{X} = 2.72$ ) than were subjects given an implicit hypothesis ( $\bar{X} = 3.78$ ). This difference was significant at the .005 level of confidence ( $F = 7.36$ ). Thus both of these analyses support the interpretation that subjects, to a greater extent, confirmed the experimenter's hypothesis in the explicit hypothesis condition because the hypothesis was clearer and more accurately perceived. Knowing precisely what the experimenter wanted the subjects were generally willing to give her hypothesis-confirming data.

While the subjects in the explicit hypothesis groups decreased their output in accordance with their accurate perception of a clearer hypothesis, the subjects in the implicit hypothesis group, run as Sigall et al. treated their subjects, appeared to perceive they were supposed to increase their production and presumably tried harder. A question from the post experimental questionnaire was designed to assess whether the subjects felt that they had tried harder in one condition or another.

Specifically the subjects were asked: "How hard did you try to copy as many numbers as you could?", and were given an eight point scale on which to reply. Responses to this question were quantified on a continuum from 1 to 8, i.e., 8 indicated that they "tried hard"

TABLE 4

Summary of Analysis of Variance of Subjects' Ratings of the  
Obviousness of the Hypothesis

Source	df	MS	F
Illumination (A)	1	1.00	0.41
Hypothesis (B)	1	18.06	7.36*
Sex of Subject (C)	1	0.25	0.10
A x B	1	1.56	0.64
A x C	1	9.00	3.67
B x C	1	0.06	0.03
A x B x C	1	0.56	0.23
Within Cells	56	2.45	
Total	63		

\* $p < .005$

and 1 indicated that the subject "did not try hard at all." These data were analyzed in a 2 x 2 x 2 factorial design, the two variables being the hypotheses and illumination conditions. Sex of subject was omitted from this and subsequent analyses since it had not been significant in previous analyses. The summary of the analysis, which is presented in Table 5, indicates a significant interaction ( $F = 9.38$ ,  $p < .005$ ) between explicitness of the hypothesis and whether or not illumination was pointed out to the subjects. This interaction, graphically presented in Figure 1, indicates that subjects tried harder to copy as many numbers as they could when the explicit hypothesis was given and the lowered illumination was not pointed out and tried less hard when an explicit hypothesis was given and the lowered illumination was pointed out. Under the implicit hypothesis the relationship was reversed, i.e., subjects tried harder when the lowered illumination was pointed out than when the lowered illumination was not pointed out. Thus pointing out the lowered illumination to the subjects in the explicit hypothesis group increased their perception of how hard they were "supposed to work," but did not seem to have as great an effect in the implicit hypotheses groups. Presumably subjects in these latter groups had greater difficulty in accurately perceiving the hypothesis and this confusion diminished the effect of pointing out the lowered illumination.

Throughout the study subjects presumably responded according to how they perceived the experimenter's hypothesis rather than according to any special motive to look good. It was felt that if this was



TABLE 5

Summary of Analysis of Variance of Subjects' Ratings of How  
Hard They Tried to Copy Numbers

Source	df	MS	F
Illumination (A)	1	5.06	1.72
Hypothesis (B)	1	4.00	1.36
A x B	1	27.56	9.38*
Within Cells	60	2.93	
Total	63		

\* $p < .005$

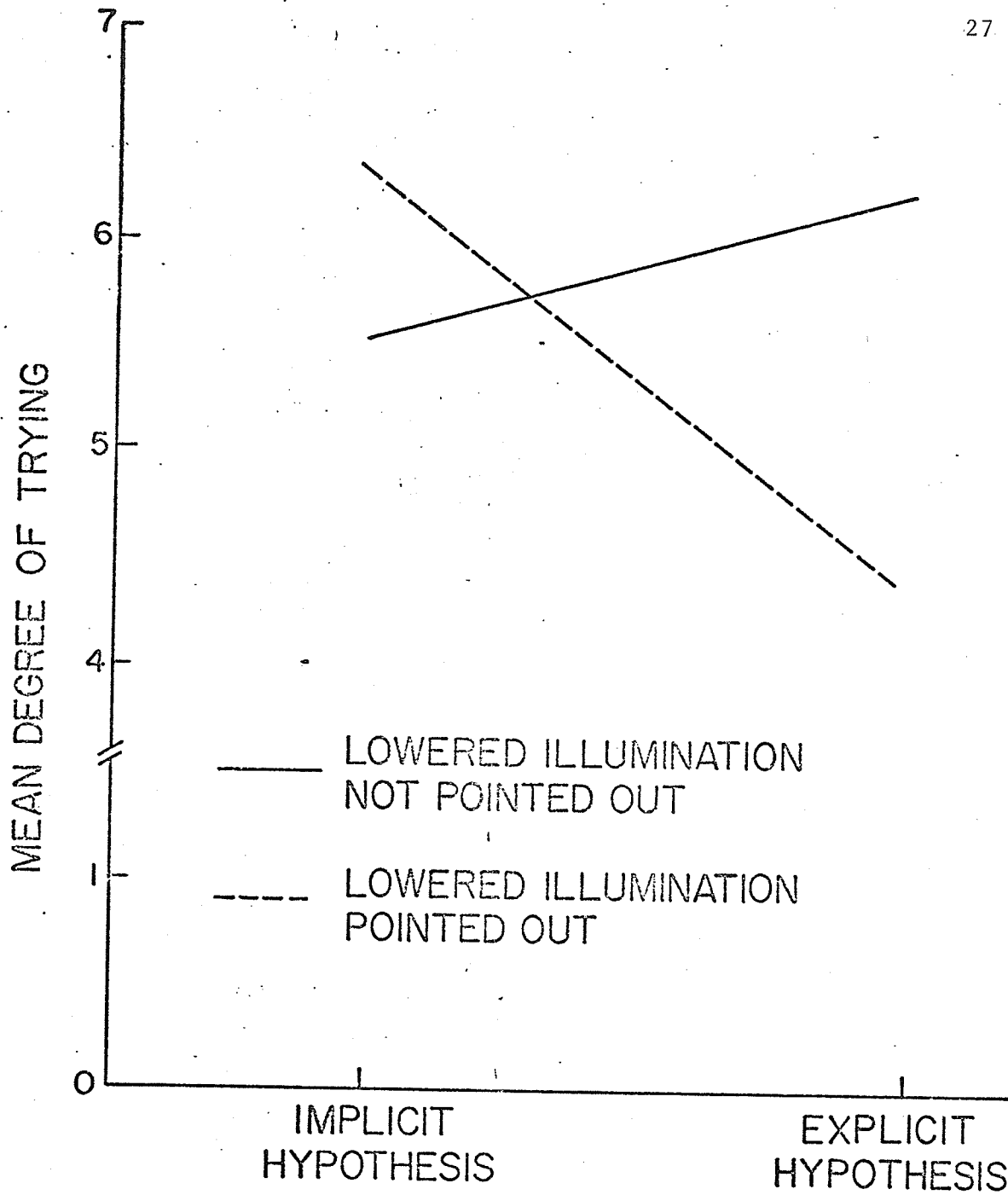


Fig. 1 How hard subjects tried to copy as many numbers as possible under each treatment condition

the case then it might be expected that subjects who perceived an increase, increased, those who perceived a decrease, decreased, and those who perceived that their performance was to remain the same, responded accordingly. In other words, possibly subjects were guided by their perception of the hypothesis regardless of the treatment they had received. To test these notions, subjects were regrouped according to their perceptions, and their performances and responses on the post-experimental questionnaire were analyzed. In each case the results clearly indicated that subjects who thought the experimenter expected a decrease in output, decreased most ( $\bar{X} = 1.54$ ,  $N = 28$ ), those who perceived an increase, increased most ( $\bar{X} = 3.70$ ,  $N = 23$ ), and subjects who felt the experimenter expected their output to remain the same across trials, performed in a consistent manner ( $\bar{X} = -.92$ ,  $N = 13$ ). Indeed, the correlation between subjects' perception of the hypothesis and their performance was significant ( $r = .26$ ,  $p < .05$ ). However a one-way analysis of variance of the data failed to attain significance, as indicated in the summary of the analysis in Table 6 ( $F = 2.16$ ). Presumably the large variability in subjects' performance, especially in the same and increase groups, reduced the possibility of attaining significance. Nevertheless the trends in the data suggest that subjects responded to a large extent according to how they perceived the experimenter's hypothesis.

A similar analysis of the obviousness of the hypothesis according to how the subjects perceived the experimenter's hypothesis (Table 7) was also non-significant ( $F = 1.59$ ). Again, however, the data

TABLE 6

Summary of Analysis of Variance of Subjects' Performance According to How They Perceived the Hypothesis

Source	df	MS	F
Performance	2	157.17	2.16
Within Cells	61	72.668	
Total	63		

TABLE 7

Summary of Analysis of Variance of Subjects' Ratings of the  
Obviousness of the Hypothesis According to Their  
Perception of the Hypothesis

Source	df	MS	F
Obviousness	2	5.24	1.59
Within Cells	3.29		
Total	63		

were in the expected direction and the relationship was moderate but nonsignificant ( $r = -.23$ ,  $p < .10$ ). Subjects who thought the experimenter expected a decrease in output generally thought the hypothesis was most obvious ( $\bar{X} = 3.96$ ) whereas those who perceived that they were supposed to stay the same ( $\bar{X} = 3.92$ ) or increase ( $\bar{X} = 3.04$ ), felt the hypothesis to be less obvious.

## CHAPTER IV

### DISCUSSION

The hypothesis that subjects will cooperate with an experimenter regardless of whether such behavior makes them appear as lacking ability, provided the experimenter's hypothesis is presented in an explicit manner, was supported. Subjects who were given hypothesis-instructions which explicitly indicated to them that the experimenter expected performance which would make them appear less effective in terms of ability, i.e., a decrease in their rate of performance of a task from "practice" to "test" trial, showed hypothesis-confirming behavior while those subjects to whom the same hypothesis was communicated but in a less explicit manner, such as was done by Sigall et al., did not. While these latter results replicated the findings of Sigall et al. in their decreased output group, the behavior of subjects in the explicit hypothesis groups bring into question their conclusion that subjects cooperate only when such behavior makes them appear in a good light.

The interpretation of the effectiveness of the explicitness manipulation was based on the assumption that the explicit hypothesis was more obvious to the subjects and hence more accurately perceived than the same hypothesis presented in a less explicit manner, as was done by Sigall et al. The reasoning behind this interpretation is simply that subjects would be in a better position to confirm the experimenter's hypothesis if they knew what he wanted. This assumption was supported by analysis of post-experimental questionnaire data, which indicated

that subjects perceived the explicit hypothesis as more obvious and more accurately perceived what the experimenter wanted them to do than subjects in the implicit hypothesis groups.

There are alternative interpretations of this data. Sigall et al., for example, might prefer to interpret the behavior of subjects in the explicit hypothesis group as still reflecting a tendency to look good. In other words, a subject confirmed the experimenter's hypothesis because this made him look like a "good guy." Alternatively Sigall et al. might offer the interpretation that subjects in the explicit hypothesis conditions decreased because they were being "obedient," not because they were "cooperating." Since subjects were explicitly told what to do and complied with the request, then Sigall et al. would conclude that the subject had obediently done what he was told, and was never really free to cooperate or look good. Both of these alternatives, the obedient or the looking-good-by-cooperating subject, however, appear to be mere semantic arguments. For example, at what point can you say a subject is cooperating rather than being obedient? Such a discrimination is difficult to make and, in the present case, not very meaningful to attempt. Similarly, cooperation and looking good are confounded, i.e., in certain instances they both define the same behavior. Indeed, it appears from Sigall et al.'s interpretation of "looking good" that as an explanatory concept it can never fail, i.e., if the subject confirms the hypothesis it is because he wants to look good by cooperating; if he doesn't confirm the hypothesis, it is because he looks good not confirming the hypothesis.



Such a concept that always explains a result, regardless of the outcome is of limited usefulness.

What appeared to be far more important in the present study than the particular motivation underlying the subject's behavior, was how the subject perceived what the experimenter told him. An analysis of subjects' performances and post-experimental-questionnaire responses in terms of their perceptions, and ignoring the treatments they received, showed that subjects who perceived an increase, increased, those who perceived a decrease, decreased, and those who perceived their performance was to remain the same, responded consistently on both trials. The correlation between the subjects' perceptions of the hypothesis and their performances was significant, although a one-way analysis of variance of this data was not. The latter result was probably accounted for by the large variability in subjects' performances. Similar results obtained with the analysis of the obviousness of the hypothesis suggested, for the most part, that subjects who thought the experimenter expected a decrease in output felt that the hypothesis was more obvious than those subjects who had perceived that they were to increase or stay the same. These trends in the data support the more general notion that subjects respond to the experiment, to an extent, according to how they perceive the hypothesis and that the researcher should invest considerable effort to ascertain his subjects' views.

In addition to the investigation of the explicitness of the hypothesis in relation to performance, the present study investigated

the effects of pointing out lowered illumination to the subjects. Although it had been assumed that pointing out the lowered illumination would challenge the subjects to do their best to overcome this obstacle and hence cause them to increase their output, the results did not support the hypothesis. However, an analysis of variance of subjects' ratings of how hard they tried to copy numbers showed a significant interaction for the explicitness of the hypothesis and whether or not the illumination variable was pointed out. The interaction showed that subjects tried less hard to copy as many numbers as they could when an explicit hypothesis was given and the illumination factor was pointed out than when it was not pointed out. Conversely, under the implicit hypothesis, subjects tried less hard when the lowered illumination was not pointed out than when the illumination was pointed out. Thus pointing out the lowered illumination to subjects in the explicit hypothesis groups seemed to increase their perception that they couldn't increase their output but, had little effect on the implicit hypothesis groups.

If lowered illumination did not operate to convey a hypothesis of increase to subjects in the "implicit" hypothesis conditions then what did convey to them that they should increase? It can only be speculated, but presumably in the instructions to all subjects several statements may have implied that the experimenter really wanted the subject to do his best. For example, subjects are told just before the "real" trial begins, ... "With this amount of light, and a trivial, boring task, and given this time limit of seven minutes we feel that

if you don't rush you'll do about "X-20" numbers or about "X-20/7" per minute." ...Such a statement implies to the subject not that the experimenter wants the subject to copy "X" numbers but that the experimenter thinks the subject can't copy more numbers under these conditions and it challenges the subject to try. In contrast, these same instructions in the explicit hypotheses groups were "masked" by the rationale for decrease that was explicitly provided these subjects, and thus an increase in output was not perceived as the expected behavior.

#### Implications

In conclusion, the results of the present study suggest that attempts to discriminate between various subject motivations may not be a profitable direction for our research to take. This is especially apparent in light of the confounded nature of the motives under consideration. The research of Sigall et al. together with the present study have instead high-lighted the limited utility and difficult application of the motive to look good.

If, as Sigall et al. interpret it, one can appeal to this concept when one confirms the hypothesis and similarly appeal to it when, for different reasons, a subject disconfirms the hypothesis, then without very detailed specification of the relevant variables the concept loses its explanatory value. Certainly further research should be profitably directed to an examination of the methods for determining the subject's perception of the experimental hypothesis and of the conditions underlying hypothesis-confirming and disconfirming behavior.

## CHAPTER V

### SUMMARY AND CONCLUSION

This study was designed to test the claim by Sigall, Aronson, and Van Hoose (1970) that subjects in psychology experiments would rather "look good" than cooperate with the experimenter. These authors maintained that their study clearly demonstrated that subjects increased their performance to look good, rather than decreased their output to confirm the experimenter's hypothesis. It was contended in the present study, however, that Sigall et al. had failed to ascertain their subjects' perceptions of the hypothesis to decrease and that, in fact, their subjects had perceived that the experimenter wanted them to increase their performance. It was hypothesized, therefore, that if subjects were given a hypothesis which explicitly indicated to them that the experimenter expected a decrease in their rate of performance on a task from "practice" to "test" trial, they would show greater hypothesis-confirming behavior than would those subjects to whom the hypothesis was communicated in the manner presented by Sigall et al. In addition, it was hypothesized that if the lowered illumination was pointed out to subjects, they would more often perceive the hypothesis as requiring increased performance and hence would show less hypothesis-confirming behavior than when the lowered illumination was not pointed out.

Sixty-four subjects were randomly assigned to one of four treatment conditions, consisting of combinations of explicit or impli-

cit hypothesis instructions and whether or not the illumination was pointed out to the subjects. It was found that the predicted effect of pointing out the lowered illumination to certain subjects was not supported. However, subjects who were explicitly told that a decrease in performance was expected of them responded in a hypothesis-confirming fashion, i.e., they decreased on the "test" trial, while those to whom a decrease was implied in the manner done by Sigall et al. did not. This result was interpreted as being due to the hypothesis being clearer and more accurately perceived in the explicit hypothesis condition. Thus the results replicated those of Sigall et al. where the hypothesis to decrease output was less explicitly stated to their subjects. However, when the hypothesis was more explicitly presented, subjects, as predicted, showed a hypothesis-confirming decrease in performance. This interpretation was supported by a detailed analysis of subjects' responses to a post-experimental-questionnaire. These analyses also suggested that all subjects, regardless of the hypothesis they received, responded according to how they perceived that hypothesis rather than according to any motive to look good. It was concluded that the present study, while not demonstrating the cooperative motive in subjects, does strongly question the notion that subjects cooperate only when such behavior makes them appear in a good light.

#### REFERENCES

- Argyris, C. Some unintended consequences of rigorous research. Psychological Bulletin, 1968, 70, 185-197.
- Holmes, D. S. Amount of experience in experiments as a determinant of performance in later experiments. Journal of Personality and Social Psychology, 1967, 7, 403-407 (a).
- Holmes, D. S. Verbal conditioning or problem solving and cooperation? Journal of Experimental Research in Personality, 1967, 2, 289-294 (b).
- Masling, J. Role-related behavior of the subject and psychologist and its effects upon psychological data. Nebraska Symposium on Motivation, 1966, 14, 67-103.
- Orne, M.T. On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. American Psychologist, 1962, 17, 776-783.
- Reicken, H. W. A program for research on experiments in social psychology. In N. F. Washburne (Ed.). Decisions, values, and groups. Vol. II, New York: Pergamon Press, 1962, pp. 25-41.
- Rosenberg, M. J. When dissonance fails: On eliminating evaluation apprehension from attitude measurement. Journal of Personality and Social Psychology, 1965, 1, 28-42.
- Sigall, H., Aronson, E., and Van Hoose, T. The cooperative subject: Myth or reality? Journal of Experimental Social Psychology, 1970, 6, 1-10.

APPENDIX A

## INSTRUCTIONS TO THE SUBJECTS PRIOR TO THE "PRACTICE" TRIAL

The experiment in which you are about to participate is one which has implications for industrial psychology. Your task today will consist of copying the list of telephone numbers which are typed on the strip of paper in front of you. Though this task is not exciting, it was selected because it is related to several industrial type of tasks, and at the same time has been shown to be independent of intelligence and related abilities. Please copy the numbers (in the order you find them) onto the blank sheets of paper which are beside you.

First, I want you to have a practice trial. Do not rush. Copy the numbers at a normal rate and stop when this timer sounds. I will return after seven minutes.



APPENDIX B

- |           |           |
|-----------|-----------|
| 1. _____  | 21. _____ |
| 2. _____  | 22. _____ |
| 3. _____  | 23. _____ |
| 4. _____  | 24. _____ |
| 5. _____  | 25. _____ |
| 6. _____  | 26. _____ |
| 7. _____  | 27. _____ |
| 8. _____  | 28. _____ |
| 9. _____  | 29. _____ |
| 10. _____ | 30. _____ |
| 11. _____ | 31. _____ |
| 12. _____ | 32. _____ |
| 13. _____ | 33. _____ |
| 14. _____ | 34. _____ |
| 15. _____ | 35. _____ |
| 16. _____ | 36. _____ |
| 17. _____ | 37. _____ |
| 18. _____ | 38. _____ |
| 19. _____ | 39. _____ |
| 20. _____ | 40. _____ |

- |           |           |
|-----------|-----------|
| 41. _____ | 61. _____ |
| 42. _____ | 62. _____ |
| 43. _____ | 63. _____ |
| 44. _____ | 64. _____ |
| 45. _____ | 65. _____ |
| 46. _____ | 66. _____ |
| 47. _____ | 67. _____ |
| 48. _____ | 68. _____ |
| 49. _____ | 69. _____ |
| 50. _____ | 70. _____ |
| 51. _____ | 71. _____ |
| 52. _____ | 72. _____ |
| 53. _____ | 73. _____ |
| 54. _____ | 74. _____ |
| 55. _____ | 75. _____ |
| 56. _____ | 76. _____ |
| 57. _____ | 77. _____ |
| 58. _____ | 78. _____ |
| 59. _____ | 79. _____ |
| 60. _____ | 80. _____ |

- |      |       |      |       |
|------|-------|------|-------|
| 81.  | _____ | 101. | _____ |
| 82.  | _____ | 102. | _____ |
| 83.  | _____ | 103. | _____ |
| 84.  | _____ | 104. | _____ |
| 85.  | _____ | 105. | _____ |
| 86.  | _____ | 106. | _____ |
| 87.  | _____ | 107. | _____ |
| 88.  | _____ | 108. | _____ |
| 89.  | _____ | 109. | _____ |
| 90.  | _____ | 110. | _____ |
| 91.  | _____ | 111. | _____ |
| 92.  | _____ | 112. | _____ |
| 93.  | _____ | 113. | _____ |
| 94.  | _____ | 114. | _____ |
| 95.  | _____ | 115. | _____ |
| 96.  | _____ | 116. | _____ |
| 97.  | _____ | 117. | _____ |
| 98.  | _____ | 118. | _____ |
| 99.  | _____ | 119. | _____ |
| 100. | _____ | 120. | _____ |

- |      |       |      |       |
|------|-------|------|-------|
| 121. | _____ | 141. | _____ |
| 122. | _____ | 142. | _____ |
| 123. | _____ | 143. | _____ |
| 124. | _____ | 144. | _____ |
| 125. | _____ | 145. | _____ |
| 126. | _____ | 146. | _____ |
| 127. | _____ | 147. | _____ |
| 128. | _____ | 148. | _____ |
| 129. | _____ | 149. | _____ |
| 130. | _____ | 150. | _____ |
| 131. | _____ | 151. | _____ |
| 132. | _____ | 152. | _____ |
| 133. | _____ | 153. | _____ |
| 134. | _____ | 154. | _____ |
| 135. | _____ | 155. | _____ |
| 136. | _____ | 156. | _____ |
| 137. | _____ | 157. | _____ |
| 138. | _____ | 158. | _____ |
| 139. | _____ | 159. | _____ |
| 140. | _____ | 160. | _____ |

- |      |       |      |       |
|------|-------|------|-------|
| 161. | _____ | 181. | _____ |
| 162. | _____ | 182. | _____ |
| 163. | _____ | 183. | _____ |
| 164. | _____ | 184. | _____ |
| 165. | _____ | 185. | _____ |
| 166. | _____ | 186. | _____ |
| 167. | _____ | 187. | _____ |
| 168. | _____ | 188. | _____ |
| 169. | _____ | 189. | _____ |
| 170. | _____ | 190. | _____ |
| 171. | _____ | 191. | _____ |
| 172. | _____ | 192. | _____ |
| 173. | _____ | 193. | _____ |
| 174. | _____ | 194. | _____ |
| 175. | _____ | 195. | _____ |
| 176. | _____ | 196. | _____ |
| 177. | _____ | 197. | _____ |
| 178. | _____ | 198. | _____ |
| 179. | _____ | 199. | _____ |
| 180. | _____ | 200. | _____ |

- |      |       |      |       |
|------|-------|------|-------|
| 201. | _____ | 221. | _____ |
| 202. | _____ | 222. | _____ |
| 203. | _____ | 223. | _____ |
| 204. | _____ | 224. | _____ |
| 205. | _____ | 225. | _____ |
| 206. | _____ | 226. | _____ |
| 207. | _____ | 227. | _____ |
| 208. | _____ | 228. | _____ |
| 209. | _____ | 229. | _____ |
| 210. | _____ | 230. | _____ |
| 211. | _____ | 231. | _____ |
| 212. | _____ | 232. | _____ |
| 213. | _____ | 233. | _____ |
| 214. | _____ | 234. | _____ |
| 215. | _____ | 235. | _____ |
| 216. | _____ | 236. | _____ |
| 217. | _____ | 237. | _____ |
| 218. | _____ | 238. | _____ |
| 219. | _____ | 239. | _____ |
| 220. | _____ | 240. | _____ |

241.	_____	261.	_____
242.	_____	262.	_____
243.	_____	263.	_____
244.	_____	264.	_____
245.	_____	265.	_____
246.	_____	266.	_____
247.	_____	267.	_____
248.	_____	268.	_____
249.	_____	269.	_____
250.	_____	270.	_____
251.	_____	271.	_____
252.	_____	272.	_____
253.	_____	273.	_____
254.	_____	274.	_____
255.	_____	275.	_____
256.	_____	276.	_____
257.	_____	277.	_____
258.	_____	278.	_____
259.	_____	279.	_____
260.	_____	280.	_____



- |      |       |      |       |
|------|-------|------|-------|
| 281. | _____ | 301. | _____ |
| 282. | _____ | 302. | _____ |
| 283. | _____ | 303. | _____ |
| 284. | _____ | 304. | _____ |
| 285. | _____ | 305. | _____ |
| 286. | _____ | 306. | _____ |
| 287. | _____ | 307. | _____ |
| 288. | _____ | 308. | _____ |
| 289. | _____ | 309. | _____ |
| 290. | _____ | 310. | _____ |
| 291. | _____ | 311. | _____ |
| 292. | _____ | 312. | _____ |
| 293. | _____ | 313. | _____ |
| 294. | _____ | 314. | _____ |
| 295. | _____ | 315. | _____ |
| 296. | _____ | 316. | _____ |
| 297. | _____ | 317. | _____ |
| 298. | _____ | 318. | _____ |
| 299. | _____ | 319. | _____ |
| 300. | _____ | 320. | _____ |

APPENDIX C

NAME \_\_\_\_\_

STUDENT NO. \_\_\_\_\_

SECTION \_\_\_\_\_

## QUESTIONNAIRE

The results of an experiment are more meaningful to us if we know what your ideas, thoughts and understandings of the experiment just completed were. Please answer each of the questions on below frankly and honestly. Please answer them in their numbered order and do not go on to the next question until you have given them an answer to the previous question.

1. The experimenter usually conducts a study expecting certain results.

This is referred to as the hypothesis.

a) What do you think the hypothesis for this experiment was?

b) Exactly how do you think you were expected to respond?

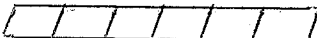
2. When and/or where did you get the idea of what the purpose and hypothesis of the experiment was? (Please answer by ranking each of the following which had an influence on your understanding of the hypothesis, e.g., put a 1 for the one which influenced you the most, a 2 for the next, etc. You do not have to put a number by everyone.)

\_\_\_\_\_ from the experimenter

\_\_\_\_\_ from the instructions

\_\_\_\_\_ from the apparatus

\_\_\_\_\_ from the task

- \_\_\_\_\_ from this questionnaire
- \_\_\_\_\_ from other students who told me about the experiment before I came
- \_\_\_\_\_ from the fact that there were two trials
3. What do you think was the purpose of having the practice trial and the second "test" period?
4. How do you think you were supposed to perform on the second trial?
- \_\_\_\_\_ increase from what it was on the practice trial
- \_\_\_\_\_ decrease from what it was on the practice trial
- \_\_\_\_\_ stay the same.
- b) How obvious did the results the experimenter wanted, on the test trial, seem to be?
- very obvious  not obvious at all
5. How do you think you actually performed? In other words, on the real or second trial, did your output:
- \_\_\_\_\_ increase from what it was on the practice trial
- \_\_\_\_\_ decrease from what it was on the practice trial
- \_\_\_\_\_ stay the same
6. Why did you perform as you did on the test trial? (Please put a 1 beside the reason which best describes your reason for responding as you did, a 2 for the next most applicable reason and so on.)
- \_\_\_\_\_ I wanted to give the experimenter the results she wanted
- \_\_\_\_\_ I wanted to give the experimenter the results opposite to what she wanted

- \_\_\_\_\_ I wanted to prove that I could do well
- \_\_\_\_\_ I merely wanted to complete the experiment without concern  
as to how I did or how the experimenter's results turned out.
- \_\_\_\_\_ Other (please explain)

7. How hard did you try to copy as many numbers as you could

Tried \_\_\_\_\_ Tried not  
Hard 

--	--	--	--	--	--	--	--	--	--

 at all

Why did you copy as many numbers as you did?

- \_\_\_\_\_ because that is what the E wanted me to do.
- \_\_\_\_\_ because I wanted to prove I could do well
- \_\_\_\_\_ copy as many numbers as I could because I wanted to give the  
result opposite to what she wanted
- \_\_\_\_\_ because I merely wanted to complete the experiment without  
concern as to how I did or how the experiment's results  
turned out.

8. The lowered lighting in the room, the boring task, and the lengthy  
practice session all worked to the detriment of your performance.  
Did you feel that these "obstacles" made you try harder to over-  
come them? Caused you to perform less well? Or did not affect  
your performance?

- \_\_\_\_\_ I tried harder because of them
- \_\_\_\_\_ I probably tried less hard because of them
- \_\_\_\_\_ they really did not affect my performance

9. How many experiments have you participated in?

I have participated in \_\_\_\_\_ experiments this year. (Include this

experiment)

I still have \_\_\_\_\_ experiments yet to complete.

This answer is to be used strictly for purposes of this experiment and constitutes no check on your participation for the course.

Please be honest.

Have you participated in this experiment before? \_\_\_\_\_ Yes \_\_\_\_\_ No

Note: The instructions and each of the nine questions appeared on separate half-sheets of paper so that only one question at a time was visible to the subject.