IMPLICIT MEASURES OF PARTICIPANTS' EXPERIENCES IN THE GANZFELD: CONFIRMATION OF PREVIOUS RELATIONSHIPS IN A NEW SAMPLE

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ABSTRACT (HEADING)

This study is a follow-up to an earlier report (Carpenter, 2001) in which transcripts of 364 ganzfeld sessions that had been collected previously in several laboratories were analyzed using a set of 36 rating scales developed to implicitly assess the approach and quality of experience of the percipient in the situation. A number of significant, apparently meaningful, and somewhat internally consistent relationships were observed in that sample. Multiple regression analysis was applied to the data in order to generate a cluster of items, which if pooled, might be expected to be a useful predictor of ESP success in a new sample. An additional, independent sample of 251 ganzfeld sessions drawn from 3 previously conducted studies is analyzed here in terms of this predictive cluster, and a significant discrimination of hitting and missing sessions is found. All data were then pooled and subjected to correlation and regression analyses. A significant portion (N = 241) of the sample was contributed by persons active in the arts who scored more highly than the non-artists. The 2 groups are analyzed separately, as well as pooled. Hitting was predicted primarily by neutral or positive physical/emotional experiences in the session and by imagery suggestive of a capacity for self-transcendence, emotional closeness and deep trust. Missing was predicted mainly by excessive verbosity, an overly cognitive, intellectualized approach to the task, anxiety and attendant defenses against anxiety, and (for persons in the arts) by more indirect indications of an unhappy adjustment to the situation. Ways in which such findings may guide future research are mentioned.

INTRODUCTION

The use of the ganzfeld by parapsychologists began with the presumption that the state of mind of the percipient was an important consideration in successfully demonstrating the acquisition of extrasensory information. The experiential evocativeness of the situation was first noticed by psychologists who borrowed it from early gestalt studies of perception and adopted it, along with other varieties of sensory deprivation procedures, because of its capacity to induce hypnogogic experiences in participants (e.g. Bexton, Heron & Scott, 1954; Murphy & Myers, 1962). For this reason the ganzfeld also appealed to parapsychologists who had been finding extrasensory effects in other altered states, such as dreaming sleep (Child, 1985), and hypnosis (Stanford, 1992)., under the assumption that it might similarly "reduce the noise" of waking consciousness and allow more access to pre-conscious and potentially extrasensory material. Enough studies on the procedure have accumulated that it may be said to have a certain capacity to elicit ESP effects recurrently, although the size of the expected effect and the degree of its reliability are still matters of debate (Bem & Honorton, 1994; Hyman & Honorton, 1986; Milton and Wiseman, 1999; Storm and Ertel, 2002). Because of this widespread interest, it has come to be a stable platform for a comparative research program across laboratories much as card-guessing was in earlier decades (Mauskopf & McVaugh, 1980).

Since parapsychologists have assumed that the ganzfeld effects the experience of the percipient, it is perhaps surprising that relatively little research has systematically investigated the state of the percipient while in the ganzfeld situation. In one interesting series of experiments, Stanford and his colleagues (e.g. Stanford & Frank, 1991), studied the effects of varying aspects of the procedure, such as the type of auditory or visual stimulation, and found meaningful results in terms of indirect measures of arousal and cognitive lability or spontaneity. The latter was psi-conducive in certain conditions. The illusion of time contraction while in the session was used as an indirect indication of "alteration of state" in several studies

(e.g. Sargent, 1980). It has tended to be associated with greater ESP success, sometimes significantly and sometimes not. Post-session questionnaires asking the percipient about the experience that had just transpired in the session have been used in several studies. Perhaps the most interesting correlates have been with responses to the questions as to what degree they found their state was "shifted" from the norm (e.g. Harley & Sargent, 1980), or how much they though their imagery had been "dreamlike" (Palmer et al, 1979). The relative lack of replicability of these post-session inquiries may be because the measures are informal and unstandardized, and because self-reports after the fact about an unusual experience may intrinsically lack validity.

Carpenter **(**2001, 2003) developed an approach to studying what might be termed the *implicit experiential approach* of the percipient to the ganzfeld task, as this might be measured by an intensive analysis of the transcripts of "mentation" produced in the session. A set of 36 rating scales was defined and manualized with extensive instructions and examples, such that transcripts can be reliably rated on each dimension. These dimensions, largely modeled after scales in the projective testing literature, provide implicit measures of aspects of unconscious or semi-conscious functioning that might be expected to be more reliably related to the unconscious processes that presumably mediate extrasensory response. In general, evidence has accrued that implicit measures are superior to self-report measures when trying to predict aspects of behavior that do not represent conscious self-presentation (McClelland et al, 1989).

Transcripts of ganzfeld sessions that had been collected in studies at several different laboratories were collected and analyzed in the prior study (Carpenter, 2001), with independent and reliable raters who were blind as to the content of each session's target, and to the ESP score of the session. Using these ratings, relationships were found between scores and ESP performance which generally conformed to expectations and appeared to be meaningful. However, in order to affirm such relationships with confidence, it is necessary to confirm them on a new sample. This confirmatory step is the work of the current project.

METHODS

The Rating Scales

Once a transcript is broken into *Idea Units* using standard rules, it is scored independently by 3 trained raters. The first four scales are not actually used in other analyses, but are scored because these scores are necessary for the definitions of some other scales. They represent types of idea-units. They are

1. IMAGE (Some imagery content is being described)
2. MEMORY (The imagery or other information has the form of a personal memory)
3. REPORT (Some non-imagery material is being described, often about some sort of physical/emotional experience, or some response to the situation)
4. REMARK (The idea unit cannot be classified into one of the other categories. These are often in the form of remarks to the experimenter or the sender)

There are three measures of physical experience that are applied to most REPORTS. These are:

1. POSITIVE/NEUTRAL EXPERIENCE (Some physical or emotional experience is given that is pleasant or emotionally neutral)
2. DISCOMFORT (An uncomfortable experience is reported)
3. ODD BODILY EXPERIENCE (An "altered" or unusual experience is reported)

Five scales measure different cognitive aspects of imagery:

1. INTEGRATION (An image is composed of more than one element, and the elements are combined in some way)
2. FLUID DEVELOPMENT (The content or activity of the image develops in time)
3. CONTRIVED IMAGERY (The percipient describes attempting to consciously construct or direct an image)
4. REGRESSED REASONING (An image has unrealistic characteristics)
5. DETERIORATED REASONING (The description of an image is so peculiar or cryptic that it cannot be clearly understood)

Six scales measure ways in which imagery may be enlivened:

1. AUTONOMY (An image has an autonomous power or will of its own, sometimes in defiance of the percipient's wishes)
2. PERSONAL INVOLVEMENT (The percipient is experientially involved in the image. It is actually scored as three sub-categories: PERSONAL INVOLVEMENT POSITIVE, PERSONAL INVOLVEMENT NEGATIVE, and PERSONAL INVOLVEMENT NEUTRAL, depending on the emotional quality of the experience)
3. HUMAN MOVEMENT (The image contains human figures in motion)
4. ANIMAL MOVEMENT (Animal figures in motion)
5. INANIMATE MOVEMENT (Inanimate objects in motion)
6. COOPERATIVE MOVEMENT (Images show humans in action with one another in a non-conflictful fashion)

Ten scales indicate emotional arousal, defenses against emotions, or expresses other emotional implications:

1. ANXIETY (An image has fearful or distressing aspects)
2. HOSTILITY (An image has angry or destructive aspects)
3. ORAL PRIMARY PROCESS (Food or other oral material is involved)
4. OTHER PRIMARY PROCESS (Oral-aggressive, sexual or anal connotations are present)
5. DENIAL (Negative connotations of imagery are being minimized or denied)
6. DISTANCING (An emotional detachment is implied in the image)
7. INTELLECTUALIZATION (Qualities of the image suggest an intellectualized approach to the task)
8. BARRIER (An image has clearly defined, relatively impenetrable outer surfaces)
9. PENETRATION (An image has poorly defined, easily penetrated or violated outer surfaces)
10. MERGER/HARMONY (An image has connotations of positive merger, love or self-transcendence)

Six scales measure the use of color or "achromatic color" (lightness/darkness and luminosity)

1. PURE COLOR (Color is described with no form or clear object)
2. COLOR WITH SECONDARY FORM (Color is described and some vague elements of form are added)
3. FORM WITH SECONDARY COLOR (Some clearly delineated object is mentioned which also has an attribute of color)
4. PURE ACHROMATIC COLOR (As color)
5. ACHROMATIC COLOR WITH SECONDARY FORM (As color)
6. FORM WITH SECONDARY COLOR (As color)

The Prior Study

In the study reported previously (Carpenter, 2001), five data sets contributed a total of 364 sessions to the analysis. An early study at the FRNM contributed 47 cases (Zingrone, 1985), the autoganzfeld study at the Psychophysical Research Laboratory 62 cases (Honorton et al, 1990), two studies from the Rhine Research Center (Alexander & Broughton, 2001; Broughton & Alexander, 1997) contributed a total of 198 cases, and a subset of Dalton's study of creative subjects (Dalton, 1997) gave 35 cases. These samples are not homogeneous in terms of psi scoring ($F = 5.20$, $p = .0016$). The early FRNM data was almost significantly negative, while the PRL data set contained the highly positive performance of a group of Juilliard artists (Schlitz & Honorton, 1992), which was almost equaled by the high performance of Dalton's sample. A wide range of psi performance was deliberately sought in this data-set in hopes that results might generalize widely to subsequent samples.

This data-set was analyzed by subjecting all cases to a step-wise multiple regression analysis of the 29 major scales against the criterion of the Z-score of the session's ESP response. A cluster of items was identified which is suitable for testing against a subsequent sample. This cluster, with weights for calculating one composite measure, is given in Table One. The multiple regression score against the

criterion of ESP scoring is .306. No significance level is cited for this, since this sort of analysis almost certainly overestimates the true size of the relationship, and shrinkage is expected on cross-validation.

Table 1

VARIABLES COMPRISING PREDICTIVE SCALE TAKEN FROM ORIGINAL SAMPLE

Variable	**Weight**
Positive/Neutral Experience	.0983
Fluid Development	.0260
Form with Achromatic Color	.0701
Autonomy	.0788
Cooperative Movement	.1885
Merger/Harmony	.2419
Integration	-.0196
Anxiety	-.0374
Intellectualization	-.0372

Note that six scales predict psi-hitting (Positive/Neutral Experience, Fluid Development, Form with Achromatic Color, Autonomy, Cooperative Movement and Merger/Harmony), while 3 predict missing (Integration, Anxiety and Intellectualization). One must ask, given 29 potential predictor variables, whether or not this set represents a reliable effect. Stepwise multiple regression is a powerful procedure for generating candidates for predictive purposes, but its results are difficult to test for significance in a meaningful manner (Wilkinson, 1979, 1990). Because of this, the prior study incorporated a split-sample, internal cross-validation procedure, the results of which were reassuring about the reliability of the relationships obtained. The cluster of items in Table 1 were then nominated by stepwise multiple regression on the *entire* data sample which was at hand at the time. This cluster must itself be tested by cross-validation in an independent sample. This cross-validation is the purpose of the current project.

A New Sample

A new set of 251 transcripts of ganzfeld sessions was secured from three studies representing two different laboratories. An unpublished study from Cornell University contributed 61 cases, the remainder of Dalton's sample contributed 93 cases, and the "Sender/No Sender" study of Edinburgh University (Morris et al, 1995) contributed 97 cases. This population was also non-homogenous in terms of ESP performance (F = 6.69, p = .0015). The Cornell data was non-significantly negative, the Dalton data was quite positive, and the Sender/No Sender data was non-significantly positive

All transcripts were rated independently on all scales by 3 trained raters who had previously demonstrated high levels of inter-rater reliability on all dimensions. Ratings were averaged for a single score on each dimension for each transcript.

A composite score called *Ganzpred* was calculated for each transcript by summing the weighted scores on each of the 9 contributing scales. This score was then correlated with the observed ESP Z scores for the sessions as a test of the predictive power of the score in this new sample. Then cases were divided into 3 groups according to the observed quartiles of *Ganzpred* (high quarter, middle half, low quarter) and the ESP rank scores were observed in terms of this breakdown, in order to see how much practical predictability is afforded by the use of this score.

Finally, both the originating and the confirming data sets were merged for overall correlational and multiple regression analyses, looking at the contributions of artists, non-artists, and both combined.

RESULTS

Analyses of Confirmatory Sample

Ganzpred significantly predicted performance in this new sample as evidenced by the correlation coefficient of .199, p = .0018. Although significant, the amount of variance accounted for by the composite measure is small. In order to assess its practical significance, the data were broken down into three subsets according to quartiles. The results are given in Table 2.

Table 2: PREDICTION OF ESP RANK SCORES BY *GANZPRED* GROUP

	HIGH	MIDDLE	LOW	TOTAL
1	25	47	16	88
2	17	22	14	53
3	12	31	15	58
4	8	26	18	52
	62	126	63	251

Altogether, this data set yielded a total of 88 1st rank hits (35%). In this sense, it is fairly representative of the ganzfeld database as a whole (Bem & Honorton, 1994). The high-quartile group on *Ganzpred* yielded a slightly improved proportion of 40%. The low-quartile group yielded only 25% rate of 1st rank hits (exactly the level of chance expectation). Fourth-rank misses are present in the whole sample at a 21% rate. In the high-quartile sub-group, there are only 13% fourth-rank misses. Collapsing the data further into binary hits and misses (1st and 2nd ranks combined, and 3rd and 4th combined) yields a simpler picture of the range of discrimination provided by the levels of the score. See Table 3.

Table 3: PREDICTION OF BINARY HITS/MISSES BY *GANZPRED* GROUP

	HIGH	MIDDLE	LOW	TOTAL
HIT	42	69	30	141
MISS	20	57	33	110
TOTAL	62	126	63	251

While the whole set yields a 56% rate of binary hits, this is improved to a 68% rate for the high *Ganzpred* group, and reduced to a 48% rate in the low quartile group. If one were attempting to predict the performance of ganzfeld sessions for some practical purpose (for example, the acquisition of some coded information as in Carpenter, 1991, or Ryzl, 1966), it does appear that the use of this sort of predictor could be of some utility. It also suggests that if means could be found for independently heightening the aspects of experience represented by these scores, the yield of ganzfeld sessions could be increased.

Analyses of Combined Samples(Prior and Current Data)

Data from all sets were combined to yield the best overall estimates that can be obtained of the relationships between these scales and ESP performance in the ganzfeld. Two measures of verbal productivity: total words, and total number of idea units in a transcript, were also included as additional indirect measures of the percipient's approach to the task. Since artists and non-artists have been found in this sample to perform so differently in terms of ESP scores, they were considered separately. Correlations of scores with ESP Z scores for Artists, Non-Artists and the total sample are given in Table 4.[1] The scale Deteriorated Reasoning is excluded since it was very seldom scored at all.

Table 4: PREDICTOR VARIABLES AND CORRELATIONS FOR COMBINED SAMPLES

[1] "Artists" are percipients in the Juilliard study, the Dalton study, and the Sender/No Sender Study. "Non-artists" are all other percipients.

VARIABLE CLUSTER	VARIABLE	NON-ARTISTS N= 342	ARTISTS N=241	BOTH
Verbal Production	Words	-.04	-.19***	-.10**
	Idea Units	-09 [a]	-.15**	-.07
Physical Experience	Positive/Neutral	.15***	.11*	.14***
	Discomfort	.07	-.04	.03
	Odd Bodily Exp.	.02	-.04	.01
Cognitive Aspects	Integration	-.05[a]	-.17***	-.08*
	Fluid Development	-.03	-.16**	-.06
	Contrived Imagery	-.03	-.07	-.05
	Regressed Reasoning	-.06	-.16**	-.08*
Imagery Enlivenment	Autonomy	.06 [a]	-.02[a]	.03
	Personal Involve. Pos.	.07 [a]	-.02	.04
	Personal Involve. Neg	-.09 [a]	-.06	-.04
	Pers. Involve Neutral	-.03	-.09	-.04
	Human Movement	-.03	-.10*	-.04
	Animal Movement	-.04[b]	-.08	-.04
	Inanimate Movement	-.08	-.14**	-.06
	Cooperative Move.	-.02	.02	.00
Emotional Aspects	Anxiety	-.16***	-.09	-.10***
	Hostility	-.14***	-.10	-.09**
	Oral Primary Process	-.08	-.07	-.06
	Other Prim. Process	-.03	-.03[b]	-.00
	Denial	-.08	-.11*	-.09**
	Distancing	-.08	-.17***	-.10**
	Intellectualization	-.07 [a]	-.07	-.09**
	Barrier	-.09	-.12*	-.08**
	Penetration	-.13**	-.13**	-.10***
	Merger/Harmony	.16***	.05 [a]	.12***
Color	Color	.03	-.06 [a]	-.01
	Color/Form	-.01	-.02	-.01
	Form/Color	-.03	-.02 [a]	-.03
	Achromatic Color	-.02	-.13**	-.04
	Ach. Color/Form	.01	-.14**	.01
	Form/ Achrom. Color	.02 [a]	-.03	.01

**p<.10; ** p<.05; *** p<.01*

[a] significant by multiple regression analysis

[b] significant in a positive direction by multiple regression analysis

If one were to attempt to predict performance of a new sample of ganzfeld data using these scales, it would be best to use another composite predictor generated by multiple regression on these combined data sets. Such an analysis takes proper account of the intercorrelations among variables to generate an optimal predictor. The results of this analysis of both artists and non-artists combined are presented in Table 5.

Table 5: NEW COMPOSITE PREDICTIVE SCALE

VARIABLES	WEIGHT
Positive/Neutral Experience	.066
Integration	-.007
Form/Achromatic Color	.058
Anxiety	-.033
Intellectualization	-.045
Merger/Harmony	.219

Psi-hitting is predicted by three variables: Positive/Neutral Experience, Form/Achromatic Color, and Merger/Harmony. Missing performance is predicted by Integration, Anxiety and Intellectualization.

DISCUSSION

The current study demonstrates that implicit psychological predictors drawn from one dataset of ganzfeld sessions may successfully be used to predict the performance of other subjects. This collection of rating scales designed to reflect different aspects of the percipient's implicit experiential approach to the ganzfeld situation and task appears to have some utility in discriminating sessions which result in hitting or missing performance.

The meaning of the relationships found in all data pooled may be assessed by examining the variables that demonstrate stronger relationships. Psi-hitting is facilitated by physical/emotional experiences in the situation that are of a positive or emotionally neutral sort, but not by experiences which are uncomfortable or peculiarly "altered." This was true for both artists and non-artists. This suggests that the situation is psi-facilitative for persons who respond to it by developing and noting experiences that are beyond the purely cognitive aspect of the task. Honorton (1977) has argued that the ganzfeld is useful in part because it permits a relaxed, undistracted, internally-focused state of mind in which the "small voice" of subtle, internal experience may be heard. It appears that persons who do well in the situation do tend to have experiences there that are notable and not distractingly uncomfortable or odd. Many of the utterances that yield scores on this dimension are simple reports of being relaxed, enjoying the experience, feeling comfortable, pleasantly drifting, etc. Persons who do not make such reports may either be understanding the situation in such cognitive terms that they are not attending to these things and do not think of them as noteworthy, or they may be failing to achieve the pleasant, relaxed, inwardly-focused state that Honorton prescribed.

Psi hitting in these data is also facilitated by imagery that has connotations of merger and harmony. This is a rather complex scale which was not frequently expressed (the observed range was from 0 to 11, with a mean of .30). The simple linear relationship was significant for non-artists, and also appeared as a positive predictor for artists in multiple regression analysis. Utterances which conveyed a sense of positive parent-child interaction, some other loving personal relationship, or experiences of positive self-transcendence, bliss or merger, all yielded points on this dimension. The presumed state of closeness of the early mother-child relationship was the touchstone for this scale, and it was designed with an eye to finding spontaneous expressions of a capacity for symbiotic connection of the sort studied by Silverman and his colleagues (Silverman et al 1982). Persons who produce such utterances are responding implicitly to the situation in a very positive way, expressing a happy sense of connection with others, or even traces of what might be considered "mystical union" while in the experiment. This would seem to reflect a well-adjusted relaxation of personal boundaries in the situation, as well as a deep optimism about one's connection with others and the world. Perhaps it is not surprising that positive access to extrasensory material is facilitated by such a posture.

Many more negative than positive relationships are found with these scales. This is probably due in part to the fact that sheer verbal productivity is negatively related to extrasensory success (particularly for the artists), and most of the other scales are positively correlated with verbal productivity. It may be that a more rapt absorption with relatively less verbal production of any sort is generally associated with a more psi-conducive state, while too much focus on the "task" of producing verbal material produces an inadvertent, unconscious movement away from the psi target. The possibility that such verbal work is counter-productive in this context is also suggested by negative relationships found with Integration, Fluid Development and Barrier, all scales which correlate highly with verbal productivity, and which load strongly on a factor heavily determined by verbal production when all these dimensions are factor analyzed. Responses displaying high levels of these dimensions all represent the production of relatively elaborate and highly articulated images, with many aspects and developments. The person who produces a great deal of material of this sort seems to be seeing the situation as one which is requiring verbiage and cognitive work . The stronger negative relationship is with Words than with number of Idea Units (when

both are tested in multiple regression, the independent contribution of number of Idea Units becomes insignificant). It may also be instructive that artists produced insignificantly fewer words per average transcript, but many more independent idea units per transcript ($t = 5.56$, $p < .000001$).[2] All of this suggests that some persons with fewer creative inner resources in this situation may compensate for this by producing extra verbiage and the complex elaboration of relatively few ideas; and when they do this it is apt to be associated with psi-missing. The negative relationship with Intellectualization (significant for both types of percipient pooled, and for non-artists by multiple regression) is generally congruent with this interpretation. Points for Intellectualization are primarily given for obsessively over-elaborated ideas, for excessive self-analysis, and for themes of school-like or examination-like situations. It appears that persons who implicitly understand the situation as examination-like, requiring verbal performance and cognitive complexity, inadvertently tend to veer themselves away from the actual targets toward misleading associations.

It appears that persons who become anxious in the situation, and express this either by imagery that is fearful (Anxious), angry (Hostility) or highly vulnerable (Penetration), are also likely to miss the correct target, while persons relatively free of this emotional response are likely to hit it. Anxiety, Hostility and Penetration are highly intercorrelated scales, and the relationship with this cluster remains significant in multiple regression, when the variance due to verbosity is removed. This relationship with anxiety is congruent with previous findings of a negative relationship between anxiety and psi success (Palmer, 1978, 1982).

Finally, the negative association between images expressing Achromatic Color with little form (AC and ACF) with ESP success for the artists was not expected but may be meaningful. Artists produced much more of these dimensions than the non-artists did (for AC: $t = 3.51$, $p = .0005$; for ACF: $t = 5.25$, $p < .000001$). In the generally livelier, more unusual and more emotional material of the artists, when lightness, darkness and greys were mentioned this often appeared to have connotations of dysphoric, sometimes disturbing themes. Perhaps for this highly expressive group, the ones who were responding to the situation in a less sanguine way would sometimes express that with such imagery, and also inadvertently produce material which avoided the correct target.

These results may be used to instruct further research with the ganzfeld. As an example of this, a study currently ongoing at the Rhine Center features two conditions. In one, what we take to be a normative ganzfeld situation is presented. In the other condition, some manipulations intended to heighten the experience of merger/harmony and lessen an aspiration toward verbal production or cognitive analysis are woven into the orientation material, the instructions, and a subliminal prime. We are exploring whether certain apparently important dimensions of implicit experiential approach can be altered by such means, and also examining the effect of this alteration (if successful) on the ESP performance of the percipient.

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[2] This is in tune with those theorists of the creative process, such as Torrance (1981) and Guilford (1967) who stress the capacity of creative persons to generate many unique ideas or associations.

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