

The effect of Ganzfeld stimulation and feedback in a clairvoyance task

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Abstract

32 Subjects participated in a free response clairvoyance experiment. Sixteen subjects were tested in the Ganzfeld condition. In the non-Ganzfeld condition the other 16 subjects listened to 40 minutes of relaxing music in the meanwhile giving their impressions of a target picture that was sealed in an envelope which they held in their hands. After the 40 minutes of stimulation the subjects ranked a set of 4 pictures among which the copy of the target. Each subject did 2 trials on two different days. For only one of the 2 trials feedback was given. The results showed scoring percentages of 12.5% in the non-feedback / non-ganzfeld condition, 25% in both conditions with feedback and 43% in the non-feedback / Ganzfeld condition. (MCE=25%). Targets were pictures of local sites, thus enabling a computer analysis using 30 descriptors as was previously done in a Remote Viewing studies. Neither of the classical and computer analyses yielded significant results. Both methods of analysis are discussed and compared.

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1. Introduction

This study had as a primary goal to teach students experimental design in a practical setting. As such it was part of the regular curriculum of the dept. of Psychology of the University of Amsterdam. Due to the restricted amount of time available, the no. of trials was set to 16 per condition which implied that with the average scoring rate that is reported in the literature of about 40%, the results per condition would not have been significantly different from the expected rate of 25%.

It was our hope that the application of an analytical judging procedure (Jahn et al, 1980), which seeks to compensate for the loss of information inherent in the forced choice ($p=1/4$) judging procedure, might nevertheless produce significant results. The major advantage of the analytical judging procedure is that for each protocol another independent judge (or the subject) can be used who has simply to answer the 30 questions (descriptors) about the contents of the protocol with a 'yes' or a 'no'. Thus the demanding task of *comparing* a protocol with a large no. of targets is avoided. Also, studies like ours which are designed with two independent variables, are most easily analyzed in terms of Analysis of Variance. This requires a score for each trial. Rankscores as well as ratings can not be used as they are not normally distributed. The analytical judging procedure on the other hand produces z-scores per trial which are normally distributed and thus are suited for use in an Analysis of Variance.

The present discussion on the replicability rate of Ganzfeld experiments is quite dependent on a good estimate of the no. of unpublished experiments (Blackmore, 1980). Therefore it was decided to publish the present experiment although the power was too low to expect significant results. This stresses the need for an alternative way to assess the replicability in meta analysis of the Ganzfeld literature (Hyman, 1982). Instead of basing the meta analysis on no. of significant studies that are reported, a method should be used that weights the results of the different studies according to their power.

According to the Observational Theories, GESP can be described as a two-step process which discriminates between 'call' (or protocol-production), where the brain state should be as 'random' as possible, and the 'feedback' of the target (or any meaningful result) which is thought to be necessary to 'retroactively' bias the protocol in favor of the target related impressions (Sijde & Wesseling, 1983).

In the present experiment both 'steps' were manipulated:

- Brain state was manipulated by the Ganzfeld induction in one condition and by

stimulation with relaxing music in the other condition.

- Feedback to the subjects was given only in half of the trials. In none of the conditions the experimenter got feedback in terms of information on both the protocol and the target picture.

2. Experimental Design

The design was a 'within'-subject design with regard to the feedback condition and a 'between'-subject design with regard to the Ganzfeld vs. Music condition. The latter was done because subject expectancies are more pronounced with respect to the effect of the Ganzfeld stimulation. A 'within' subject design would have resulted in a confound of brain state manipulation with expectancy and other related variables.

3. Hypotheses

1. There will be a different effect with regard to the feedback manipulation.
2. Subjects in the Ganzfeld condition will show more hitting.
3. There will be an interaction between feedback and Ganzfeld such that Ganzfeld with feedback is the optimal condition.

These hypotheses will formally be tested using the analytical judging procedure to calculate z-scores for each trial and by using these in an Analysis of Variance expecting main effects for both manipulations as well as an interaction between the two.

4. Targetpool

The targetpool consisted of 16 pictures of sites in and around Amsterdam. These type of Remote Viewing targets has never been used before in the Ganzfeld but were chosen so that no new descriptors needed to be constructed. For the analytical judging procedure each target was judged using 30 descriptors comparable to those used by Jahn et al. (Jahn et al, 1981). The mean interjudge reliability using 4 judges for the target description was $K=0.78$. Four descriptors of the 30 turned out to be non discriminating for the present target pool (no affirmative answers were obtained for these descriptors for any of the targets). These 4 descriptors were the questions:

- a. Is any significant part of the target indoors?
- b. Is the target dominantly in the dark?
- c. Is any significant part of the target oppressively confined?
- d. Are there people on the target other than can be expected within the impression?

They were removed in subsequent judging procedures from the questionnaire.

For the subjects ranking procedure, sets of 4 pictures were constructed, 1 being a copy of the target picture, the other 3 chosen at random from the total pool. This procedure did not guarantee diversity of pictures in the set nor did it guarantee equiprobability of pictures to occur in any of the sets. Targets were randomly assigned to each trial.

5. Subjects

Subjects were freshmen psychology students that were *required* to participate in a preset number of experiments as a part of the educational program. When using a 7 point scale for answering the question "I believe in ESP" 13 subjects could be classified as sheep 11 subjects as goat. Belief in personal psi abilities was present in only 5 subjects. A number of subjects also expressed their impression that the study was a fake. This attitude is due to the large no. of psychological experiments in this part of the educational program that gives false a priori information.

6. Procedure

After a short introduction (5 minutes) subjects were asked to lie down on a matras in the experimental room which has a one-way mirror through which the subjects could be observed by the experimenter. They got the headphone through which, depending on the condition, either 40 minutes of relaxing music or 40 minutes of white noise was presented. There was no explicit relaxation procedure preceding this period. They were handed a sealed envelope with the target. In the music condition they were asked to close their eyes while in the Ganzfeld condition they were requested to keep their eyes open while looking into a uniform field of red light caused by the standard ping pong ball 'apparatus'. During the 40 minute stimulus period the experimenter recorded the mentation that was produced by the subject. After the stimulus period 2 questionnaires were given, one measuring the effect of the induction, the other asking to describe their experiences in terms of the 26 descriptors. This took about 20 minutes. Finally the subjects were asked to rank order the pictures in 4 numbered envelopes, one containing a copy of the target. In the feedback condition the number of the actual target was revealed and the subject was asked to have a close look at the target picture. In no stage of the procedure the experimenters observed the contents of any of the envelopes.

In the feedback condition the experimenter got feedback however with regard to the rankorder of the target. More precisely: the feedback condition

was a condition in which the experimenter observed (as first person) the rankorder and communicated this immediately to the subject who gets then pictorial feedback of the target. The non-feedback condition on the other hand was a condition where the experimenter observed the rankorder at some delayed moment and the subject got no information whatsoever.

7. Results

7.1 Subject's Rankordering

TABLE I gives the distribution of ranks in each of the 4 conditions with the Mean Rank ($MR_{\text{expected}}=2.5$) and the corresponding z-score (positive z = hitting).

TABLE I
Results of the rankordering by subjects

	MUSIC		GANZFELD	
NON FB	1: 2 2: 6 3: 6 4: 6	MR=2.5 z=0	1:7 2:3 3:3 4:3	MR=2.13 z=+1.23
FB	1:4 2:3 3:5 4:4	MR=2.56 z=-0.0	1:4 2:4 3:3 4:5	MR=2.56 z=-0.0

None of the cells is significantly different from chance expectations by any measure.

7.2 Analytical Judging

In TABLE II the results of the analytical judging procedure are given in terms of the z-score corresponding to the sum of ranks for each of the four conditions. In the original article describing this analytical judging procedure, 5 different scoring rules are give. After a second article (Jahn et al, 1982) in which another 7 rules are evaluated, it was concluded that either the so called Weighted Full Descriptor score or the Weighted Selective Descriptor score, both normalized by the Perfect Score, are most appropriate. In the present series many subjects expressed their discomfort with a number of the 26 questions concerning the descriptors as they did not always seem to be very relevant. Therefore we chose to use the Weighted Selective Descriptor score (WSD) since the associated scoring rule gives the subject the opportunity to pass the questions that seem to be irrelevant. It should be noted that, although different scoring rules might yield different results at least the WSD and WFD

scores in the present study are highly correlated ($r = .93$, $N=64$, $p < 10^{-6}$).

TABLE II
z-scores for each condition obtained through analytical judging

	MUSIC	GANZFELD
NON-FB	$z = -1.05$	$z = +0.81$
FB	$z = +1.14$	$z = -0.41$

Fig. 1 shows the distribution of the 1024 WSD scores which are obtained through comparison of all 64 protocols with all 16 targets.

insert fig.1 about here

The distribution can be approximated by a normal distribution with a mean of 0.596 and a standard deviation of 0.124. On the basis of this distribution it is possible to express the WSD scores of the 64 trials as z-scores. These are used in an Analysis of Variance with the factors STATE (2 levels: Ganzfeld and Music) and FEEDBACK (2 levels: feedback and Non-feedback). The results are presented in TABLE III. It is clear that none of the formal hypotheses is confirmed.

TABLE III
Results of ANOVA

SRC	SS	df	MS	F
ST	.002	1	.002	.002
FB	.588	1	.588	.601
ST*FB	1.839	1	1.839	1.88*
ERROR	58.67	60	.977	

* $p < 0.172$

8. Discussion of analysis procedures

The most relevant contribution of this study to the Ganzfeld research programme is the introduction of the Analytical Judging procedure. It is remarkable that this procedure gives a different result from the classical evaluation most notably for the MUSIC-FEEDBACK condition. This is even more striking since the WSD scoring rule is the most conservative off all rules. It seems as if the analytical Judging reveals correspondences between targets and protocols that were not observed by the subjects while ranking the sets in this condition. However since the

actual value of the z-score is far from significant we cannot draw any definite conclusion.

The highest individual z-score ($z = 1.65$) was on the very first trial of the experiment (MUSIC-FEEDBACK condition). The protocol reads as follows:

[here follows excerpt from protocol.]

The target was the main square in Amsterdam. However the rank given by the subject in this trial was a 2.

The information that is gained in the analytical procedure by comparing the protocol with more than 4 possible targets might very well be lost due to the fact that the subject has to force the information about the internal experience into answers on a limited (maybe irrelevant) no. of questions. An evaluation of the pro's and con's here has to await a study with clear psi effects. If there is any trend in the present data then it is that the analytical judging tends to produce the more deviating z-scores.

It should be kept in mind that in the present study pictures of target sites were used. If the analytical judging procedure is going to be used with the type of targetpools that is generally used in Ganzfeld research, new descriptors have to be constructed. With regard to the pictorial contents each element that occurs above a certain frequency in the protocols should be included. A preliminary inspection of protocols obtained at PRL yields 42 keywords that occur frequently (Berger, R., private communication). These are rather specific like fire, birds, hands, blood, etc. etc.. Unlike remote viewing targets, targets in Ganzfeld experiments might have symbolic meanings. Therefore one should incorporate, apart from the descriptors that explicitly refer to associational, archetypal and symbolic correspondences. A first set of this type of descriptors can be constructed from common dreamthemes (Griffith et al. Am. Antropol. 60, 1773 (1958)) like "school, teachers, study", "eating delicious food" etc. etc.

9. Conclusions

The present study did not show significant psi effects and hence conclusions about the effect of the Ganzfeld manipulation and feedback can not be drawn. The application of the analytical judging procedure on the present data does not yield superior results. Although further adaptation of this procedure to the Ganzfeld targetpool demands a major research effort there are two major arguments to proceed:

- 1 Evaluation of single trials is possible on the basis of a known (normal) chance

distribution. The present use of ratings to this purpose is unjustified.

- 2 Process orientated research using techniques like Analysis of Variance is enabled and stimulated. If the Ganzfeld research paradigm is that replicable as some of us seem to believe it is time to find out why.

Acknowledgements

I want to thank the Psychophysical Research Laboratories for the invitation and the resulting one-month stay as a visiting research fellow. During this stay the APPLE version of the analytical judging program was written.

References

- S.J. Blackmore, The extent of selective reporting of ESP Ganzfeld studies, *EJP*, 1980, 3, p.213.
- R. Hyman, Does the Ganzfeld experiment answer the critics' objections?, paper presented at PA conv. 1982, Cambridge.
- R.G. Jahn, B.J. Dunne, E.G. Jahn, Analytical Judging procedure for remote perception experiments, *JoP*, 1980, 3, p. 207
- R.G. Jahn, B.J. Dunne, R. Nelson, E.G. Jahn, T.A. Curtis & I.A. Cook, Analytical Judging procedure for remote perception experiments II, presented at PA conv. 1982, Cambridge.
- P.C. v/d Sijde & P. Wesseling, State of Consciousness during feedback: exploring the 2-step model of GESF. To be published in *EJP*, 1983.