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When St. Denis was decapitated, he is supposed to have picked up his head and walked off with it. This led his custodian to comment, "Dans des cas pareils, ce n'est que le premier pas qui coûte."* Unfortunately, this maxim does not seem to apply to research in parapsychology. If extrasensory perception (ESP) exists, it is of fundamental importance, and fundamental problems are never easy to solve. But a large body of evidence has been adduced in favor of the existence of ESP, and while this evidence has left most scientists unconvinced, there is general agreement that further research is justified. In a survey of 349 fellows of the American Psychological Association, only 17% said that ESP was an "established fact" or a "likely possibility", but 90% considered its investigation a "legitimate scientific undertaking". (J. Parapsychol., Vol. 16, 1952, pp. 284-95)

I. Objectives

It is difficult to state the long range objectives of a research program in parapsychology. The present investigators are by no means certain that ESP exists or that it is possible to experiment with it. They do feel that the parapsychologists have made a strong case and are willing to devote research time to further study of this subject.

There are three overlapping areas which require special exploration and where it is hoped that substantial progress can be made. These are: the design of 'repeatable' experiments; the determination of functional relationships between a variety of psychological variables and ESP test scores; and mapping limits for the utilization of the phenomenon, with special reference to the channel capacity, the kinds of messages which can be transmitted and spatio-temporal constraints.

The present research team have concluded that these objectives would be best served by initiating three closely connected experimental studies. The first consists in conducting group experiments, in which each individual is treated as possessing a modicum of ESP and test scores are predicted on the basis of ratings on a number of psychological and physiological scales. The second is to develop a method to relate patterns of subjective probability

* In such cases, only the first step requires any effort.

reflected in response sequences to test scores and to psychological and behavioural factors. The third is an exploration of the postulated ESP abilities of a few specially gifted subjects, who will be intensively studied under flexible conditions.

A large number of group experiments have been carried out by previous investigators. They have apparently succeeded in discriminating between levels of scoring for persons characterised by different ratings on a number of psi-variables. These include IQ, extroversion, effects of certain drugs, Rorschach protocols, self-confidence, belief in ESP, subject-experimenter relations &c. But in each case only one variable was studied at a time, even though it should have been clear that other variables than the one selected for analysis were also influencing the results.

If a phenomenon is caused by a number of factors, or if at a given stage of investigation it must be treated as if it were, it would be permissible to allow one factor to vary at a time, the other factors being held constant, or to consider the combined effect of a number of relevant factors. If one varied one factor at a time and ignored all the others, he would be ill informed about the use of experimental design. This is unfortunately the situation which obtains in parapsychology.

Experiments in which ESP emerges as a function of the interrelations of a number of psi-variables should yield results which meet any reasonable criterion of repeatability. Comparatively crude one-variable studies, such as those of Anderson and White at Duke University where ESP depends on the inter-personal attitudes of school-children subjects and their teacher, experimenters have apparently been successful about 50% of the time, even though the variables have been dichotomous and significance has been estimated with relatively crude tests (a student either likes or does not like his teacher and vice versa; a student either scores above the expected mean or scores below it).

The study of response sequences is based upon the assumption, defensible in the light of recent psychological research, that guessing patterns represent subjects' evaluation of the uncertainty situation in the experiment. There will be certain gross departures from randomness for all subjects, but there will also be idiosyncratic departures. These are related to general behavioural differences, because what a person considers to be probable determines to an important extent what he will do. It is predicted that

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when subjects are divided into response types, these types will tend to score at different levels in ESP tests. Of course it is not assumed that adopting a particular pattern can in any way effect scores (except in experiments where the model involved in comparing guess and target sequences is the matching distribution rather than the binomial distribution, in which case the variance may be increased, though the expectation is not effected). It is assumed that the guessing pattern and the ESP score are both related to a third factor.

The work with individual subjects who give promise of extraordinary abilities will introduce a number of experimental techniques which have been ignored or barely hinted at in the past. A variety of models of the manner in which information is transferred will be tested by simple variation of the tasks imposed on the subject. Preliminary learning studies, in which feedback of results and other kinds of reinforcement are utilised, will be introduced at the same time. If a subject is found who can score reliably, an attempt will be made to increase the quantity of transmitted information without increasing the average probability of success, by making use of straightforward techniques borrowed from the mathematical theory of communication.

In working with individual subjects, special attention will be given to disassociative states, which tend to accompany spontaneous ESP experiences. Such states can be induced and controlled to some extent with hypnosis and drugs. Some of this work will make use of qualitative stimuli, such as drawings and ideas with special associations.

II. Methods

Group Experiments

Numerous mathematical models and experimental designs enable the simultaneous assessment of two or more independent predictors. Chief among these are multiple regression analysis and factorial experimental designs, which are closely related logically and mathematically. The essential idea of the regression model is that each individual's scores on the n independent variables and the ESP criterion may be located at a point in an $n + 1$ dimensional space. The relation between the criterion and the predictors is given by a multiple regression equation which takes the form:

$$\bar{Y} = A + \beta_{y1.23\dots n} X_1 + \beta_{y2.134\dots n} X_2 + \dots + \beta_{yn.123\dots n-1} X_n$$

/where

where A is an intercept and the coefficients of the X's are partial regression coefficients and indicate the weighting allotted to each predictor.

The regression equation and each of the, independent, predictors may be tested for significance. If the null hypothesis is rejected, the accuracy of prediction is of interest. This is best considered in the language of estimation statistics, where one may speak of confidence intervals. That is, for a subject characterised by a certain pattern of scores on the independent variables, one may predict with .95 confidence that the subject's ESP score will fall somewhere between A and B percent success. The clearest meaning of 'repeatability' is expressed in statements of this kind, whereby the results of a series of experiments, not the probabilities attached to them, may be compared to see if they fit the same pattern. The width of the predicted interval and the confidence coefficient of course vary inversely and the definition of 'repeatability' depends on assigning an a priori ESP-probability.

The variables to be considered can be classed in several ways. They will be intrinsic psychological and physiological factors and experimentally manipulable factors. Intrinsic factors may be temporary and characteristic of the experimental situation, such as annoyance, or general personality characteristics, such as intelligence. Experimentally manipulable factors include induced attitudes, such as motivation produced by positive reinforcement, and purely formal factors, such as the number of ESP trials yielding the most accurate predictions. The selection of variables will depend on a detailed analysis of the results of past research, incidental observations in experiments with single subjects, apparent common factors in 'spontaneous' ESP, and intelligent guessing. In the selection of variables, special attention will be paid to technical problems in scaling and to the reliability and validity of existing scales. In some cases ad hoc procedures, such as the Q sort, will be used.

Response Patterns. Human beings are notoriously inefficient randomisers, so would not be inappropriate to treat response patterns as having two components, ESP and guessing habits. Guessing habits represent subjects' subjective evaluation of the sequential uncertainty situation in the experiment and depend on such factors as ability to judge probabilities and imitate randomness, compulsions with respect to symmetry &c. Such habits will necessarily interfere with exercise of ESP, because every time a choice is made habit and psi-information are in

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competition unless they should agree fortuitously. It might be, for example, that the well known decline effect phenomena are due to the gradual build up of habits and their dominance over ESP.

It is, however, not only desirable to correct for the destructive effects of guessing habits. It may be that such habits could be used to predict ESP test scores. When one decides to cross the street, his decision about when to cross depends on his estimate of the chance that he will be run over. Behaviour is largely determined by concepts of probability, and systematic bias in assessments of uncertainty situations are known to be related to personality types. It is quite possible that some of these types, whether or not they are similar to the ones derived by psychometric techniques or ordinary common sense, may be related to ESP ability. It might in fact be possible to derive an ESP-typology from the non-ESP component of the ESP guessing pattern.

The techniques which will be used to analyse response sequences are too complicated to enter into here, but will include the informational estimation of redundancy, as used in the study of languages and the construction of pseudo-languages, autocorrelation, and ad hoc methods to reduce and classify the number of possible patterns. The actual analysis will be carried out by an electronic computer. It should be made clear that the quantity of ESP in the results of even the best subjects is too small to interfere with the elucidation of guessing habits. The data used in this study will be obtained from group ESP experiments which have yielded significant results, high scoring subjects (including control series and records taken after they 'lost' their ability), from special groups such as psychotics, children and mediums, and from psychological and educational tests in which answers are of the multiple choice type. The ESP data have been promised by

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Individual Subjects. The amount of information transmitted on the average per trial in ESP experiments is: $\log_2 5 + (r/25)\log_2(r/25) + 4[(25-r)/100] \log_2 [(25-r)/100]$ in bits, where r is the number of correct guesses. (This appears to be the correct model, since there is evidence that subjects produce the same deviation from chance when aiming below it as when they aim above, in spite of the fact that $p \neq 1/2$). Good subjects will tend to have somewhere between .2 and .6 bits of information generally

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available to them. This is one of the reasons why ESP experiments are so difficult. But it may still be possible to learn a good deal about the phenomenon, even if learning studies should fail. For it is possible to vary the experimental paradigm to discriminate between various models for the operation of the phenomenon, such as: ESP occurs sporadically but gives perfect information; ESP always occurs and multiplies chances of success by a constant factor; ESP tells the subject one of the things the target is not; ESP, when it occurs, answers a question of the form— is the target an X?. In addition to psi-models, it will also be necessary to introduce models which provide more sensitive estimates of ESP. For example, target material will be introduced whereby guesses instead of being of the 'all or nothing' type can be more or less right. Again, a number of different p values will be introduced and intermixed to imitate real life situations.

Learning studies will be instituted in which the subject will be rewarded or punished for his overall performance and reinforced in various ways — by being told whether he was right, by being told what the target was, with electric shock etc. In addition, an attempt will be made to increase the transmitted information in cases where the average probability of success remained constant. Thus if N_{ia} = the number of trials in which the i th distinguishable target is guessed to be the a th, t_i = the frequency of i as a target, g_a = the frequency of guesses of A , and N = the number of trials, $(N_{ia}N/g_a(t_i))$, which states the ratio of the frequency with which i is guessed A to the expected frequency if there were no guessing preference, may be used to determine which guess was the best estimate of the target, and the resultant estimate, which will depend on the number of trials and the quantity of information available to the subject, will approach certainty asymptotically.

But the main consideration will be the attitude and general disposition of the subject. Wherever possible, every attempt will be made to tailor the tasks required to his preferences and his estimate of good working conditions. In one case the experimental procedure will be designed to achieve favorable motivation by such devices as instructing him that he is participating in a study of subception. In other cases drugs and psychological tricks will be used to modify his attitudes. The experimenters will be particularly interested in disassociative states, from the abaissement de niveau mental to multiple personality in so-called mediums, and an attempt will be made to induce a number of states of this kind, using hypnosis. Hypnosis is seen not as a

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variable in itself but as a technique for creating various subjective states through suggestion. In these studies and some others use may be made of qualitative target material, which may be evaluated with the use of elaborate matching methods, which have their origin in Euler's solution of the 'Rencontre' problem.

We are very fortunate in having the co-operation of [redacted] who has formerly returned [redacted] after several years in [redacted]. The experiments of Dr. S.G. Soal did with [redacted] discussed in the book Modern Experiments in Telepathy, are probably the best controlled and most convincing evidence yet offered for ESP. Exploratory experiments with [redacted] are already in progress.

III. Time Required.

Support is being requested for a twelve month period. This will allow studies to be carried out in each of the three areas discussed above. If at the end of that period no results favoring the ESP hypothesis have been found, the project will be dropped. If the hypothesis is supported, the project will be revalued and its objectives will be modified. Then a further request for support may be made to the [redacted] B

IV. Estimated Budget.

<u>Item</u>	<u>Amount Requested</u>
Apparatus for recording data	\$300
Microfilm camera and projector	250
Computer time* and programming	300
Office Equipment	150
Office expenses (postage, phone, duplicating)	300
Repairs to premises at [redacted] H	560
Manual computing and checking data	300
Inducements for subjects	500
Experimental assistants	200
C [redacted] (full time)	3,600
Travel [redacted]	1,000
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	7,460
+ 15% indirect costs	1,119
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	\$8,579

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[redacted] will be available without charge, but a small contribution is expected.

The [redacted] will provide and construct experimental apparatus without charge.

The [redacted] will provide desk calculators, furniture, and a limited amount of secretarial and clerical assistance without charge.

The [redacted] has allocated premises available to this project without charge. These consist of the basement of the [redacted] about 570 square feet in area and comprising two rooms and three large closets.

Experimental workers other than [redacted] will contribute most of their time without charge.

V. Qualifications and Tax Exemption.

The ESP research project is to be a research study officially approved by the [redacted] and will be conducted in a neuropsychological laboratory attached to the [redacted]

There will be an informal advisory committee who will review the progress of the work, offer suggestions about its conduct and consult on technical problems. The members of this committee are:

[Large redacted block containing names of committee members]

The chief investigator will be [redacted] for the degree D.Phil. working under the [redacted] and attended the [redacted] was born in [redacted]

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The following persons have agreed to assist in experiments:



who is ultimately responsible for the conduct of this research, is joint editor of the and the author of three books and numerous technical papers on statistics and biometrics.

As the project will be carried out and the is willing to receive and disseminate the funds, any funds granted us should be considered tax exempt by the U.S. Government.

VI. Related Work at Other Universities.

There are or have been research centers for parapsychology at Duke University, Cambridge University, City College of New York, Harvard University, Stanford University, The University of Chicago, The University of Utrecht (which has a chair of Parapsychology), London University, Pittsburgh University &c.

A general survey of the methods and findings of parapsychology may be found in Rhine and Pratt (14), an exhaustive analysis of the research up to 1940 in Rhine et al (13), and a general review of the subject in Soal and Bateman (16).

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Research into psi-variables has been summarised by Mangan, 1959 (9). A recent review of the experiments initiated by Anderson and White is Van de Castle (19). A detailed account of a major research project in this is Schmeidler & McConnell (15). Work relevant to the study of response sequences has been done by Pratt and by Soal (10, 11, 12). General factors presumed related to ESP and studies of individual subjects are discussed in (13), (14) and (16), - where references are given.

The idea of using multivariate designs in group experiments appears to be original. Some of the ideas about studying response sequences go back to conversations with

[REDACTED]

The method described by them seen have been a Ph.D. thesis.

[REDACTED]

Most of the ideas involved in the individual studies have been discussed at one time or another in the past, but little has been done about them. [REDACTED] has done mathematical work on the experimental discrimination of psi-models (18); the method of differential scoring is due to [REDACTED]

[REDACTED] has discussed the method for conducting [REDACTED] mentioned (17). In general,

much useful information and many ideas for research have come out of conversations with [REDACTED]

[REDACTED]

References:

[REDACTED]

(2) [REDACTED]

(3) [REDACTED]

(4) [REDACTED]

(5) [REDACTED]

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