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THE DIFFERENTIAL EFFECT
AND HIDDEN TARGET DIFFERENCES
CONSISTING OF EROTIC AND NEUTRAL
STIMULI

BY

JAMES C. CARPENTER

The Differential Effect and Hidden Target Differences Consisting of Erotic and Neutral Stimuli

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ABSTRACT: Two exploratory experiments are reported in which the investigator devised a dual-target situation in the hope of permitting a more precise formulation of the differential effect (significant difference in scoring level when the subject is responding to two types of targets or using two types of response). Two questions guiding the research were: (a) Can a target difference of which the subject is unaware result in the differential effect? (b) Can personality variables be found which predict which set of targets the subject "prefers"?

In both experiments an erotic-neutral target difference was employed (unknown to the subject) and the method of response was blind matching. In the first experiment (19 subjects, all sheep), a significant interaction effect between target-type and anxiety (as measured on the Taylor Manifest Anxiety Scale) was found ($P < .01$), with high-anxiety subjects psi-hitting on neutral and psi-missing on erotic targets, and mid- and low-range subjects showing the opposite pattern. In the second experiment (31 subjects) the personality variables were the sheep-goat differentiation and sex guilt as measured by the Mosher Guilt Scale. Overall, sheep scored higher than goats, reconfirming Schmeidler's hypothesis. Sheep scored higher on erotic targets than on neutral ones. Among the goats, high-guilt subjects scored lower than low-guilt subjects. High-guilt goats scored higher on erotic targets than on neutral ones, while low-guilt goats reversed this trend. Unexpectedly, sheep were found to produce significantly lower sex-guilt scores than goats. The conclusion is reached that differential scoring can occur even though the subjects do not know that the target difference exists, and that the effect of the target difference appears to be meaningfully related to the subjects' personality differences.

INTRODUCTION

Rao has reported some interesting studies in what he first called the "preferential effect" (8, 9, 10, 11), and later the "differential effect" (12). In his first report, Rao was remarking on a phenomenon noted previously by other researchers. His subjects performed guessing tasks using two sets of materials. One set was made up of the standard ESP cards, the other a set of targets of the subjects' own choosing, such as names of personal significance. The subjects scored above chance on the "choice" targets and below chance on the standard targets, the difference between the two rates of scoring being significant. Rao tentatively labeled this result the "preferential effect." Subsequent studies, however, showed that the simple matter of the subject's conscious preference was not a reliable predictor of hitting and missing tendencies in a situation employing two distinct sets of targets. For example, Rao's second study yielded results opposite to those first obtained, in that scoring was

low on the choice cards and high on the standard cards. This study employed one procedural change from the first one in that the subjects never knew which set of targets they were aiming at, while subjects in the first study did have that information.

Following Rao's first paper, other studies in the differential effect were reported by Kanthamani (5) and Freeman (3).

Reviewing a sizable number of experiments the results of which he took to illustrate the "bidirectional" nature of psi, Rao offered a general definition of the preferential effect: "It has been frequently observed that when the subject is presented with two contrasting conditions, such as two sets of targets, he tends to respond differentially to them. This tendency to hit and miss at the same time is called the preferential effect" (13, p. 232). In this formulation the "preference" is not necessarily assumed to be the same as the subject's conscious choice, but refers to hypothetical unconscious variables which lead one condition to "pull" psi-hitting from the subject and the other psi-missing. Rao's review led him to conclude, among other things, that the differential response is more likely to occur in dual-target situations than in other target situations.

The studies to be reported in this paper were undertaken in the hope of going further in the direction Rao has pointed out, toward the construction of a more explicit and more predictive formulation of the differential effect. In particular, it was hoped that a dual-target situation could be devised to investigate these two questions: (a) Can a differential effect be produced by target differences of which the subject is unaware? (b) Can independent subject variables be found which will predict which set of targets will be "preferred" by each subject?

Fisk and West (1, 2) have reported the finding of extrachance ESP scoring on targets for which the subject had strong, emotion-eliciting erotic associations. With this result in mind, it seemed most likely that a target difference of potential emotional salience would be most likely to produce an unconscious differential effect. It also seemed likely that an emotionally salient target difference would be found to interact meaningfully with some of the available psychological instruments used to assess various characteristics of an individual's emotional life. Since sexual feelings are known to be of significant importance in virtually all human beings, it was decided that an erotic-neutral target difference would be employed.

Two subject variables were receiving considerable attention in ESP research at the time the initial study on the erotic-neutral target differential was planned. These were Schmeidler's Sheep-Goat classification (14) and the Taylor Manifest Anxiety Scale (15). It was decided to launch a purely exploratory study to see if either

of these variables might be found to relate to differential scoring patterns.

STUDY I

Procedure

Nineteen junior high school students, twelve girls and seven boys, acted as subjects. They had all expressed an interest in ESP and were recruited through a lecture on ESP they had attended at school. They were paid \$1.00 for their participation in the experiment.

The blind-matching technique was used. The subject was asked to match a deck of 75 standard ESP cards against ten key-cards enclosed in opaque envelopes. Each of the five standard symbols was represented in two key-envelopes; thus there were two complete sets of targets. Inside the five envelopes of one set, along with the standard symbols, were taped erotic pictures (photographs of nude men and women engaged in sexual activity); and inside the five envelopes of the other set, along with the standard symbols, were taped blank cards of about the same size and weight as the erotic pictures. The pictures and blank cards were taped securely in a fashion that permitted the accompanying ESP cards to be removed and replaced freely without moving or exposing the former. The subject was told that each symbol would be represented by two targets, but he was led to believe that there was no difference between the two sets of targets. Both the key cards (in their envelopes) and the response cards were shuffled thoroughly before each run, and the key cards were placed randomly before the subject; thus neither the subject nor the experimenter knew what was in any given key-envelope. The subject held the response cards face-down while doing his matching. At the end of the run, the experimenter checked and recorded the responses by pulling the target card part way out of the envelope and showing it to the subject, noting discreetly at the same time whether the "loading" of the target was erotic or blank. So far as the experimenter could tell, no subjects ever guessed that there might be anything more to the targets than the standard ESP cards. Each subject did two runs.

Prior to the ESP runs, and after the procedure had been described, each subject was asked: "Do you think ESP is possible given the conditions of this experiment?" According to his answer, he was classified as a sheep or a goat. Each subject had previously filled out the Taylor Manifest Anxiety Scale (MAS).

After the subject had left, the two runs were pooled and the number of hits and misses for each target-type were tallied. Since the numbers of responses made to each target-type were usually not

the same, numbers of hits were not directly comparable and a "percentage right" for each target-type was calculated instead. Each subject thus received two ESP scores: one percentage value for erotic targets and one for neutral targets. In order to meet the requirements for the analysis of variance, the distribution of these scores was made more nearly normal by converting each percentage to its equivalent arc sin coefficient (16, p. 423).

Results

The data for the boys and girls were first tallied separately. No significant differences were found in overall scoring rate or in preferential patterns; therefore the data of the boys and girls were pooled in all further analyses.

All of the subjects were sheep; hence no analysis in terms of the attitude variable could be made.

Following the convention of Nielsen and Freeman (4, 7) in their use of the Taylor MAS in ESP studies, the anxiety scores were grouped into "high" (upper quarter), "medium" (middle half), and "low" (lower quarter). A two-by-three, repeated-measures analysis of variance (17, p. 298) was carried out. The results are given in Table 1. Neither target-type was "preferred" by the group as a whole, nor was there any main effect for MAS level.

Table 1
ANALYSIS OF VARIANCE SUMMARY TABLE, STUDY I

Source	SS	df	MS	F
<i>Between Subjects</i>				
Anxiety	.0239	2	.0120	
Subjects within Groups	1.9243	16	.1203	
<i>Within Subjects</i>				
Target-Type	.0000	1	.0000	
Anxiety x Target-Type	.0449	2	.0225	11.84*
Target-Type x Subjects Within	.0311	16	.0019	

* $P < .01$.

A significant interaction effect ($P < .01$) between target-type and anxiety was found. Examination of the cell means shows that the effect was of the following sort: high anxiety subjects scored higher on neutral than on erotic targets; middle and low anxiety subjects scored higher on erotic than on neutral targets. In other words, subjects who were high on the MAS (upper quarter) exhibited differential scoring in that they tended toward psi-hitting on the

neutral targets and psi-missing on the erotic targets. Medium and low anxiety subjects showed the opposite pattern. For reference, the mean percentage scoring rate in each cell is given in Table 2.

Table 2
MEAN PERCENTAGE SCORING RATE FOR EACH CELL, STUDY I

		Erotic Targets	Neutral Targets
		MAS Level	High
Medium	21%		19%
Low	19%		17%

STUDY II

Procedure

Thirty-one male freshman students who were enrolled in introductory psychology classes at Ohio State University acted as subjects for the second study.

The ESP target materials were the same as in the previous study.

In this study it was decided to attempt again to study Schmeidler's sheep-goat variable in a population more likely to contain some skeptics. Moreover, if in fact the erotic-neutral target loadings were setting up an unconsciously salient differential situation to which subjects were reacting extrasensorily, then it seemed reasonable that the emotional stance which they take toward erotic impulses might effect their scoring patterns. One variable commonly thought to be of importance in this regard is guilt. The Mosher Guilt Scale (6) comprises three sub-scales, one of which is a measure of Sex Guilt (MGS sex). It was decided to employ the forced-choice version of this scale, which is quickly administered and scored, to yield a measure of sex guilt in order to study its possible relation to the erotic-neutral differential effect.

Immediately after entering the experimental room all subjects were asked to write (ostensibly for a separate study) a one- or two-paragraph essay on their impressions of "sexual behavior among undergraduates at Ohio State." This was done in the hope of alerting the subjects to erotic concerns, and thereby perhaps

strengthening the differential effect. Unfortunately, constraints upon the experimenter's time were such that he did not include a control group tested without the essay, so its effect, if any, cannot be ascertained by this study.

After writing the essay the subjects were asked the sheep-goat question. They then performed two ESP runs of 75 cards each, as in the first study, without knowledge of the target differential. After the runs, each subject filled out the MGS,¹ which was scored later for MGS sex only.

Results

Originally it had been intended to analyze these data with a three-way analysis of variance, testing the effects of all three variables (attitude, MGS sex and target-type) and their interactions simultaneously. However, a strong and unexpected relation between the attitude and MGS sex variables was found which made it impossible to provide an adequately large N in certain treatment combinations. Moreover, the fact that two of the independent variables were correlated would have made the result of a single analysis of variance difficult to interpret. Guilt scores tended to be higher for the goats (15 subjects) than for the sheep (16 subjects). MGS sex scores for sheep ranged from 1 to 64, with a mean of 36.81, while the scores for goats ranged from 12 to 76, with a mean of 58.50. A *t*-test of the difference between these means is significant ($P < .005$). Besides posing difficulties for analysis, as mentioned above, this unexpected finding appears to be of some interest in its own right because of what it may imply regarding the psychological factors involved in making the sheep-goat choice. This is discussed below.

Because there were not enough scores in certain treatment combinations to permit a three-way analysis of variance, it was decided to analyze the data of sheep and goats separately. Two separate analyses of variance, testing the effects of guilt and target-type, were carried out (17). Each group's median MGS sex score was used to separate "high guilt" and "low guilt" levels. Because the median scores for sheep and goats were different, it must be remembered that the "high" and "low" levels are not identical for the two attitude groups.

In addition to these two analyses, it seemed of interest to know if there was any difference in scoring rate for the sheep and goats—a question which could not be answered by the separate analyses. All runs for sheep were pooled, as were all runs for goats, and the

¹ One subject did not fill out the MGS. His data were not included in analyses involving the guilt measure.

difference between the two means was tested. Since sheep are expected to score higher than goats, a 1-tailed test is appropriate. The difference is in the predicted direction and is marginally significant (Table 3).

Table 3
DIFFERENCE IN SCORING RATE FOR SHEEP AND GOATS, STUDY II

Attitude Group	No. of Subjects	No. of Runs*	Dev.	Sum of Difference	CR of Difference	P (1-tailed)
Sheep	16	32	+29	50	1.83	.03
Goats	15	30	-21			

* No. of cards per run = 75.

It also seemed of interest to see if there was any overall preferential effect for one target-type over the other. Although none had been found in the first study, the use of a different age group, and the addition of the essay, made the second study seem sufficiently different to merit another test. As it turned out, when the scoring rate for the erotic targets is compared with that of the neutral targets, there is overall a trend toward a preference for the erotic targets, but it is not significant.

For the analyses of variance, the percentage scores were again converted to arc sin coefficients.

The results of the analysis for the sheep group is given in Table 4.

Table 4
ANALYSIS OF VARIANCE SUMMARY TABLE (SHEEP), STUDY II

Source	SS	df	MS	F
<i>Between Subjects</i>				
MGS sex	.0020	1	.0020	
Subjects within Groups	.1520	14	.0109	
<i>Within Subjects</i>				
Target-Type	.0780	1	.0780	7.09*
MGS sex x Target-Type	.0001	1	.0001	
Target-Type x Subjects Within	.1546	14	.0110	

* P < .05.

No significant effect was found for MGS sex level, nor was there a significant interaction between guilt level and target-type. Target-type did produce a significant effect. Scoring was higher on erotic targets than on neutral ones. Thus, it may be said that the sheep in this study produced a differential effect in favor of the erotic targets.

The goats, on the other hand, showed no significant preference for either target-type (Table 5). It may be seen, however, that

Table 5
ANALYSIS OF VARIANCE SUMMARY TABLE (GOATS), STUDY II

Source	SS	df	MS	F
<i>Between Subjects</i>				
MGS sex	.0788	1	.0788	5.84*
Subjects within Groups	.1620	12	.0135	
<i>Within Subjects</i>				
Target-Type	.0002	1	.0002	
MGS sex x Target-Type	.0382	1	.0382	4.96*
Target-Type x Subjects Within	.0929	12	.0077	

* P < .05.

Table 6
MEAN PERCENTAGE SCORING RATE (SHEEP AND GOATS) FOR EACH CELL, STUDY II

		<i>Sheep</i>		
		Erotic Targets	Neutral Targets	
Sex Guilt Level	High	23%	19%	
	Low	23%	19%	
	<i>Goats</i>			
	High	19%	15%	
	Low	20%	23%	

guilt-level had a significant effect, with low-guilt goats scoring higher than high-guilt goats. Put in another way, since the goats as a group tended toward psi-missing, it seems that all of that effect was contributed by the goats with high guilt scores. There is also a significant interaction effect for the goats. The 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.

The mean percentage scoring rate for each cell of the two groups of subjects is given in Table 6.

DISCUSSION

The results described above indicate that a target differential of the sort employed can affect subjects' scoring rates even though the subjects are not aware that the target differences exist. Furthermore, the effect of these target differences seems to be meaningfully related to personality differences among the subjects. Schmeidler's attitude, or sheep-goat, variable appears to be useful in determining the sort of effect obtained, as do the more "affective" variables of the Taylor MAS and the MGS sex.

It would appear, in general, that the psi function may shift back and forth between the positive and negative modes as a function of (at least) the emotional significance of the event in question, and the needs, proclivities, and expectations of the subject. The differential effect, with its simultaneous exploitation of hitting and missing tendencies, seems an ideal paradigm for further study of these variables and their complex effects and interactions.

It would seem premature to speculate at this point about a theoretical rationale which could account for the results presented here. Much more careful empirical work is needed both in studying further the variables explored above, and also in systematically treating variables which the present studies leave uncontrolled, such as age and sex of subjects, and "set elicitors" such as the essay used in Study II. While sensory cues would seem to present virtually no problem here, further research might profitably employ a two-experimenter type of procedure, with its attendant additional safeguards.

It should also be noted that the target differential employed in both studies—erotic pictures and blank cards—does not provide unequivocal evidence that it is the difference between erotic and non-erotic which is being responded to. It could be the difference between any picture and none at all. Two types of pictures—erotic and non-erotic—could be used in future studies to help in clarifying this point.

The association found between the measure of sex-guilt and the sheep-goat dimension is a potentially interesting finding in its own right. It would seem reasonable to assume that persons who are relatively high in guilt about experiences as unavoidably human as sexual feelings and ideas would feel more need than others to keep such experiences to themselves, and hence would be less comfortable in a world in which ESP is a real possibility than one in which it is impossible by fiat. If the relationship found here is not a spurious one, and is confirmed in later research, some progress may be made in explicating the "dynamics" of the sheep-goat variable and its effect on ESP scoring.

If these studies are not conclusive, they are provocative; and they suggest that this may be a fruitful avenue for research and theory which attempt to construct some account of the "psychology of psi."

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