

THE EFFECT OF MANIPULATING EXPECTATIONS BOTH BEFORE AND DURING A TEST OF ESP

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ABSTRACT: A repeated finding in the parapsychology literature is that attitudes prior to testing can influence performance on tests of ESP. This is true of both the attitudes participants bring to the situation and attitudes experimentally induced both prior to and during testing. The aim of the current studies was to compare the effects of manipulating expectation before and also during a test of ESP. Experience was manipulated in two ways: through the administration of a placebo which participants were told had previously been found to increase ESP abilities, and by providing feedback that was either an accurate or a falsely positive indication of performance. In both studies an interaction was found between placebo and false feedback, and post hoc tests revealed that the placebo affected performance only when coupled with falsely positive feedback. In Experiment 2, false feedback was shown to influence negatively the performance of those with a prior belief in parapsychological phenomena. The results are discussed in terms of the additive effects of both manipulations on efficacy expectations.

Numerous studies have examined various psychological correlates of extrasensory perception (ESP) scores, such as personality traits (e.g., Palmer, 1978). One relationship that has proved to be fairly robust is the association between belief in ESP and performance on ESP tests. Schmeidler and colleagues (Schmeidler, 1943, 1952; Schmeidler & McConnell, 1958) first performed a series of experiments that demonstrated the relationship between belief in ESP and ESP performance. Schmeidler defined *goats* as those participants who believed that ESP was impossible under the conditions of the experiment, and defined *sheep* as all participants who were not goats. He found that sheep generally performed above chance whereas goats generally performed below chance. This performance differential has since been labelled the sheep-goat effect (see Haraldsson, 1975; Lawrence, 1993; Palmer, 1971).

The sheep-goat effect can be viewed as an example of the influence of an attitude on behaviour. This attitude/performance relationship is well documented in the psychological literature (Rosenberg & Hovland, 1960; Zanna & Rempel, 1988). An

interesting finding from the attitude literature is that attitudes formed by direct personal experience are better predictors of behaviour than attitudes formed by indirect experience (Fazio & Zanna, 1981). Also, these personal attitudes are more specific and stable over time (Fazio & Zanna, 1978; Zanna & Fazio, 1982). Indeed, a common reason given for belief in the paranormal is personal experience (Blackmore, 1984). Bearing this literature in mind, it seems possible that existent attitudes can be influenced through the direct manipulation of experience. Some studies have attempted to manipulate subject expectancies as part of the experimental setting. For example, Smith, Foster, and Stovin (1998) gave participants either a pro-paranormal statement, an anti-paranormal statement, or no statement, and found that the subsequent pattern of belief scores reflected the valence of these statements. Those who had read a pro-paranormal statement produced the highest belief score, and those who had read an anti-paranormal statement produced the lowest belief score. The authors concluded by suggesting that believers in a sceptical context and disbelievers in a pro-paranormal context may show depressed performance on subsequent tasks, due to low motivation to perform.

Other studies have measured the effects of manipulating expectancies on performance with ESP tasks. Akolkar (1968) gave participants a lecture on ESP in either a positive or a negative light and found that participants' attitudes towards parapsychology were significantly affected as a result. Furthermore, Akolkar found that those exposed to the positive evaluation of parapsychology performed better on a subsequent ESP test than those given the negative presentation. Taddonio (1975) also manipulated attitudes prior to testing and found an effect for experimenter-induced expectancy, with better performance on an ESP task for those in the high expectancy group. J.B. Rhine (1945) also found that administration of certain substances such as caffeine directly influenced ESP performance, as did the administration of a placebo. These results are consistent with the view that participants' ESP performance had been manipulated by altering their expectations.

Manipulation of perceived ESP performance *during* an ESP test has also been hypothesised as being able to alter the belief and performance of participants (Tart, Palmer, & Redington, 1979; Thorisson, Skulason, & Haraldsson, 1991; Woodruff & Murphy, 1943). This manipulation has generally taken the form of

feedback during the ESP test. Both Woodruff and Murphy (1943) and Tart et al. (1979) found that accurate feedback as to whether each guess was correct or incorrect was related to ESP performance. In an extension of this paradigm, Thorisson et al. (1991) included *false* feedback as a manipulation. Participants were asked to guess which of four identical boxes appearing on the screen had been selected by the computer. One group was given correct feedback; they were told whether or not they had guessed correctly on each occasion. The other two groups were told that they were performing either better or worse than they actually were. Thorisson et al. failed to find any significant differences among the performances of these three groups. However, in this study, no explicit reference was made to testing for ESP. Instead participants were asked to participate in a psychological experiment meant to study the relationship between attitudes and guessing abilities. It could therefore be argued that since participants were not aware that they were meant to be accessing a specific ability (ESP), then an increase in perceived performance would not necessarily have led to a better ESP performance.

Tests that aim to influence performance by manipulating belief have sometimes included a third "belief" category into their design (e.g., Thorisson et al., 1991). Bevan (1947) and Casper (1951) both incorporated the category of *indecisive* into their sheep-goat experiments, referring to those participants who did not hold strong attitudes either for or against the existence of ESP. It has been hypothesised that indecisives are more susceptible to attitudes induced by an experimenter. In an experiment to test this hypothesis Taddonio (1975) found that the effect on performance of experimenter-induced expectancy was indeed most apparent in the indecisive group.

Therefore, a frequent finding is that expectations can be successfully manipulated either prior to test (Akolkar, 1968; Rhine, 1945; Smith, Foster, & Stovin, 1998; Taddonio, 1975) or during test (Tart et al., 1979; Thorisson et al., 1991; Woodruff & Murphy, 1943). A pertinent question, then, is whether multiple manipulations of expectation are more likely to enhance performance than manipulation of a single factor. This question was explored in our pair of studies. As Taddonio concluded that the indecisive group was more susceptible to manipulated expectancy, the present studies included this specific group.

EXPERIMENT 1

The present studies aimed to build on Taddonio (1975) and Thorisson et al.'s (1991) research. This initial study was carried out to investigate the effect of prior attitude and the manipulation of attitude both prior to and during an ESP test. Participants were given either accurate or falsely positive feedback during an ESP task in order to manipulate expectation during testing. Furthermore, a placebo was administered to half the participants, who were told that the placebo was known to increase ESP ability, in order to manipulate expectation *prior* to testing. Participants' prior beliefs were measured by questionnaire and participants were also asked to predict their performance on the forthcoming ESP test after the placebo manipulation.

It was hypothesised that ESP performance would be positively affected both by the manipulations of expectancy prior to test (placebo) and during test (feedback), with performance being highest in conditions where both a placebo and falsely positive feedback were administered. Furthermore, these results were expected to be most evident with the indecisive group.

METHOD

Design

An independent samples design was employed with three independent variables: one was whether a placebo was given to participants prior to the ESP test, another was whether the feedback given to participants during the test was true or falsely positive, and the third was the participant's prior attitude (sheep, goat, or indecisive). The dependent variables were the predicted test performance after the placebo manipulation and the actual performance on the ESP test.

Participants

An opportunity sample of 31 student volunteers from the University of Glamorgan, consisting of 6 males and 25 females, were randomly assigned to one of the four conditions. The participants were aged between 18 and 47 (with a mean of 25.19 and a standard deviation of 9.08).

Materials

The 18-item *Australian Sheep-goat Scale* (Thalbourne & Delin, 1993) was used to assess participants' belief in the paranormal. This scale was used because it is the most recent version incorporating a visual analogue scale. The questionnaire consisted of 18 pairs of extreme statements, each expressing either a positive or a negative attitude towards a general aspect of parapsychological phenomena. Positive statements were always to the right and negative to the left. Participants were required to dissect a line that was drawn under the statement to indicate their belief in each statement. A dissecting line on the far left would indicate disagreement whereas the far right would indicate agreement. Scoring of responses was achieved by splitting the line into three equal sections (each 4.5 cm long) and assigning responses on the far left as goats, on the far right as sheep, and in the middle section as intermediates. Designation into belief categories was achieved by taking each subject's mean performance over the 18 items, using measurements of the line. Therefore, participants with a response mean below 4.5 were classed as goats, those with a mean between 4.5 and 9 were classed as indecisive, and those with a mean above 9 were classed as sheep.

The ESP task itself required a Viglen computer, together with SuperLab software, to administer the ESP test. The ESP test itself was a derivative of the standard clairvoyance procedure. In each trial a symbol appeared on the monitor screen but was obscured by a 180mm x 130mm black, opaque shield that covered the lower two-thirds of the screen and easily obscured the symbol. This shield was fixed to the screen with tape, and participants were monitored through a video link to ensure they did not tamper with the shield.

The software for the false feedback condition was configured so that both the targets and the feedback messages appeared in a fixed, previously randomised order. Participants in this condition were informed that 15 of their 25 guesses were correct, with the remainder incorrect. For equivalence with the false feedback condition, the targets in the true feedback condition appeared in the same fixed random order. However, for the true feedback condition the software was configured so that all key presses elicited true feedback. The experimenter did not choose these sequences or program the software. Sequences were randomly generated using the select and replace method.

Procedure

The participants were tested individually by one experimenter. The experimenter was aware of the nature of the experiment and of the inert nature of the allegedly ESP-enhancing substance, and was a believer in ESP. The participants were first asked to complete the Australian Sheep-goat Scale and were then randomly allocated into groups (based on arrival at the laboratory) for the before-test placebo/non-placebo manipulation. Participants read instructions based on their group allocation, and signed consent forms. Written instructions given to participants in the non-placebo group simply stated that they were about to take an ESP test. The written instructions given to participants in the placebo group informed them that they would be given two drops of "Guaranine," which had previously been found to increase ESP abilities, and that they would then be given an ESP test. An oral applicator syringe was used to administer two drops of the placebo (which was actually vanilla essence) onto each participant's tongue. They were further informed that the substance would require approximately 15 minutes to take effect: therefore participants in both groups spent this time completing a second questionnaire. This questionnaire enquired about the nature and amount, on average, of any foodstuffs and beverages consumed, in addition to various items of general information such as age, gender, and whether they had participated in an ESP test before. Participants were then also asked to estimate how well they would perform in this ESP test out of a possible 25 correct guesses (selecting from five possible targets).

Participants from both placebo and non-placebo groups were then given the written test instructions and performed the computerised ESP test. Participants were required to select the symbol which they believed had appeared on the screen from a possible five targets, and to make an appropriate key press to indicate their choice and to end the trial. Images of the five possible targets were fixed to the appropriate response keys to remind participants of their choices, and this allowed the data to be recorded automatically by the computer. The symbols were a star, a triangle, a circle, a square, and wavy lines.

Each selection elicited feedback in the form of one of two messages appearing at the top of the screen, either "Correct" or

"Incorrect." There were 5 practice trials, followed by 25 trials in the main session.

After the experiment participants were fully debriefed.

RESULTS

A comparison of performance by manipulation and belief was not feasible due to small numbers of participants in two of the belief categories. Table 1 reveals that there were only three sheep and eight goats. An ANOVA failed to reveal a significant effect of attitude towards ESP and score on the ESP task, $F(2,28) = 0.766$, $p = .474$.

TABLE 1
MEAN NUMBER OF CORRECT HITS ON THE ESP TASK BY ATTITUDE,
EXPERIMENT 1

Attitude towards ESP	<i>N</i>	<i>M</i>	<i>SD</i>
Sheep	3	5.33	0.58
Indecisive	20	5.55	1.73
Goat	8	4.63	2.13
Mean	31	5.29	1.77

A 2 x 2 between-subjects ANOVA (placebo x feedback) was carried out on the ESP score data (see Table 2). A significant interaction was found between the type of feedback given and the presence or absence of a placebo: $F(1,27) = 6.021$, $p = .021$. However, a main effect for placebo was not forthcoming, $F(1,27) = 2.173$, $p = .152$, and neither was a main effect for feedback, $F(1,27) = 0.332$, $p = 0.569$. This suggests that the placebo affected only scoring in the false feedback condition. Figure 1 graphically represents this interaction, which was confirmed by post hoc Scheffé tests. When participants were given false feedback, there was a placebo effect, $F(1,27) = 8.511$, $p < .01$. However, when participants were given true feedback, there was no placebo effect, $F(1,27) = 0.436$, $p > .05$. Further, when participants were given a placebo, there was an effect of feedback, $F(1,27) = 4.43$, $p < .05$. However, when participants were not given a placebo, there was no effect of feedback, $F(1,27) = 1.83$, $p > .05$. A single mean *t*-test on the mean ESP scores in the false feedback with placebo condition revealed a significant deviation from chance, $t(7) = 15.777$, $p < .01$.

TABLE 2
 MEAN NUMBER OF CORRECT HITS ON THE ESP TASK BY MANIPULATION,
 EXPERIMENT 1

Manipulation	<i>N</i>	<i>M</i>	<i>SD</i>
False feedback/no placebo	9	4.33	2.00
False feedback/placebo	8	6.62	1.19
True feedback/no placebo	7	5.43	1.13
True feedback/placebo	7	4.86	1.86
Mean	31	5.29	1.77

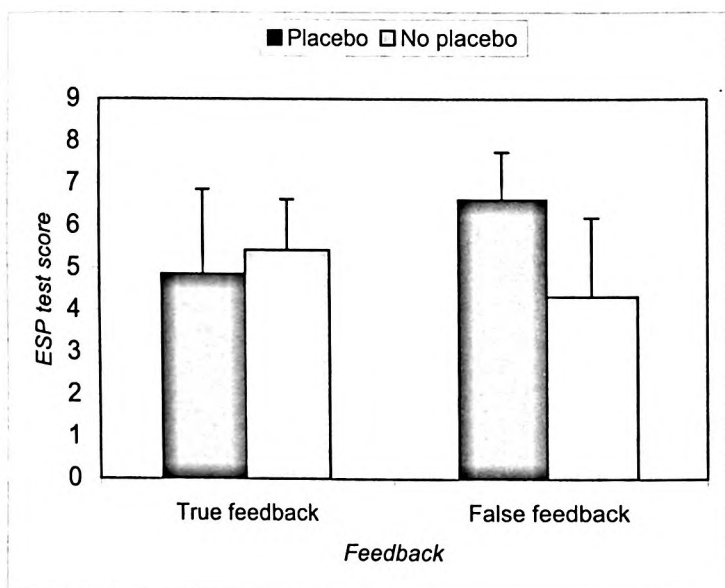


Figure 1. Experiment 1: ESP test score as a function of placebo consumption and type of feedback received

A Spearman's correlation was carried out between the actual scores and the predicted scores for each participant. Participants' ESP scores ranged from 2 to 8, and expected scores ranged from 0 to 18. However, the correlation failed to reveal any significant relation between each participant's predicted and actual performance, $r(29) = .137$, $p = .461$.

Furthermore, a *t*-test revealed that the mean expected scores were not significantly higher for subjects with the placebo (mean 7.93, *SD* 4.448) than for those without the placebo (mean 5.44, *SD* 2.279), $t(29) = 1.985$, $p = .057$, failing to show a significant effect of the placebo in manipulating their expectations prior to the ESP test.

DISCUSSION

This experiment aimed to test two connected hypotheses: first that ESP performance would be positively affected by the manipulations of expectancy prior to testing and during testing, with performance being highest in conditions where both a placebo and falsely positive feedback were administered, and second, that this result would be most evident with the indecisive group. Overall the results of this experiment present an encouraging indication of the combined positive effects of a placebo and false feedback on ESP performance. However, neither the placebo nor false feedback produced any independent benefit. Moreover, the hypothesis that the effects of both placebo and feedback would be greatest in the indecisive group could not be tested due to disproportionately sized attitude groups. Nevertheless, attitude prior to manipulation was potentially a factor in the success of the present study as the majority of participants were classed as indecisive in their attitudes towards ESP and the goat scores were low.

These results, however, must be treated with caution. The number of participants was modest and sampling problems resulted in considerably more indecisives than either sheep or goats. Furthermore, there were important issues regarding the design of the first experiment. In particular, one fixed random order of presentation of stimuli was used that could have matched certain participants' response biases, otherwise known as the "stacking effect" (Davis, 1978). Alternatively, this could have led to the experimenter "learning" the sequence and "relaying" this to the participants. In addition, as feedback was fixed, it was possible that participants in the false feedback conditions could have received falsely negative feedback on certain trials. To clarify these issues and to extend the study to a wider participant base, a second experiment was conducted.

EXPERIMENT 2

This experiment aimed to build upon the previous study by addressing issues with the design and increasing the number of

participants studied. The basic original design remained the same: participants were given accurate or falsely positive feedback during an ESP task in order to manipulate expectation during testing. Furthermore, a placebo was administered to half the participants, who were told that the placebo was known to increase ESP ability, in order to manipulate expectation prior to test. The two measures of belief (questionnaire and predicted performance on the ESP test) were also taken. However, in this experiment feedback was responsive to their choices and presentation of stimuli was completely randomised.

It was therefore hypothesised that ESP performance would be positively affected by the manipulations of expectancy prior to test (placebo) and during test (feedback) with performance being highest in conditions where both a placebo and falsely positive feedback were administered. Furthermore, these results were expected to be most evident with the indecisive group.

METHOD

Design

An independent samples design was employed with three independent variables: one was whether a placebo was given to participants prior to the ESP test, another was whether the feedback given to participants during the test was true or falsely positive, and the third was the subject's attitude. The dependent variables were the predicted test performance and the actual performance on the ESP test. Predicted test performance was examined for explanatory purposes only.

Participants

An opportunity sample of 71 volunteers from the University of Glamorgan, consisting of 17 males and 54 females, were randomly allocated to one of the four conditions. The participants were aged between 18 and 58 (with a mean of 29.89 and a standard deviation of 9.35).

Materials

The sheep-goat scale, computer, software, and opaque shield were the same as in Experiment 1. However, two programs for the true and false feedback conditions were created. Both programs were configured so that both the targets and the feedback messages appeared in a random

order. Furthermore, the false feedback version of the program was also configured so that on 20% of incorrect trials the feedback was falsely positive.

Procedure

The procedure was the same as in Experiment 1, but a different experimenter was used. This experimenter was aware of the nature of the experiment and of the inert nature of the allegedly ESP-enhancing substance, but was indecisive as to belief in ESP. In addition, each participant received his or her own individual target sequence to overcome the stacking effect.

RESULTS

Similar sampling effects to Experiment 1 emerged with this study; namely, only a small number of participants revealed themselves as sheep and goats, with the majority of participants emerging as indecisive with the scale used (see Table 3).

The ESP results were analysed by a 3x2x2 ANOVA incorporating attitude, placebo, and feedback (see Table 4). No significant interaction was found between attitude, placebo, and feedback, $F(2,59) = 1.138$, $p = .327$; nor between placebo and attitude, $F(2,59) = 2.156$, $p = .125$. However, the interaction between feedback and placebo was significant, $F(1,59) = 11.358$, $p = .001$, as was the interaction between feedback and attitude, $F(2,59) = 3.963$, $p = .024$.

TABLE 3
MEAN NUMBER OF CORRECT HITS ON THE ESP TASK BY ATTITUDE,
EXPERIMENT 2

Attitude towards ESP	<i>N</i>	<i>M</i>	<i>SD</i>
Sheep	12	5.08	1.98
Indecisive	47	5.60	1.56
Goat	12	5.00	2.09
Mean	71	5.41	1.72

Main effects for placebo $F(1,59) = .070$, $p = .792$, feedback, $F(1,59) = .188$, $p = .666$, and attitude, $F(2,59) = 1.384$, $p = .259$ were not forthcoming.

TABLE 4
MEAN NUMBER OF CORRECT HITS ON THE ESP TASK BY MANIPULATION,
EXPERIMENT 2

Manipulation	<i>N</i>	<i>M</i>	<i>SD</i>
False feedback/no placebo	16	4.75	1.61
False feedback/placebo	19	6.11	1.76
True feedback/no placebo	17	5.71	1.45
True feedback/placebo	19	5.00	1.79
Mean	71	5.41	1.72

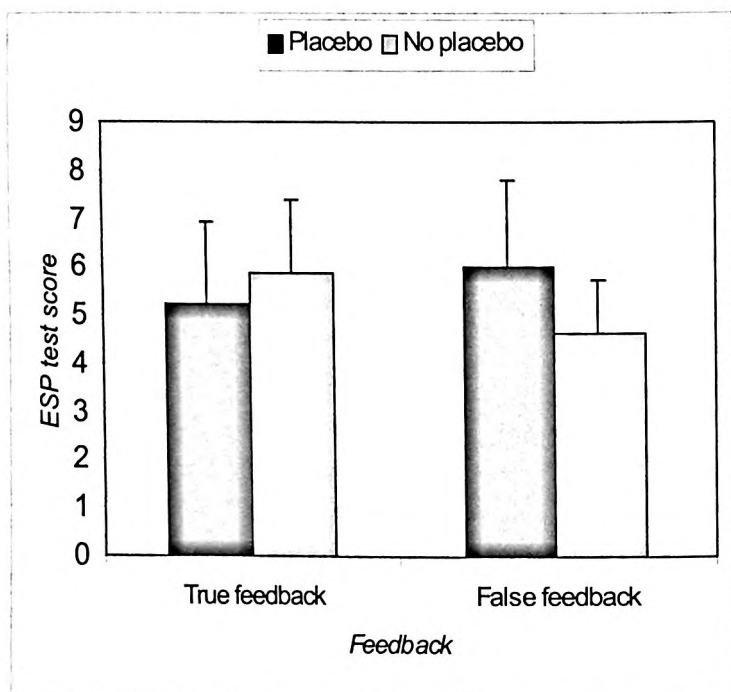


Figure 2. Experiment 2: ESP test score as a function of placebo consumption and type of feedback received.

These results suggest that the placebo affected only scoring in the false feedback condition (Figure 2). Post hoc Scheffé tests confirmed this. When participants were given false feedback, there was a placebo effect, $F(1,59) = 6.85$, $p < .05$. However, when participants were given true feedback, there was no placebo effect, $F(1,59) = 1.94$, $p > .05$. When participants were given a placebo, there was an effect of feedback, $F(1,59) = 4.93$, $p < .05$. However, when participants were not given a placebo, there was no effect of feedback, $F(1,59) = 3.38$, $p > .05$. A single mean t -test on the mean ESP scores in the false feedback with placebo condition revealed a significant deviation from chance, $t(18) = 15.116$, $p < .01$.

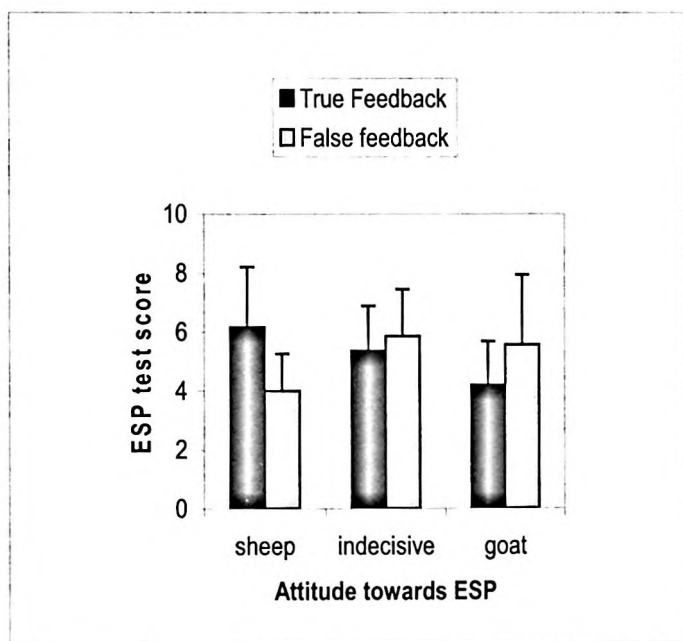


Figure 3. Experiment 2: ESP score as a function of feedback and attitude towards ESP

The significant interaction between feedback and attitude suggests that false feedback inversely affected scoring in the attitude conditions

when compared to true feedback (see Figure 3). However, despite performance reflecting the classical sheep-goat effect in the true feedback condition, Scheffé tests revealed no differences between sheep versus indecisives, $F(1,59) = 1.34$, $p > .05$, indecisives versus goats, $F(1,59) = 2.37$, $p > .05$, or sheep versus goats, $F(1,59) = 2.48$, $p > .05$. Nevertheless, with false feedback the sheep performed markedly worse than the indecisives, $F(1,59) = 6.88$, $p < .025$, but the performance differences between sheep and goats and between goats and indecisives were not significant, $F(1,59) = 3.36$, $p > .05$, and $F(1, 59) = 0.189$, $p > .05$, respectively.

A Spearman's correlation revealed a significant negative correlation between the actual scores and predicted scores per participant, $r(63) = .249$, $p = .045$. However, t -tests revealed that the mean expected scores were not significantly higher for subjects with the placebo (mean 7.49, SD 4.80) than for those without the placebo (mean 7.54, SD 3.491), $t(63) = -0.046$, $p = .964$, failing to show a significant effect of the placebo in manipulating their expectations prior to the ESP test.

To verify that the targets generated for this experiment were randomly selected, 3,000 targets were generated by the random source used in these experiments (a random number generator program called Random Number Generator Pro). Chi-squared tests revealed no significant deviation from a uniform distribution for each individual target, $\chi^2(4, N = 3,000) = 2.827$, $p = .587$, and pair of alternatives $\chi^2(16, N = 3,000) = 13.29$, $p > .10$.

DISCUSSION

Both experiments revealed that ESP performance was highest in conditions where both a placebo and falsely positive feedback were administered. Furthermore, Experiment 2 suggested that falsely positive feedback had a detrimental effect on the performance of sheep when compared with indecisives.

A potential explanation for the interactive effects of the placebo and feedback manipulations concerns the degree of self-efficacy experienced by participants. A high degree of self-efficacy would manifest itself as a strong belief that one has the ability to control the outcome of a specific situation through one's own actions (Bandura, 1986), and this in turn has been suggested to result in the individual's being more likely to engage with a task (Bandura, 1986; Pintrich & De Groot, 1990). Moreover, adult experiences of

repeated failure are argued to result in the individual attempting to control the situation through the use of various mechanisms that aim to reduce stress and regain control (Averill, 1973; Thompson, 1981). In the parapsychology literature there is a tradition of explaining ESP phenomena in terms of relaxation and control. For example, Kanthimani and Rao (1972) described an ESP positive personality as encompassing such traits as *relaxed*, *assertive*, and *composed*, whereas ESP negative personalities express traits such as *frustrated*, *dependent*, and *tense*. Similarly, Braud (1975) identified physical relaxation and increased awareness of internal processes as being important elements of a psi-conductive state. Furthermore, attempts to induce relaxation through hypnosis and ganzfeld procedures have succeeded in producing some of the most reliable ESP results (e.g., Honorton & Krippner, 1969; Schechter, 1984; Smith & Gibson, 1941; Storm & Ertel, 2001).

In relation to the self-efficacy perspective, a possible explanation for the interaction between placebo and false feedback in the present studies is that the placebo increased expectancy prior to the task and this expectancy was maintained throughout the task by the presence of falsely positive feedback. However, no significant differences were found between expected scores for those given a placebo versus those not given a placebo. In fact, all groups expected to score above chance, and this was more striking in Experiment 2.

Without a significant effect for the placebo manipulation in increasing predicted ESP performance, explanation of the additive performance for placebo and falsely positive feedback is challenging. One must conclude that all participants started the ESP test with similar levels of expectancy regarding their individual expected performance on the test. The feedback manipulation, possibly in conjunction with the prior manipulation of placebo, may then have had some effect.

Participants in the placebo with false feedback condition expected to score above chance level and, on average, performed above the level of chance. The falsely positive feedback supported this expectation. Furthermore, receiving a placebo prior to test may have had a positive effect on performance as these participants received feedback that their expectations and behaviour concurred. A close match between outcome and expectancy possibly resulted in greater feelings of control and less stress, allowing participants to perform at a higher level.

In both experiments, the groups that received a placebo and then true feedback performed at chance level. One can conclude from this that the placebo on its own positively influenced neither expectancy nor performance.

In Experiment 1 the groups that were not given a placebo prior to the ESP test produced slightly more modest predictions of their possible success: however, this modesty was not evident in Experiment 2. In Experiment 1, predicted and actual performance were similar for the group that did not receive a placebo but was given true feedback. This control condition reveals a match between expectancy and outcome. However, in Experiment 2 this group's predicted score was much higher than its actual score, possibly reflecting experimental demand characteristics.

The groups that received falsely positive feedback without a placebo produced the lowest mean scores in both experiments. Therefore, participants who expected to score either at chance level or above were informed during the task that they were performing at a level significantly higher than that, but were in fact performing the least well. It is possible that the lack of concurrence between their expectations and their perceived performance resulted in poor feelings of control over the task as no alternative explanation was available to these participants because they had received no placebo. Such a lack of control could have resulted in less investment in the task by participants in this particular group, which could explain their poor performance.

The significant interaction between attitude and feedback in Experiment 2 can be interpreted along similar lines. The performance by the three groups in the true feedback condition reflects the classical sheep-goat finding, but no comparisons reached significance. However, within the false feedback condition the sheep performed significantly worse than the indecisive group, which performed similarly to the goats. If believers in ESP are aware of their ability then it is possible that inflating their actual hits resulted in dissonance between their actual and reported performance (see Festinger, 1957). In attempting to resolve such dissonance, participants could have considered the feedback to be inaccurate. Motivation to perform may then have been reduced. However, the results of this interaction can only be interpreted with caution due to small sample sizes in certain attitude groups.

Overall the pattern of results suggests that participants are open to the positive effects of expectancy when it is primed before test

and augmented during test. However, these effects were not shown in isolation from one another. This intensifying of expectancy supports Taddonio's belief that indecisives are more open to the manipulation of expectation, as they formed the basis of the current sample. Further studies are required to gauge whether more extreme degrees of attitude support or refute this hypothesis.

In summary, the results from this study supported the hypothesis that the combined effects of placebo and false feedback would positively affect ESP performance. However, these results are preliminary and further study with a more equal distribution among the three belief categories (sheep, goat, and indecisive) is required. In addition, the proposed mechanism whereby the placebo may have retroactively enhanced expectation when coupled with falsely positive feedback requires clarification. Further studies are required to examine these processes.

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