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AN ATTEMPT TO MANIPULATE THE SCORING DIRECTION OF SUBJECTS BY MEANS OF CONTROL OF MOTIVATION OF THE SUBJECTS.

by

Martin Johnson

INTRODUCTION

It has often been claimed that motivation is instrumental for success in ESP-testing. Judging from previous findings there seems to exist a good rationale for keeping this in mind when designing a psi-experiment. One of the hazards of many of the reported laboratory experiments may be that the experimenters have failed in creating the optimal atmosphere to get the subjects at their best. A challenging, compelling situation in which the subjects responses have real-life implications is not easily designed. In the following, two small experiments will be described in which the author tried to control the scoring direction of the subjects by manipulating their motivation. Experiment I was aimed for high motivation and Experiment II for low.

EXPERIMENT I

Population

13 students taking a course in clinical interviewing held by the author. Eight of the subjects were females and five males. Most of the subjects were graduate students.
The same subjects were used in both the experiments.

Procedure

The experiments were planned to take place at the end of the course firstly for one thing because a good rapport could then be likely to have been developed between the experimenter and his subject;

secondly because at the end of the course a favourable testing situation could be anticipated having real-life implications for the subjects.

At the end of the last lecturing hour of the course the subjects were introduced to a challenging ESP-task.

The following instruction was given:
You will here have a chance to obtain information as to some of the questions you have to answer in the exam you will be given tomorrow. By the optimal use of your ESP you will have a chance to obtain knowledge as to five of the fifteen questions in the exam.

Each of you will be given five batches of these envelopes. There are five envelopes in each of the batches. Your task is to select one of the envelopes in each of the batches. In each of the sealed envelopes there is a piece of paper of identical size and appearence, but only in one envelope of the five, belonging to a batch, there will be typed a question. In the other ones are only blanks.

The envelopes are prepared out of my sight by three experimenter assistants who have carried out their work and randomized the envelopes out of my sight. The selected and opened envelope must be put back to the batch from which it is taken.
Please notice that you are only permitted to open the five envelopes you have selected, one from each of the batches. Any questions? Please feel convinced that you will succeed well. Go on and the very best of luck!

Comments

To cancel out the possibility of discrimination between the two types of items ("targets" and blanks") by means of "optic skin reading" all the enclosures were wrapped in a piece of aluminum

foil in a fairly standardized way[1]).

After the instruction had been given the five batches of stimulus material were presented to each of the subjects (the batches were placed in rather big Jiffy-bags on shich an identification number was written. Within each of the batches the order of the envelopes with the "blanks" and the "target" were randomized). The subjects were evenly spaced in the class-room and each of the subjects could easily be watched by the experimenter. When the test was finished the experimenter checked that only one envelope in each of the batches had been opened. Further-more, for identification purpose it was checked that the subjects had written their names on the Jiffy-bags.

Results

The general outcome of the experiment is summarized in Table 1.

table 1

Outcome of Experiment under High Motivation Condition

Subject	A	B	C	D	E	F	G	H	I	J	K	L	M
N of Hits	1	1	2	1	3	2	3	1	1	2	2	1	1

Total N of Hits: 21

M.C.E.= 13. Observed number of hits: 21. Obs. difference=+8

P_{exact} = 0,013

[1]) The author expresses his gratitude to Mr. Egil Boräng, Mrs. I.-B. Danielsson and Miss A. Engström for their help in preparing the test material and for its randomization.

EXPERIMENT 2

As already has been mentioned in the introduction of this article a contrasting experiment was designed. The aim of this second experiment was to try to elicit a scoring in the negative direction by means of putting the subjects in a frustrating situation characterized not only by low motivation but by a feeling of frustration and hostility toward both the experimenter and testing situation.

Procedure

A few days after the exam was taken, early on a Monday morning the 13 subjects were called by the author, who in a harsh way and by rather unpleasant comments ordered the subjects to show up at his office in 60 minutes. The subjects were primarily made to believe that they had to come because of their exams. Curiously enough all the subjects accepted and showed up in approximately the prescribed time.

Another feature of the frustrating situation was that after having arrived the subject had to remain standing in the author's office for a while because all chairs were occupied by two "visitors". After this treatment (when very little notice was paid to the subjects), the subjects two at a time, were given five batches of envelopes and ordered to pick out the "correct" ones just in the same way as they previously had done. They were ordered to carry out this procedure, still standing, but now in the dull corridor outside the author's office, and then to return the target-material according to the same general rules as at the end of the first experiment. Then they were ordered to go to another room and sit down and wait for an explanation from the author.

Results

The outcome of the second experiment is condenced in Table 2.

Table 2

Outcome of Experiment under Frustrating Conditions

Subject	A	B	C	D	E	F	G	H	I	J	K	L	M
N of Hits	0	1	2	2	2	1	2	1	0	1	0	0	1

Total N of Hits: 13

M.C.E. = 13

The difference between the scores in the two experiments, tested by Wilcoxon matched-pairs signed-ranks tests for related samples, is marginally significant with $p < .025$ (two-tailed). This figure might be slightly inflated because of the many ties in the differences of the scores.

DISCUSSION

Although the difference between the two conditions is marginally significant this outcome doesn't justify us to conclude that the second experiment substantiated the hypothesis put forth. As can be seen from Table 2, the number of hits obtained under frustrating conditions is exactly according to chance expectations.

It seems reasonable to conclude that the manipulation of the motivation of the subjects may have contributed to their "hitting behavior" in the first experiment, whereas a "missing behavior" could not be elicited by the manipulations done in order to frustrate them.

Comments

Could the observed effect in Experiment I be explained as an artifact caused by means of ordinary sensory perception?

It could be argued that there are certain physical differences between the five target-pieces of papers and the twenty "blank" ones. Perhaps there is a systematic difference in weight between the two categories? a) Are the five target-strips a little bit heavier than the "blanks" because there did appear letters? b) Or did the experimenter's assistants unconsciously vary their way of wrapping the two categories of strips in aluminum foil? Did they use more or less foil when wrapping the five target-strips than when wrapping the twenty blanks? c) And even if amount of foil they used for the "targets" and "blanks" were randomized or almost identical, perhaps there was a systematic variation in the way of wrapping that tactually could be discriminated through the closed envelope by the subject? (Subjects could reasonably have a chance to manifest "artifical" ESP in an experiment of this kind by discriminating just a systematic difference in physical properities between one envelope within each of the batches of five envelopes. On the basis of such a discrimination statistically unlikely results could be obtained).

Already from a theoretical point of view hypothesis a) can be said to be very unlikely. The photo-chemic process (a dry-process) by which the letters come to existance on the target-strips does only mean a redistribution of the chemical components in the emulsion of the strips.

A post hoc analysis carried out by determination of the weights of a sample of the used target-strips and blanks did not reveal any systematic difference between the two categories of items regarding weight.
Hypothes b) has also been empirically tested.

No systematic trend did substantiate. Hypothesis c) is much harder to rule out. A visual inspection of the items did not reveal any systematic trend regarding a different way of wrapping the "targets" from the "blanks" (no difference in geometry or in frequence of wrinkels).

In further studies of this kind all these limitations can successfully be overcome by paying a proper attention to the design of the experiment. Instead of putting the "targets" and the "blanks" into envelopes the enclosures could preferrably be put into identically looking metal boxes excluding the risk of tactual discrimination. Furthermore, by this design no attention has to be paid to avoiding "optic skin sensitivity" or "skin reading" because the metal-box will work still more efficiently in cutting-of IR-radiation from the letters put on the target-strips, than by the use of aluminum foil. The randomization of weight-differences among the boxes and the target- and blank-strips must however be carefully considered.

SUMMARY

At the last lecturing hour of a course in clinical interviewing a class of 13 graduate students were offered an ESP-test, having real-life implications to the Ss. The task they had to carry out by the use of their intuition was to pick out five "correct" envelopes out of five batches of five envelopes in each. Both the envelopes and batches were randomized ($p=1/5$; $q=4/5$). For each correct choice the enclosure of the selected (sealed) envelope secured the information of one question they had to answer in a written exam they had to take the day after the test. A positive scoring was predicted. The prediction became substantiated ($p=0,013$).

In another manipulative experiment carried out a few days after the exam was taken, the subjects were put in a frustrating situation. They were harshly treated. By means of the feature of the design of the experiment a psi-missing was predicted. This prediction, however, was not substantiated.

The findings from the first experiment are viewed by the author as indicative as regards the paramount importance of creating a challenging testing situation, which the subjects will find as a meaningful one and the outcome of which may have real-life implications.

The outcome of the second experiment certainly demonstrates the hazard an experimenter has to face when trying to direct the psi-process by manipulating the motivation of his subjects. The reverse of the hitting-syndrome will not easily be acquired simply by getting his subjects frustrated. Rather the elusive psi-process may become blockaded. The difference of the scores of the two experiments was marginally significant ($p < .025$), and the outcome was in the expected direction.

Finally the author indicates some week points in the design of this experiment which may have implications on the interpretation of the results. It is not completely conclusive that the results in Experiment I are the functioning of psi. The discrimination between "targets" and "blanks" may have been brought about on the basis of sensory discrimination. Nothing in the findings from a subsequent analysis of data supports this alternative hypothesis.

CODING OF TARGETS IN A CLAIRVOYANCE TEST

by

Sybo A. Schouten

INTRODUCTION

Based on experiments by McFarland and George (6), Chauvin (1), Sanders (8), Freeman (3) and Rao (7), which indicate that using contrasting targets in ESP tests gives different scoring on the two kind of targets, Krippner (5) tested the hypothesis that scoring would be different between clairvoyant response to target symbols in the form of words (non-coded targets), and target symbols in the form of photographs of the objects symbolized by the words (coded targets). The experiment confirmed his hypothesis: subjects scored significantly positive on the non-coded targets while scoring at chance level on the coded targets.

As an explanation for the preference shown by the subjects for non-coded targets, Krippner suggests that perhaps non-coded targets are more easily perceived than coded targets, which would indicate a similarity between normal and paranormal perception. This however, seems unlikely since under both conditions (coded vs non-coded targets) subjects had duplicate postcards of the target objects in the code identical to that of the actual targets placed on the table in front of them for reference purposes.

That targets in the form of photographs of the objects were termed "coded" merely refers to the fact that under both conditions subjects had to circle the word of the chosen object on the answer sheet. Thus subjects knew in both conditions what type of target was being used, and it is quite possible that in both conditions subjects just chose one of the five postcards placed in front of them and then circled the appropriate name. If this was the case, it seems more probable that the differential response was caused by a "psychologi-

cal preference". Now it would be interesting if it could be demonstrated that non-coded targets are more easily perceived than coded-targets. This would suggest that in the normal type of ESP experiment - which is always based on guessing from among a limited number of known objects - subjects match in each trial each object with the target and base their guess on a concurrence between one of the matched objects and the target. This process would be quite different from the normally accepted hypothesis that it is the "idea" of the object which is transmitted. An indication which speaks in favour of this "matching-hypothesis" can be found in the findings of Fahler and Osis (2) which show that subjects who scored at chance level were nonetheless able to check at a very significant level those guesses which afterwards turned out to be hits. The purpose of this study was to test whether scoring on targets would be different from scoring on the same targets in coded form without subjects knowing that coded targets were used, in order to avoid psychologically based preferences. Since in the trials, with non-coded targets, subjects could guess according to the "matching-hypothesis" but not so when targets were coded, it was hypothezed that scoring would be significantly different for both conditions, favoring the non-coded condition.

PROCEDURE

An experimental session consisted of 7 short series of 20 trials each. In each trial the subject had to choose between 5 different items. In each series a different kind of target material was used. The purpose of using short series and different groups of target symbols was to keep the subject as interested as possible during the experiment. The stimulus materials used were:

1) Standard ESP symbols;
2) A varying number of dots, numbers ranging from one to five;
3) Handdrawn letters of the alphabet;
4) Colored cards;
5) Handdrawn clock faces, the hands indicating a certain time.

In the other two series a mixture of symbols was

used. Symbols were drawn in ink on small postcards, except for the colored stimulus cards, which were cut-up sections of regular paper.
In each series half of the stimulus cards contained handdrawn symbols, (the non-coded targets). On the other half of the stimulus cards, the words of these symbols were typed (coded targets).
Thus each series contained 20 cards, 4 of each symbol, two being drawn and two typed. The use of equal numbers of each symbol in the series and in both conditions was necessary to eliminate the possible influence of preferences of the subjects for certain symbols. The cards were enclosed in small opaque envelopes, each envelope being given a letter, which indicated the series, and a number.
In all, 24 undergraduate students participated in the experiment. Each subject took part in one session, which lasted nearly one hour. Before starting the actual experiment an informal talk was given on ESP testing in general.
The experimenter then gave the instructions about the experiment itself. Subject was told that the purpose of this experiment was to select high-scoring subjects for further clairvoyance experiments. Subject was not informed about the real purpose of the experiment. Five postcards with drawn symbols, identical with the drawn symbols in the target deck of the appropriate series, were placed before the subject so that he could refer to then while taking the test. He was led to believe that all target symbols in the deck were of the same kind as the duplicate symbols. Then the envelops of the deck were shuffled and placed before the subject. He was instructed to take the first envelope in his hands, then to look for one of the duplicate symbols which in his opinion would match the symbol in the envelope. In one series the procedure was different. In this series the subject was presented 20 decks of 5 envelopes each. He was told that 4 envelopes contained the same symbol, for instance red, one envelope however contained a different symbol, for instance a drawing of a house. The subject had to choose the envelope with the different

symbol. After making his choice subject called the name of the symbol and then showed the experimenter the code letter and number of the envelope. The experimenter recorded the answer. The experimenter did not know at the time of the experiment the relation between envelopes and symbols. At the end of the experiment the envelopes were opened and first recorded on a target sheet. After this the answer sheet were checked for hits and misses.

RESULTS

Greenwood and Stuart (4) gave the formulae 1,02 pqn for computing the variance in case the number of symbols in the deck are equal for each of the symbols. However, this formulae is not appropriate for this data because the factor 1,02 is based on decks of 25 symbols; and in this experiment the decks were of a different size. For this reason it was decided to utilize a non-parametric test, the X^2 analysis. The overall results for the experiment are presented in the following table:

condition	trials	MCE	hits	misses	X^2	P
coded	1680	336	297	1383	5,66	.02
non-coded	1680	336	353	1327	1,08	-

	number of subjects scoring		
	>MCE	=MCE	<MCE
coded	4	5	15
non-coded	15	0	9

Subjects scored in the coded-condition marginally significant in a negative direction, but scored at chance level in the non-coded condition. As the same subjects participated in both conditions, it was decided to utilize the Wilcoxon matched-pairs signed-ranks test (9) to test the difference in scoring under the two conditions. The Wilcoxon test yielded a T=53, which for 22

subjects (two subjects got the same number of hits under both conditions) is significant at the .01 confidence level (9, table G). Of this 22 subjects, 17 scored lower on the coded targets.

DISCUSSION

At first glance one would conclude that the stated hypothesis, which implied that subjects would score higher on non-coded targets, was confirmed by this experiment. However, since the condition involving coded targets yielded a marginally significant result while the condition involving non-coded targets yielded near-chance results, this conclusion cannot be maintained. This implies that Krippner's proposition, that coded targets are more difficult to perceive than non-coded targets, is not justified.
Moreover, the results contradict the so-called matching hypothesis. Subjects showed a differential response to the two types of targets, but the experiment failed to give any indications about the nature of this effect.

SUMMARY

In a clairvoyance experiment with 24 subjects, coded and non-coded targets were used to test the hypothesis that non-coded targets are more easily perceived than coded targets. The subjects did not know the purpose of the experiment or that in half the trials they guessed for coded targets. Subjects scored significantly different in the expected direction in both condition, but as they only scored marginally significant in the coded-condition, and not significant in the non-coded condition, the hypothesis could not be confirmed.

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AN ATTEMPT TO EFFECT SCORING BEHAVIOR IN A GROUP TEST OF PRECOGNITION BY MEANS OF MANIPULATION OF MOTIVATION AND BY THE USE OF INDIVIDUALLY ASSIGNED EMOTIONALLY LOADED TARGET MATERIAL.

by

Martin Johnson

INTRODUCTION

The impact of motivation, attitude and mood on a subject's scoring behavior has repeatably been stressed by parapsychological experimenters. The same can be said as regards the influence of the experimenter-subject relationship on scoring behavior. The concept of motivation - in spite of the great importance the concept traditionally has been given both in ordinary psychology and in parapsychology - is most certainly a very complex one. We can speak of motivation in a number of ways. Motivation can for instance be described in terms of conscious of unconscious (pre-conscious). We can also speak of extrinsic respe tively intrinsic motivation. The use of the word differs and very often there seems to be confusion because the very concept is often poorly defined. There is no clear-cut distinction between the use of the concept of motivation and mood, although mood usually is thought of as a more transient state of consciousness, than that of motivation.

In addition a certain degree of confusion can frequently be found as regards the use of the concept of attitude. A subject can be said to have a certain attitude towards the idea of ESP, or towards taking part in an ESP-experiment or in relation to the experimenter. And the attitude can most probably change from one experimental setting to another one. The specific result that

will be obtained in a certain experimenter-subject-team is also thought to be effected by the interaction of the two personalities and their expectations. When a decline-effect was found in the early Duke University studies, the decline of scoring was tentatively explained in terms of decreased motivation or loss of the challenge and enthusiasm that existed in the beginning of the experiments. This explanation is of course speculative. A number of ways, however, have been suggested for maintaining high-scoring behavior of a subjects: positive reinforcement (rewards, competition etc.), the use of drugs, hypnosis, meditation etc. Even if knowledge of our subject-matter as regards the important factors related to motivation are rather scanty, most experimenters in the field would probably agree upon the negative effect exerted by boredom in the experimental setting. At any rate a state of enthusiasm characterizing both the members of the "experimental team" is thought of as a very necessary and important factor for the eliciting of a psi-process. If a state of high motivation or at least a state of non-boredom is instrumental for the psi-process one consequence should be to avoid long test-sessions. Quite to the contrary very short and intense sessions should be preferred. Still another factor may also be of importance for a subject's scoring behavior; the third corner of what Rao describes as the "psi-triangle", that is the emotional quality of the <u>targets</u> (12). How a subject generally will be influenced by the "mental quality" of a target, is still one of those innumerable unsettled questions in our field. Some suggestive findings have however been reported by Rao (11), Kanthamani (7), Freeman & Nielsen (3) and by Johnson & Nordbeck (6). The last mentioned investigators found, in an investigation with a "sensitive", a scoring behavior that was in agreement with our predictions. As target material we used (without her knowing it) for her strongly unpleasant themes, e g words or concepts related to strongly traumatic episodes in her anamnesis, pieces of information which had been obtained from projective tests and from clinical interviews. On the other hand "positively" charged targets were used, the meaning of which were related to strong, overt

interests of the subject. A very strong psi-missing was demonstrated on the negative targets whereas a hitting behavior was demonstrated on the positive ones. The difference was significant, ($p < .001$). The findings conflict with those reported by Freeman and Nielsen (ibid). Dissimilarities as regards procedure (individual testing respectively group-testing, specificly meaningful targets versus generally "like-dislike" targets, different expectancies etc.) must be kept in mind. According to the author's thinking the tendency to score differentially on emotionally charged targets, having a specific meaning for a certain subject may very well have something to do with the "defense mechanisms" of subjects(1), and is very much in line with ideas expressed by psychoanalysts like Cervadio and Eisenbud (13,2)

The main objective of the experiment was to try to predict the scoring behavior of the subjects by means of

a) efficient manipulation of their motivation (i) for the task itself and also (ii) towards the experimenter. The experimenter's manipulation should be carried out immediately before the subjects took the test, by a skillful utilization of the psychological possibilities of the situation.

b) the use of "secondary targets" that should have a specific and strong affective meaning for each of the subjects.

c) a very short test-session (only 50 calls), to enhance the chances for the subjects (i) to maintain a "white heat" enthusiasm and feeling of challenge during the whole session and (ii) by means of the short session try to minimize the risk that the subjects should start to develope specific calling patterns that can be said to be a kind of psychologically caused non-random behavior that could tend to cancel out extra chance scoring on a presumtively psi-basis.

HYPOTHESES

Hypothesis 1.
The technique to be utilized for the creation of a supposedly strong, feeling of acceptance of the experimenter and challenge and enthusiasm for the test itself should facilitate the psi-process, and thus having an instrumental function for the kind of behavior that will be predicted according to hypothesis 2.

Hypothesis 2.
By the use of the strongly emotionally charged and individually related "pleasant" and "unpleasant" targets, a differential scoring on the two types of "secondary targets" should occure.

2.1. The subjects should tend to score higher on "pleasant" targets than on the "unpleasant" ones;

2.2. A tendency of psi-missing should occure on the "unpleasant" targets;

2.3. On the remaining targets (20%), not being associated with emotionally charged secondary targets, the scoring level should be intermediary between the scoring level on the "pleasant" and on the "unpleasant" targets.

METHOD

Subjects - 28 adult students attended an introductory course in psychology in the summer of 1969, held at the "Summer University", Lund University, Lund, Sweden. The author was one of the lecturers of the course, and from the beginning he made up a strategy for the experiment. He tried very hard to develope a good rapport with the presumtive subjects. He had scheduled to devote the last lecture to introducing the students to parapsychology. The introduction was to terminate with a group test of precognition in which the subjects were to perform 50 calls of random number digits, 1, 2, 3, 4 and 5. Long before that he had prepared a surprise for the students. The experimenter had previously been told how much the students hated and feared one of the textbooks used at the course. The book in question

was "Personality Development and Social Learning", by Bandura and Walters. With some good reasons the book can be said to be a rather tough reading for beginners in psychology. The author had used the book for several semesters for more advanced courses in social psychology which meant that he was very familiar to the book, and therefore in advance of the ESP-experiment he had translated and mimeographed all its chapters of the book. After the lecture had been delivered and some general remarks on a test of precognition had been given, the following specific introduction was given:

"I am very grateful that you have promised to take part in this experiment. But before we start, I would like to do you a real favor. Here you have rather extensive summaries of all the chapters of the textbook that you hate and fear! This will make it possible for all of you, very comfortably, to pass the written exam you are scheduled to take in a few days. Please, read it and have good luck! (These introductory remarks and the handing over of the abstracts were strongly approved by applause from the audience.) I have just done you a favor, and therefore I venture to ask you to help me to demonstrate that there exists something like ESP! Open the form! There is one important thing to do before you take the ESP test. Please, do me the great favor of writing down a couple of very personal things, most intimately related to yourself. On the right top-corner of the form, there are two boxes, one denoted as "pleasant" and the other as "unpleasant". (The word: pleasant is followed by a plus sign and unpleasant by a minus sign). Please, put a word or a sentence in the "plus-box" that expresses something that is exceedingly pleasant, nice or attractive to you, and really means extraordinary much to you. It could be something special that you have enjoyed or would like to enjoy more than anything else - it could be a kind of a secret dream. Please, put also a word, a concept or a sentence in the "minus-box"! It must express or symbolize something very unpleasant or threatening that you have experienced or fear to experience. Remember that it must be something very personal and I

would like to say secret. It could be something you have experienced as strongly frustrating or traumatic. When you are trying to formulate it, you may find it hard to recall and emotionally upsetting too. But you have to be very honest, otherwise I don't think it will work. Please return the favor I did you by being ruthlessly honest! To make this a bit easier to you, please don't write your name on the form, just write your national registration number! Please, turn the page! On page 2 you have two raws, denoted as run No 1 and run No 2. In each of the columns there are 25 speces. In each of these "run-columns" there are two sub columns, one intended for your guesses or predictions and the other to be filled in later on with the target-digit you have to try to anticipate or "precognize". What you have to do is to try to predict which of the digits 1, 2, 3, 4 and 5 that later on will appear in the related space. Try to use all the digits approximately the same number of times! Please try to feel convinced that you can predict the sequence of digits much better than by mere chance! The probability of getting a hit is 1/5 and for a miss the probability is 4/5. Some questions? All right. Go ahead! Good luck! You will do a wonderful job! "

Targets

In this paper two classes of targets will be discussed. Primary targets refers to random digits that a subject had to try to "precognize".

As previously mentioned, each subject on a very personal basis, was asked to state two strongly emotionally charged words, one "positive" and one "negative". The subjects were not informed of how the words they gave should be used in the experiment.

According to our prediction a psi-missing could be expected to occuse on primary targets being associated with an "unpleasant" secondary target. To the reverse a positive scoring could be expected on primary targets being associated with a "posi-

tive" secondary target.

It was decided in advance that in each of the target-runs each consisting of 25 primary targets, 20 of the positions between 1-25 should be singled out and "associated" with the words (secondary targets) a subject had written. Since we had both "plus" and "minus" secondary targets, 10 of the position within each of the runs had to be used for "plus" secondary targets and 10 for "minus" secondary targets.

That means that in one "run" five of the positions 1 to 25 will not have any secondary targets. These targets will here be designated as "only primary targets". The "only primary targets" can be used as a kind of "controls" of the scoring level. It is reasonable to think that the scoring level of "only primary targets" should be intermediary between those on "plus" and "minus" positions.

Selection of positions for "secondary targets" within the two runs.

The positions of the secondary targets within each of the runs were determined on the basis of the ABBA-principle, for stimulus order with the first A put on position No 1 in Run no. 1 and in position no. 2 in run no. 2. That also implies that in run no. 1, the positions 5, 10, 15, 20 and 25 were positions where no secondary targets were found. In run no. 2, in the same way positions 1, 6, 11, 16 and 21 were reserved for "only primary targets".

For each of the subjects the meaning of A and B was determined by the drawing of "plus" and "minus" wooden chips from a bag containing 50 randomized "pluses" and "minuses". After the "plus" and "minus" positions within the runs, on an individual basis had been determined, the positions were indicated in the forms by plus and minus signs, to the right of the appropriate spaces, intended for the "precognized" digits.

The "plus" and "minus" words (or concepts) given in each of the forms were written in full length at appropriate places.

Selections of primary targets.

For the selection of precognition targets a less elaborate procedure was followed than the ten-step method developed at the Institute for Parapsychology (10).

Step 1. The forms were manually carefully shuffled,
Step 2. The forms were put on the floor from left to right in the positions 1 to 28,
Step 3. A randomized sequence of the forms were acquired by the following measures,
a) An entry-point in the random number digit-table (on its first page), was determined by the date of the day (gave the raw),

b) Randomized positions for the 28 forms on the floor were obtained by means of the digits, read two by two, from the left to the right on the raw where the entry-point had been determined. If for instance the following sequence of RNDs were obtained,
04 03 19 55 28 etc.,
the form that was placed on the floor in position no. 1, had to be re-arranged into positions 4; that form no. 2 had to be put into position 3; that form no. 3 had to be put on position 19; that the digits 55 were irrelevant for our purpose and that form in position no. 4 on the floor had to be placed into position 28 etc.

c) After a randomized distribution of the order of the forms had been secured (ranging from 1 to 28), the position-numbers were written on the forms. The subject that had filled in the forms that now had position number 1, was designated as "Subject no. 1".

Step 4. Now the national registration number of Subject no. 1, was used for the determination

of the entry-points in the RND-table. It was decided that the two first digits should determine the entry-point in the column (at p. 1), and that fifth and sixth digits should determine the raw in the column. (those can range from 1 to 31 because they indicate the date of the month of birth). Example: Subject No. 1 had the following digits in the first part of his national registration number: 38 11 04 (which means that he was born on Nov. 4, 1938); which gives us entry at column no 11 and raw no 4!

After the RNDs for Subject No. 1 had been generated (fifty digits), the next fifty digits that followed applied for Subject No. 2, etc., etc. The following code for translating RNDs ranging from 0 to 9 into digits ranging from 1 to 5 was used:

1s and 6s became a 1
2s and 7s became a 2
3s and 8s became a 3
4s and 9s became a 4
5s and 0s became a 5

Step 5. The primary targets (RNDs) were put in their right position in the forms, by a typist[1]).

EVALUATION

The evaluation of hits was carried out by three independent persons, Mrs. Lagergren, Dr. Bertil

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[1]) The author wants to express his gratitude for the valuable help that Mrs. I. Lagergren, then typist at the Department of Psychology, Lund University, gave him when she carried out the monotoneous work of preparing the forms for their evaluation by filling in both primary and secondary targets. During the whole procedure, she was unaware of the purpose of the experiment.

Nordbeck of the Department of Psychology, Lund University, and by the author. Only three errors had been made by the typist; in two cases she had not been able to see a hit, and in one instance she had made an error in the opposit direction: she had seen a hit where there actually was a miss.

RESULTS

The outcome of the experiment is summarized in TABLE 1, pag. 10, where individual scores as well as total scores on the different types of targets are given, together with p-values.

TABLE 1

NUMBER OF HITS ON "PLEASANT", "UNPLEASANT" AND "NEUTRAL" TARGETS

Ss	No.of Hits on "pleasant" Targets	No.of Hits on "unpleasant" Targets	No.of Hits on "neutral" Targets	Tot.
1.	1	3	3	7
2.	4	3	2	9
3.	7	3	3	13
4.	4	4	0	8
5.	5	2	2	9
6.	4	5	2	11
7.	5	4	4	13
8.	8	4	2	14
9.	3	0	2	5
10.	3	4	0	7
11.	6	0	2	8
12.	5	3	2	10

Ss	No.of Hits on "pleasant" Targets	No.of Hits on "unpleasant" Targets	No.of Hits on "neutral" Targets	Tot.
13.	3	2	1	6
14.	5	5	3	13
15.	4	2	2	8
16.	7	3	1	11
17.	0	2	4	6
18.	4	6	5	15
19.	4	2	1	7
20.	4	5	2	11
21.	7	2	2	11
22.	4	3	3	10
23.	9	3	4	16
24.	5	4	0	9
25.	3	3	2	8
26.	2	0	1	3
27.	5	5	3	13
28.	4	5	2	11
	Σ 125	Σ 87	Σ 60	Σ 272

MCE:28x4=112. MCE:28x4=112. MCE:28x2=56. MCE:280

Obs.dev.,=+13(n.s.).Obs.dev.,=-25,Obs.dev.,=+4 (n.s.).

CR=2.35.
p=.0094(one-tailed)

According to Wilcoxon's matched-pairs test for related saples[1]) the p-value for the difference in scoring between the two types of targets is,
$p < .005$ (one-tailed)
According to Hypothesis 1, the manipulations that the experimenter carried out should enhance the chances to elicit the psi-capacity of the subjects. The psychological measures that the experimenter utilized was supposed to have an instrumental function for bringing about effects according to Hypothesis 2 and its sub-hypotheses. Since something of extra-chance character seems to have happened as regards what is implied by Hypothesis 2.1, one can at least say that Hypothesis 1 did not become falisfied, although very little can be said about the validity of the ideas behind the hypothesis in it self.

As regards Hypothesis 2, the following can be stated:

Sub-hypothesis 2.1, is rather strongly supported by actual findings. The outcome is in the expected direction and the difference in scoring on "pleasant" and "unpleasant" targets is a significant one ($p < .005$, one-tailed).

Sub-hypothesis 2.2, predicting a psi-missing effect on "unpleasant" targets is also supported by our findings. It should be observed, that the negative scoring on "unpleasant" targets in fact is the main cause why a significant differential scoring was obtained.

Sub-hypothesis 2.3, cannot in a clear-cut way be said to have become verified. The scoring-level can hardly be said to be intermediary between the one on "pleasant" - and the one on "unpleasant" targets. On the other hand, it should be noted that the scoring on the "neutrals" was on a

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[1]) See S. Siegel: "Non-parametric statistics for the behavioral sciences". pp. 92-94, Int. Student Edition, McGraw-Hill Book Company, Inc., New York, 1956, (14).

change-level, and one could say that the reason why the prediction faild is related to the fact that scoring on "pleasant" targets also turned out was on a chance-level. The very fact that the experiment turned out statistically significant, and by and large, in accordance with predictions, makes the author think that some of the psychological and methodological features of this study should be considered in subsequent studies.

DISCUSSION

In previous studies (4,5) results have been reported that support the view that there is a relationship between certain "precognitive" defensive structures that can be studied by means of the Defense Mechanism Test, the DMT[1]), and scoring direction in an ESP-test. Tentatively it has been demonstrated that subjects, who according to DMT-data are classified as anxiety prone, tend to demonstrate a psi-missing effect[2]) in an ESP-test situation.

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[1]) The DMT can briefly be described as a projective procedure in which a percept-genetic tachistoscopic method is used. Pictures with a central person and a peripheral, threatening person are presented, the stimulus intensity being increased by steps, affecting an ordered sequence of percept-genetic levels of interpretation, from stimulus distal (more or less "preconscious") towards all the more stimulus-proximal interpretations.

[2]) There may exist several reasons for "psi-missing". Under certain conditions in an card-guessing experiment, a subject can systematically mixe up the names of the targets (so-called "consistant missing"), which may cause a "psi-missing effect". See Timm (15)

One could also say that subjects characterized by a low level of "defense mechanisms" in their DMT-protocols (known to be correlated with high stress tolerance) tend to be "psi-hitters", i.e., scoring above mean chance expectancy (m.c.e.), whereas subjects characterized by strong "perceptual defense mechanisms" in their DMT-protocols (known to go together with low stress tolerance), tend to score below m.c.e., i.e. "missing" behavior. But how to "explain" this "missing" behavior and its relationship to perceptual defense structures in the DMT? The following very tentative suggestion can here be given: persons with excessive "defense mechanisms" (∿ neurotics), are thought to be more or less habitually rejecting impulses emerging from the unconscious. It is suggestive to think that some kind of sensing and decoding processes may take place at a preconscious level, processes that can be said to be instrumental in relation to the (preconscious) defense mechanisms of the ego. The "sensing" process would in this case "reveal" the affinity between the emerging impulse (the "psi-signal") and the "feared" sphere of the personality and hence impose anxiety (submanifest), eliciting defense against anxiety (8). The presupposed "decoding" process can be thought of as an "auxiliary" device in relation to the "defense mechanisms". Through the decoding of the content of the message or "signal" (in an ESP-card-test, the "content" could be the symbol of a star); the "defense mechanisms" could be said to be furnished with means to counteract what the "impulse" reaches and affects at the cognitive level. That could be brought about by repressing the emerging "impulse" back into the unconscious, on the cognitive side accompanied by a blockage of associations towards the "decoded" and "repressed" symbol. (The same effect could be obtained by a "defensive" process of "denial").

If the discussed suggestions can to some extent, account for our observations as regards the phenomenon of a general psi-missing, then we have to ask to what extent the specific missing (or differential scoring), observed in this study can be

understood by the same paradigm. As far as the author can judge, the assumed "censorship" could be effectuated by the requisite of sensing, decoding and repressive and/or denial mechanisms. In the latter case, it must be admitted, that the procedures involved are much more complicated. For one thing, it is a test of precognition which implies a kind of more or less unintelligible anticipation of events. For another, the "censorship" seems to have been carried out in a rather selective way. As regards the calls which later were associated with "pleasant" secondary targets, chance results showed up, which may imply that no "psi-information" was involved. Quite to the contrary, something seems to have been involved concerning the calls which later became related to "unpleasant" secondary targets. This effect could be understood in terms of the previously mentioned paradigm.

The author feels however, that at present it might be rather premature to theorize about the findings, although it must be remembered that some of the effects were predicted and these expectances were also utilized in the design of the experiment.

At any rate, the findings seem strongly to justify further research along similar lines. It should be noted that the assumtions put forward in this paper, do have test-consequences. One could construct scales for degree of "pleasantness" - "unpleasantness" and correlate the order of rank expressed by a subject with his scoring. One could also imagine possibilities to manipulate the level of anxiety of a subject prior to or in the test situation. The presumptions on the eliciting of "preconscious anxiety" by the DMT-pictures might be possible to validate by psycophysiological methods, and the same may hold possible as regards the notion that the anticipation of an "unpleasant" target may be accopanied by an increased submanifest anxiety. The frustrating fact in parapsychology is however, that we still are lacking the repeatable experiment. Is that because we are only observing unidentified artifacts or because we are so ignorant of what consitutes the necessary and

sufficient conditions to bring about these peculiar phenomena?

SUMMARY

28 adult students took part in a group test of precognition. Each subject made 50 calls or "predictions" of the sequence of the digits 1, 2, 3, 4 and 5, randomly distributed within two runs. The random number digits were designated as primary targets. In addition, there was also another class of targets, secondary targets. The secondary targets were of two types: "pleasant" and "unpleasant" ones. Each subject was asked, on a very intimate basis, to give two statements; one on a most "unpleasant" word or concept, the other on a strongly appealing word or concept. To each of the subjects, 40 out of the 50 primary targets were associated with secondary targets (20 "pleasant" and 20 "unpleasant"), according to the ABBA-principle of stimulus order. Within each of the two runs, 5 primary targets were not associated with any secondary targets. Based on previous findings, a differential scoring-effect was predicted, with psi-missing on "unpleasant" targets and a higher scoring on the "pleasant" targets. A great emphasis in this experiment was placed on trying to enhance the motivation towards the task among the subjects and to try to get the subjects favorably disposed towards the experimenter. In the minutes before the test was given, the experimenter did them a greatly appreciated and unexpected favor: the week after the ESP-test was given the subjects had to take a written exam, on a text-book they feared considerably; therefore the experimenter gave the subjects mimeographed copies of translated summaries of all the chapters of the book, intended to save many hours of hard work and feelings of anxiety. The subjects were asked to repay their gratitude "by helping me to show that there exists something like ESP!"
The hypothesis put forth as regards a differential scoring-effect was verified at the .005-level of significance. The prediction of a psi-missing on "unpleasant", individually related secondary targets was also substantiated at a statistically significant level. The findings are thought, indirectly to

support the idea of the importance of carrying out ESP-experiments in a challenging and compelling real-life context.
Finally the author offers a very tentative explanation, within a psychodynamic frame of reference, of the observed and predicted effects. According to this interpretation, the tendency to avoid "unpleasant" targets is thought to indicate the existance of "preconscious" sensing, decoding, repression and denial processes. These processes are thought to be related to the classic "defense mechanisms" as well as to the perceptual defensive structures that can be studied by means of the tachistoscopic technique utilized in the Defense Mechanism Test, the "DMT". These highly speculative ideas have, however, certain test implications: by a good and sensitive design several of the assumptions could easily be subjected to falsification, according to Popper(9) the basic test of meaningfullness in empirical science. An alternative explanation is however, that the observed scoring behavior is an experimenter-expectancy effect or some kind of unidentified artifact.

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