

A REEXAMINATION OF THE  
FAITHFUL SUBJECT ROLE

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In Partial Fulfillment

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Master of Arts

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by

Barry Spinner

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A dissertation submitted to the Faculty of Graduate Studies of  
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## ABSTRACT OF THESIS

Fillenbaum (1966; Fillenbaum & Frey, 1970) has proposed that a faithful subject role may be adopted within experiments i.e., that a large proportion of subjects who form hypotheses regarding the nature of an experiment will provide data that are not influenced by their suspicions. His postulation of this role was based on the finding that subjects who were suspicious of being subsequently tested for recall of a prose passage nonetheless did not show 'incidental' learning of its content, nor did they report any attempts to learn the passage. Although the faithful subject role has been generally accepted (Weber & Cook, 1972), and Fillenbaum's demonstration of it regarded as valid, examination of the procedures of the studies on which it was based, casts doubt on whether Fillenbaum's subjects were truly faithful or whether they may have become aware of the nature of the deception after all opportunity to bias results (learn the passage) had passed. To test this hypothesis, in the present study, suspiciousness measures were presented prior to incidental learning measures, and, the data for these subjects compared with the data obtained through a replication of Fillenbaum's procedure.

In addition, subjects were administered a scale designed to assess how actively they search for the experimenter's hypothesis, and how likely they are to bias results. It was predicted that in comparison to those who scored as passive, those who scored as active would be more likely to become aware of the deception and bias results.

The data supported the first hypothesis, but not the second. Discussion concerned the role that subjects had adopted, the ecological validity of faithful data, and the use of post-experimental questionnaires in psychological research.

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## CHAPTER I

### INTRODUCTION

A number of problems arising from the social nature of psychological research have recently been identified. According to Orne (1962) these difficulties are due to the fact that while the individual is regarded as an active, thinking organism outside the laboratory, he is viewed by researchers as a passive responder to the experimental situation. In contrast to this passive image, Orne suggested that the subject's active perception of the experiment, of his role in it, and of the stimuli the experimenter manipulates, have a significant effect on the subject's behaviour. He proposed that subjects are generally motivated to cooperate with the experimenter, and that they often base their responses on cues to the experimenter's hypothesis (demand characteristics) which are present within the experimental situation. Thus, instead of responding to the experimental treatment, subjects may perceive demand characteristics revealing the experimenter's hypothesis which they proceed to confirm. Subsequent research has further explored subject motivation and behaviour in an attempt to test Orne's theory. However this research has not always been supportive; often it has been found that subjects do not behave so as to confirm the experimenter's hypothesis.

In their review of the studies on subject motivation, Weber and Cook (1972) found it appropriate to fit a role theory interpretation of subject behaviour to these findings. In addition to Orne's good



subject role, they identified three other subject roles which they believed could be supported by the data: the negativistic, apprehensive, and, faithful subject roles.

The negativistic subject role was first conceptualized by Masling (1966) as the 'screw-you' effect. In contrast to the good subject, the subject who adopts this role attempts to disconfirm what he perceives to be the experimenter's hypothesis (Cook, Bean, Calder, Frey, Krovetz & Reisman, 1970). Presumably, this subject is motivated by psychological reactance (Brehm, 1966); he rebels against having his behaviour manipulated or controlled and expresses his independence by performing contrary to perceived expectancies.

The apprehensive subject (Rosenberg, 1965) is seen as one who is anxious about how he will be evaluated by others. His presumed motivation is to present himself as favourably as possible. Thus when he perceives he will look good by cooperating with the experimenter, he does so; when confirming the experimenter's hypothesis does not allow a subject to appear in a positive light, presumably he will opt for a strategy that will make him look good.

Subjects who adopt the good, negativistic or apprehensive roles tend to provide data that are biased in one direction or another. In contrast to this, there is evidence that in certain restricted situations subjects provide faithful, unbiased data (Fillenbaum, 1966; Fillenbaum & Frey, 1970). In their discussion of the faithful subject role, Weber and Cook (1972) distinguished between two versions. The active version assumes the subject to be very concerned with

providing unbiased, valid data. The passive version views the subject as docile and largely uninvolved in the experimental situation. This subject is unlikely to discover a hypothesis, or to base his responses on one he is provided with.

#### Empirical Evidence for the Faithful Role

Several studies can be interpreted as being supportive of the hypothesis that subjects will, in certain situations, adopt an active faithful role. Brock and Becker (1966) conducted two consecutive experiments with the same subjects. In the first, subjects were exposed to deception and then were either completely debriefed, partially debriefed, or not debriefed at all. In the second, subjects either caused low or high damage to the experimental apparatus, and, there was or was not a common cue linking the two experiments. The dependent measure was the subjects' willingness to sign a strongly counter-attitudinal petition. Subjects in the high damage condition were the only ones who signed, and analysis revealed that neither prior deception nor common cues affected performance. Fisher exact tests indicated that in the case where subjects caused high damage, the complete debriefing-common cues treatment reduced compliance. However, Weber and Cook (1972) reanalyzed these data using two-tailed tests, and found that this difference did not reach acceptable levels of significance. In general then, it appears that subject behaviour was not affected by either the prior deception or common cues treatment. Unfortunately, interpretation of these data is difficult. No

attempt was made to assess how many subjects in each condition were aware of the link between the petition signing and the rest of the experiment and so it is impossible to determine if a faithful role was indeed adopted.

Cook et al. (1970) reported two studies which may also support the faithful subject role. In the first study subjects either were or were not exposed to four deceptions and debriefings before taking part in the critical experiment on attitude change. The results indicated that the two treatments did not lead to differences on the final dependent measure. These results might indicate that subjects who experienced the prior deception adopted an active faithful role, if the assumption is made that these subjects were more likely to be aware of the nature of the final deception. Unfortunately, although subjects were administered a post-experimental questionnaire, levels of awareness were not assessed. However, the post-experimental data did reveal that compared to those who did not experience deception, those who did cared less about understanding and following the experimental instructions, believed the experimenter less, and saw experiments as less scientific and less valuable. This suggests that rather than adopting an active faithful role, subjects who were deceived became passive, and, did not bother to search for nor act upon a hypothesis.

In their second study, Cook et al. exposed subjects to two consecutive attitude change experiments. In the first, subjects were deceived, and either not told about it, read about deception in general, or, were told that they had been deceived. The second experiment either

did or did not have a cue in common with the first. In the condition where there were no common cues, experiencing deception resulted in less attitude change than did the other two treatments. Thus, subjects who were told of the initial deception did subsequently bias their responses, and were not faithful. However, these differences between the groups disappeared when subjects were given cues which linked the two experiments. Once again no attempt was made to assess hypothesis awareness, and so, it is unclear whether the common link served to cue subjects into an active faithful role, equalized awareness across conditions, or resulted in subjects becoming passive.

Cook and Perrin (1971) partially replicated the procedure used by Cook et al. in their second study. Subjects participated in a first experiment where they experienced no deception, read of deception in general, or experienced deception. Subsequently, subjects either were or were not told deception was involved in the following experiment. Unlike the results of the study by Cook et al., a measure of attitude change did not discriminate between conditions. On the other hand, the data from a measure of subjects' retention of the persuasive message did show a pattern similar to that found by Cook et al. with their attitude measure. When there was no cue to deception, subjects who had experienced the initial deception retained more of the message than those who did not experience it. These differences disappeared when a cue to deception was provided. Again levels of hypothesis awareness were not assessed. If it is assumed that subjects who experienced the initial deception were

more likely to be aware of the attitude change hypothesis than those who did not, then the results could be interpreted as being due to either active faithful or passive behaviour. On the other hand, the subjects who experienced deception may have been 'aware' of the wrong hypothesis, i.e. the hypothesis that the deception was related to retention of the material rather than to attitude change. Such an interpretation would be consistent with the finding that these subjects did indeed learn the message better.

In summary, each of these studies provided data that can be interpreted as supportive of the active faithful role. However, conclusions based on these data must remain tentative as levels of subject awareness were not assessed and alternative forms of subject motivation may have been operative in each study.

The strongest support for the faithful subject role has been obtained in a series of studies by Fillenbaum (1966; Fillenbaum & Frey, 1970). In each study the general experimental procedure consisted of two parts: (a) a preliminary task typically involving a mild deception, and (b) a word cancelling task followed by a measure of incidental learning. In the first study (Experiment I, 1966) subjects were provided with two lists of adjectives, with four positive adjectives in the first list, and four negative adjectives in the second. Subjects were asked to construct one character sketch based on each of the lists. Experimental subjects were subsequently informed that the two adjective lists actually represented only one person, and were told to reconcile the two sketches. After completing

this third character sketch, subjects were informed that:

"...what was said initially about a task might not cover all that was going to happen or to be required of them as subjects, and that sometimes experiments required that subjects be deceived initially." (p.534)

The second stage of the study ostensibly consisted of a word cancelling task. Subjects were provided with a prose passage, complex instructions to follow, and were told to work accurately but quickly as they would be timed. In actual fact, this was an incidental learning task. After completing the word cancelling and a subsequent check for errors, subjects were asked to answer thirteen items on the content of the passage. This test of incidental learning served as one dependent measure of the degree to which subjects were faithful. Those subjects who were aware that they would be questioned on the passage, and wished to do well, presumably would have tried to learn the passage, thus biasing their results. Finally, a post-experimental questionnaire was administered to assess hypothesis awareness and attempts to bias results.

Fillenbaum found that the initial deception had no effect on levels of awareness or response biasing. Both groups reported relatively high levels of awareness; 55% and 57% for control and experimental subjects respectively. What led Fillenbaum to conclude that subjects were faithful, was that those who were aware of the upcoming test scored no higher on the incidental learning test than those who were unaware. Furthermore, only 13% of all subjects reported attempting to bias results, and indeed, these subjects

scored significantly higher on the incidental learning test than those who reported awareness and did not attempt to learn the passage.

In Experiment II in the same paper, Fillenbaum introduced a manipulation of the amount of information given subjects concerning deception in psychological experiments. His procedure was virtually identical to that in the first experiment. Both control and experimental subjects experienced the initial deception and subsequent debriefing. However, both prior to and following this deception, experimental subjects were additionally told that a good subject:

"...always tries to find out what is going on, to anticipate what is going to happen, so that he can do as good a job as possible." (p.535)

Even with this added manipulation, on the basis of scores on the incidental learning measure, no significant treatment effects were observed in this second experiment. Levels of hypothesis awareness (35% and 50% for controls and experimentals respectively) also did not differ significantly. The finding that only 25% of all subjects biased their responses, while 42.5% were hypothesis aware, again led Fillenbaum to conclude that the large majority of his subjects were faithful. Fillenbaum and Frey (1970) partially replicated this procedure in a third study. However, rather than simply manipulating levels of suspiciousness, they attempted to preselect subjects so as to maximize the strength of the suspicion variable. Subjects completed a four-item measure on their understanding of the

experimental situation and of their role as subjects. Participants were then classified as being predisposed to trust the experimenter and cooperate with him ('trustful' group), or, to suspect him and not cooperate ('suspicious' group). Several weeks later, subjects took part in an experiment in which they were exposed to the experimental treatment used in Experiment I (Fillenbaum, 1966). Levels of hypothesis awareness (39% and 59% for the trustful and suspicious groups respectively) once again did not differ significantly. Consistent with earlier results, only 23% of all subjects attempted to bias results. A marginally significant main effect ( $p < .079$ ) for the incidental learning test was found, with suspicious subjects demonstrating greater incidental learning. This pattern of results led Fillenbaum to conclude that the faithful subject role had again been demonstrated.

In summary, the results of each of these studies was interpreted by Fillenbaum as evidence for the prevalence of the faithful subject role. While within each experiment he consistently found about 50% of his subjects to be hypothesis aware (actual levels ranged from 42.5% to 56%), response biasing stayed considerably lower, ranging from 13% to 25%.

Fillenbaum's results appear to provide the only clear, consistent support for the faithful subject role. However, his case for the faithful subject role is reasonable only if a major assumption underlying his interpretation is tenable: that subjects who reported hypothesis awareness became aware before or during the word cancelling



task, i.e., at a time when they could still bias their responses. There are several points in Fillenbaum's procedure which suggest that this assumption may not be tenable.

First, the incidental learning test, consisting of questions on the content of the passage and providing ample information as to the nature of the deception, was introduced before the awareness measure. Thus, awareness may have occurred after all opportunity to learn the passage and bias results had passed. Second, informing subjects of the initial deception, a point which "...was painfully clear to most subjects..." (Fillenbaum & Frey, 1970; p. 45), and telling them that deception is common in experiments may have created strong demands for subjects to report any suspicions they had. These two factors in combination may have both permitted and encouraged subjects to report awareness on the post-experimental questionnaire although awareness occurred after the opportunity to bias results had passed. Therefore it is not clear that the subjects who were reported as being faithful actually were.

Some indirect support for this interpretation is available from Fillenbaum (1966). He reports that some of his subjects were motivated to perform faithfully because:

"...they felt their job was to do as well as possible on the task (i.e. the cancelling task), and therefore they could not let themselves become distracted by other possibilities."  
(p.535)

Three separate aspects of this statement create doubt as to whether subjects were aware of the nature of the deception at the appropriate time. First, subjects were given as much time as they wanted to check their work on the word cancelling task. Thus, they had ample time to learn the passage without it interfering with their performance on the word cancelling task. Second, it is clear from the above statement that subjects were quite concerned about their performance on the task. If they were truly hypothesis aware, it is likely that they would have been at least as concerned about their performance on the incidental learning measure as on the word cancelling task. Finally, given the fact that subjects considered any hypotheses other than the one provided only to be possibilities, indicates that they may have suspected deception, but, while doing the word cancelling task, were unsure of its true nature.

#### Statement of the Problem

If the foregoing analysis is correct, then the interpretation of Fillenbaum's data, and the demonstration of the faithful subject role, is still open to question. The difficulty with his procedure appears to be the timing of the awareness measure. It is the contention of the present author that if he had assessed awareness before measuring incidental learning, he would likely have found lower levels of awareness that were more comparable to the levels of response biasing he found. With these results, there would be little

support for the active version of the faithful subject role.

In order to test this hypothesis, the timing of the awareness measure was manipulated in the present study so that one-half of the subjects received it after the incidental learning test, i.e., Fillenbaum's treatment, while the other one-half received it before the incidental learning measure. It was hypothesized that those in the latter condition would show lower levels of faithfulness than those in the former.

As reported earlier, Fillenbaum and Frey (1970) found marginal individual differences in response biasing according to how subjects were classified on the basis of their four-item measure of suspiciousness. In view of their limited test of this hypothesis, it seemed appropriate to attempt to improve upon their scale in order to test the effects of such individual differences on faithfulness. The measure of subject motivation was designed to assess levels of subject activity in the laboratory. Similar to Fillenbaum and Frey's measure, the scale was designed to assess the degree to which subjects actively search for a hypothesis, and their tendency to allow hypothesis awareness to influence their behaviour. Subjects who scored at one end of the scale were classified as 'active' (similar to Fillenbaum and Frey's suspicious subjects), while those at the other extreme were classed as 'passive' (similar to the trustful subject). It was expected that active subjects, in comparison to passive subjects, would be more likely to become aware of the nature of the deception, and more likely to bias their results.

Confirmation of the above hypotheses would have important implications for the prevalence of the faithful subject role. Positive results would indicate that the active version of the faithful subject role is adopted by relatively few subjects and is not as wide spread as has been concluded. Obtaining the predicted results on the test of subject motivation would indicate that subjects do enter the experimental situation with different levels of motivation which have significant effects on their behaviour.

In summary, the hypotheses were as follows:

1. Those subjects scoring as active on the premeasure were expected to show higher levels of hypothesis awareness and biasing than those who scored as passive.
2. Those subjects who were administered the awareness measure before the test of incidental learning would have lower levels of reported faithful behaviour than those who were administered it after the incidental learning test.

## CHAPTER II

### METHOD

#### Subjects

The subjects were 45 male undergraduates registered in several sections of the introductory psychology course at the University of Manitoba. Subjects volunteered in order to partially fulfill an experiment-participation requirement.

#### Design

There were two independent variables with two levels of each. The first was subject scores on a test of subject motivation in experiments (active vs. passive). The second was whether the test of awareness was administered before or after the incidental learning test (early vs. late).

#### Materials

Test of subject motivation. A test designed to assess how actively subjects search for the experimenter's hypothesis, and how likely they are to bias results was constructed. The original version of the "Subject Questionnaire" contained 28 Likert-type items. Subjects were required to indicate how much they agreed or disagreed with each item by responding on a five point scale. In order to counter the effects of response sets, one-half of the items were worded so that agreement with the statement constituted an active

response, while agreement with the other one-half constituted a passive response. These items were pretested on 55 male and female undergraduates at the University of Manitoba. Item analyses were performed on these data in order to select those items which correlated significantly with the total test score at the 5% level or better. This resulted in a reduction of the length of the test to 18 items.

To select subjects for the experiment, this revised version of the Subject Questionnaire (Appendix A) was administered to 67 males approximately 1½ months prior to the beginning of the experiment. A post-experimental interview indicated that none of the subjects perceived a relationship between the Subject Questionnaire and the experimental session. Scores from this administration ranged from 27 to 74 with a mean of 46.0, a median of 45.5, and a standard deviation of 9.6. The reliability was found to be .80 by Hoyt's estimate of reliability. According to their total score on the Subject Questionnaire subjects were divided at the median into active and passive groups. Individuals from this group of 67 were contacted by telephone and were asked to participate in the experiment. The first 45 subjects to agree to participate were employed in the experiment. Twenty-three of these subjects were classified as passive, and 22 were classed as active.

Experimental materials. Since the original experimental materials used by Fillenbaum were unavailable<sup>1</sup>, equivalent ones were developed. These included the prose passage, the word cancelling instructions, the incidental learning test, and the measure of subject awareness.

All of the materials were pilot-tested on a group of comparable subjects. The 900-word prose passage was drawn at random from a text on Greek mythology (Rose, 1928; Appendix B). To develop the incidental learning test 19 multiple choice and completion items were constructed. On the basis of the pilot test, the most discriminating 13 items (nine multiple choice and four completion) were retained so as to equate the length of the test with that used by Fillenbaum (Appendix A).

The 'funnel type' awareness measure (Appendix A) was patterned after Page (1971). It consisted of nine items, each on a separate sheet. The items, designed to elicit information regarding subject awareness and bias, were initially general in nature, and became progressively more specific so as to minimize the possibility that subjects would be made aware by the questions themselves. Subject awareness was determined by responses to items two to five and item ten on the awareness measure by two raters who were blind to subject treatment. These items questioned subjects on what they thought was the purpose of the experiment in general and each of the tasks in particular. In addition each subject was asked if he had expected to be required to do something concerning the word cancelling task that was not mentioned in the instructions, when this suspicion first occurred, and what made him suspicious. A subject was classified as aware if he indicated that he suspected he would be asked to recall the passage for any reason (e.g., to recite the passage, answer questions on it, etc.), and, if these suspicions occurred before or during the word cancelling task.

Reported levels of response biasing were determined in a similar manner according to responses to items six to nine, which asked subjects if they had done something during the word cancelling task not included in the instructions, had read the passage, or tried to learn it. A subject was classed as biased if he indicated that, for any reason, he had read or tried to learn the passage. Actual levels of response biasing were assessed by scores on the incidental learning test. The maximum score possible was 13, with higher scores indicating greater retention.

#### Procedure

Although different variables were examined in the present study, the procedure used generally followed that employed by Fillenbaum and Frey (1970). Each subject was assigned to either the early or late condition by means of a table of random numbers. The experimenter was blind to the subject's assigned treatment until the time of its administration, and throughout the experiment, to his score on the Subject Questionnaire.

Subjects were tested individually by a male experimenter in a single session that consisted of two parts. In the first part, designed to arouse suspicions of deception in experiments, the subject was informed that he was participating in an experiment on 'complex information processing', consisting of a number of separate tasks. Each subject was first given two divergent sets of adjectives (Appendix B), and asked to write a character sketch based on each of them. When he finished this he was then asked to write a new description recon-



ciling the two previous ones as representing only one individual. After completing this third sketch it was pointed out that what he as a subject was initially told about a task might not cover all that could happen to him or all that might be required of him. Each subject was additionally told that psychology experiments sometimes require that subjects be deceived initially.

In the second part of the experiment, each subject was presented with a complex word cancelling task and was instructed to work quickly but accurately as he would be timed. He was also told that he would have as much time as he wanted following the task to check his work. The instructions (Appendix C) were presented by tape recorder up to this point. When the subject had finished checking his work the passage was collected. To determine the next step in the experiment, the experimenter consulted a prepared list which indicated to him the condition to which each subject had been assigned. Each subject assigned to the late condition was immediately administered the test of incidental learning followed by the awareness measure. In the early condition, the awareness measure was administered before the test of incidental learning. This difference in the time when awareness was assessed constituted the experimental manipulation. Finally, each subject was debriefed and was requested not to discuss the experiment with anyone else.

## CHAPTER III

### RESULTS

Responses on the awareness measure were classified as to whether or not the subject reported being aware of the nature of the deception, and whether or not he reported attempting to learn the passage, by two raters who were blind to subject treatment. There was initial agreement among the raters on 41 of the 45 subjects (91%) and subsequent agreement on the remaining four. Seventeen subjects were classified as unaware/unbiased, five as unaware/biased, nine as aware/unbiased (faithful), and fourteen as aware/biased. The data from the five unaware/biased subjects (one from each cell except two from the early-passive condition) were excluded from the analyses. Although they were unaware of the forthcoming learning test, they apparently had read the prose passage, typically out of curiosity. Hence, these subjects, while performing similarly to biasing subjects, were 'motivationally' similar to unaware subjects. In addition, Fillenbaum did not report any subjects in this classification. Thus, while such subjects are perhaps of interest in regards to this particular paradigm, they are irrelevant to the more general issue at hand.

Examination of the data revealed that the hypothesis that subjects classified as active on the basis of scores on the Subject Questionnaire would be more likely to become aware and bias results than those subjects classified as passive, was not supported. Of the active subjects, 11 reported awareness, while 12 of the passive subjects did (see Table 1).

Table 1

Observed Frequencies in the Unaware, Faithful, and  
Biased Classifications as a Function of Treatment.

Treatment	Classification		
	Unaware	Faithful	Aware/Biased
Early			
Active	5	1	4
Passive	6	0	4
Late			
Active	4	3	3
Passive	2	5	3

The groups also did not differ in the number of subjects (7) reporting bias, or on scores on the incidental learning test. The means were 6.3 and 5.95 for active and passive subjects respectively. Since no differences were observed between active and passive subjects, for all subsequent analyses the data were collapsed across this classification.

The second hypothesis, that fewer subjects would be classified as faithful when tested for awareness before rather than after the incidental learning test, was supported. The number of subjects classified as unaware of the deception, aware and unbiased, and, aware and biased, for the early and late conditions, is presented in the first two rows of Table 2. While only one of the nine aware subjects in the early condition was classified as faithful, eight of the fourteen aware subjects in the late condition were so classified. An overall chi-square test for independence indicated the two conditions were significantly different,  $\chi^2_{(2)} = 7.2$ ,  $p < .05$ . Furthermore, a comparison of the top two rows of Table 2 indicates that the number of biasing subjects was essentially unaffected by treatment. On the other hand, the number of subjects classified as faithful was drastically reduced in the early condition, while the number of unaware subjects increased correspondingly, relative to the late condition.

It is also of interest to compare these results with those obtained by Fillenbaum. To make this comparison, the number of subjects classified as unaware, faithful and biased in each of Fillenbaum's three experiments were summed. These data were then scaled down to give a

Table 2

Observed Frequencies of Unaware, Faithful, and Biased  
Subjects for the Present Study and Fillenbaum's Experiments.

Group	<u>Classification</u>		
	Unaware	Faithful	Aware/Biased
Early	11	1	8
Late	6	8	6
Fillenbaum*	10.2	5.8	4.0

\*These frequencies are scaled down from the actual data  
 reported by Fillenbaum.

total N of 20 to make his data comparable to those of the present study.<sup>2</sup> The results obtained by Fillenbaum are presented in the bottom row of Table 2. Using Fillenbaum's data as expected values in a test for goodness of fit indicated that the late condition did not deviate significantly from expectation,  $\chi^2_{(2)} = 3.52$ ,  $p < .20$  while the early condition did  $\chi^2_{(2)} = 8.07$ ,  $p < .02$ .

Since Fillenbaum found that subjects who were classified as biased consistently scored higher on the incidental learning test than those classified as unbiased, the data from this measure were analyzed via a two factor analysis of variance. The early-late treatment variable served as one factor, and subject classification as biased or unbiased as the other. As expected, and consistent with Fillenbaum's results, those who reported learning the passage scored higher than those who did not,  $F(1,36) = 12.996$ ,  $p < .001$ . The means were 8.16 and 5.22 for biased and unbiased subjects respectively. In addition, those in the late condition scored higher than those in the early condition,  $F(1,36) = 6.892$ ,  $p < .013$ . The means were 7.96 and 5.22 for the late and early conditions respectively. The data are presented in Tables 3 and 4.

Table 3

Mean Scores on the Incidental Learning Measure.

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Treatment	<u>Subject Classification</u>	
	Biased	Unbiased
Early	6.25	4.50
Late	9.67	5.93

---

Table 4

Summary of Analysis of Variance for Scores on the Incidental Learning Measure.

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Bias (A)	1	64.53	64.53	12.99	.001
Treatment (B)	1	34.22	34.22	6.89	.013
A x B	1	8.85	8.85	1.78	.190
Error	36	178.76	4.97		
Total	39	286.36			



## CHAPTER IV

### DISCUSSION

The finding that the Subject Questionnaire was unsuccessful in predicting subject behaviour was unexpected. Although it is not possible to specify the precise reasons, it may be of some use to speculate as to why the hypothesized relationship was not found. One possibility is that subjects may have been unable to accurately assess their own behaviour in the laboratory, and responded to the scale in a consistent but inaccurate manner. Alternatively, the obtrusiveness of the items may have created psychological reactance (Brehm, 1966) in subjects, leading them to respond either haphazardly or opposite to their real feelings. Both of these alternatives appear unlikely, the former because the reliability of the scale would have been much lower had subjects completed it haphazardly. If subjects had answered in a manner opposite to their true feelings there would have been a negative relationship between scale scores and the criterion measures.

Perhaps the most likely explanation is that subjects responded to the items in terms of how they thought some hypothetical 'good' subject should act rather than in terms of their own behaviour. Thus, unless a number of subjects' behaviours were closely related to a consistent image of the ideal subject, little or no relationship would be found between scale scores and actual behaviour. This alternative appears plausible as many of the items were worded in terms of how good subjects should behave.

The second hypothesis of this study, that assessing awareness before the test of incidental learning would result in fewer subjects classified as faithful than when the awareness measure followed the incidental learning test, was supported. The significant chi-square test for independence indicated that these procedures produced different distributions of subjects into each of the unaware, aware/unbiased (faithful), and aware/biased categories. Furthermore, it is clear that these differences were entirely due to the shift in the number of subjects classified as unaware and faithful. In the early condition, fewer subjects were categorized as faithful, and more were classified as unaware relative to the late condition. The tests for goodness of fit confirmed that the late condition successfully replicated Fillenbaum's results, while the early condition did not.

Since the only difference between the two procedures was whether incidental learning was tested before or after awareness was assessed, it is apparent that in the late condition the placement of the learning test served to increase the number of subjects reporting awareness. Because this awareness occurred after the opportunity to bias results had passed, such 'late-aware' subjects could only have been classified as faithful. However these late-aware subjects clearly were not adopting a faithful role, as faithful subjects by definition are ones who are very concerned with following instructions exactly and giving honest results.

If they were not faithful subjects, what role were they adopting? Although a post-hoc analysis of the role adopted by the late-aware subjects can not be conclusive, it appears that a 'looking-good' interpretation (Rosenberg, 1969) is the most parsimonious for these subjects and for those in both conditions who biased their results. Regardless of when subjects became aware, most likely they felt they would be evaluated positively (i.e., intelligent) for 'figuring out' the deception the experimenter had told them might occur when they were debriefed after the initial deception. Specifically, biasing subjects could display their intelligence by learning the passage and doing well on the learning test. Subjects who were made aware by the learning test, on the other hand, could enhance their images by claiming (as they did) that they knew about the deception, but were faithful because they wanted to give valid data and thus did not deviate from instructions. Although other role interpretations are possible, none appear as parsimonious nor as definitely identified as the foregoing. For example, biased subjects may have been trying to look good, while late-aware subjects may have adopted a negativistic role and claimed awareness when there was none. Alternatively biased subjects may have adopted a cooperative role if they assumed that the experimenter wanted them to learn the passage.

Although no prediction was made about how well subjects would do on the learning test, the finding that those classed as biased scored significantly higher on the incidental learning measure than those classified as unbiased is consistent with the common-sense expectation

that those who claimed to have tried to learn the passage actually did better than those who did not. Fillenbaum found similar results. However in this study it was also found that subjects in the early condition scored significantly lower on the incidental learning test than those in the late condition. This somewhat unexpected result may be due to the interference of the awareness measure with retention in the early condition. That is, inserting the awareness measure between the word cancelling task and the learning test likely caused subjects to forget some of the material.

#### Implications for Future Research

It should be clear from the results of this study that the incidence of faithful behaviour is relatively low. As yet, it is unclear what situational and personality variables would serve to increase faithfulness. For example, if biasing subjects were motivated by a desire to look good, then reducing evaluation apprehension may result in increased faithfulness.

Should there be a search for more faithful subject behaviour? Does the faithful subject actually yield more ecologically valid data than a less faithful or otherwise motivated subject? The answer to these questions is "probably not". In the present study, response biasing required definite action on the part of the subject in terms of preparation - in order to bias, subjects had to actively prepare for the learning test. Furthermore, it was clear to those subjects who wished to remain faithful how they were to behave - they were not to try

to learn the passage. However, in the large majority of social psychological experiments, the behavioural implications for those who wish to remain faithful may not be that clear. For instance, if a subject discovers he is in an attitude change study, and decides to provide faithful data, he must then decide how much his attitudes would have been changed if he were not aware. This criticism of faithful subject data, then, is similar to those made of the use of role-playing as an alternative to deception in experiments (Freedman, 1969; Miller, 1972). The major thrust of this argument is that role-playing subjects are forced to act 'as if' they are in a real situation. Thus, the data they provide consists only of their guesses as to their behaviour. Similarly, faithful subjects are forced to act as if they did not know what the experiment was about. Clearly then, one important direction that research in the social psychology of the psychological experiment can take is to make empirical investigations of the conditions under which subjects will provide ecologically valid data; not simply stating what researchers should avoid, but more importantly, providing alternative methodologies which will give more confidence in the data obtained.

The results of this study also have important implications for the use of post-experimental questionnaires in assessing subject awareness and motivation. Fillenbaum's conclusions regarding the prevalence of faithful subjects were based largely on such data. However, the results of the present study indicates that this data was influenced by subjects' motivations. Unless one can be certain that an 'honesty' set

can be produced, for example by clearly differentiating the post-experimental questionnaire from the rest of the experiment, and/or by special instructions (e.g. Page, 1968), and/or by procedural precautions (as in the present study), conclusions based on post-experimental questionnaire results must allow for the possibility of biasing effects on this measure as well. This is not to say that all such questionnaire data should be disregarded. It can be a very useful tool for determining subjects' suspicions of the experimenter's hypothesis, as well as attempts to bias data. However, it should be recognized that the same demands and biases that operate in the experiment proper, may influence responses on the post-experimental questionnaire. What is needed then, is further research, possibly using this paradigm, to identify those situational and/or personality variables that influence subject honesty on the post-experimental questionnaire.

## FOOTNOTES

1. Fillenbaum, S. Personal communication, January, 1976.
2. The data presented in Table 1 are based upon the results obtained by Fillenbaum in all three of his studies. Although the variables manipulated by Fillenbaum differed somewhat within and between each study, it was felt that this procedure was appropriate for two reasons. Firstly, Fillenbaum did not find any significant differences between the various groups within each study he ran, and secondly, the assumption tested by this study was that the differences between studies were less significant than his consistent procedure of testing for awareness after the incidental learning test was administered.

## REFERENCES

- Brehm, J.W. A Theory of Psychological Reactance. New York: Academic Press, 1966.
- Brock, T.C., & Becker, L.A. "Debriefing" and susceptibility to subsequent experimental manipulations. Journal of Experimental Social Psychology, 1966, 2, 227-236.
- Cook, T.D., Bean, J.R., Calder, B.J., Frey, R., Krovetz, M.L., & Reisman, S.R. Demand characteristics and three conceptions of the frequently deceived subject. Journal of Personality and Social Psychology, 1970, 14, 185-194.
- Cook, T.D., & Perrin, B.F., The effects of suspiciousness of deception and the perceived legitimacy of the deception on task performance in an attitude change experiment. Journal of Personality, 1971, 39, 204-224.
- Fillenbaum, S., Prior deception and subsequent experimental performance: The "faithful" subject. Journal of Personality and Social Psychology, 1966, 4, 532-537.
- Fillenbaum, S., & Frey, R., More on the "faithful" behaviour of suspicious subjects. Journal of Personality, 1970, 38, 43-51.
- Freedman, J.L., Role playing: Psychology by consensus. Journal of Personality and Social Psychology, 1969, 13, 107-114.
- Masling, J., Role-related behaviour of the subject and psychologist and its effects upon psychological data. Nebraska Symposium on Motivation, 1966, 14, 67-103.
- Miller, A.G., Role playing: An alternative to deception? A review of the evidence. American Psychologist, 1972, 27, 623-636.
- 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.
- Page, M.M., Modification of figure-ground perception as a function of awareness of demand characteristics. Journal of Personality and Social Psychology, 1968, 9, 59-66.
- Rose, H.J., A Handbook of Greek Mythology, London, England: Methuen and Co., 1928. Pp. 143-145.



- Rosenberg, M.J., When dissonance fails: On eliminating evaluation apprehension from attitude measurement. Journal of Personality and Social Psychology, 1965, 1, 28-42.
- Rosenberg, M.J., The conditions and consequences of evaluation apprehension. In R. Rosenthal & R.L. Rosnow (Eds.), Artifacts in behavioural research. New York: Academic Press, 1969.
- Weber, S.J., & Cook, T.D., Subject effects in laboratory research: An examination of subject roles, demand characteristics, and valid inference. Psychological Bulletin, 1972, 77, 273-295.

Appendix A

Subject Questionnaire

## SUBJECT QUESTIONNAIRE

How subjects view the experiment is important. This questionnaire is part of a larger survey to assess these opinions. From this and other work an understanding of the subjects' feeling will be gained and guidelines for future research established. Since this is one of the first large scale enquiries into subject's feelings, we ask that you complete the questionnaire frankly and honestly, based on your experiences or opinions.

If you have not been a subject in an experiment before you may have difficulty answering some of the questions. Having served in only one or two experiments you may also feel that you have not had enough experience to say how you would or should behave in an experiment. This doesn't disqualify you; your opinions are still important to our survey. You probably have some feelings how a subject should behave and we would like to include your views in our survey.

A standard IBM answer sheet is provided for your responses. Do not make any marks on the questionnaire itself.

1. Print your name, age, and sex on the top line of the answer sheet.
2. In the space marked Examination Centre, print "Subject Questionnaire".
3. On the next line, print the course in which you are enrolled (e.g. Psych 120, Section 3) and the name of your instructor.
4. In the section provided for "Identification Number", write your student identification number in the column headed by the red arrow. Blacken in the adjoining spaces corresponding to these numbers.
5. In the very bottom row of numbers in this "Identification Number" Section, write in the number of psychology experiments you have served in and blacken the space corresponding to this matter.
6. Now turn to the questionnaire and read question one. Select the response which best describes your feelings on this statement in accordance with the following scale.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
STRONGLY				STRONGLY
DISAGREE	DISAGREE	UNDECIDED	AGREE	AGREE

Make your judgements in accordance with your degree of acceptance or rejection of the statement. However, you should try to avoid the "undecided" response as much as possible, as it is your feelings towards each of the statements that is being sought.

7. Proceed to answer each of the items, recording your answers on the answer sheet.

1. The "correct" response for a subject in a psychology experiment is the one that occurs to him first, without thinking.
2. How to behave in any experiment is a problem for the subject to solve.
3. Although suspicious about the true purpose of an experiment, a subject should avoid basing his responses on these suspicions.
4. A subject should consider himself a collaborator who assists the experimenter, rather than an object for study.
5. A subject should just "let things happen" in an experiment without thinking about them.
6. A good subject generally tries to figure out what the experimenter wants.
7. A subject should generally take the purpose of the experimenter into account before responding.
8. A good subject tries to discover a great deal about the experiment and what he will have to do just from seeing the experimental room and apparatus.
9. What the subject feels, rather than what he knows the experimenter wants should determine the subject's response.
10. A subject should respond first and then think about the experiment later.
11. Unless requested to think about something, a subject should just respond automatically in an experiment.
12. On psychological tests a subject should give the first response that comes to mind without thinking about what it may mean.
13. A good subject pays attention to the experimenter for hints on how he (the experimenter) wants him to respond.
14. A subject should not try to interpret the purpose of the experimenter's activities.
15. A good subject tries to figure out the meaning of the experiment as he listens to the experimenter's instructions.
16. A subject should carefully think about what the experimenter wants before he responds.

17. Most subjects really aren't interested in the experiments they take part in and "just go through the motions".
18. A good subject tries to figure out what the experiment is all about as soon as he can.

Incidental Learning Test



1. Whom did Apollo fall in love with?
  - a. Peneios
  - b. Kreusa
  - c. Naiad
  - d. Kyrene
  - e. Hypseus
2. Who was known as the deity of olive growing and hunting?
  - a. Artemis
  - b. Aristaious
  - c. Apollo
  - d. Vergil
  - e. Eurydike
3. What did Eurydike die of?
  - a. snake bite
  - b. bee sting
  - c. a lion's bite
  - d. drowning
  - e. a hunting accident
4. What was Kyrene doing when Apollo first saw her?
  - a. rowing across the river
  - b. hunting
  - c. wrestling a lion
  - d. tending at the bee hives
  - e. running from Aristaious
5. Which of the following people has a province in Africa named after him/her?
  - a. Vergil
  - b. Dryad
  - c. Dreusa
  - d. Orpheus
  - e. Kyrene
6. Who turned into a pillar of stone?
  - a. Niobe
  - b. Leto
  - c. Tityos
  - d. Orpheus
  - e. Eurydike
7. Why was Niobe punished?
  - a. for boasting of her superiority
  - b. for killing Leto
  - c. for insulting Apollo's mother
  - d. for having too many children
  - e. for killing Artemis

8. Whose children were killed?
  - a. Leto's
  - b. Artemis'
  - c. Niobe's
  - d. Tantalos'
  - e. Sipylos'
9. What is supposed to be on Mt. Sipylos?
  - a. a statue of Apollo
  - b. Apollo's chariot
  - c. Niobe, in a pillar of stone
  - d. Kyrene's spirit
  - e. none of the above
10. What did Sybil want to do after her wish was granted?
11. Whose ears were changed into the ears of an ass?
12. How many grains of dust did Sybil have in her hand?
13. With whom did Apollo have a musical contest?

### Awareness Measure

## Subject Questionnaire

### Instructions

At this point in the experiment, we would like to get your ideas and thoughts about what you have done up until now. Please answer each of the following questions frankly and honestly. Please Do Not go on to the next question until you have completed your answer to the previous one, and, please Do Not go back to a question once you have started the next one.

## Subject Questionnaire

2. What do you think this experiment is about?

3. What do you think the purpose of the first task (writing the character sketches) is?

4. What do you think the purpose of the second task (word-cancelling) is?

5. Do you think you will be asked to do something concerning the word cancelling task that was not mentioned in the instructions? What?

a.

b. If you do, when did it first occur to you?

c. How sure are you of this (check one)

very						not at
sure	_____	_____	_____	_____	_____	all sure



6. Did you do something during the word-cancelling task you were not instructed to do because of any suspicions you may have had? What

b) If you did, why did you do this?

c) If you were suspicious, but did nothing, why did you do nothing?

7. Did you pay much attention to the meaning or content of the passage from the word cancelling task? (check one)

not \_\_\_\_\_ very  
at all \_\_\_\_\_ much

8. Did you ever read the passage just to get its meaning? Why?

9. Did you try to learn the passage at all?

10. If you do think that you will be asked to do something not mentioned in the instructions, what led you to think this?

## Appendix B

## Adjectives

PERSON ONE

SOCIAL

INTELLIGENT

INDUSTRIOUS

WARM



PERSON TWO

IRRITABLE

SELF-CENTERED

STUBBORN

ENVIOUS

Prose Passage

The rather late story of Apollo and the Cumaeen Sibyl appears to be partly modelled on the legend of Kassandra. According to Ovid, he would have made her immortal if she would have yielded to him. As it was, he bade her choose whatever she liked, and she asked to live as many years as she held grains of dust in her hand. Too late, she realized that she had not asked to continue young, and, as she still would not grant the god her favours, she gradually shrivelled up till, towards the end of her life of a thousand years (the number of the grains of dust), she was, according to the popular account, reduced to a tiny thing which was hung up in a bottle and could only answer the children who asked 'Sibyl, what do you want?' with the words 'I want to die'.<sup>21</sup>

More fortunate was Apollo's love for Kyrene, daughter of Hypseus, the son of the river Peneios, and a Naiad, Kreusa daughter of Earth. Kyrene was a huntress, a sort of local Artemis, and when Apollo first saw her she was wrestling, single-handed and unarmed, with a lion. His admiration for her courage turned to passionate love, and snatching her up, he carried her in a golden chariot from Mt. Pelion to that district in Africa which still bears her name.<sup>22</sup> There she became the mother of ARISTAIOS, a rustic deity, the inventor of various country labours and pastimes, such as bee-keeping, olive-growing, and hunting or some kinds of hunting. He is best known from a single episode; he had a violent passion for Eurydike, wife of Orpheus, and pursued her; in trying to escape from him she trod on a venomous serpent, from the bite of which she died. Her sister Dryads took revenge upon Aristaios by making all his bees die; he then had recourse to his mother for advice. According to Vergil, she in turn referred him to Proteus, who, when Aristaios managed to catch him, explained the cause of the trouble. The Nymphs were consequently appeased, and a new swarm got from the decaying carcass of a bullock. This belief was apparently common, and not confined to the Greeks; the fact lying behind it is the existence of a fly, *Eristalis tenax*, which lays its eggs in carrion, where they hatch out, and closely resembles a bee in outward appearance.<sup>23</sup>

A fervent lover, Apollo was not less vigorous in his hate, although it was by no means always on his own account that he exercised his terrible powers. His defence of his mother's honour against Tityos has already been described; the case of Niobe was less to the credit of the divine trio concerned, but shows, by what is to our ideas (and those of the Greeks of the classical epoch) its injustice, a survival of the old principle of collective responsibility, the same which, in the case of the early Hebrews, for instance, caused the execution not only of Achan but of all his household. Niobe, daughter of Tantalos, had seven sons and seven daughters (or six of either sex, or ten). In an evil moment, she boasted that she was far superior to Leto, who had but two children. Thereupon Apollo and Artemis drew their bows, the former slaying the boys and the latter the girls. Niobe, thus bereft, wept over her dead children until she turned into a pillar of stone, from which the tears continued to flow, and in this shape she was shown to the curious in later times on Mt. Sipylus.<sup>24</sup>

Two famous musical contests are said to have taken place, one between Apollo and Pan, the other against Marsyas. The latter story has been briefly told in Chapter V (p. 111); the former runs as follows. Pan challenged Apollo to a contest. Imolos, the deity of the mountain of that name, acted as judge, and the divine performers played in turn (the story is told prettily by Ovid,<sup>25</sup> grandly by Shelley). Imolos decided in favour of Apollo; Midas king of Phrygia dissented, whereat Apollo transformed his ears into those of an ass, as an appropriate punishment. The king was exceedingly ashamed, and contrived to wear his turban so as to cover the deformity. His barber, however, was perforce privy to the secret, and having the professional vice of garrulity, was ready to burst for lack of some one to confide it to. At last he dug a hole in the ground and whispered it into that. Unfortunately, reeds grew up from the spot, which every time the wind blew through them whispered audibly 'King Midas has asses' ears.' There is a variant according to which Midas was judge between Apollo and Marsyas and voted for the latter; the sequel is the same.

## Appendix C

### Instructions

"This is an experiment on complex information processing. It consists of a number of separate tasks. Here are your instructions for the first task: Here are two lists of adjectives. (Experimenter hands adjective lists to subject). Each list describes a different person. Your job is to write up a description of each of these people based on the adjectives that describe them. That is, based on the four adjectives describing person one, write a brief character sketch that tells what you think person one would be like. Then do the same thing for person two. Tell me when you are finished". Upon finishing the task subjects were told: "Actually, these two lists of adjectives describe only one person, not two. I'd like you to take the two descriptions you've written and write a third one fitting the first two together. Tell me when you've finished". Upon completion of the third sketch, subjects were told: "As you're probably aware of by now, what is said initially about a task might not always cover all that is going to happen or to be required of you as a subject. Sometimes experiments require that a subject be deceived initially". "Now we will begin the second task, a complex word cancelling task. The instructions are on this sheet of paper (experimenter hands subjects instruction sheet (Appendix C)). I will read them out loud while you read them to yourself". "This next task is a word cancelling task. You are going to receive a passage of prose. You are to go through the passage of prose, and perform the following operations: Put a line through each capitalized letter, circle each comma that appears in the passage, under-

line all words of 2 letters in the passage. Work quickly but accurately.

You will be timed, so tell me as soon as you are finished. After you finish, you will be given plenty of time to go back and check your work".

All subjects were asked if they understand the instructions, and told to proceed with the task.

### Instructions for Word-Cancelling Task

This next task is a word cancelling task. You are going to receive a passage of prose. You are to go through the passage of prose, and perform the following operations:

1. Put a line through each capitalized letter (e.g., A; B; etc.).
2. Circle each comma (,) that appears in the passage.
3. Underline all words of 2 letters in the passage.