

This is the second in a series of articles on the role of the experimenter and additional personnel (other than the subject) taking part in parapsychological experiments. It reviews the evidence for psi-mediated experimenter effects, or the communication of experimenter bias, when all normal (i.e., sense-based) channels of communication are eliminated. Experiments in two broad categories are reviewed: (a) nonintentional psi experiments in which the subjects are unaware of certain important aspects of the test situation, or may not even know that they are taking part in a psi test; and (b) experiments in which the experimenter deliberately tries to influence the results by means of his own PK or ESP. When significant results are obtained in the first category, they may be due either to telepathy from the experimenter and/or his associates (psi-mediated experimenter effects) or to clairvoyance of the testing situation on the part of the subject (psi-mediated experimental effects). Significant results in the second category suggest either a direct influence of the experimenter upon the subject's responses by means of PK or an indirect influence by means of ESP. It is concluded that in psi research it may not be possible to differentiate between the experimenter and his experiment, and, therefore, between psi-mediated experimenter and psi-mediated experimental effects.

INTRODUCTION

This is the second in a series of papers dealing with the influence of the experimenter (and participants other than the subject) on psi test results. In psychology an experimenter effect has been reported by several authors and there are a number of surveys on the topic (e.g., Barber, 1973; Barber and Silver, 1968; Jung, 1971; Kintz, Delprato, Mettee, Persons, and Shappe, 1965; Rosenthal, 1966).

The experimenter effect in psychology has been described as the response of subjects to the needs and wishes of the experimenter or to factors in the experimental situation other than those to which the experimenter has overtly instructed them to respond. The explanation for experimenter effects in psychology experiments assumes that they are sense-mediated: that the subject is guided by subtle sensory cues-sometimes received subliminally-which are unintentionally provided by the experimenter. Another paper in this series (White, in press) attempts to show that these same factors are also associated with experimenter effects in parapsychology. But the results of a number of parapsychological experiments have suggested that experimenter effects may also be psi-mediated; that is, the subject may respond to the wishes and needs of the experimenter over and beyond what he is told by the experimenter and under conditions which rule out the possibility of sense-mediation. In such cases, the only way the subject could obtain the relevant information would be from the experimenter by means of telepathy (i.e., a psi-mediated experimenter effect), or by clairvoyance of the testing situation (i.e., a psi-mediated experimental effect). Even if the latter is the case, it is difficult to see how the experimental situation can be separated from the experimenter, for in a sense it can be viewed as a trap which the experimenter has devised with the intention of catching a particular finding which will fulfill his hopes and expectations.

Moreover, as I have tried to show in the first paper (White, 1976) in this series, in some instances it does not appear to be the experimenter himself who influences the subject's scores, but rather some other participant in the test situation, whether it be an observer, agent,

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randomizer, checker, or data collector. Although most of these "other participant" effects are no doubt due to subtle sensory cues or psychological influences in the testing situation, here too the effects may be psi-mediated. Therefore the term "psi-mediated experimenter effect" is used in this paper in its broadest sense, i.e., to indicate the effect not only of the experimenter, but also that of anyone assisting him in carrying out tasks relevant to the experiment or otherwise participating in it.

Another point to be made in this paper is that the results of psi experiments may be contaminated by psi itself. When psi-mediated experimenter effects occur, it is sometimes difficult to determine whose psi is responsible for them: that of the subject, the experimenter, the other research personnel, or that of all of these. However, it seems likely that such effects are most often connected with the person who is more interested in the results than anyone else even the subject-namely, the primary experimenter. Moreover, since the primary experimenter^{Footnote.2} is responsible for reporting the results, we are provided with a fuller account of his viewpoint than that of the others involved and thus what we are presented with in assessing the findings is his account of the experiment. Although it may seem farfetched, it might be worthwhile in all research reports to present firsthand accounts of the experiments from all persons playing a significant role in them.

Although theoretically the results of all parapsychological experiments are susceptible to interpretation in terms of psi-mediated experimenter effects, the effect has thus far been isolated in only two major types of testing situation: those allowing for the expression of nonintentional psi (a psi response to material which the subject is not deliberately trying to apprehend), and those in which the experimenter deliberately tries to use psi to influence the subject's scores. Experiments of both types will be reviewed below. Some of them are discussed in one or both of the other papers in this series (White, 1976; in press); when they are described again here, it is to illustrate points not hitherto emphasized.

NONINTENTIONAL PSI EFFECTS

The first review of nonintentional ESP and PK effects was made by Stanford (1974a, 1974b). With regard to ESP (Stanford, 1974a), he classified these effects in three categories. The first is illustrated by those experiments (Carpenter, 1971; Johnson, 1971; Johnson and Nordbeck, 1972; Stanford, unpublished) in which, unknown to the subjects, the experimenter had included in some of the targets certain motivationally important material in order to observe its effects on the test results. Stanford's second category of nonintentional ESP effects derives from experiments "in which subjects apparently used nonintentional ESP to respond to the wishes, intentions, moods, etc., of the experimenter" (pp. 39-40). In this category he cites studies of Feather and Brier (1968), Fisk and West (1958), Osis, Turner, and Carlson (1971), and West and Fisk (1953). His third classification consists of experiments in which the subjects demonstrated ESP in a situation in which they did not even know that they were taking part in a test of ESP. He includes five experiments in this group: Johnson (1973), Kreitler and Kreitler (1972), Lewis and Schmeidler (1971), and Stanford (1970, 1973).

Stanford's classification of nonintentional psi is largely concerned with types of target material and motivational factors. In discussing the experiments he reviewed, and some additional ones,

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I will use a different scheme of classification. Since I am primarily concerned with presenting the evidence for psi-mediated experimenter effects, my classification will stress those aspects of the experiments in which the experimenter had no normal knowledge of the targets, or if he did, the experimental conditions were such that it was impossible for him to convey the information to the subject by sensory means. Hence in all five of the following categories of nonintentional psi any significant experimenter effects which were evidenced must have been psi-mediated.

The first category consists of research in which experimenter and subjects were separated by a considerable distance. In the second group are studies in which they were separated by a "time barrier" during crucial periods of the test. The third category, and by far the largest, consists of those experiments in which the subjects were either not aware that they were being tested for psi, or if aware of that, kept in ignorance of certain important aspects of the testing situation. (In all the experiments in this group the experimenter was present with the subjects and aware of the experimental objectives, but ignorant of the actual targets and thus unable to cue the subjects by normal means.) The fourth category consists of experiments in which neither the experimenter administering the test nor the subjects were aware of the main experimental objectives. The final group is made up of studies in which the subjects apparently picked up information relevant to the experiment which was unknown to and unanticipated by the experimenter during the running of the tests.

Experiments in Which Experimenter and Subjects Were Widely Separated by Distance

If it is admitted that there is an experimenter effect in para psychology, as there is in psychology (Rosenthal, 1966), then the common-sense assumption-given the current scientific paradigm is that the causes of experimenter effects in parapsychology are the same as in psychology. In psychology they are attributed to the subject's reactions to personal characteristics of the experimenter, his method of handling the subject, and subtle unintentional cues such as tone of voice, posture, gestures, etc., which guide the subject to make the response the experimenter is hoping for. Since almost all psychology experiments are run in a testing situation in which subject and experimenter are in the same room, these are likely hypotheses to explain the fact that divergent results are often obtained by different experimenters. But in parapsychology subjects are often out of range of sensory cues from the experimenter-and still some experimenter effects sneak through! If these effects are not chance-determined, it is difficult to see how they could occur unless they are psi-mediated.

As far as I know, the first experiment providing clear-cut evidence of a psi-mediated experimenter effect was carried out by West and Fisk (1953). They tested 20 subjects by mail, sending them 32 sealed packs of 12 clock cards, four packs at a time. Half the packs had been randomized and sealed by Fisk and half by West, but as far as the subjects knew, Fisk was the only experimenter involved. The overall results were significant ($P = .0011$), but only Fisk's data were independently significant ($P = .00015$) while those of West were at chance.^{Footnote.3} It is interesting to note that on the basis of earlier experiments, West had suggested that Fisk "seemed to belong to a group of successful experimenters while he himself [West] belonged to a group who could only achieve null results" (p. 185).

Soal and Bateman (1955) reported that in some of their experiments with the high-scoring

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subject, Basil Shackleton, in which conditions of target presentation were changed without telling him that this was the case, and when he and the experimenters were in a different room, his scoring level dropped.

Fisk and West (1958) conducted an experiment along the lines of their clock card experiment described above, but working with only one subject and using a PK test in which the PK target had to be selected by ESP. Fisk corresponded with the subject and she mailed him her score sheets. Unknown to her, however, Fisk and West alternated in displaying the target faces, neither knowing those of the other. As in the clock card experiment, there was a significant positive deviation on Fisk's targets ($P = .013$) while the score on West's targets was at chance. A chi-square test of the number of hits and misses on the targets of the two experimenters showed that the difference between their results was marginally significant ($P = .05$).

Marsh (1959) carried out a GESP experiment in which 371 college students tried to reproduce pictures drawn by an agent 470 miles away. The aspect of Marsh's experiment that is relevant to psi-mediated experimenter effects is the way in which he used linkage material associated with the agent. The subjects were divided into two groups, an experimental group and a control group, and were told that they would have different agents. (The control group did not know that it had been so designated, and in actual fact there was only one agent, not two.) In a summary review of the experiment, Fisk (1960) describes the situation as follows: "Both groups were given precisely similar instructions but whereas the Experimental Group was given correct linkage material that given to the Control Group was incorrect. No linkage material was provided for the first five-day section in order that this section might provide an indication of the normal scoring level of the two groups when no linkage was operating... " (p. 224).

The types of linkage materials used were colored squares possessed in common by agent and subjects, squares from the agent's handkerchiefs, photographs and personality test results of the agent, and an intimate autobiography of the agent. In each instance the Experimental Group was given correct linkage material while the Control Group was given fabricated linkage material.

There was a significant difference in scoring between the Experimental and Control Groups, as measured by chi square. The Experimental Group scored above chance while the Control Group scored below chance to a similar degree (perhaps indicating that by means of ESP they knew they weren't getting the real McCoy and didn't like it!). In the first five-day section when no linkage material was used the difference between the scores of the two groups was not significant. However, significant improvements in scoring were made by the Experimental Group when they received a photograph and personality description of the agent, while no such scoring increment was obtained by the Control Group. The handkerchief squares provided the Experimental Group also were associated with significantly improved scores for the Experimental Group, but not for the Control. The colored squares did not improve the scores of either group.

The fact that consciously the subjects thought they had two different agents and both groups thought of themselves as experimental, not knowing that one of them had been designated a control group nor that both groups shared the same agent, combined with the fact that the two

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groups scored significantly in opposite directions, points to the operation of a psi-mediated experimenter effect. The linkage material, which all subjects assumed to be correct, further accentuated the scoring differences.

Osis and Carlson (1972) carried out three clairvoyance distance experiments in which the targets were displayed in their laboratory while the subjects worked at home. Both experimenters sat beside the targets, which were arranged on the floor. The subjects were asked to focus their attention on Osis, who was well known to them, and they were not informed of the presence of Carlson. Both experimenters rated their moods during each session. The ESP scores were found to be correlated only with the mood of the unknown experimenter. This finding was confirmed in the third experiment in which Osis was unable to come to the laboratory and so sat with the targets at home while Carlson sat with them in the laboratory as usual. The total deviation from chance in this experiment was suggestive and again the correlations indicated that the subjects were responding only to Carlson's mood.

Experiments in Which Experimenter and Subjects Were Separated by a "Time Barrier"

As would be expected in the emerging paradigm to which the data of parapsychology point, but in flagrant contradiction to the current scientific world view of what can happen, it would appear that not only can experimenter effects occur when the subject is spatially separated from the experimenter, but also when a time barrier separates them during probably the two most crucial points of any ESP experiment: the time when the subjects make their calls and the time when the experimenter determines the target order and checks the results.

An excellent illustration of the penetrability of the time barrier is an experiment of Schmeidler's (1964a) in which 75 subjects made 150 calls for targets which would later be selected by a computer. It was planned that later the subjects would be shown a third of their calls and their associated targets, another third would be seen only by the experimenter, and the last third would never be printed out, but would simply be scored by computer. The subjects were not informed of this aspect of the experiment. While the subjects were making their calls the experimenter was ignorant of which calls would fall in which of the three treatment categories. Schmeidler (1964b) found a significant negative correlation between those calls only the experimenter saw scored and those the subjects saw ($P = .00015$). Schmeidler suggests that "this correlation implied that the subjects had been responding to the difference between conditions; a difference that did not yet exist but would be produced by the letters [by means of which the subjects were notified of their scores]" (p. 24).

In this experiment the subjects once again were able to respond differentially to different conditions even though they had not even been told that they existed. And since the treatment to be given each call had not been determined at the time the subjects made their responses, they had no contemporaneous means of obtaining the information and thus must have used either precognitive clairvoyance or a combination of precognitive clairvoyance and telepathy to do so.

Another series of experiments indicating that subjects can use psi to distinguish between experimental conditions that have not yet been determined was reported by Feather and Brier

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(1968). The subjects were told that the experimenter would check half their runs (to be determined randomly) while someone else (known to the experimenter but not to the subjects) would check the other half. Subjects were also requested to specify those runs they felt the known experimenter would later check. In two pilots with Feather as the known checker and Brier as the unknown checker, the subjects obtained a differential effect, but only on those runs checked by Feather. When they thought she would check the runs and she actually did, they scored above chance, whereas when they thought the other person would check the scores but Feather actually did, they scored below chance. For the two pilots combined the difference was significant ($P < .03$, two-tailed). In a confirmatory experiment Brier was the known checker whereas Feather was the unknown checker. The differential effect again occurred on the runs checked by Brier, but not on those checked by Feather ($P < .02$, one-tailed). Since the checker or experimenter effect noted in these data was apparently not due simply to the subjects' conscious expectations of who would check the runs but was based on who actually did check them, the effect had to be psi-mediated, in this case by precognition.

Stanford has pioneered in testing nonintentional psi. His first experiment of this type was one of precognition (Stanford, 1970). Thirty male college students were tested individually for what they assumed was their ability to remember details of a taped dream report. The test consisted of a four-choice multiple-choice test. The memory questionnaires were scored several weeks later by an assistant who did not compare the answers with the actual dream report. Instead, she used a random number table to select on a one-fourth probability basis as correct for each item one of the four possible choices. Thus the ESP task was a precognitive one. In a later discussion of the results of this experiment, Stanford (1974) wrote:

Subjects were strongly biased to give the answer supplied on the tape. However, the effect of nonintentional ESP was sufficiently strong to overcome this bias in some instances. [Which one could say is equivalent to saying that two and two make five!] The following comparison makes the point clearly: On trials in which the random process selected as correct the answer subjects had actually heard on the tape, subjects produced responses contradicting the tape only 1.96% of the time; on trials in which the random process selected as correct an answer contradictory to what subjects had heard on the tape, they produced responses contradicting the tape 16.40% of the time. The difference of proportions is significant. On the trials in which subjects thus made responses counter to a strong bias engendered by having heard the tape they were accurate 46.90% of the time when by mean chance expectation 25.00% accuracy is expected, a result which is highly significant (pp. 41-42).

Thus in this experiment the subjects had to use two kinds of psi to discern two different aspects of the experiment: they had to use precognition to significantly "remember" the random responses and they had to use a form of contemporaneous ESP to be able to respond to the nonintentional ESP task to begin with! (There is also a possibility that they performed the latter task by precognitive clairvoyance, but telepathy from the experimenter or his assistants cannot be ruled out.)

The last experiment in this group was carried out by Johnson (1971), who administered a group precognition test to a class of 28 adult students. They did two runs of 25 calls of the numbers one through five. However, unknown to them, there was also an unconscious aspect to this experiment involving what Johnson called "secondary targets." He had asked the subjects at the time they made their calls to note four words on their sheets: all four were to be of a very

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personal and intimate nature, and two were to have very pleasant associations for the subject while two were to have very unpleasant associations. The subjects were not informed as to how these words would be used in the experiment. Using an ABBA order, Johnson later associated 10 of the targets in each run with "pleasant" words for each subject and 10 targets were associated with the "unpleasant" words. Five targets in each run served as a control and had no secondary word associations. The subjects scored positively (but not significantly) on the targets with positive associations; they obtained a significant negative score on the targets with negative associations ($P = .0094$, one-tailed); and they scored at chance on the targets not associated with any secondary targets. The difference in scoring on the "pleasant" and "unpleasant" secondary targets was significant ($P = .005$, one-tailed). Thus, even though the subjects did not know that certain targets would later be associated with words they had designated as "pleasant" or "unpleasant," and even though at the time they made their calls the order of neither the primary (number) or secondary (word) targets had been determined, they responded in a manner which was in line with the experimental expectations.

Experimenter-Present Experiments with Subjects Either Unaware of Being Tested for Psi or Ignorant of Important Aspects of the Test, and with Targets Unknown to Experimenter

In the experiments in this category the experimenter was with the subjects during the testing and aware of the experimental objectives; in all cases, however, the actual targets were unknown to him and therefore he could not have cued the subjects by normal means.

One of the first studies of this type was conducted by Woodruff (1960). He included in the target order a number of ESP symbols which had been stamped in red ink, whereas the subjects proceeded on the assumption that all symbols were stamped in black ink. In Part I of the experiment only black symbols were used in order to provide a control for Part II in which symbols of both colors were employed. There was a higher average score in Part II on the red targets as opposed to the score on the black targets, but the difference was not significant. However, there was a significantly greater fluctuation around the theoretical mean in the scores of the subjects responding to the red symbols than in those responding to the black symbols ($P = .01$).

In two exploratory experiments Carpenter (1971) administered a blind matching ESP test using ESP symbols. Unknown to the subjects, each envelope containing an ESP card also contained another card. Half of the time the additional card was an erotic picture and half the time it was a blank card. The subjects in the first experiment were 19 junior high school students. All were sheep. They were also administered the Taylor Manifest Anxiety Scale. A significant interaction ($P < .01$) was found between the two types of targets and the degree of anxiety manifested: the high anxiety subjects scored positively on the neutral targets but below chance on the erotic targets while the subjects in the mid and low range on the Taylor Manifest Anxiety Scale reversed the pattern.

The subjects in the second experiment were 31 male college freshmen, and the Mosher Guilt Scale was used to assess sex guilt. The sheep-goat effect was also measured. There were 16 sheep and they scored significantly higher on the erotic targets than on the neutral targets. The 15 goats did not produce a significant scoring differentiation on the two types of targets, but "the

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high-guilt goats scored higher on the erotic targets than on the neutral ones, while the low-guilt goats scored higher on the neutral targets than on the erotic ones" (p. 212).

In an unpublished experiment which Stanford describes in a later paper (Stanford, 1974a), he confirmed Carpenter's results using verbal erotic stimuli rather than erotic pictures. Whereas Carpenter had worked only with male subjects, Stanford also included females in his study, but he was only able to confirm Carpenter's effect with his male subjects.

Lewis and Schmeidler (1971) were the first to use the term "nonintentional ESP." It was in connection with an experiment in which there were two sessions in which 14 subjects tried to control their alpha and to identify its presence by means of a key press. Unknown to the subjects, the key press also registered an ESP call. There followed a half-hour period during which the subjects received alpha training with feedback. In the third and fourth sessions, the subjects made purposeful ESP calls using the key press. The half-hour training session was used to provide feedback concerning their ESP hits.

There was no evidence of either alpha or ESP learning. In the first two sessions, on the nonintentional ESP calls, the subjects obtained significant positive scores when they were generating more alpha and their scores were at the chance level when they were generating less alpha. In the purposeful ESP sessions, the ESP scores were significantly positive when less alpha was generated or was absent, but when the subjects generated more alpha their scores were at chance. Thus the result of the ESP tests in the last two sessions is a mirror image of the result in the first two sessions. The important aspect of these results as far as the present paper is concerned is the fact that the subjects did as well on the ESP test which they didn't even know they were taking as they did on the purposeful ESP tests.

Schouten (1971) carried out an experiment to see if subjects would score differently on non-coded targets (photographs of target objects) than on coded targets (words symbolizing the target objects). In order to eliminate target preferences, the subjects were not informed about the use of coded targets. As far as they knew, they were responding to non-coded targets. Actually, half of the targets were coded and half were non-coded. There were 24 subjects and they were given cards representing the non-coded targets. They were asked to match the envelopes containing the targets with these five cards. Even though the subjects did not know about the coded targets, they scored significantly in a negative direction on them ($P = .02$) while they scored at chance on the non-coded targets of which they were aware.

Johnson and Nordbeck (1972) reported on work with a subject who had had several spontaneous ESP experiences and had evidenced scoring fluctuations above and below chance in laboratory tests. She was also subject to spells of anxiety. After examining clinical material and personality test data, Johnson chose six words, half on pleasant themes in the subject's life and half representing unpleasant themes. Five each of the six words were written on cards, wrapped in foil, and sealed in opaque envelopes. Another batch of six each served as target objects and were similarly sealed. The subject was not informed of the nature of the target stimuli but was simply asked to perform a blind matching test by placing the 30 sealed cards in piles of five each on the six target envelopes "according to her impression of 'similarities' " (p. 126). During the test the target envelopes were in a room on a different floor

and were displayed to the subject by means of closed-circuit TV. It was predicted that she would score positively on the pleasant targets and negatively on the unpleasant ones. Three runs of 30 calls each were done under these conditions and a fourth "in which both the target cards and matching cards were replaced by strips of magnetic recording tape onto which the spoken target words previously had been recorded" (p. 127). Where chance is 10 for each type of target, she scored only two hits on the negative targets and 19 on the positive. The difference was significant ($P < .01$, two-tailed). (The same scoring tendency was maintained on the last run where the targets were strips of magnetic tape!)

A repetition was planned, but in the interim Johnson held a seminar on parapsychology in which he described what he had done in this experiment. To his surprise and chagrin, the subject was present. She was displeased that private material had been used as targets and was reluctant to participate. She did do three runs, however, and the scores were in the predicted direction, though not significant. In any case, this second experiment did not involve nonintentional ESP since the subject was then aware of the target differentiation.

Two subgroups of experiments relevant to nonintentional psi and psi-mediated experimenter effects will be reviewed next.

1. ESP Experiments Disguised as Academic Examinations

Johnson (1973) conducted three clairvoyance experiments (two pilots and one confirmatory) with college students who took an eightquestion psychology examination. The examination answer sheets were attached to the front and back of a large envelope. Unknown to the subjects, inside the envelope were typed the answers to four of the questions (selected randomly). The subjects were not aware that there was an ESP aspect to the examination.

In the first two experiments the hypothesis was that the scores would be higher on the target questions (those with the concealed answers) than on the non-target questions (those without answers). In both experiments the subjects got higher scores on the target questions than on the non-target questions and the differences were significant ($P = .022$; $P = .045$).

In the third experiment an attempt was made to elicit psi-missing by using both "primary" and "secondary" targets. The primary targets, which had a negative function, consisted of concealed information which was relevant to the exam questions, but incorrect. The secondary targets contained no information relevant to the exam and consisted of typed sentences aimed at either encouraging or discouraging the subjects. Positive secondary targets (e.g., "You will certainly pass this exam") were used in association with non-target questions. Negative secondary targets (e.g., "You are too stupid to pass this exam") were paired with primary targets in order to reinforce negative scoring on those targets. The results gave significant support ($P = .005$) to the hypothesis that "scores on the questions provided with incorrect answers and negative psychological reinforcement would be lower than scores on answers to nontarget questions, which were provided with positive psychological reinforcement" (p. 210).

Willis, Duncan, and Udofia (1974) attempted a replication of Johnson's (1973) work. Two introductory psychology classes took a midterm examination consisting of a 35-item

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multiple-choice test. In the first class 100 students received exam sheets with the answers to the first six questions enclosed in a test envelope while 104 students did not. The difference in the mean number of errors for the two groups was not significant. In the second class 70 students received tests with answers to the first six questions enclosed while 77 did not. Again, the difference in the results for the two groups was nonsignificant. The authors summarize by saying that "the rate of errors on the first page [containing six items] was not significantly different from the rate on the remainder of the test in either class" (p. 582).

Although this was a conceptual replication of Johnson's (1973) work, it was far from an exact one. By using the first six items in the multiple-choice test as the ESP targets instead of randomizing them throughout the entire test, the experimenters made themselves vulnerable to various extraneous factors. For example, the actual questions asked on the first page may have been either easier or harder to get right by normal means than the questions on the remainder of the test. Perhaps the subjects had not "warmed up" to the test conditions on the first few questions and so ESP had less chance of operating. There may also have been distractions during the first part of the test due to rustling of papers or the arrival of late students. Certainly the stacking effect cannot be ruled out. And whereas half of Johnson's questions had concealed answers and the responses to these were compared with the answers on the half that had no concealed answers, in the experiment of Willis and associates the ratio of targets to non-targets was 6 to 29.

Braud (1975) also attempted a replication of Johnson (1973). He used 46 subjects who were members of an undergraduate parapsychology course. The results of 22 subjects were considered to constitute a pilot experiment and those of 24 subjects as a confirmatory experiment. In addition to testing nonintentional ESP in the context of an academic examination, Braud measured the subjects' psi performance in relation to their need for "test-relevant information." A conscious clairvoyance task was also involved.

The examination was made up of three parts. The first part contained 16 items testing knowledge of parapsychological terms, and Part 2 was made up of 14 items concerning methodological procedures. Part 3 was the conscious clairvoyance task which consisted of 24 four-choice alternative items on a sheet stapled to the outside of a manila envelope within which were the "correct" answers. The students were informed that the results on this task would count toward their final grades; what they did not know was that the envelope also contained the targets for an unconscious clairvoyance test. The targets for this test consisted of the correct answers to seven of the 14 items in Part 2 of the exam.

In the pilot experiment the scores of the conscious clairvoyance task were at a chance level. The results of the unconscious clairvoyance task, however, were extrachance as evidenced by the fact that there were significantly fewer errors in Part 2 on the items for which answers were supplied than on the items for which no answers were supplied ($P = .025$, one-tailed).

Similar results were obtained in the confirmatory experiment: chance results on the conscious clairvoyance task and significant results on the unconscious clairvoyance task ($P = .025$, one-tailed). When the data of both experiments are combined, the results on the nonintentional ESP task are highly significant ($P = .0016$, onetailed).

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Part I of the exam, in which no answers were supplied, provided a baseline for assessing the subjects' normal knowledge of the course content. Braud reports a Spearman rank-order correlation calculated for the subjects' unconscious clairvoyance scores versus their total error scores on Parts 1 and 2 where they could have scored well simply through normal knowledge of the answers. The correlation was significant ($P < .01$, two-tailed), indicating that "there was a significant tendency for poor grades on the conventional knowledge portion of the exam to be associated with 'good' unconscious clairvoyance performance" (p. 283).

2. ESP Experiments Masked as Psychological Tests

Several experiments have been reported in which the subject was not informed that he was participating in an ESP test and was given to understand that he was taking a psychological test. Successful experiments of this type are doubly important because they not only show that psi can occur when the subject is unaware of using it, but also suggest that psi may actually contaminate results in experimental psychology. In fact, it would be interesting to see what would happen if psychology were to adopt the stringent testing conditions in which all possibility of sensory cues is eliminated, as is standard operating procedure in parapsychology. If an experimenter effect held up under such conditions, it would cast some doubt on the validity of the sense-mediated explanation of the experimenter effect in psychology experiments (as well as in some parapsychological experiments) when the experimenter and subject are in the same room. The studies described in this category suggest that a psi-mediated experimenter effect may well be present in psychological as well as parapsychological experiments.

As far as I know, the first attempt to investigate psi-mediated experimenter effects in standard psychological tests was reported by Warner and Raible (1937) in the first issue of the *Journal of Parapsychology*. The impetus for their research was the fact that "in conducting discrimination tests the experimenter often manipulates the presentation of the stimuli and is aware of what the subject's response should be. If telepathy occurs it may be that the experimenter's knowledge influences the subject's judgments. Only occasionally has discrimination testing been done in such a way that the experimenter was unaware of the correct response until after the judgments had been made and noted" (p. 44). In order to test the possibility of experimenter contamination they used weight discrimination as their experimental task. The stringent conditions usually employed in a parapsychological GESP or telepathy test requiring that agent and percipient be separated by at least two rooms were deliberately waived because Warner and Raible wanted the conditions to resemble as closely as possible those used in a psychophysical laboratory. On half the trials the experimenter did not know the correct answer and on half he did. The authors report that "the number of correct responses was generally greater when the experimenter knew the weights presented than when he did not. In two cases out of the seventeen [subjects] the difference was marked enough to indicate that the experimenter's knowledge influenced significantly the judgments of those subjects" (p. 44).

Since the experimenter was screened from the subjects, the authors propose that the only sensory cues that could have been provided would have to have been auditory ones, but they thought it unlikely that such cues were responsible for the results obtained. Rosenthal (1965) has cited this experiment as a cut-and-dried example of nonverbal communication by subtle sensory cues; in view of the experiments to be reviewed in the remainder of this paper,

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however, it seems more likely that Warner and Raible's own tentative interpretation is the better one—that the experimenter influenced the subjects' answers by ESP. Whatever the correct interpretation may be, they urged that all such psychological experiments contain controls against the possibility of telepathy, but to this day this admonition has not been heeded.

Tart (1963) tested 11 college students individually by taking several physiological measures while they guessed when they thought "subliminal stimuli" were present. Unknown to the subjects, there were no subliminal stimuli: instead, an agent in a soundproof room was either shocked electrically or the shock was directed to a resistor, both at random intervals. The "subliminal stimulus" the subjects thought they were guessing was thus only available by ESP. Their conscious guesses as to when the stimulus was present were at chance. However, the physiological responses of the subjects were related to the occurrence of both types of shocks to a significant extent. During the trials they generally showed "(a) a faster and more complex EEG pattern; (b) more frequent galvanic skin responses; and (c) more frequent changes in finger pulse volume" than they did during control (intertrial) periods. Thus the subjects "may be said to have responded on an 'unconscious' level" (p. 385).

The tests of the psi-mediated instrumental response (PMIR) model introduced by Stanford (1974a) for the most part belong in the present subgroup of nonintentional psi experiments masked as standard psychological tests (including Stanford, 1970, already described above). The PMIR model proposes "that the organism nonintentionally uses psi to scan its environment for need-relevant objects or events" and that when information about them is obtained, "the organism tends to act in ways which are instrumental in satisfying its needs in relation to the particular object or event in question" (Stanford, 1974a, p. 34). Stanford and his associates have experimented with the PMIR model in regard to a number of specific needs. These experiments will be reviewed next.

Stanford and Thompson (1974) tested an assumption of the PMIR model that "the timing of an action can be the mediating vehicle for psi-mediated instrumental response" (p. 99). This mechanism can, among other things, cause a person to carry out an action at a time when that action has normally unforeseeable consequences. The experimental hypotheses were (a) that in order to avoid an unpleasant condition and encounter a pleasant one, subjects will make use of the unconscious timing mechanism, and (b) that subjects' scores on a conscious ESP task will relate positively to their success in using the unconscious timing mechanism. Twenty-nine college-age males took a precognition test following which they were given a 10-word freeassociation test in which their reaction times and responses were recorded. For each subject one of the 10 stimulus words was randomly selected as the key stimulus, and each key stimulus "was randomly designated as requiring either a quick or a slow response from the subject if he was to enter [a] favorable as opposed to [an] unfavorable condition of the experiment which would follow the wordassociation task" (p. 101). The subjects knew nothing about the key word nor that they were expected to react to it at a certain speed, and the experimenter handling the subjects was blind as to the key word and the direction of the response-speed contingency.

The first hypothesis was not confirmed: "Subjects as a group did not show a reliable disposition toward responding in a way which would allow them to encounter the favorable rather than the

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unfavorable condition" (p. 103). There was a significant positive correlation ($P < .025$, one-tailed), however, between the subjects' scores on the PMIR task and the conscious precognition task, and thus the second hypothesis was confirmed. The authors note that this confirmation "provides support for the assumption that an unconscious timing mechanism can be a mode of psi-mediated instrumental response" (p. 103). And since the subjects were unaware that an unconscious psi task was involved, the fact that they nevertheless responded to it in an appropriate way suggests that they were using psi to carry out the experimenters' intentions.

Stanford, Zenhausern, Taylor, and Dwyer (1975) performed a PK experiment which tested the PMIR assumption that PK can be used to achieve desired ends even when the events acted upon are not normally known to the subject, and without conscious effort on his part to use PK. Forty male college students tested individually first took a PK test in which their task was to influence an electronic random number generator. After completing this intentional PK test, they were taken to another room where they were required to carry out a very boring task involving motor skills which could last as long as 45 minutes. Unknown to the subjects, the generator was turned on again and generated a trial per second ($p = 1/6$). If and when seven hits occurred in any successive block of 10 trials, the subject was allowed to stop the unpleasant task and was introduced to a pleasant task. This was the nonintentional (PMIR) PIC test since the subjects knew nothing about these contingencies. Scoring in the conscious PK test was not significant. In the PMIR test, eight subjects were released from the boring task where only 2.9 would be expected by chance ($P = .0069$), and the mean percentage of hits per subject was also significant ($P = .05$). This result indicates that just as they can in ESP tests, subjects are able in PK tests to fulfill the experimenter's expectations without being consciously aware of the nature of the task or even that they are being tested for PK.

A nonintentional ESP experiment reported by Stanford and Stio (1976) tested the PMIR need-strength hypothesis as well as a second proposition originally worded by Stanford (1974a) as follows: -PMIR occurs in part through psi-mediated facilitation or triggering of otherwise ready or available responses (including actual behaviors, thoughts, memories, or feelings)" (p. 46). The authors call this the "associative-mediation hypothesis" and describe its rationale as follows:

We sought to examine the associative-mediation hypothesis by requiring that for half the subjects nonintentional PMIR could occur only through strongly facilitating (speeding up) a response on a word- association test, and that for the other half PMIR could occur only through inhibition (slowing down) a response.... In word association, extrasensory facilitation of response (i.e., reduction in reaction time or increase of response speed) to a given stimulus word can occur if extrasensory function can utilize a ready or available response (e.g., an overlearned but not necessarily prepotent response) and trigger release it. In non-ESP use of word association it has long been known that such overlearned responses ... are associated with shortened reaction times.... Stanford (1973) had already shown that such overlearned responses can be readily used for ESP purposes, in confirmation of the associative- mediation hypothesis. Therefore, in the present study, subjects who under the experimental contingencies were required to use PMIR to facilitate response speed on the key word were expected to be able to do so [while] those required to use PMIR to slow down a response were expected to be less successful. Psi-mediated response inhibition in word association logically would seem to

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require that a relatively weak response be facilitated by psi in order to block or compete with a relatively strong (and therefore fast) response which would normally have come forth under the same circumstances.... The primary response normally tends to come forth in many subjects, and it tends to be a fast response. In an experimental condition which requires a slowing of response, it seems likely that psi would have to facilitate quite strongly a relatively weak response in order to compete with the primary response, thus slowing down reaction time. This would be a more complex and probably much less efficient task under the assumptions of the associative- mediation hypothesis (pp. 56-57).

Forty college-age males were tested by a female experimenter. Half had to respond rapidly to a randomly selected key word in a free-association test (the same one used in the Stanford-Thompson study, 1974) and half had to respond slowly in order to enter a favorable (sexually arousing) condition; those not producing the required reaction time (RT) entered an unfavorable (boring) condition. Subjects did not know that their RT on one of the words in the list "controlled their fate" in the remainder of the session; it was assumed that they would unconsciously "use psi in the service of their needs" (p. 55). Half the subjects listened to an erotically-toned phonograph record intended to arouse their sexual needs before the PMIR task and half heard it after.

The need-strength hypothesis was not confirmed. Although the subjects who heard the record before taking the PMIR test did better than those who heard it after, the difference in scoring was not significant. (The authors attribute this failure to replicate to the ineffectiveness of the record in arousing the subjects sexually.) The associative-mediation hypothesis was confirmed. As predicted, subjects in the rapid RT contingency achieved better PMIR results than those in the slow contingency ($P < .02$, one-tailed), and their scores also differed significantly from chance ($P < .02$, one-tailed).

In another PMIR experiment Stanford and Associates (1976) tested two propositions of the PMIR model as originally expressed by Stanford (1974a): (a) "The strength of the disposition toward PMIR is directly and positively related to ... the importance or strength of the need(s) in question- and (b) "factors disposing toward misuse of PMIR are considered to include ... a negative self-concept" (p. 168). Once again, the subjects had to use PMIR to avoid an unpleasant situation and enter a pleasant, erotically arousing situation. To study the first proposition, 72 male college students were tested by either a male or a female experimenter in the hope that those "tested by an attractive female experimenter [would] show a greater disposition to produce PMIR (by approaching the sexually arousing goal event) than [would] those tested by a male experimenter" (p. 168). The second proposition was tested indirectly by bolstering the self-concept of half the subjects by praising them for their performance on a moderately difficult task and saying nothing to the other half regarding their performance.

There were three male and three female experimenters and each tested 12 subjects, half of whom were in the positive self-concept group and half in the neutral self-concept group. The task in which self-concept was manipulated consisted of a controlled-association word-association test. Following this, subjects were given the PMIR task, which they were told was a normal free-association test. In it they gave associations to 10 words, one of which had been randomly selected as a key word. As in the Stanford-Thompson (1974) and Stanford-Stio (1975) experiments, subjects producing the required reaction time entered the erotically

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arousing condition, and those that did not entered the boring condition. At no time were subjects informed that ESP was involved in the test.

Subjects tested by female experimenters scored significantly better than those tested by male experimenters ($P = .025$, one-tailed) and thus the need-strength hypothesis was confirmed. The self-concept hypothesis was not confirmed; scoring of subjects in the positive self-concept group was not significantly different from that of the neutral self-concept group. As predicted, however, the highest scores were obtained by subjects in the positive self-concept group tested by a female experimenter ($P \geq .03$, one-tailed).

Significant evidence of PMIR was found in all the experiments of Stanford and his associates reviewed above, though results bearing on various sub-hypotheses were not always significant and were sometimes contradictory. The fact remains that for subjects to have succeeded in these nonintentional psi tasks they must have had an unconscious extrasensory awareness of the experimenter's intentions or of certain aspects of the test situation; in other words, psi-mediated experimenter and experimental effects are the only explanation for the significant results obtained.

Kreitler and Kreitler (1972) conducted a series of three experiments aimed at learning whether or not nonintentional ESP could affect psychological experiments. All the experimenters (i.e., data collectors) were skeptical about ESP. They administered three standard psychological tests: subliminal perception of letters of the alphabet, autokinetic motor perception, and the TAT. Unknown to the subjects, during the testing "senders" in another room were trying to "transmit" the correct answers to them. These studies were very complex and a number of analyses were performed to assess the significance of various sets of data. In summarizing the results of all three experiments the Kreitlers conclude that ESP "operates on people who are unaware of the attempts to [transmit something] to them and are unaware that they have got an ESP communication" (p. 44). Further, they view their results as having far-reaching implications for the experimenter effect in psychological as well as in parapsychological research. (But can the line be drawn at the psychological sciences? May the experimenter effect not extend to the limits of biology and even physics as well?)

Another elaborate nonintentional ESP experiment was designed by the Kreitlers (1973) to learn more about an unusual finding of their first set of experiments: the fact that the subjects "responded in line with the ESP messages mainly or exclusively when the content of the ESP messages was in contrast to [their] habitual or relatively frequent response tendencies ... as manifested in the control conditions" (p. 164). The experiment also explored whether or not the senders' concentration on the targets facilitated results.

Sixty subjects were told that they were participating in "a study on perceptual judgments." They did not know about the presence of senders in another room, nor did the senders know they were sending! They were merely told they were taking part in an experiment which measured "intensity of thinking." Again, the experimenters (or data collectors) were skeptical about the existence of ESP.

As far as the subjects were concerned, the test was to guess which of a pair of projected stimuli

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(two identical circles or two horizontal lines) was larger. Unknown to the subjects, part of the time weak subliminal stimuli reinforcing the size of one of the supraliminal stimuli were projected along with the supraliminal image, and part of the time the supraliminal stimuli were supplemented by the sender's ESP message. The Kreitlers report that "the major finding was that ESP messages were effective chiefly when they contradicted information conveyed by the subliminal stimuli and were communicated by a transmitting sender" (p. 163).

In an attempt to repeat Kreitler and Kreitler's (1972) experiment involving subliminal perception of letters, Lübke and Rohr (1975) tested 31 undergraduate psychology students. They were told that the study was on "the effects of fatigue on the threshold of perception." The hypothesis that the subjects would identify more of the subliminally-presented letters when a sender was looking at them than when he was not was confirmed ($P < .04$, one-tailed), as well as the Kreitlers' finding that subjects tend to succeed on responses with a low probability of occurrence. The authors interpret their results as also confirming the Stanford PMIR hypothesis that ESP is used nonintentionally in the service of one's needs.

Experiments in Which Neither Experimenter Nor Subjects Were Aware of the Main Experimental Objective

Although there are only two studies in this group, it is worth consideration because presumably any psi-mediated experimenter effects which occur when both the experimenter collecting the data and the subjects are unaware of the experimental objectives are constellated by the senior investigator who is not present during the testing.

Cox (1971) compared results on a PK test with two different densities of dice (lead and celluloid). Neither the subjects nor the data collectors were aware that the dice differed. Four series of 240 runs each were carried out with 112 subjects. With the exception of a few runs, Cox, who was the only one who knew about the difference in the dice, did not take part in the experimenting. There was little difference in the amount of PK evidenced with the two types of dice. However, there was a difference in the scoring direction. Positive scoring was obtained with the celluloid dice and negative scoring (psi-missing) with the lead dice. The difference between the scores with the two types of dice was significant in both the exploratory and confirmatory series. Cox points out that to obtain these results "the subjects must have used a combination of PK and clairvoyance.... Clairvoyance apparently provided them unconsciously with the knowledge that there was a difference in the dice; and on the basis of this knowledge they appear to have produced a differential scoring effect by PK, one resulting in target avoidance on one kind of dice and target hitting on the other" (p. 118). Although clairvoyance is the parsimonious explanation of how the subjects learned of the difference in dice, that they obtained the information telepathically from the senior investigator is another possibility. Even if this experiment does not provide airtight evidence of a psi-mediated experimenter effect, it does at least suggest a psi-mediated experimental effect.

Ballard (1975) had 11 female and 11 male subjects guess 50 ESP symbols, each enclosed in an envelope, after listening to a taped relaxation procedure. Neither the subjects nor two of the three primary experimenters knew that each envelope also contained either an erotic picture or a neutral stimulus. Ballard says "the results suggested that the participants responded

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differently to the erotic and neutral stimuli even though they were consciously unaware of their existence. Erotic stimuli produced significantly more variance in responses (number correct per target) than neutral stimuli ($P < .01$, one-tailed). High-anxiety and low-anxiety females (measured by the State-Trait Anxiety Inventory) differed in their response to erotic stimuli ($P < .05$, two-tailed), as did males and females as indicated by the difference in variances ($P < .05$, one-tailed)" (p. 34).

Spontaneous Experimenter Effects

This category includes experiments which provide evidence of the spontaneous occurrence of psi-mediated experimenter effects in ways not anticipated by the experimenter but which are caught, as it were, red-handed by means of the experimental net. Because the effects in this group involve both unintentional and unanticipated elements, they usually come to light in experimental situations in which errors occurred. In a stimulating article on the "error phenomenon," Rao (1968) suggested that accidental errors on the part of subjects or experimenters may serve as "mediating vehicles" for the occurrence of psi phenomena. It is the experimenter error experiments which are of interest here. In this category Rao cites his own experiment (Rao, 1963), Schmeidler (1964a), and two undated and otherwise unidentified experiments by Rao and Sailaja. The Schmeidler experiment (1964a), which has already been described above, served as the impetus for Rao's article. In her computer-run investigation of precognitive clairvoyance, Schmeidler had conducted two experiments, one in 1961 and one in 1962. There were three procedural differences between the first and second experiments, only one of which concerns us here. This involved discarding the initial targets and substituting re-run targets. "In the 1961 experiment, machine and programming errors made it necessary to discard the results of 34 subjects. The responses of those 34 subjects were re-run against a second set of new random targets. For some subjects there were errors in the second running also, and their responses were re-run again, using a third set of random targets" (pp. 6-7). Schmeidler doubted whether any of the scores of these 34 subjects should be included, but she analyzed them in order to see if there was a scoring difference on the original and the re-run targets. If the difference was negligible, she decided to pool the results on the procedurally correct targets with the rest of the results, but if different, to describe them separately. As it turned out, in spite of the smallness of the sample, there were significant differences between the two sets of scores in three of the four categories: "Subject sees" ($P = .05$); clairvoyance scores, or "computer sees" ($P = .02$); and total score ($P = .02$). When the results on the 1961 targets the computer had originally prepared (although incorrectly) were compared with the results of the 1962 experiment, there was a significant difference for clairvoyance runs ($P = .005$) and for the total scores ($P = .001$).

In Rao's (1963) first experiment involving the error phenomenon, the subjects in a precognition test were to respond to a set of target words written in Telugu and then to a set of the same words written in English. However, the experimental assistant mistakenly set up the English targets first. Since the target order for both sets was determined by a single entry point in a book of random numbers, the actual targets used in the first half were those originally intended for the second half, and vice versa. Rao (1968) describes the results as follows: "As it happened, the accidental switch in the target arrangement produced results significant in a number of ways, thereby suggesting that ESP did occur in this experiment and that the

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procedural error was somehow relevant to the subjects' performance. The significant differences in the scoring trends when the subjects' calls were checked with the targets as they should have been if no mistake had been made further suggests that the subjects unconsciously (at the psi level) apprehended and then responded to a number of procedural problems that were to arise only subsequently" (p. 65).

As Rao further points out, if the procedural change did not affect the results, how explain the difference in responses to both sets of targets? He suggests "that the error itself was the guiding source and that the subjects' apprehension of it had a sort of 'triggering' effect on their psi" (p. 65).

Rao (1968) also described another experiment of his (not dated or otherwise identified) in which he made an error. The subject's task was to match a set of 50 target cards consisting of five each of 10 different suits against five key envelopes in which there were two different key cards. However, in one run the two key cards were mistakenly left out of one of the key envelopes. This was not discovered until the experimenter and subject were checking the results by opening the key envelopes. By a process of elimination they were then able to infer the designation of the two missing key cards. There were 10 hits in all in this run. "But there was a total of only three hits in the four piles for which there were key cards in the envelopes, while there were seven hits in the pile which had no key cards in the envelope" (P. 66). Rao suggests several explanations for this striking difference in scoring rate, the most likely one appearing to be that the subject, by means of ESP, was aware that one envelope was empty and was thus presented with a differential testing situation in which the inferred targets were the preferred ones. Rao points out that the error "may have had a triggering effect on the release of the subject's psi ability. That such unusual scoring should have occurred when an error was made ... suggests that psi may have a curious sensitivity which makes it more attentive and responsive to unusual happenings" (p. 67).

Rao (1968) also describes an experiment by Sailaja (undated and not otherwise identified) in which the experimenter made an error. A blind matching test was administered in which the target cards were 25 words in Telugu and 25 words in English. In the first half the subjects matched the targets against key cards in English without knowing the meaning of the Telugu target cards. In the second half the experimenter taught the subjects what the Telugu words meant and then asked them to match the 50 English and Telugu target cards against Telugu key cards. However, on one occasion during the second half of the testing the experimenter mistakenly put the English key cards in the envelope instead of the Telugu key cards. The subject tested on this run scored 13 hits on the Telugu targets and only one hit on the English targets, a difference which is highly significant.

I, too, have reported an error, in this case made by a data collector, which resulted in a significant differential effect (White, 1975). In a classroom ESP experiment the data collector, who was the teacher of the class, mistakenly told the students that if in doubt, they could make more than one guess per trial. Thus some of the data from this teacher's class could not be included in the main analysis of the experiment, which involved several other teachers and their classes as well. However, out of curiosity the results of the 16 students who made only one response per trial were compared with the results of the unambiguous (first-choice) calls of the

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nine students who made multiple calls, and a significant difference ($P = .007$, two-tailed) was found between the scores of the two groups. The students who made only one guess per trial scored positively while those making more than one guess on some of their trials scored below chance on their unambiguous responses.

Another experiment which may belong in this category of unintended and unanticipated experimenter influence is illustrated by Price (1973), who conducted two experiments using erotic and nonerotic stimuli. Only an incidental (though highly significant) finding of the second experiment is relevant here. There were 14 subjects who guessed the targets, which were enclosed in opaque envelopes. Each subject did eight runs, four of which consisted of responding to erotic stimuli alternated with four runs of the standard ESP symbols. Price randomized the erotic targets while a student assistant randomized the nonerotic targets. On the final day of target preparation the nonerotic randomizer was in a very negative mood due to various circumstances as opposed to the relatively neutral mood she had been in earlier. The subjects apparently "latched on" to this factor. Comparing the scores on the targets associated with her two mood states, it was found that "mood interacted to a highly significant degree with target type ($P < .003$). A state of negative affect ... was associated with the highest rate of scoring in the experiment when the targets called were the nonerotic targets prepared by the assistant. This produced a highly significant target differential effect for the negative mood state ($P < .001$), as well as a significant mood differential effect for the nonerotic targets ($P < .01$)" (p. 298). It is of interest to note that the nonerotic randomizer was not present during the experiment, probably did not know any of the subjects, and did not score the runs. Price characterizes the overall results of the second experiment as being a mirror image or reversal of those of the first experiment, in which he had randomized both erotic and nonerotic targets. The influence of the negative mood of the nonerotic randomizer in the second experiment may well have had a good deal to do with this fact.

The Price work and other experiments (e.g., Osiris, Turner, and Carlson, 1971) in which experimenter mood was recorded provide evidence that this variable can strongly influence results, sometimes over great distances. Thus it seems reasonable to assume that experimenter mood has played an important part all along in our experimentation, but has remained undetected in many cases because it was not recorded. Parapsychologists may find that they will have to include in their standard testing procedures a measure of the moods and attitudes of everyone playing a role in a psi experiment. And it might not be going too far to suggest that this measure be taken before, during, and after each experiment (but before checking the results). Preferably the same questions would be asked in every experiment in order to produce a baseline against which to assess the influence of whatever variables the experimenter is interested in investigating.

The experiments reviewed in this group show that unanticipated and extraneous factors can, by means of psi itself, influence the results of our research, and they add to the growing evidence that our present experimental designs are unable to rule out nonintentional, psi-mediated experimenter influences.

DELIBERATE ATTEMPTS BY THE EXPERIMENTER
TO INFLUENCE THE SUBJECT BY ESP OR PK

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The second major type of experiment providing evidence of a psimediated experimenter effect consists of those in which the experimenter deliberately tried to use ESP or PK to influence the subject's scores. In most of these experiments there was an agent involved either the experimenter himself or another person specifically recruited to serve in this role.

ESP Influence

Schmeidler (1958) was the first to investigate the role of the agent as a means of understanding the experimenter-subject relationship in ESP experiments. She posed the following questions: "Is [the agent's role] something like that of a cheering section at a sports event, so that [his] paranormal messages of good will encourage the percipient to success? ... Could a negativistic agent be as discouraging-paranormally-to the percipient as an unresponsive audience is said to be to a stage performer? In short, is the agent's role one of influencing paranormally the morale of the percipient, so as to encourage or discourage him as he makes his clairvoyant responses? An alternative theory is that ... the agent transmits material; broadcasts the target in some paranormal way ... ; that an impetus comes from him which sends the target to the percipient" (pp. 47-48). In other words, is the agent's role to facilitate (or inhibit) the percipient's psi ability, or is it to actively transmit the target content to him?

To test these hypotheses, Schmeidler (1958, 1960, 1961b) carried out three large-scale experiments of the same basic design, using agent-subject pairs matched on the basis of their Rorschach responses.^{Footnote.4} The subjects performed eight runs, of which four were of the GESP type (with the agent trying to "send" the target content) and four of the clairvoyant type (targets in sealed envelopes). The subjects believed that all runs were in the GESP condition. Also unknown to the subjects was the fact that in two of the clairvoyance runs the agent was told to hope that the subject would succeed, and in two to hope that he would fail. Pooling the results of these experiments, evidence for telepathy was provided by a mean difference ($P = .001$) and a negative correlation ($P = .01$) between the scores in the GESP condition in which the agent tried to "send" the targets and those in the clairvoyance condition in which he did not know the targets, and hoped the subject would fail. Some evidence was provided that the agent was able to transmit the target content, as indicated by the difference between GESP scores and those clairvoyance scores when the agent hoped the subject would succeed ($P = .02$). The results also indicated that the agent influenced the subject's general mode of response as evidenced by a difference between scores in the clairvoyance condition when the agent hoped the subject would succeed and when he hoped he would fail ($P = .02$). Thus telepathic effects appear to have operated under what would ordinarily be considered as clairvoyant conditions.

In her discussion of the overall results of these studies, Schmeidler (1961b) relates them directly to the experimenter-subject relationship in several respects:

If the wishes of someone who does not know the target can a percipient's performance, then what limit is there to the number of potential influences? To put the same question concretely: An experiment may include one subject who is called an agent and is given the formal task of hoping for success (or failure); but if others to whom no such formal task is assigned also hope for success or failure, do they act as agents also? Our data have no direct bearing on this problem, but they forcibly raise the question of whether such influences can operate in large or distant social groups, of whether, for example, in a laboratory where there is a general attitude

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of cheerful cooperation among the staff members, ESP subjects will tend to have higher scores (if they are congenial to the staff) than corresponding ESP subjects working on an experiment regarded with disapproval or detachment by the staff.

Investigating effects of such remote interpersonal relations would be difficult, though not impossible. A problem nearer to hand is the question of the influence of the experimenter, who is the one other individual clearly concerned with the experiment. The hypothesis to be examined is that the experimenter's hope for high or low scores affects the percipient; that the experimenter is an additional agent. So far as our own data are concerned, the fact that the results of Experiment 11 were not significantly different from chance expectation indicates that this particular experimenter was not an effective agent. It is possible that with other experimenters, other patterns might appear (pp. 38-39).

For the sake of completeness, mention should be made of an experiment carried out by Moss (1966) which was designed to shed light on the relation between ESP and experimenter bias (among several variables), but since no evidence for ESP was found, this study will not be described further.

Stanford (1973) worked with 60 subjects in an experiment in which the ESP task consisted of responding to both free and controlled word-association tests. The subjects knew they were participating in an ESP test and that Stanford's wife (at home some miles away) would try to influence them to make the responses on each trial that she had randomly selected as their targets. However, Stanford (1974a) later noted that "although subjects knew we would attempt to influence their associations by ESP and were told not to resist this influence, they were asked to take the tests just as they normally would, without thinking about the ESP aspect. The experiment provided evidence that ESP can influence word association even though subjects feel they are in no way extrasensorially 'influenced' " (p. 42).

PK Influence

In a PK experiment reported by Price and Rhine (1944), the subject scored significantly above chance when working alone using a dice-throwing machine. He was able to continue this scoring level when neutral observers were introduced to the testing situation, but when an experimenter/observer (with whom he ordinarily enjoyed friendly relations) was present and deliberately tried to discourage and distract him, he scored below chance. The difference between his scores when he worked alone and those when the distracting observer was present was highly significant. Of course, the distracting influence of the experimenter could have been entirely due to sense-mediated and psychological factors since she and the subject were in the same room, but the authors raise the possibility that the negative results may have been due to the PK of the experimenter, either by directly influencing the dice or indirectly influencing them by a psi-mediated inhibition of the subject's PK ability. It may be a relevant factor that the distracting experimenter was Margaret (Peggy) Price, an unusually effective and successful parapsychology experimenter. Even though a psi-mediated experimenter effect cannot be proven in this study, it has been included because the results of later PIC work carried out under conditions ruling out sense-mediated explanations lend some credence to the hypothesis of psi-mediated experimenter effects in this case as well.

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Another PK experiment, reported by Humphrey (1947), involved two subjects, one of whom was designated as the "thrower" and the other the "observer." Their roles were alternated. They worked together in the "help" section of the test to make the desired die face turn up, and in the "hinder" section they worked in opposition, each trying to make a different face turn up. The "help" condition yielded significant positive results ($P = .001$) while the "hinder" condition yielded insignificant positive results. The difference in scoring in the two conditions was significant ($P = .02$). Since the thrower did not know whether he was being helped or hindered, either he discerned this information by ESP and was affected by it, or the difference in scoring was due to the observer's successful efforts on his own targets. The fact that a negative deviation was not forthcoming on the "hinder" trials may have been because the observer was told not to wish against the thrower's target faces turning up, but merely to aim for as many hits as possible on his own targets.

Feather and Rhine (1969) carried out an extension of Humphrey's study in two PK experiments in which they themselves were the subjects. In both experiments "each subject had her own secret list of target faces, so arranged that in three out of each six runs, the two subjects were trying for the same target (thus unknowingly 'helping' each other) and in three they were trying for different targets ('hindering' each other)" (p. 213). A pilot and four confirmatory series comprised the first experiment. In the pilot there was a marginally significant difference between the two target conditions, with positive scores on the "help" condition and negative scores on the "hinder" condition. But in the four confirmatory series this effect was reversed and the difference was significant ($P = .03$). Thus the overall results of the first experiment did not replicate those of Humphrey. An analysis of run-score variance, however, suggested "that there is a difference between the same- and different-target conditions ($P = .04$). The scoring on the same-target runs varied slightly more than would be expected by chance, in contrast to scoring in the different-target condition, which varied somewhat less than would be expected by chance but to an insignificant degree" (p. 218).

The second experiment was essentially the same as the first except for the fact that these runs were conducted on days when one of the subjects (Feather) was in an unpleasant mood. The first experiment, described above, was then termed the "pleasant-mood experiment." The authors describe the overall results as follows:

The different-target scores varied according to mood as expected; that is, those from the pleasant-mood experiment ... were in the positive direction and those from the unpleasant-mood experiment were in the negative direction, with a significant difference between the two ($P = .02$). The same-target scores differed to an insignificant degree in the opposite direction. An analysis of variance indicated that the empirical PK run-score was affected significantly ($P < .02$) when both mood and target difference were considered together. Subjects scored higher on the same-target runs in the unpleasant mood than in the pleasant mood, while a reverse effect was noted when they were trying for different targets (p. 213).

Since the subjects never knew whether they were "helping" or "hindering," any experimenter effect in these experiments would have had to be psi-mediated. They seemed better able to carry out their intention to score higher on the "help" targets in the unpleasant-mood experiment than in the pleasant-mood experiment.

DISCUSSION

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This review of experiments has attempted to show that psi-mediated experimenter effects occur and that they may contaminate the results of many psi experiments-and by implication the results of experiments in other fields as well. Two major types of testing situations were surveyed: those demonstrating nonintentional psi and those in which the experimenter deliberately tries to influence the test results by means of his own ESP or PK.

In the nonintentional psi experiments, the subjects are either not informed about certain aspects of the test or they may not even know that they are taking part in a psi experiment; and yet they respond in a way which suggests that by means of ESP they are aware of aspects of the experimental design about which they have no conscious knowledge. But ESP of what? If these experiments give evidence of psi-mediated experimenter effects, then presumably the subjects get the information telepathically from the experimenter. But a major counterhypothesis to this interpretation is that they discover details of the experimental set-up by clairvoyance, or-and especially if they are informed of the true nature of the experiment after its completion-by precognition. But then we must ask: clairvoyance of what? Precognition of what? Presumably of the nature of the targets or experimental manipulations about which the subject was purposely not informed. But since there is no way in which an experiment can be separated from the experimenter (an experiment is actually the embodiment of the experimenter's hopes, expectations, and possibly his fears), then even if the subjects do obtain the hidden information by contemporary or precognitive clairvoyance, these nonintentional psi studies provide evidence of psi-mediated experimenter effects.

In the case of experiments in which the experimenter deliberately tries to use his psi to influence the subject, the results are not as clear-cut and the evidence is not as strong, but they do suggest that intentional psi-mediated experimenter effects occur. If we assume this to be the case, then the question becomes, How? Several possibilities are reviewed by Schmeidler (1961a), who suggests that there may be two kinds of telepathy and that the agent may function in several different roles. One function might be to "make some targets more interesting and thus more accessible than they would otherwise be" (p. 93). A second function of the agent would be a more dynamic one-that of actively sending out information and impressing it on the subject. She ties in this aspect of telepathy with PK: "The PK data indicate that a person can influence inanimate objects, and it therefore seems only reasonable to suppose that he can influence other human beings" (p. 93). She then goes on to propose still another role the agent could play-that of influencing the subject in a facilitative way (cheering him on, as it were) rather than communicating specific items of information. It is this "facilitating" function of the agent that Schmeidler tested in the experiments described above, in which the agents were able to "psychically alert or sensitize or help" the percipient even though no specific information was transmitted (p. 93).

Stanford (1974b) has also reviewed the function of the agent. He proposes that in some instances of telepathic exchange the percipient takes the active role and uses ESP to scan the environment for information relevant to his needs. In this case the agent, or person whose thoughts and feelings are scanned by the percipient, plays an essentially passive role. In other instances "the agent plays an active role and in some sense directly influences the brain or mind of the 'percipient' (target person) in an active fashion" (p. 343).

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Thus Stanford distinguishes between "active-percipient" and active-agent" telepathy, and because of the semantic confusion this terminology might create, he suggests that "telepathy" be used to designate the passive-agent phenomenon and a new term found for the active-agent phenomenon. The term he suggests for the latter is MOBIA (mental or behavioral influence of an agent). He views MOBIA as a form of PK, adding that basically all we know about PK "is that there is, at a given moment, an unexplained conformance between the disposition (need, desire, urge, or impulse) in one system and what happens in another system" (p. 347).

Stanford conceptualizes MOBIA as being for the most part "nonperceptual, noncognitive ... and never recognized by the target person as external influence MOBIA may simply trigger in the target person otherwise ready or available responses which are appropriate to the dispositions of the MOBIA agent" (p. 347). This concept would explain very nicely what happened in Schmeidler's experiments described above when the agent (read: MOBIA agent) hoped the target person would either succeed or fail in the ESP task. It would also help to explain cases such as that of Soal's (Soal and Bateman, 1955) two outstanding subjects, who regularly scored well on GESP runs, but usually failed to obtain significant results under clairvoyant conditions; that is, Soal's negative attitude toward the existence of clairvoyance might have inhibited their psi by means of MOBIA. And the inability of some experimenters (such as myself) to elicit significant scoring in test subjects might be due to their unconscious skepticism regarding the conditions of the test such that by MOBIA they immobilize whatever psi ability the subjects may have.

In addition to explicating the role of the designated agent in psi tests, the MOBIA concept lends credence to the common observation of subjects-from the raw student recruit to the high-scoring veteran of many experiments-that the presence of an observer inhibits results. MOBIA also provides a means of understanding how intentional psi-mediated experimenter effects may occur. Whether one favors Schmeidler's hypothesis of the "facilitating ability" of the agent or Stanford's MOBIA concept of an agent directly influencing the brain or mind of the target person, either form of agency could operate in psi-mediated experimenter effects to encourage or inhibit the subject's responses in any form of psi test.

By whatever means psi-mediated experimenter effects occur, the simple fact that they may do so must be taken into account both in designing experiments and in evaluating their results. Johnson (1973) has said of his examination-type experiments (and his remarks would apply also to any experiment employing a PMIR design) that their design tends to eliminate some of the dangers of standard psi testing "such as 'experimenter expectancies,' artifacts resulting from subject-experimenter interaction, etc., since ... there is no experimenter in the conventional sense" (p. 216). On the contrary, it seems to me that this type of experiment provides a situation in which experimenter expectancies may be demonstrated in their purest form, uncontaminated by conscious awareness on the part of the subject. Anything that gets through this type of experimental design has to be psi-mediated - if not from the experimenter directly, then by the subject's clairvoyance of the experimental plan.

PMIR experimental designs may promote the occurrence of psimediated experimenter effects for the same reason that the error phenomenon may activate psi. In discussing the modus operandi of the error phenomenon, Rao (1968) points out that it "adds further credence to the

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hypothesis that psi, an unconscious process, is under the surveillance of the repression mechanism and that there are defenses built around it. Just as repressed wishes, memories, etc., are occasionally manifested in slips of the tongue or accidents, repressed psi may find its expression in the form of errors.... The curious sensitivity of psi to errors and procedural irregularities is perhaps a way of getting around the inherent defenses. When there is an error, the trial or run is likely to be discarded and therefore psi can function without fear of being recognized" (p. 71).

In a sense PMIR or nonintentional psi experiments are also examples of Rao's "procedural irregularities." Instead of informing the subject of the real purpose of the experiment and how he is supposed to perform, the experimenter tries to "put something over" on him by keeping him in the dark as to the very element which represents the focal point of the experimenter's interest. This may well activate (at the psi level) an "Oh no you don't" response in the subject, who in turn tries to "put something over" on the experimenter by scoring in a way which shows that he knew all along what the "hidden" element in the experiment was. Thus the PMIR design allows experimenter and subject to "get even" with each other-and to their mutual advantage: the experimenter has his secret hypothesis confirmed and the subject not only behaves as a "good" subject should, but also proves that the experimenter can't "pull the wool over his eyes"!

The Kreitlers (1972) see the results of their ESP tests masked as psychological tests as having far-reaching implications for the experimenter effect in both psychological and parapsychological experiments. They point out that since in the case of any experiment there are expectations about the results, and there are several people who know about these expectations and enough about the design in order to "concentrate" intentionally or unintentionally on these expectations at temporally relevant points, it seems plausible to regard ESP as a possible source of errors in experiments. A part of these errors appears to have been included under the phenomenon of the experimenter's bias (Rosenthal, 1966). But since it has been shown that an ESP communication can be transmitted to the subject also through a stranger ... spatially separated from him, the effect seems to transcend the effects of the experimenter's bias, which depend upon contact between the experimenters and the subjects (p. 44).

I would interpret the Kreitlers' results differently. The fact that Rosenthal and others have only observed experimenter bias in experiments in which there was sensory contact between experimenter and subject does not mean that this is the only situation in which experimenter bias can be transmitted. The parapsychological experiments reviewed above, including those of the Kreitlers, offer clear-cut evidence that experimenter bias can be psi-mediated. In fact, the occurrence of psi-mediated experimenter bias in experiments designed in such a way that no information could have been sensorially mediated calls into question the validity of the "sensory cue" explanation of experimenter bias in both psychology and parapsychology experiments with subject and experimenter in the same room. In short, unless psi itself can be ruled out, it is impossible to eliminate the influence of experimenter expectancies on experimental results. Even if no one, experimenter or other, knows the nature of the targets during the test, this does not eliminate the possibility that the subject may pick the experimenter's mind precognitively, as several of the experiments described above have suggested (Feather and Brier, 1968; Johnson and Nordbeck, 1972; Schmeidler, 1964; Stanford, 1970). Moreover, the experimenter's intention(s) and expectations presumably are available to the subject at all times by psi. The

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Ballard (1975) and Cox (1971) experiments attempted to control the communication of experimenter expectation by psi by keeping the data collectors ignorant of the true purpose of the research. But even here it is still possible that the relevant information was available by psi from the senior investigator who conceived the experiment and knew its real purpose, no matter how great the distance which separated him from the subjects.

It is obvious that the role of the experimenter (conceiving this term in its broadest sense) must be taken into account in designing the results of parapsychological experiments (and perhaps those in other fields as well). However, we cannot be sure whether the subject in a PMIR experiment uncovers hidden aspects of the testing situation by telepathy from the experimenter or by clairvoyance of the situation itself, or whether an experimenter deliberately trying to influence the subject's scoring by psi does so directly by means of PK or indirectly by means of ESP. Thus, at this stage it might be wise to refer not only to psi-mediated experimenter effects but also to psi-mediated experimental effects.

This review will have served its purpose if it has demonstrated that both psi-mediated experimenter and psi-mediated experimental effects do occur. Then, starting from the base which this finding provides, we may be in a position to pursue the task on behalf of which Price (1973) has argued so eloquently: that of "describing and understanding a universal, transpersonal structure from which psi derives both its existence and its meaning ... it is the metaprocesses or the structure of a situation which should attract our theoretical and research attention rather than the processes themselves" (p. 319).

Eventually we may well discover that these are no valid grounds for distinguishing between the experimenter and his experiment. But it will be many a creative experiment from now until we will be able to know whether this surmise truly meshes with "reality."

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Footnotes:

1 Shortly before this paper went to press, I received the March, 1976, issue of the *Journal of Parapsychology* which contains an article entitled "Experimenter Effects in Parapsychology," by J. E. Kennedy and J. L. Taddonio. This is an excellent survey and should be studied by anyone interested in the experimenter effect not only in parapsychology but in psychology as well. [Return to the text]

2 The reader should keep in mind that, depending upon the circumstances of the research being described, the term "experimenter" as used in this paper can designate either the primary experimenter-the person who conceives, designs, and is responsible for the experiment-or any other person involved in it as a data collector, checker, observer, etc. [Return to the text]

3 On pp. 138-139 of the first paper in this series (White, 1976) the probability values cited for the overall results of the West-Fisk experiment and for Fisk's results considered alone were mistakenly given as $P = .01$ and $.001$, respectively. [Return to the text]

4 The second experiment (Schmeidler, 1960) in this series did not yield significant results bearing on the question of agency and it will not be reviewed here. [Return to the text]