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THE RELATIONSHIP BETWEEN HYPNOTIZABILITY, CREATIVITY, AND PSI IN THE GANZFELD

City University of New York PH.D. 1986

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THE RELATIONSHIP BETWEEN HYPNOTIZABILITY, CREATIVITY, AND PSI IN THE GANZFELD

by

NANCY SONDOW

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

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Abstract

THE RELATIONSHIP BETWEEN HYPNOTIZABILITY,

CREATIVITY, AND PSI IN THE GANZFELD

by

Nancy Sondow

Advisor: Professor Gertrude R. Schmeidler

Psi functioning, hypnotizability , and creativity appeared to share openness to unconscious processing. This study explores their interrelations . Speculations were stated as 18 formal hypotheses.

30 males and 30 females took tests of hypnotizability (SGSHS:C); measures of creativity (self-report, Barron-Welsh Art Scale, independence of judgement, and tolerance for ambiguity); dream recall frequency; dream quality; absorption; Gestalt Completion. In another session, they gave free responses while in 35-minute Ganzfeld isolation, attempting to describe by ESP aspects of a randomly selected target picture. Subject's mentation was transcribed by the experimenter, who was blind to the target and the subject's trait scores. Subject and experimenter ranked and rated (double blind) the resemblances between mentation and pictures.

After correction for selection, formal findings were null. One of 13 psi hypotheses was significantly supported: dream quality correlated with

psi success (r=+.25, 58df, p<.05, 2-tailed). Effort correlated negatively with psi, contrary to prediction. Two of 5 hypnotizability hypotheses were significantly supported for self-report of creativity but not for other creativity measures: self-report correlated significantly with hypnotizability for all subjects (r=+.26, p<.05) and for females (r=+.43, p<.009).

Exploratory analyses yielded interesting post hoc findings which may clarify why overall results were null, especially: (a.) 31 subjects who resisted instructions showed significant psi-missing; the remaining 29 scored above chance. (b.) 28 subjects who reported the Ganzfeld experience "just happened" showed significant psi-missing; 32 who "made it happen" scored above chance. Happen (locus of control) was consistently negatively correlated with psi through many data subdivisions. (c.) Sex and hypnotizability interacted with the Effort Scale. Males reported more effort and females more passivity in the Ganzfeld with increasing hypnotizability. Partialling out the effect of this cognitive habit revealed hidden positive relationships between psi success and hypnotizability and between psi success and creativity for females. (d.) Experimenter's pre-session mood correlated with subjects' psi success. ESP scoring differences between males and females could be largely explained by simultaneously controlling for interpretation, resistance, and experimenter mood.

Discussion focussed on exploring further both an unconscious component to psi success (indicated, e.g., by dream imaginativeness) and a conscious component (e. g., "making it happen").

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CHAPTER I

INTRODUCTION

Telepathy, clairvoyance, precognition, and psychokinesis (PK) have traditionally been conceptualized in terms of an information transmission model, from mind to mind (telepathy), object to mind (clairvoyance), future to present (precognition), and mind to object (PK), by unknown means, after possible sensory cues or causal inferences have been eliminated. Known as ESP (Extra-Sensory Perception) and PK, or collectively called psi, they are observable phenomena in search of an explanatory metaphor.

In the search for a repeatable psi experiment, there have been several promising directions of research. One has been to specify population parameters that can distinguish groups of successful from unsuccessful participants. Another has been to examine what appear to be psi-conducive states of consciousness and attempt to produce such states in laboratory subjects.

An underlying assumption in the present investigation is that psi interactions are not rare, or limited to certain "gifted" individuals, but go on all the time at an unconscious level. The question becomes, what combination of experimental manipulation and subject selection will increase the likelihood that the psi information will enter consciousness or influence behavior in a way that can be detected and measured. While it is an oversimplification to examine attitudes, capacities, or states of subjects in an ESP experiment in an attempt to delineate factors predictive of success, without also taking into account variables associated with the "sender", the experimenter, and others involved in the complex interpersonal field of the experiment, nevertheless, the

variables examined in the present investigation will mainly focus on the question of individual differences of subjects' capacities to benefit from what appears to be a very promising technique for inducing a "psi-conducive" state of consciousness.

I will review some of the Ganzfeld-ESP literature, some of the hypnosis-ESP literature, the creativity-ESP studies, and the studies bearing on the relationship between hypnosis and creativity. I will hypothesize that hypnosis, creativity, and psi success are related in a personality syndrome involving a cognitive style of openness to unconscious processing that includes effortless experiencing of unconsciously processed information, the ability to shift flexibly from one "state of consciousness" or way of processing to another, and lack of repression as a defensive style. The question to be posed is whether the Ganzfeld technique is effective in producing psi success in unselected subjects, or whether this personality syndrome might be selected in future Ganzfeld-psi studies to increase the repeatability of the phenomenon.

Psi-Conducive States of Consciousness

In an analysis of subjective reports of methods of gaining accurate psi impressions in the older psi literature (from 1882 to 1940), Rhea White (1964) has drawn attention to a ritualistic technique that appears repeatedly in the introspections of highly successful subjects. The implicit assumption behind the method is that the correct response exists (or enters) at an unconscious level, and that the task of the conscious mind must be to make the unconscious conscious, to recognize the correct response if and when it enters consciousness, and to school the conscious mind to wait for the response to come, rather than to strive for it by guessing. The method consists of a series

of consecutive steps, some achieved by different subjects in a variety of ways, but with an underlying common structure.

The first step is always the induction of profound physical and mental relaxation. This state is not easy to attain and was usually induced by a ritual of progressive muscular relaxation combined with strategies to still the conscious mind. For instance, Craig Sinclair (1930) says of this stage:

> "...relax completely your mental hold of, or awareness of, all bodily sensation...Relax all mental interest in everything in the environment; inhibit all thoughts which try to wander into consciousness from the subconscious...This is clearly a more thorough affair than just relaxing."
>
> "Drop your body, a dead weight, from your conscious mind. Make your conscious mind a blank...Give to the subconsciousness the suggestion of concentrating on one idea, and then completely relax consciousness... If, after you have practiced 'letting go' of the body, you find that your mind is not a blank, then you have not succeeded..." (p. 181-182).

When relaxation is achieved, the next step is to further quiet the conscious mind. Most of the reports emphasize blanking the mind, "empty (the) brain... and gaze... into a deep darkness...," "...stop the usual stream of..."daydream' imagery, thus creating a subjective blank screen...," "give (oneself) up to a completely passive condition, and... avoid straining... in search of the idea," "create...a void of thought."

However, a few used the strategy of engaging the conscious mind in concentration on a single mental image, for instance, visualizing a single yellow rose and holding the image, without associations, until one could " 'see' the very texture of the petals." One remains totally concentrated and absorbed in just one aspect of the image, such as its shape or color, while avoiding sleep.

The goal is to reach a stage of proficiency in which one can hold a single hypnogogic image "forever if need be." Whether mind-blanking, or holding a hallucinatory image, the step seems to be to achieve a state of "trance" that can be held effortlessly.

For those who used the strategy of holding an image, a substep followed in which they would then release the image, blank the mind, and consciously demand that the psi information appear to them, as if speaking to "another self." Thus the imaging strategy seems another route aimed at the goal of achieving a profound blanking of the mind.

The "Demand," while not a separate step for those who approached the mind-blanking state directly, was also present for them as an initial orientation to the task. For example, Warcollier (1938) emphasizes that one must keep the idea that one wants to know the answer even while making the mind blank.

White calls the next step "the Waiting, the Tension, and the Release." One must be able to endure a period of "not-knowing" in which anxiety and tension mount, and yet refrain from breaking the tension by guessing. Some report a period of 15 minutes of holding the mind blank before something comes. Richet (1889) reports of his hypnotic subject, Leonie: "My patience was...pretty severely tried. To wait three, four, or five hours at dead of night til a card is named, one needs a considerable share of perserverance" (p. 68).

The final step involves recognizing the information when it finally enters consciousness. Most commonly, and especially before months of practice, images would come as fragments, would change into one another, and would often be distorted by interpretation and association by the conscious mind. However, sometimes the impression would suddenly and spontaneously pop into the mind as if by "inspiration", accompanied by a feeling of conviction.

When this happened, many reported additional signs of correctness; for instance, some reported feelings of joy, a thrill, a "hunch," a feeling of exaltation or of gladness accompanied correct images; some reported a quality of light or brightness, vividness, colors, or black on white, or white on black rather than the more common grey on grey were indications of correctness; some reported compulsion, or a recurrent image were most often associated with success. White's article suggests that psi is most reliably detected in a "psi-conducive state" that is not like most people's "ordinary waking consciousness," and that accessing the "unconscious" is important for success.

A few investigations of "psi-conducive states" such as relaxation or hypnosis had begun to appear in the modern psi literature preceding this article. For example, Schmeidler (1952) found hospitalized concussion patients showed significantly higher psi performance than other patients on a clairvoyance psi guessing task ($p=.002$). She concluded their greater relaxation and "uncritical willingness to respond" may have been the relevant differentiating factors. In a following study with maternity patients, Gerber and Schmeidler (1957) found patients judged by someone blind to their ESP scores to be relaxed and accepting of the experimental situation showed significant psi-hitting ($p=3\times10^{-5}$) while those judged not relaxed psi-missed significantly ($p=.006$).

Altered states investigations, including relaxation, meditation, dreaming, hypnosis, and sensory pattern deprivation became increasingly popular after White's article appeared. In a review of relaxation-psi studies through 1976, Honorton (1977) reports that 10 out of 13 experimental studies published at that time in which induced relaxation preceeded the psi task were significant overall.

The meditation-psi research is relevant to the method White describes, and to the exploration of psi-conducive states, but will be excluded from this discussion because it is a learned technique rather than a fairly stable capacity. For an overview of the studies relating psi to meditation, see Honorton (1977).

The hypothesis that psi is an unconscious process and can best be detected by making the unconscious conscious has also been validated in a series of dream telepathy studies (see Van de Castle, 1977, for a review).

Ganzfeld and Psi

The same year that White published her observations, Bertini, Lewis, and Witkin (1964) published an account of an experimental way to produce, prolong, and study the hypnagogic state using the Ganzfeld procedure (see Avant, 1965, for a review of the Ganzfeld literature), in which illuminated ping-pong ball halves taped over subjects' eyes and white noise in their ears produces visual and auditory pattern deprivation and leads to hypnagogic-like imagery which can be monitored by asking subjects to report continuously their thoughts, images, and feelings.

In the early 70's, three different laboratories, independently of each other, all began experimenting with the Ganzfeld technique to see if the "waking dream" produced by Bertini et al's method would also be psi-conducive.

Braud, Wood, and Braud actually reported their results first (in the June, 1973 meeting of the First International Congress of Parapsychology and Psychotronics, Prague, Czechoslovakia) while Honorton and Harper reported their results at the September, 1973 Convention of the Parapsychological Association. However, Honorton and Harper have been given credit as the originators of the psi-Ganzfeld procedure in the literature.

I will describe their experiment in some detail, although it has flaws, to give the reader an idea of the general procedure. Honorton and Harper (1974) ran 30 subjects, each in a single Ganzfeld trial. Seated in a comfortable reclining chair in a sound-attenuated room, a subject had ping-pong balls taped over his or her eyes, a red light adjusted in front so there was uniform illumination, instructions to "think out loud," and report all images, thoughts and feelings that pass through the mind, without clinging

to them, just observing them. Subjects were told an ESP message would be sent to them at some point, were warned not to try to strive for the message, were asked to give themselves a suggestion that the message would appear at the appropriate time, and were told to relax completely. Note the similarities in the instructions to White's description of relaxation, passivity, and demand. Instead of white noise, subjects heard a seashore sound through headphones for 35 minutes. An experimenter in another room recorded the subject's mentation through a one-way intercom. A second experimenter and a sender were located in a third room. One of 31 sets of Viewmaster Slide Reels was randomly selected as the target pack. Each pack was constructed so that themes of its four Viewmaster Reels differed as much as possible. A target was selected from the pack by the second experimenter who did not look at it, and was viewed for five minutes by the sender. At the end of the Ganzfeld period, the first experimenter, blind to the target, brought the reshuffled pack of Reels to the subject, read back the Ganzfeld mentation, and asked the subject to rank-order the four Reels in order of correspondence to the mentation. After the ranking, the sender was called in and revealed the correct target. Psi success was measured by direct hits ($p=1/4$). Thirteen subjects chose the correct target, a scoring rate of 43%, which was significant ($p<.02$, 1-tailed). Unfortunately, duplicate packs were not used for judging, and target randomization within a pack was apparently done by previous shuffling.

Braud, Wood, and Braud (1975) compared psi performance in the Ganzfeld with that of a control group, in which subjects sat comfortably with eyes open in a dimly-lit room, in the same reclining chair, reporting continuously what they thought, imagined, felt, or sensed, but without the uniform visual and auditory stimulation. Subjects were randomly assigned

to Ganzfeld or control conditions after being seated in the recliner. Thus the experimenter remained blind to the group the subject was to be in so there could be no unconscious differential treatment of subjects before the impression period. There were 10 subjects in each group. Sessions lasted 35 minutes. Both groups were given instructions for relaxation, "mind-blanking," suggestions for success in the task, and suggestions that subjects would enter a "psi-conducive state." A questionnaire assessed the influence of these suggestions on both groups, showing they did not differ significantly on either self-rated physical or mental relaxation either at the beginning of the session or during the five minute impression period at the end, nor did they differ on other relevant variables such as mood, attitude, expectancy, belief in psi, or belief in the psi-conduciveness of the procedure. Pictures were arranged in packs of six, and a "hit" was defined as subject blind-rating the target in the top-half of the set. There were 10 hits and no misses in the Ganzfeld group ($p=.001$), while the control group scored at chance with five hits and five misses. The difference was significant by a Mann-Whitney U Test ($p<.025$, 1-tailed). Shifts in state of consciousness and shifts in body awareness were both greater in the Ganzfeld than control group, but significantly greater only for the latter measure by Mann-Whitney U Test ($p<.02$, 2-tailed). It might be noted that there were only four direct hits (rank 1) in the experiment, three in the Ganzfeld group and one in the control group.

Parker (1975) reports beginning an investigation of the Ganzfeld technique in 1973 independently of Honorton and Harper or Braud et al. His hypotheses were that subjects who experienced relatively large changes in state during the procedure would show significant ESP scoring, and that those who reported highly altered states during the experiment would also

score significantly. Each of 30 subjects was asked to give a state report every 10 minutes during the 30 minutes of Ganzfeld stimulation. Subjects did not report their imagery, but made brief records of it at the end of the session.

Unfortunately, the sender was also usually the experimenter, who was thus not blind to the target when he later handed the envelope of four pictures to the subject to rank them in order of target likelihood. This would invalidate the study had results been positive. However, Parker was clearly unsuccessful in imparting sensory clues to subjects, who ranked the correct target first or second less often than chance expectation. The mean of subjects' reported shift in state between the first and last 10 minutes was taken as a dichotomizing point. The 19 subjects whose shift in state exceeded the mean produced four hits and 15 misses ($p<.02$, 2-tailed), while subjects with a relatively small shift scored non-significantly above chance. Those with relatively large overall alterations of state also significantly psi-missed, with one hit and 10 misses ($p<.007$,2-tailed). Those whose state remained relatively like normal waking scored close to chance. These results, which run counter to the experimenter's expectation and are thus unlikely to be due to sensory cueing, suggest that change of state relates to the magnitude of the ESP effect, but not the direction, if other factors cause subjects to use their ESP abilities to avoid succeeding in the task.

As an example of such a possible factor, Child and Levi (1979) found significant psi-missing in a sample of 14 students who had to participate in a Ganzfeld for class credit in an experimental course required of all psychology majors at Yale. Subjects each rated their pack of five pictures on a 100 point scale with no ties. The ratings of the targets were

significantly lower than ratings of the control pictures ($p<.002$) with no direct hits and eight in last place. The significant avoidance of the target may have been due to resentment by the students, who were forced to participate. In fact, a post-hoc analysis revealed that those taking the course as a requirement for their major averaged a much lower rating of the target than the other students, with a significant difference ($p<.04$). Also, a comparison of the target ratings of the six trials before mid-term exams with the eight trials run after mid-terms were returned showed the latter were significantly lower ($p<.02$).

Smith, Tremmel, and Honorton (1976) compared psi detection in a 40 minute Ganzfeld when a sender was presented with a target subliminally for about one millisecond or with a 10 minute sending period. Each of 20 sender-receiver teams completed two sessions, one in each sending condition, with the order of conditions alternating and the receiver blind to condition. Targets were constructed so that each of 10 categories adopted from Hall and Van de Castle's (1966) content analysis of dreams was either present or absent in each picture. Categories were color, activity, mythical characters (mostly from comic books), human characters, artifacts/implements, food, body parts, architectural objects, animals, and nature scenes. Thus, judging consisted of ten binary choices (i.e., the presence or absence of each category) where five would be expected to be correct by chance. Overall psi results were significantly above chance ($p<.02$). However, the effect seemed to be limited to the subliminal sending condition, which was independently significant ($p<.02$).

After exposure to the target, senders were also given Ganzfeld stimulation, asked to report their experience, and then coded the presence or absence of the ten categories, so that a comparison could be made of

subliminal target incorporation to psi target incorporation. Senders in the subliminal condition incorporated almost the same amount of information as the psi receivers in that condition. Their correct binary choices also resulted in $p<.02$.

This study was the first to attempt to structure the free-response judging procedure to capture more of the richness of the available information than one could by reducing startling correspondences to a one in four probability. Ten correct binary choices would result in independent significance in a single Ganzfeld trial. This specially designed set of 1024 pictures, known as the Maimonides Binary Target Set (MBTS) has since been used with the binary scoring system in five other studies. Braud and Wood (1977), and Terry, Tremmel, Kelly, Harper, and Barker (1976) each found the method detected significant psi-hitting in the Ganzfeld, while Rogo (1977), Terry (1976), and Wood, Kirk, and Braud (1977) had non-significant results with the system.

There may be several reasons why the system did not prove to be more sensitive than the rank-ordering of target packs. It is difficult to judge what in the mentation is relevant to the target and what is not, without seeing the target among a number of pictures. Some of the categories were so common that they were likely to appear in almost everyone's imagery at some point in the session (e.g., color, nature scenes). The system required that subjects focus on the categories of the scoring system, which for some, was not the categorization they would naturally have thought in terms of. Different people categorize in different ways, and the binary system was not sensitive to individual differences in cognitive organization.

One might ask why one could not just increase the number of targets in a pack so that a direct hit had a lower probability. The answer is obvious when one attempts to put large packs of pictures together, or to judge from large packs. It is very difficult to find a fourth picture to differ from three others in form, theme, color, texture, and content. As more pictures are added, similarities between pictures mount, and confusion on some dimensions becomes inevitable in the judging process. Only four studies have used packs with as many as six pictures. Two were unsuccessful. Neither of the two successful studies used a direct hit analysis. Braud, Wood, and Braud (1975) used a binary analysis, comparing top-half ranks to bottom-half ranks, while Dunne, Warnock, and Bisaha (1977) used a sum-of-ranks analysis. (See Solfin, Kelly, and Burdick (1978), and Morris (1972) for descriptions of sum-of-ranks analyses).

Rayburn (1975) randomly assigned 40 volunteer college students to four groups. Two of the groups of 10 were told they would be in an ESP experiment, and someone would be "sending" them a message. The other two groups were not informed that an ESP task was involved, but only that they were participating in a study of sensory deprivation. One of the informed and one of the uninformed groups actually had a sender, who looked at a randomly selected Viewmaster Reel for five minutes during the session. The other two groups had no sender, and the target was only designated without being viewed. Physiological measures of heart rate, blood flow, and galvanic skin response were monitored in the Ganzfeld for all subjects. Each subject was later presented with four Viewmaster Reels by an experimenter blind to the target, and asked to choose the one that most closely resembled the mentation during the Ganzfeld.

Nine of the 10 subjects who were informed of the task and who had a sender chose the correct target out of four possibilities ($p=.00003$). Four of the informed subjects who thought there was a sender when the condition was actually clairvoyance chose the correct target. In the uninformed groups, two targets were chosen correctly when there was an unknown sender, where MCE (Mean Chance Expectation) equals 2.5, and no targets were chosen correctly in the uninformed non-sender condition. A comparison of the informed versus non-informed groups hits and misses was highly significant (Fisher Exact $p<.0004$), as was a comparison of the hits and misses of the senders versus no-senders ($p=.0008$). Looking only at the informed group, hits versus misses of senders versus no senders was also significant (Fisher Exact $p<.03$), but one cannot conclude that the difference was caused by the act of sending, since it might have been due to the deception of having no sender when subjects believed there was one. Of the other five studies using a clairvoyance design, three were statistically significant and two were not (see Tables 1 and 2, Appendix A). Thus a sender is not necessary for success. Rayburn concludes the variables she manipulated might be synergistic. A comparison of hits and misses of the informed-sender versus uninformed-no-sender conditions was highly significant (Fisher Exact $p=.00006$). No physiological measures proved useful. This study highlights what is probably a crucial variable in experimental, as opposed to spontaneous psi, namely, subjects' orientation to the task (in White's terms, the Demand). It is also possible, however, that the experimenter, who was not blind to condition, unconsciously provided a different interpersonal environment between groups which influenced the direction of results.

It is hard to classify this study in terms of overall success rate, since half of the 40 subjects were ignorant of the ESP task. Overall hit rate was non-significant for all trials combined, but significant for the 20 who were oriented toward the ESP task.

In an example of the importance of instructions to subjects to wait passively and not strive for information in the Ganzfeld, Delanoy (1981) reported an unsuccessful study in which six subjects each completed 12 sessions in an effort to learn by introspection and feedback how to distinguish psi correspondences in their mentation. She predicted improvement in hit rate over the 12 sessions. After each 32 minute session, a subject rank-ordered a pack of six pictures containing a duplicate of the target. Results were non-significant by sum-of-ranks. Two of the six subjects showed independently significant scoring, one psi-missing ($p=.008$, 2-tailed) and one psi-hitting ($p<.04$, 2-tailed). Her remarks on subjects' strategies in receiving impressions during the Ganzfeld are illuminating.

> "First, most of them tended to disregard impressions that they felt were derived entirely from personal experiences or concerns, concluding that therefore they were not related to the target. Second, all the subjects at some point actively tried to 'send their mind' to the target that the agent was viewing. Both of these inclinations tended to disrupt any altered state of consciousness that had been achieved and gave rise to feelings of frustration as the subjects thought that they were 'failing' at the task of receiving target-relevant images... the imagery that appeared was often vague and unclear. Rather than describe as best they could what they were seeing, there was a strong inclination to label the impressions as something familiar... Once an impression was named, the images that followed were often parts of a train of thought that appeared to be rising from ordinary psychological associations (e.g., the solid rectangular shape that was labeled a door would then become a door in a cottage, and the cottage and its setting would then be described

in detail). These associative ramblings almost never led to target-related images." (pp. 158-159).

Leaving out the Rayburn (1975) study, which is hard to classify, there have been 22 published Ganzfeld studies demonstrating significant psi overall ($p<.05$), listed in Table 1 (see Appendix A). All but two have shown significant psi-hitting. Child and Levi (1979) and Keane and Wells (1979) showed significant psi-missing. Another 20 published studies, listed in Table 2 (Appendix A), have not found a significant psi effect, although two of these did not include auditory stimulation (Rogo, 1976), and are mentioned only for completeness, but omitted from the table. Thus about half of all Ganzfeld-psi experiments have demonstrated significant psi success.

Blackmore (1980) asked whether the high success rate of published studies (58% of the 31 published Ganzfeld studies were significant at that time) might be due to selective reporting. She reasoned that more non-significant than significant studies might be abandoned before completion or never written up. A questionnaire sent to every person who it was thought might have been associated with Ganzfeld studies elicited another 19 completed but unpublished studies. A chi-square of significant and non-significant for published and unpublished studies showed no significant differences. The percentage of all studies, published and unpublished, showing significant psi in the main analysis remained 50%. Blackmore noted that another 450 unpublished and non-significant studies would have to exist undetected if the existing significant ones were the result of selection.

Honorton (1974) has proposed a noise-reduction model for psi detection as an explanation for the apparent success of the Ganzfeld

technique. One of his assumptions is that psi is very weak compared to other incoming (sensory) information, and all sources of "noise" must be damped down as much as possible before the weak psi signal can be recognized. However, it may be that one will not damp down internal censorship of unconscious material (if that is the channel through which psi emerges) in those subjects whose defensive structure will not allow them to do so.

W. Braud (1975) suggests a psi-conducive syndrome with some characteristics found in the Ganzfeld procedure, some in the subject, and some in the situation: physical and mental relaxation; reduced autonomic arousal; reduced sensory input and processing (as in Honorton's model); increased awareness of internal processes such as images and feelings (more a trait than a state variable, as evinced by higher dream recall or capacity to introspect on internal cues); an "altered view of the world" involving cognitive and emotional belief in psi and belief in global interconnections among seemingly separate aspects of the world, a less defensive and more caring attitude toward others, an ability to suspend interpretation and judgement (which might be viewed as a less defensive and more fluid ego structure); the psi must be need-fulfilling to at least one of the participants (perhaps the experimenter); and finally, he proposes that psi is decreased with what he calls "action mode/left hemisphere" functioning, i.e. active striving, focused attending, logical thought, increased boundary perception, dominance of the formal over the sensory, and verbal, mathematical, temporal, abstract, analytical, linear, digital, rational, and conscious functioning, that is, functions adapted to orienting to the external environment, while he proposes psi is increased with "receptive mode/ right hemisphere" functioning, i.e. passive

acceptance, diffuse attending, paralogical thought processes, decreased boundary perception, dominance of the sensory over the formal, and imagery, spatial, concrete, holistic, nonlinear, analogical, intuitive, and unconscious functioning.

Unfortunately, the two experiments he reports to test psi performance after inducing action or receptive mode functioning by taped instructions found significant psi-missing in the action mode, indicating, not a decrement in psi functioning, but a use of psi to avoid the target, in both a GESP free-response task, and a PK task of influencing a random number generator. It is likely that his attempt to "induce" action mode functioning actually acted as an aversive, anxiety-provoking set of instructions (for instance, subjects were given mathematical, logic, and analogy problems, and readings on linguistic philosophy, constitutional law, physics, etc.) which probably served less to orient the subjects to the external environment and more to make them resent the experimental tasks.

However, his conceptualizations are provocative, especially because these two "modes" bear a strong resemblence to formulations of "primary process" and "secondary process" thinking, and to "active mode" and "receptive mode" ego functioning (E. Fromm, 1979).

There is a fairly consistent pattern to indicate that a change of consciousness in response to the Ganzfeld experience relates to psi success.

For instance, Sargent (1982) reports a Ganzfeld experiment using 20 visitors to his Cambridge laboratory, ten of whom were journalists, some quite skeptical to the ESP hypothesis. Results showed a 35% hit rate (for each trial, $p=1/4$) and were not significant ($p=.067$ by sum-of-ranks). A prediction that there would be a significant positive correlation between

psi success and rated change of consciousness in the Ganzfeld was confirmed ($p<.05$, 1-tailed). Bizarreness of session mentation (to what extent mentation was primary-process-like) was positively correlated with psi success ($p<.05$, 2-tailed), and time estimates of Ganzfeld duration were negatively correlated with psi success ($p<.05$, 2-tailed). Significant positive correlations were also found between psi success and both pre- and post-session relaxation ($p<.01$, 2-tailed), while pre-session bad mood correlated negatively with the psi measure ($p<.01$, 2-tailed).

Palmer, Bogart, Jones, and Tart (1977) also observed that subjects who experienced a shift in state of consciousness in the Ganzfeld were significantly more likely to score well than those who did not, as did Sargent, Bartlet and Moss (1981).

Stanford and Neylon (1975) found a significant difference ($p<.03$, 2-tailed) in estimates of Ganzfeld duration for those who rated the target high versus those who rated it low, with the more successful underestimating the interval by 48%, the unsuccessful by 16%. Those who did not underestimate time scored significantly below chance ($p<.005$, 2-tailed). The percentage of time that random, disconnected thoughts were reported correlated positively and significantly with ESP scores ($r=.336$, 38df, $p<.04$, 2-tailed). Sargent (1980), Experiment V, also found that successful subjects had more bizarre, spontaneous, and dream-like imagery, as did Palmer, Khamashta and Israelson (1979).

Some researchers in the field have embraced the Ganzfeld technique as a new breakthrough in the path toward repeatability, a sort of royal road to psi success for unselected subjects. Others have argued that the Ganzfeld is a placebo, adding nothing intrinsically necessary for success, but useful psychologically in providing a ritual that takes the responsibility

for psi success off the subject by suggesting that the technique rather than the subject is eliciting the phenomenon. A reasonable middle position is that the Ganzfeld is one of many ways that is helpful in entering a state that is psi-conducive, not necessary, but perhaps sufficient to generate ESP reliably enough to look at correlates and enhancers of the phenomenon.

Measures of a shift to a more "altered state," underestimating time, and more random, disconnected, and bizarre imagery (primary process) are all associated with psi success in the Ganzfeld. Can we select or predict which subjects will be more likely to react in this way to increase the repeatability of the procedure in eliciting psi? In the following sections, literature on hypnosis and creativity will be reviewed to see what they may suggest as possible candidate personality variables that might help to separate successful from unsuccessful psi performance in Ganzfeld participants.

Hypnosis and psi

There are indications that hypnosis causes alterations in thinking similar to those reported by successful Ganzfeld subjects. For instance, Hammer, Walker, and Diment (1978) demonstrated that hypnosis causes highly hypnotizable subjects to use more primary process thinking while listening to poetry than a control group matched on hypnotizability, age, and prior study and interest in poetry. Subjects in both hypnotized and unhypnotized groups listened to a poem, then described all thoughts, feelings, and reactions while hearing the poem as it was replayed with stops. Transcriptions of mentation were blind rated as to whether the subject was hypnotized. 80% were classified correctly ($p<.02$). Another investigator, blind to the hypothesis or source of the transcripts, rated them for primary process, with differences in all hypothesized categories of the measure significant ($p=.005$).

Bowers and Brenneman (1979) found that subjects administered the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A) underestimated the duration of the "hypnotic interval" by 41%. The same subjects underestimated the same length of time by 14% without a hypnotic induction. This was replicated in several samples (combined $n=435$). There was no significant relation between hypnotizability and amount of time contraction, although there was a trend in the expected direction. It is possible that the more difficult Stanford Hypnotic Suggestibility Scale, Form C (SHSS:C) would show a stronger correlation with time distortion than the more motor-oriented Form A. Or it is possible that passive-receptive as opposed to active-directed attention is achieved by low as well as high hypnotizables during the induction, changing the time sense regardless of suggestibility level.

Grela (1945) examined the effects of positive and negative hypnotic suggestions, and of positive waking suggestions, on ESP performance in a card-guessing task. Eleven subjects were assigned to a hypnosis group on the basis of their response to a postural sway test. Ten subjects were assigned to a waking suggestion group, though, unfortunately, not matched with those in the hypnosis group on the measure of susceptibility employed. The hypnosis group first completed a baseline ESP condition in which neither hypnotic induction nor suggestions were given. In a second condition, the hypnosis group was given a hypnotic induction, then positive suggestions intended to instill belief in ESP and belief in the subject's own ability to score well. The waking suggestion group was given similar suggestions without a hypnotic induction. The hypnosis group completed a final session in which negative suggestions were given to the effect that ESP did not exist, the experiment was a waste of time, and that the subjects knew they would not demonstrate ESP ability in the psi test.

All four conditions scored above chance, pooled ($p=.0001$), but only hypnosis with positive suggestions was independently significant ($p=.007$). The negative suggestion condition showed the lowest psi scoring. However, differences between conditions were not significant. Looking at each subject's overall session scores, there was a significant level of consistency for higher scoring in the positive suggestion condition ($p<.05$). Unfortunately, conditions were not counterbalanced, and the lower scoring rate of the negative suggestion condition may have been an order effect. Since no attempt was made to determine whether suggestions were accepted by the subjects, or whether the positive suggestions preceding them mitigated the acceptance of the negative suggestions that followed, one cannot know whether or not the failure to elicit low enough psi scores

in the negative condition for a significant scoring difference to appear may have been due to contamination by the previous suggestions.

In a Finnish study, Fahler (1957) examined the use of hypnosis to improve ESP scores with four subjects selected on the basis of previous informal ESP testing. Each of the subjects completed half of their ESP trials in the waking state and half while hypnotized. The psi task was ESP card guessing, with a clairvoyance procedure for 170 runs (of 25 cards), and a precognition procedure (the concealed cards were shuffled after subject's calls) for 190 runs interspersed among the clairvoyance sessions. Results in the hypnosis condition were significantly above chance ($p=.0001$) while in the waking condition they were non-significantly below mean chance expectation (MCE). Both the clairvoyance runs and precognition runs were significantly positive in the hypnosis condition. In the waking condition, neither was significant, but precognition scores were below chance, significantly so for one of the four subjects. There were six individual sessions of 10 runs which were independently significant, contributed by two of the subjects. Of these, five were in the hypnosis condition and showed psi-hitting. The remaining session was in a waking precognition condition, and showed significant psi-missing. The author questions whether the hypnotic state per se contributed to the differences in scoring rates, or whether subjects in the waking state were less motivated to score well than when they were hypnotized.

Fahler was then invited to visit Duke to continue his line of inquiry. Fahler and Cadoret (1958) reported a replication of the preceding study. After an informal exploratory series demonstrated that the effect of hypnosis continued to elevate psi scores, two formal series were run. In the first, 11 subjects completed 210 clairvoyance runs. Each subject gave an

equal number of calls in the waking state and in hypnosis, with order controlled. After each run, subjects received feedback on their performance. In the second, 12 subjects were each tested lying with eyes closed in a Faraday cage with EEG monitoring. Clairvoyance calls of ESP packs were again the psi measure. Each subject completed three runs in the waking state followed by three runs hypnotized, or vice-versa, in a single session. Subjects completed from one to seven sessions each, for a total of 240 runs.

Results in both series showed very strong psi-hitting in the hypnosis condition and chance scoring in the waking condition. In the first formal series, the 105 runs in the hypnotic condition were significantly positive ($p=10^{-7}$), and the difference between hypnosis and waking was significant ($p=.0001$). In the 20 sessions of variable run length for all subjects, 16 had higher scores in the hypnosis condition ($\chi^2=8.89$, 1df, $p=.003$). Looking at individual subjects, 8 out of 10 scored higher in hypnosis than in waking conditions. Four individual sessions were significant in the hypnosis condition, all positive, and the only significant individual score in the waking condition showed psi-missing.

In the final series, results were even more startling. Hypnosis runs were highly positive ($p=10^{-10}$), while waking runs were non-significantly negative. The difference was highly significant ($p<10^{-6}$). Of the 35 sessions in which hypnosis and waking scores were not equal, 30 were higher in the hypnosis condition. Of the nine significant positive individual session deviations, all were achieved during hypnosis.

Unfortunately, no information is given about subject selection or degree of hypnotizability.

Casler (1962) investigated the effects of positive suggestion for success with and without hypnosis, and also with and without a "sender" in the psi task. A preliminary study assigned 48 subjects to one of each of the four groups.

Since there were no significant differences between telepathy and clairvoyance conditions, they were combined. There was significant psi scoring in the hypnosis with positive suggestion condition ($p<.005$) and chance scoring in the hypnosis without suggestion condition. The difference between hypnosis conditions was significant ($p=.006$). Both waking conditions scored at chance. The hypnosis with positive suggestion condition scored significantly higher than the waking positive suggestion condition ($p<.04$).

A confirmatory study ran 15 subjects in both hypnosis and waking conditions with order controlled. Both conditions used clairvoyance testing and positive suggestion for success. The hypnosis condition showed significant psi-hitting ($p<.01$) while the waking condition scored at chance, with the difference between conditions significant ($p=.007$). Casler (1964) hypnotized both sender and receiver for half the psi runs. In the other half, both were unhypnotized. Psi performance was significant for the hypnosis condition ($p<.05$) and at chance for the waking condition. The difference in psi performance between conditions was significant ($p=.01$).

Casler (1967) attempted to increase the success rate he had previously found with positive suggestions for success with hypnosis, by asking subjects to generate their own suggestions for success while hypnotized. Twenty-one subjects each finished four runs in the waking state and four after a hypnotic induction, with order effects controlled. Neither condition showed significant psi, but the hypnosis condition scored

above chance and the waking condition scored below, with a significant difference between them ($p<.025$).

In a later study, Casler (1969) attempted to use hypnosis to test the hypothesis that psi interactions would be facilitated by the existence of close emotional bonds between sender and receiver. Initially unacquainted people were paired as sender-receiver teams, and each was given hypnotic suggestions that a close emotional bond existed between them. Three conditions were examined: both sender and receiver unhypnotized; only the sender hypnotized; only the receiver hypnotized. All conditions showed chance psi scores, and differences between groups were non-significant. However, it is questionable that the hypnotic suggestion to form a close bond between strangers would necessarily do so, especially if the pairs had not been matched for compatibility.

Rao (1964) reported a short experiment within a larger investigation with a single highly hypnotizable female subject, preselected on the basis of previous success in which waking and post-hypnotic performance were compared on a blind-matching clairvoyance task. After two runs in the waking state, the subject relaxed on a couch. Suggestions were given that she was completely relaxed and in the right state of mind to obtain good ESP scores after she awakened. She then completed two more runs. This procedure was repeated for five sessions. Thus the effect of order was not controlled. Scores after hypnosis were significantly higher than those obtained in the pre-hypnosis runs ($p<.02$).

Reasoning that if hypnosis can affect scoring, it may affect only the magnitude while other factors affect the direction of the effect, Honorton (1964) chose a paper and pencil test, the Stuart Interest Inventory (SII), a list of items to be rated for degree of liking or disliking that had been

constructed empirically to separate psi-hitters from psi-missers. The SII had been found to predict the direction of ESP scoring in two ways. For one, subjects who chose extreme positions in their degree of liking or disliking the items of the scale tended to psi-miss, while those with more moderate opinions tended to psi-hit. Certain combinations of items were also found empirically to separate the hitters and missers. Since there was no theoretical rationale underlying the construction of the scale, the items separating hitters from missers seemed to be without meaning. For instance, hitters tended to like Dramatics, History, Bridge, Salesmen, and Formal Affairs, (all related to social extroversion) while the missers liked Animal Zoos, Geography, Boxing, and Military Drill. The scale seemed more accurate in predicting the missers. It can be argued that both negative predictive aspects of the SII appear related to a personality syndrome that might be thought of as psi-inhibitory; those who took extreme (black and white) positions psi-missed as did those who liked externally-imposed frameworks where things are categorized without ambiguity and confined by rigid, clearly-defined boundaries (Zoos and Geography) and frameworks where violent aggressive impulses are confined, bounded by rules, formalized and socially approved (Boxing and Military Drill).

Honorton predicted that hypnosis and suggestions for positive scoring would increase the magnitude of the ESP deviation, while the hitting or missing direction of the ESP would be as predicted by the SII. Six subjects each completed eight clairvoyance runs in the waking state and eight runs after suggestions for high scoring in hypnosis counterbalanced over two sessions. The experimenter remained blind to the SII scores until after the ESP session to control the possibility of communicating experimenter expectation. The two subjects predicted to score below

chance scored significantly negatively in hypnosis ($p<.0003$), while their waking scores, and both waking and hypnosis scores of the predicted high scoring group, were all very close to MCE. The difference between the predicted high and low scoring subjects in hypnosis was significant ($p=.003$). Thus the hypnosis-and-positive-suggestion procedure was followed by more extreme psi scores, but only for those subjects whose SII scores indicated they would score below chance on a psi test. Presumably this was because the character structure of those subjects whose SII scores indicated they would score below chance included a need to resist allowing psychic information into consciousness, and they were better able to avoid the ESP targets after being hypnotized.

A replication with 20 subjects was reported by Honorton (1966). Waking and hypnosis runs were counterbalanced by subject, with five runs per subject in each condition. The nine predicted high scorers showed no evidence of psi in either hypnosis or waking conditions, and the 11 predicted low scorers again scored significantly below chance in the hypnosis condition. The difference between the predicted high and low scorers in hypnosis was significant ($p<.007$). Again, the experimenter and subjects were blind as to who was expected to score above and who was expected to score below chance.

Honorton (1969) found no significant correlation in a sample of 31 between scores on the Barber Suggestibility Scale administered with Barber's "waking imagination" instructions and ESP performance on standard ESP symbols in the waking state after suggestions for high scoring. He concludes there is not a strong relationship between suggestibility and psi performance. However, Barber's "waking imagination" instructions, designed to give subjects cognitive strategies to help some of them score higher on

the measure of suggestibility than they otherwise would, sidesteps and does not address the issue of effortlessness, which may be a relevant component of a relationship between psi success and suggestibility. It may also be important, in ascertaining whether such a relationship exists, to give subjects suggestions, not for high scoring, but for relaxation, mind-quieting, and other strategies to achieve a "psi-conducive state."

Fahler and Osis (1966) report a study in precognition, in which two selected subjects, who each believed they were sometimes aware of when their ESP responses were correct, were hypnotized by Fahler, who had previously worked with each of them as a hypnotherapist. Targets were the digits one through ten, and subjects were asked to guess while hypnotized which number would later be written on the record sheets next to their responses. It was suggested that on some trials they might have impressions of correctness or feelings that certain calls were "different" from the others. They were instructed to indicate those calls by saying "mark," but to refrain from saying "mark" too often. Each subject completed 150 calls each session. Ten sessions were planned for each, but one subject completed only three, then moved to another city. An assistant who was blind to subjects' calls randomized the target order for each session the day after the session was run, using a standard procedure involving manipulations of numbers generated by dice to enter a random number table. Results of the 1950 trials were non-significant and slightly below chance. However, when calls were separated into marked and unmarked trials, a dramatic pattern emerged. In the 360 marked trials, there were 60 hits (16.7% of the targets), while in the 1590 unmarked trials there were 115 hits (7.2% of the targets). A Chi-Square test of hits and misses on marked and unmarked trials is highly significant (χ^2=31.98, 1df, p=2x10^{-8}). There is

highly significant hitting in the marked trials ($p=.00018$)[1]. This difference is highly consistent across sessions for both subjects. Hits exceed what is expected by chance in 12 of the 13 sessions for the marked trials, and chance expectation exceeds above-chance hitting in 12 of the 13 sessions for the unmarked trials. The authors note that it is impossible to tell from the data whether subjects used a one-step process, in which they became aware of the occurrence of ESP only when it was strong and successful, but were either unaware of it (or did not report feelings of incorrectness to the experimenter because they were not instructed to do so) when ESP was being used to avoid the target significantly often in the unmarked trials, or whether they used a two-step process, in which calls were made randomly, and ESP was then used to identify which were hits, thus leaving an excess of misses in the remaining trials. In the latter case, psi-missing would not have to be evoked as a theoretical mechanism.

One wonders how these same subjects would have performed in the same task with the same experimenter without hypnosis (if they could be equally motivated). Was the therapist-patient relationship a factor in the striking results? This study is also reminiscent of White's anecdotal reports of a "feeling of conviction" that sometimes accompanied correct responses. As in White's cases, Fahler's were trained subjects. It is unfortunate that nothing about these subjects' subjective strategies was reported.

In a very interesting study, McBain, Fox, Kimura, Nakanishi, and Tirado (1970) screened 77 students for hypnotizability and found 22 who were both highly hypnotizable and could be matched into 11 teams, each sharing

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[1]After an arc sin transformation on the scores because of the low probability of success (1/10) and relatively small number of marked trials.

similarity of affective categoration on the semantic differential for at least five out of twenty-three concepts Thus, each team had a unique set of five concepts on which they agreed, which were used as targets by that team. Concepts were meant to evoke feelings, and each was symbolized by a simple line drawing (e.g., fire, money, death, sex). All subjects were given post-hypnotic suggestions for rapid hypnotic induction during the experiment, and both sender and receiver were rehypnotized and told that as sender, the sight of any of the five symbols on which they had been affectively matched would cause the sender to feel very strongly the emotion the concept ordinarily evoked, while as receiver, he would be keenly aware of his partner's affective reaction to the symbol. Each member of a team both sent and received alternately in blocks of 25 trials over three sessions, without feedback until each had completed 125 trials. Results of the psi test were significantly above chance expectation ($p=.05$, 2-tailed). A correlation of the receivers' hypnotizability scores on the SHSS:A with hits on the psi task was positive but not significant ($r=+.22$). However, the senders' hypnotizability correlated highly significantly with receivers' hits ($r=+.64$, $p<.01$, 2-tailed).

Honorton and Stump (1969) selected six subjects in the upper quarter of the distribution of the Barber Suggestibility Scale (BSS), and gave them suggestions to dream, while hypnotized, about randomly selected target art prints enclosed in opaque envelopes. Each of five subjects produced four different dreams with four different target pictures in a single session, and the sixth completed eight dreams in two sessions. Subjects later ranked each of their four targets against each dream in terms of target likelihood. Of the 28 dreams, 13 were correctly matched to their targets as first choice ($p<.02$, 2-tailed, corrected for continuity). However, when each

session was ranked by an outside judge with the same procedure, chance results were obtained. Different judges were used for different sessions, with availability the only prerequisite. It is likely that subjects had more information available in unverbalized form than the dream descriptions judges had to work with. It is also possible that the qualities that make an effective judge in this kind of task were more present in the highly hypnotizable subjects than in the unselected judges. For instance, tolerance for and familiarity with "primary process" thinking may be crucial in judging this type of material.

A replication and extension (Honorton, 1972) matched two groups of 30 female subjects on the BSS, so that there were ten high, ten medium, and ten low suggestibles in each group. Four hypnotic dreams were produced for four concealed targets in the hypnosis group, while the matched control group reported daydreams about their targets. Subjective state was reported on a five-point scale ("awake" to "profound trance") after each hypnotic dream. Subjects also evaluated how dreamlike each experience seemed, and how vivid the imagery appeared. Subjects blind-ranked their own mentation to each picture. Hypnosis subjects in the upper quartile of the BSS again scored significantly above chance ($p<.04$), while mid- and low-suggestibles and all subjects in the waking imagination group scored at chance. Hypnosis subjects with more shift toward altered-state reports were significantly more accurate than subjects who felt more normally awake and alert ($p=.05$). Vivid hypnotic dreams were more successful than those with weak imagery ($p<.05$). The last two dreams were rated significantly more vivid than the first two ($p=.002$) and also showed significantly more psi hits ($p<.03$).

Keeling (1971) gave three highly susceptible female subjects two two-hour sessions of hypnotic training, emphasizing hypnotic dreaming. In the first psi session, each subject in turn served as hypnotized sender to the other two, who were hypnotized receivers. For each trial, the sender was given a typed one or two-sentence description and told to have a hypnotic dream about the description. Receivers were told to have hypnotic dreams about what the sender was dreaming. Each subject was awakened and wrote down her dream, rehypnotized, and the process was repeated until each subject had sent four dreams to the other two. A second session used only two of the subjects, who each sent to the other six times.

Results were evaluated by four groups of ten independent judges. Group one consisted of undergraduates in introductory psychology, group two was made up of clinical psychology graduate students, groups three and four were composed of middle-aged students in a YMCA course on the occult. Only group two, the clinical graduate students, was able to match sender and receiver dreams significantly above chance ($p<.02$). Results of the group judgings were combined by majority vote, and results were significant overall ($p<.05$). Only the second session, with one receiver per session, showed significantly above-chance matching ($p<.002$), while the first session, with two receivers per sender, was not judged more accurately than chance.

It is conceivable that the multiple receivers in the first session were actually sometimes receiving from each other, rather than the designated sender, which might have lowered the likelihood of psi detection in that session.

This study gives us a clue about what makes a good judge in a free-response psi experiment. Only judges trained to understand the

transformations, fusions, and fragmentation that are characterized as primary process thinking and that occur in dreams were able to correctly discern psi correspondences between pairs of dreams.

Glick and Kogen (1971) asked each of two female subjects to free associate while hypnotized and presented with a series of five concealed target postcards of famous paintings. Each subject later scored her own mentation blindly against each picture, and the material was also scored by two independent judges. For one subject, although she and both judges rated correspondences between correct mentation-picture pairs higher than for incorrect pairs, only one of the independent judge's ratings showed significant psi detection ($p<.01$). For the other subject, all three judgings were highly intercorrelated (all $p<.01$) and a t-test showed the mean of the combined ratings of the correct pairs was significantly higher than the mean of the ratings of incorrect pairs ($p<.01$). Again, one independent judge appears more skilled at detecting psi correspondences than either the other judge, or one of the two subjects.

Parker and Beloff (1970) report two studies attempting to replicate Honorton and Stump's (1969) results with subjects selected for high scores on the BSS. In the first, eight subjects were run with the same instructions and procedures as those used by Honorton and Stump, except that each subject completed two sessions of four hypnotic dreams each. Results of the 64 sessions were evaluated by subjects' blind judging, and by a different independent judge for each subject. Results of both judgings were close to

chance.[2] An attempted confirmation experiment was run with ten more highly suggestible female subjects, with a single session of four trials each. Results were non-significant.

In an analysis of 20 published studies comparing psi performance with and without a hypnotic induction, Schechter (1984) finds that 7 comparisons show a significant difference in psi scoring favoring the hypnosis condition, 9 more comparisons are in the same direction but non-significant, and there are no comparisons that significantly favor control over hypnosis conditions. Furthermore, in 79% of the comparisons psi performance after hypnosis is above MCE, significantly above MCE in 48%, while psi performance in control conditions varies unsystematically.

The consistency of the studies taken as a whole suggests that hypnosis facilitates the manifestation of psi. However, in some of the studies, control groups were not matched for hypnotizability. In others, one must question the validity of "baseline" measurements when subjects are their own controls, and know the purpose of the study is to compare waking with hypnosis. They may be motivated to succeed only in the hypnosis

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[2] For the first session alone, both subjects' and judges' direct hits (correct first choices) were suggestive of clairvoyance ($p=.06$, corrected for continuity), while the second session had fewer hits than would be expected by chance. A sum-of-ranks analysis of subject rankings for the first session was significant ($p=.02$), and the scoring decline between sessions was significant ($p<.02$).

condition, and may even be motivated to psi-miss in the non-hypnotic condition.[3]

Since no studies have compared hypnosis conditions with waking conditions when the experimenter was blind to condition and subjects blind to the comparison, there is always the possibility that expectation, doctrinal compliance, or differential handling of subjects by the experimenter may have caused the effect that appears to be due to hypnosis.

It must be kept in mind that a hypnotic induction does not lead to "hypnosis" unless the individual is both hypnotizable and willing to cooperate with the hypnotist. It may be that, for highly hypnotizable people, "hypnosis" only serves to orient or give permission to enter a state in which they naturally spend much time anyway. Wilson and Barber's (1982) description of the syndrome they term the "fantasy-prone personality" indicates that this is true, at least, of many at the top of the distribution of hypnotizability.

The question of whether higher hypnotizability will facilitate psi manifestations in the Ganzfeld rests on the indications in the literature that "hypnosis" conditions facilitate psi, and on assumptions that the Ganzfeld relaxation instructions resemble a hypnotic induction, that the

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[3]For instance, Zamansky, Scharf, and Brightbill (1964) found prehypnotic thresholds for tachistoscopic word recognition were significantly higher when highly hypnotizable subjects expected hypnosis to follow than when they did not, while Jackson, Franzoi, and Schmeidler (1977) found subjects expecting training (by immediate feedback) for correct ESP calls showed significant psi-missing in their earlier "baseline" runs without immediate feedback. Similarly, Honorton (1970) and McCollam and Honorton (1973) reported a significant increase in scoring after feedback, but their results were also based on psi-missing in the pre-feedback condition and chance scoring in the feedback condition.

state of consciousness during "hypnosis" and during Ganzfeld stimulation are similar with respect to accessing and processing unconscious material, and that individual differences in ego structure or cognitive habits will allow or impede a change to a psi-conducive state of consciousness in both domains.

Creativity and Psi

Many writers have noted parallels between psi and creativity. As Anderson (1962) points out, for both creativity and psi, "the process itself remains veiled." She suggests they share a general pattern in which there is need, drive, or purpose, there is scanning, searching, finding, there is a flash of insight where the material enters consciousness, and finally the material is made relevant.

This is equivalent to Wallas's (1926) conception of the stages of the creative process: preparation, incubation, illumination, and verification. It is the illumination phase that bears the most resemblance to manifestations of psi, while the incubation phase parallels the assumption that psi is first processed unconsciously, preparation bears some resemblance to motivation, need, or, in White's terms, the Demand, and in a free-response design, the verification phase seems relevant to the judging procedure, where evaluation, selection, and logical thought dominate.

Moriarty and Murphy (1967) hypothesize that both creativity and psi ability are facilitated by common conditions and personality states, in that both demand an openness to new and unusual experiences and tolerance for the unrealistic, both are more likely in those with high self-esteem, self-understanding, and empathy, and in that creative people are likely to demonstrate psychic ability. Krippner (1962) points out both are more easily defined in negative than in positive terms, both involve sensing missing elements, both operate outside the limits of cultural conditioning, both suffer if the mind is closed to unusual material from the unconscious or the environment, both are facilitated by altered states such as dreaming, both are "non-verbal and prelogical..., unconscious...in origin, dependent on need or drive, closely aligned with emotionality, yet subject to at least a

modicum of conscious control" (p. 15). Murphy (1966) suggests positive motivation, relaxation, and dissociation are common factors to both.

In short, both creativity and psi ability seem to flourish in those who can allow unconscious material into consciousness in a relatively unmodified and uncensored form, and seem blocked in those who are fearful of looking inward.

Attempts to define and measure creativity are beset by difficulties. In reviewing the studies bearing on the relationship between psi and creativity, I will mention all measures used to define creativity, but point out they differ from study to study, and may not always be tapping the same underlying dimensions. Nevertheless, unless otherwise indicated, a positive relationship between the psi and creativity measures is always predicted.

Levine and Stowell (1963) briefly report two studies investigating the relationship between creativity and psi. In the first, all subjects were "sheep," that is, they believed in the possibility of ESP, the creativity measure was a pair of timed divergent thinking tasks adapted from Guilford's Classes of Uses Test, and the psi task was a series of clairvoyance choices between two geometric forms. Psi scores did not differ from chance. The correlation between psi and creativity measures was in the predicted direction but non-significant. The report does not give the number of subjects or trials. The second study (reported by Honorton, 1967, p. 29) used 69 subjects, some of whom were "sheep," and some of whom were "goats," that is, they believed ESP was impossible. The creativity measure was "uses of a brick" one could think of in five minutes and the psi task used standard ESP cards ($p=1/5$). Predictions were that sheep would have a positive correlation and goats would have a negative correlation between psi and creativity scores. Again, correlations were in the

predicted direction but non-significant. When corrected for attenuation the correlations were "suggestively significant."

Schmeidler (1963) reports a pilot study in which 25 undergraduates at Pratt were given a battery of six of Guilford's tests of divergent thinking, then a psi test consisting of 24 clairvoyance trials with clock cards ($p=1/12$ on each trial), then another eight-item creativity test measuring independence of judgement devised by Barron, and finally, a sheep-goat question. A comparison of those who scored above MCE versus those who scored at or below MCE for sheep versus goats was significant (Fisher Exact p=.05), implying there was a psi effect in the data, although pooled psi scores were at chance. However, the correlation between the pooled creativity measures and psi scores was negative (r=-.34, corrected for attenuation) and for sheep alone, it was significantly negative (r=-.41). The author speculates that the surprising direction of the correlation may have resulted from the order in which tests were administered. Undergraduates at Pratt Institute may have been concerned about a measurement of their "creativity." Those doing poorly may have welcomed a different type of test, while those doing well may have resented the rather boring and repetitive psi task, and unconsciously avoided the targets. Another possibility may involve the attitude toward ESP of the class instructor at Pratt who administered the tests, who was not interested in ESP, and did not want his name associated with the report (Schmeidler, personal communication, 1984).

It is curious how the concept of psi-missing allows interpretation of a correlation in the direction opposite to that hypothesized, not as a disproof of the hypothesis, but as another piece of evidence; the magnitude of the relationship is as predicted, but not the direction. Yet there is strong

evidence that a negative atmosphere or mood can cause psi-missing. For instance, Honorton, Ramsey, and Cabibbo (1975) demonstrated the effect on psi performance of an experimental manipulation of mood, where the experimenter treated subjects in one group with respect and warmth, while those assigned to the other group were treated with rudeness and hostility, producing predicted significant psi-hitting in the former and significant psi-missing in the latter. If psi is an unconscious process, a negative situation, that is, one that elicits unconscious resistance, should be expected to produce psi-missing. It may be the difficulty of removing all sources of potential psi-missing variables that makes psi seem so unpredictable.

In part of a larger investigation to re-examine the effects of feedback to subjects and experimenter in precognition, Schmeidler (1964) gave 42 subjects the Barron Scale (independence of judgement) and two timed divergent thinking tasks (uses of a brick, of a coat hanger), after they had participated in a precognition test where each each had guessed three runs of 25 ESP symbols and colors, making 150 targets for each subject which were later selected and scored by computer. Although not told when they made their guesses, each subject later received feedback about only 50 of their trials, the experimenter another 50, and no one ever saw the detailed hit and miss pattern of the third 50, though total hits were recorded by the computer. Although the first such experiment had found significant psi-hitting (p=.003), this replication attempt showed overall psi-missing (p=.04). This time the experimenter was blind as to which 50 was going to be fed back to whom, and felt less enthusiasm and more withdrawal during the course of the experiment. She speculates this may have influenced the direction of scoring. The originality measures

correlated significantly negatively with psi scores (r=-.33, p=.04), most strongly when subjects received feedback on their psi scores (r=-.43, p=.006). A cannonical correlation weighting all psi-scores against all creativity measures was significant (.57, p=.01), implying some common factors operate in both creativity and ESP.

The author notes that the negative relationship between most of the creativity measures and psi performance found in this experiment could have resulted from either of two possibilities. Overall psi-missing (perhaps caused by experimenter attitude) could have caused those higher in creativity to use their psi to miss more, that is, the more creative will be more responsive to the prevailing atmosphere, or, alternately, the high creatives may have disliked and resented the repetitive psi task more, since neither originality nor independence of judgement could be used in it. If so, a free-response task with unknown possible targets should remedy the direction of the correlation.

In five series of precognitive standard ESP card guessing tests with teenagers run in groups, Honorton (1967) looked at the psi-creativity relationship using Torrance's Personal-Social Motivation Inventory (PSMI) measuring a "searching and courageous attitude," and, in two of the series, also a timed divergent thinking test (the ice question test) scored in a complex way for originality and fluency. There was a trend for psi-missing overall. Those scoring high on the creativity measures scored inconsistently and non-significantly on the psi task, while those scoring low on the creativity measures psi-missed significantly. Differences in psi scoring between those high and low on the creativity measures abounded in the predicted positive direction, and were highly significant, but most of

the differences were contributed by psi-missing of those scoring low on the creativity measures.

These curious results are difficult to interpret. It may be that the creativity measures employed actually separated the more mature and relaxed from the more insecure and anxious teenagers, rather than separating the more and less gifted. It is possible that those with the least "searching and courageous attitudes" were most inhibited in the fluency and originality of their creativity responses, especially in a group test, and most resentful and resistant to the entire test procedure, using psi unconsciously to avoid the ESP targets.

Anderson (1966) asked teachers of an elementary school to judge their students' "creativity," defined as originality, spontaneity, freshness, and unstructured behavior in approaching both curricular and extracurricular school activities, and to rate each student as being highly creative, showing some sporadic signs of creativity, or showing no signs of creativity. A forced-choice clairvoyance test was woven into an elaborate fantasy involving the entire school, where each call was imbued with significance within the fantasy, tailored to each grade level. Results showed that the 145 students given a high creativity rating scored significantly positively on the psi test ($p=.005$), the 361 students rated somewhat creative scored significantly negatively ($p=.001$), while the 85 students judged uncreative scored very close to chance. One wonders if teachers would give the rating "showing some sporadic signs of creativity" to the highly creative who were maladjusted or who had negative feelings about the teacher or the class, and thus showed their potential sporadically.

Moss and Gengerelli (1968) report a free-response telepathy experiment with emotional multi-media targets in which it was noticed

that in sender-receiver teams in which one or both was a professional artist (there were 38 artists and 5 professional "sensitives" in the sample of 144 volunteers), the teams of one or two artists performed better than those involving a professional sensitive. A post hoc analysis found highly significant positive psi for teams involving artists ($p=5x10^{-6}$) and chance scores for teams in which neither sender nor receiver was an artist.

In a study planned to replicate this post hoc finding, Moss (1969) classified subjects as artists if they worked professionally as writers, actors, composers, painters, etc., and classified them as non-artists if their profession was considered less "creative," e.g., engineers, teachers, secretaries, housewives, psychologists, etc. The 30 artist teams scored significantly positive on the psi task ($p=.003$, 1-tailed) while the 43 non-artist teams scored at chance. A χ^2 test of those who scored above chance versus those who scored below, artist versus non-artist, was significant ($p=.05$). The author notes that occupation is a fairly unsatisfactory method to categorize levels of "creativity," but that, even with such a crude dichotomy, results still suggest a link between creativity and psi performance.

One might argue that her results might be partially explained by unconscious differential treatment of artist and non-artist teams by the experimenter, who was not blind as to who was classified an artist.

In an attempt to replicate Moss's results, Gelade and Harvie (1975) tested 40 sender-receiver teams. All receivers were artists, as were 15 of the senders. Targets were emotionally-arousing "episodes" of slides and soundtracks, arranged in packs of two. Each session consisted of five consecutive trials, with feedback given to both receiver and sender after each trial. Results of 200 trials were almost exactly at chance. Although

the artist-artist teams scored more positively than the others, with 39 hits in 65 trials, their results were not independently significant. However, though not reported by the authors, a χ^2 of hits versus misses with both artists versus not both artists, can be computed from the reported information, and is significant.

McGuire, Percy, and Carpenter (1974) examined a battery of personality and mood tests in relation to a clairvoyance test of standard ESP symbols (10 runs of 25 trials each). Thirty-three subjects each had their own target order, and completed Nowlis's Mood Adjective Check List (MACL), a sheep-goat question, the CPI, the Welsh Figure Preference Test, and a number of other measures. The only prediction was that those subjects who were categorized as "Type 2" personalities on the four-fold typology of the Welsh Figure Preference Test would score higher on the clairvoyance measure than the other subjects because of their more intuitive and creative mode of functioning. All measures were included in stepwise multiple linear regression analyses predicting total hits in the clairvoyance task, as well as two forms of variance. Both scales of the Welsh Figure Preference Test that indicate the Type 2 personality were positively correlated with psi-hitting, and both loaded positively in the regression equation.

Barron and Mordkoff (1968) report an exploratory attempt to relate creativity, as measured by a composite index of originality (Guilford's Unusual Uses, Consequences, and Plot Titles), to what they term "extrasensory empathy" in nine pairs of female identical twins. Skin resistance was measured simultaneously for both twins as one of the pair was shown a traumatizing film, while the other was sensorily isolated in another room and asked to try to imagine what her sister was seeing and

report her impressions. Each of four sets of twins, two high on the creativity measure, and two low, participated as both sender and receiver. Unfortunately, when roles were reversed for each pair, they were told a different film would be used, but, in fact, the same film was used again. In other words, there was an attempt at deception. The authors report that only for one of the four pairs was there any suggestion of synchronous changes in autonomic arousal. The 18 minute film had four emotional arousal points which typically produced skin conductance changes in the viewer. Arousal was displayed in the non-viewing twin within 60 seconds three times out of the eight possible arousal periods, for one of the two "high creative" pairs. Unfortunately, both twins were silent during the impression recording periods, as were most of the subjects in the experiment. One does not know to what extent the use of deception impeded an interpersonal atmosphere of trust that is necessary for sharing impressions, and to what extent the traumatic nature of the material was itself an inhibitor, being in memory when the second of the pair was "receiving," and an aversive "message" in the case of the first trial.

A fifth set of twins, who were "strikingly original, being far superior to the rest of the twin sample," and who "claimed to have had a history of spontaneously occurring telepathic communications between the two of them since early childhood," were also tested with TAT cards, where the "receiver" was to make up a story without seeing the cards her sister was responding to, and both stories were recorded. The authors report they looked for "coincidences" in 15 second intervals in the pairs of stories, but found only general common themes that related to common recent experiences, worries, or preoccupations. No evidence of coincidences in the autonomic measure was found. Four more sets of twins were run only with

TAT cards with similar results. It is unfortunate that a clearer and more quantifiable judging procedure was not employed. A blind-matching of an equal number of stories in the sensory and extrasensory conditions for each pair, for instance, would at least have allowed quantification of "coincidence," and have treated the problem of shared memories and experiences in a way similar to the way that forced-choice guessing experiments treat a shared knowledge of the symbols being used. The authors conclude that the experimental situation employed was unfavorable to psi detection, in that "Most of the subjects were apprehensive to start with, and certainly none got into the sort of mood that facilitates intuition, a wealth of imagery, and relaxation of ego controls" (p. 78).

Moriarty and Murphy (1967) found a non-significant relationship between 10 measures of creativity and clairvoyance scores of 42 teenage subjects. However, their method of judging the correspondences between target drawings and the drawings made by the subjects was a poor one, where independent judges rated on a five-point scale the degree of similarity between an ESP response and both a target and randomly matched control. Ratings of similarity were made "intuitively," and the agreement between raters was poor. A rank-ordering of each response against a small pool of dissimilar pictures might have provided more illuminating results.

L. Braud and Lowenstein (1982) used a free-response psi procedure, "altered-state" induction, and pictures as targets to investigate the relationship between psi success and creativity as measured by Alternate Uses. Twenty teenaged girls were tested as a group. The creativity test preceded the psi task, in which subjects attempted to gain clairvoyant impressions of the randomly selected target of their separate target pack of four pictures. A five-minute impression period followed a 45-minute "psi-

conducive" tape which included relaxation exercises, autogenic exercises, music and natural sound effects, meditation, imagery, and mind-blanking instructions. Each subject recorded her own impressions, and ranked her four pictures. The creativity tests were scored blind to the psi scores. Overall psi results showed a 35% hit rate, where 25% was expected by chance. Psi results were non-significant with this small sample.[1] However, a comparison of the creativity scores of those who ranked the target a "hit" with those who ranked it a "miss" by a Mann-Whitney U test showed that those more successful at the psi task had significantly higher creativity scores ($p<.05$, 2-tailed).

These studies give mixed results. One reason may be that many have used divergent thinking tests to measure creativity, although divergent thinking tests have correlated low or negligibly with criterion ratings of eminent creative adults (admittedly there are problems with the scoring of each) and have been related to other measures of creative performance in inconclusive and sometimes contradictory ways (Dellas and Gaier, 1970), and may be less reliable if time pressure, or evaluation pressure, or both, are added (Wallach and Kogan, 1965). In addition, the type of psi task may be relevant. The studies by Moss et al. (1968), Moss (1969), and Braud and Lowenstein (1982) suggest that free-response tests may be more sensitive to positive manifestations of psi in a population high on originality, perhaps because free-response allows more creative expression and is more enjoyable than are forced-choice ESP tests. Although finding reliable measures of either one's capacity for creativity or one's psi ability is dubious, the relation of creativity measures to psi scores deserves further study.

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[1] If this rate of scoring had been maintained, 78 rather than 20 subjects would have been required to achieve statistical significance.

Links between Creativity and Hypnotizability

A series of studies has demonstrated that more highly hypnotizable subjects are relatively more creative as measured by a variety of tests tapping various aspects of the construct of creativity. This relation has sometimes been found only for women, sometimes for both sexes, and seems stronger at the upper end of the hypnotizability measures.

In an unpublished talk, K. Bowers (1969) reported a significant correlation between creativity and hypnotizability for women but not for men, and also found that, for the women, the frequency and intensity of trance-like experiences in waking, as measured by Shor's (1960) Personal Experience Questionnaire (PEQ) correlated with hypnotizability as expected (Shor, Orne, and O'Connell, 1962), and also correlated with an index of creative functioning.

In a following study, K. Bowers (1971) selected 36 men and 36 women who were rectangularly distributed on hypnotizability as measured by the HGSHS. The PEQ and a battery of five creativity tests were administered: The Holtzman Inkblot Test, scored for human and non-human movement (as a measure of access to and control over primary process ideation), a Free Association Test (measuring ideational fluency), Guilford's Consequences Test, a Remote Associates Test (which is a questionable measure of creativity in that there is one right answer and the test correlates with intelligence), and the Barron-Welsh Art Scale. Only the women showed significant correlations between hypnotizability and creativity ($r=+.41$, $p<.05$). For the entire sample of 72, scores on the PEQ were significantly related to level of hypnotizability ($r=+.25$, $p<.05$). For women, the relationship was significant ($r=+.39$, $p<.05$), while for the men it was non-existent ($r=+.09$). The relationships between hypnotizability,

creativity, and the PEQ consistently increase among women as a function of hypnotizability. For the 12 high-susceptible women, the correlation between hypnotizability and creativity is +.48[1], between PEQ intensity and creativity r=+.63, and between PEQ intensity and hypnotizability r=+.68.

58 of the original 72 subjects were later given the more demanding SHSS:C scale, and although men and women did not differ in the original sample on the HGSHS, it was found that women averaged significantly higher on the C-scale ($p<.05$) than the men. The correlation between hypnotizability as measured on the SHSS:C and creativity was non-significant for both men (r=+.02) and women (r=+.25). However, when one examines only those women who scored at or above the median of the C-scale, the correlation becomes significant (r=+.55, $p<.01$) in this restricted range. It may be that the increase in correlation between the hypnotic measure and the creativity measures at the high end of the SHSS:C scale indicates a bimodal distribution of the capacity for cognitive processing that allows willed perceptual distortions and dissociation, and that ability lies at the heart of the relationship between creativity and hypnotizability.

K. Bowers and Van der Meulen (1970), in a complex design, used 30 trained highly hypnotizable subjects, and 60 untrained subjects, half high and half low on hypnotizability, who were randomly assigned to hypnosis, simulating, or waking-motivational treatment groups. All the trained subjects were given one creativity task (Guilford's Consequences Test, which measures divergent thinking), while the other 60 subjects were assessed on a battery of nine creativity measures, including the Consequences Test, the Holtzman Inkblot Test scored for human movement (which is assumed to index tolerance for primary process thinking and

[1]With such a small sample, r must reach +.58 before $p<.05$.

control over it), and a Free Association test (which was considered a crude measure of "tolerance for psychological regression"). Eight out of the nine measures showed significant superiority of susceptible over unsusceptible subjects, but there were no significant treatment or interaction effects. A significant correlation (r=+.45) was found between the pooled creativity measures and the HGSHS hypnotizability measure for the untrained subjects.

When the data were examined for sex differences, it was found that women were more creatively productive than men in every comparison, significantly so in four of them. It might be mentioned that all tests were administered by a female experimenter. Twenty-five of the 30 highly hypnotizable were later given the SHSS:C, which better discriminates within the high range of hypnotizability, with more cognitive and fewer motoric items. Scoring only the six items requiring cognitive capacity for hallucination, and post-hypnotic amnesia, the correlation between the overall creativity battery and these items over the restricted range of only these highly hypnotic subjects showed a stronger relationship than did the cognitive items of the C-scale with the initial HGSHS. In fact, for the highly hypnotizable subjects alone, the HGSHS, which assesses mostly motoric suggestions, correlated close to zero with overall creativity, but with the more difficult hallucinatory items of the SHSS:C, the correlation jumped to +.37.

In a sample of 61 undergraduates (28 male, 33 female), Perry, Wilder, and Appignanesi (1973) found high hypnotizables (measured by the SHSS:C) given a battery of 14 creativity tests yielding 19 measures performed more consistently and scored above the group mean on significantly more creativity measures than did low hypnotizables. Among the 19 creativity scores, the Barron-Welsh Art Scale and Revised Art Scale (which

intercorrelated +.95) each significantly correlated with hypnotizability. The other creativity measures which significantly correlated with hypnotizability were object synthesis (Semantic Redefinition) which Guilford defined as "the ability to shift the function of an object and use it in a new way;" Torrance Verbal Fluency and Flexibility, and Torrance Figural Originality. An analysis of sex differences found that when the number of creativity tests on which one scored high was correlated with hypnotizability scores, women showed a stronger relationship ($r=+.52$, $p<.01$) than men ($r=+.17$, $p<.05$) or than the entire sample ($r=+.39$, $p<.01$). Most of the creativity tests used did not intercorrelate significantly. Of those that showed a significant relation to hypnotizability, the relevant dimensions seemed to be preference for complexity, the ability to shift among interpretations or categories, and infrequently encountered, highly original responses.

P. Bowers (1978) hypothesized that the "effortlessness" experienced by both highly hypnotizable people in response to hypnotic suggestions, and by creative people when a creative solution "occurs to" them, is accounted for by "receptiveness to subconscious work." Bowers suggests that "the illusion of passivity...the effortless experiencing...involves an extra measure of receptivity to subconscious promptings. This formulation is somewhat similar to that of 'regression in the service of the ego' or 'adaptive regression' which has been used to understand hypnosis (Gill and Brenman, 1959) and creativity (Kris, 1972)" (p. 187).

Hypothesizing that the aptitude for such effortless experiencing accounts for the relationship found between measures of creativity and hypnotizability, she selected 32 university students whose hypnotizability, measured by HGSHS:A (Shor and Orne, 1962), was high for eight males and

eight females, and low for eight males and eight females. The constructs of creativity, imagery vividness, absorption, and effortless experiencing were each assessed in several ways.

Effortless experiencing was measured by self-rating the effortlessness of imagery and fantasy tasks, by a three-item Ease Questionnaire about the degree of choice and experienced activity in constructing the images and fantasies and by self-ratings of the degree of effort experienced in producing responses to each item of Guilford's Consequences Test.

Three measures of imagery vividness included a rating of the imagery and fantasy tasks, the Marks Scale of Vividness of Visual Imagery, and a scale to assess whether visual or verbal thought was dominant in the Consequences Test. The measures of absorption assessed the absorption or distraction on the fantasy task, their absorption during the consequences task, and a four-item absorption questionnaire similar to Tellegen and Atkinson's (1974), but restricted to daydreams, books, films, and music.

Creativity was measured by creative self-concept, and by listing all recent creative activities. The activities were rated for creativity by independent judges. Taft and Gilchrist (1970) found both these measures to relate in expected ways to personality variables characterizing creative people, and Rotenberg (1976) reported the two correlated +.46. One of Guilford's (1959) tests of divergent thinking, the Consequences Test, scored for remote consequences (measuring originality) was given in two ways. Five of the items allowed subjects to give as many different responses as possible and also be creative and flexible (standard consequences) and another five instructed the subject to respond by not trying to think up

consequences but to just let them occur (no effort consequences.) Reaction time to each imagery and fantasy task was measured.

Composite measures of the constructs were constructed after examining the intercorrelations of the measures of each construct. For instance, the absorption measures were inconsistently related to each other, so only the Absorption Questionnaire was used as the absorption measure. Vividness, Effortless Experiencing, and Creativity measures were each positively related within their construct, and so a composite measure of each was formed using the mean of each subject's z-scores.

An analysis of variance assessing level of hypnotizability and sex on creativity and effortless experience showed a highly significant difference in favor of high hypnotizables. Unlike previous studies, there was no effect of sex or any interaction. Results of analyses of variance of each measure making up the composites of effortless experience and of creativity also showed significant differences in favor of the highly hypnotizable subjects and again, no sex effects.

All intercorrelations among vividness, absorption, effortless experiencing, creativity, and hypnotizability were significant. The point biserial correlations of high versus low hypnotizability with creativity and effortless experiencing were +.55 and +.61 ($p<.001$) respectively. The correlation of creativity with effortless experiencing was +.62 ($p<.001$).

In multiple correlations, neither prediction of hypnotizability nor of creativity was increased by adding either vividness or absorption to effortless experiencing as a predictor variable. However, when the effect of effortless experiencing was controlled, all the significant relationships of variables with hypnotizability and creativity were reduced to non-significant partial correlations. It appears that effortless experiencing

accounts for most of the shared variance between creativity and hypnotizability, and also between hypnotizability and absorption, and all of the shared variance between hypnotizability and vividness of imagery. A high correlation (r=+.72) between reaction time of fantasy responses and the effortless experience composite adds support to the adequacy of the composite as a measure.

These results were replicated with a smaller sample (n=24) of very low, medium, and very highly hypnotizable subjects. The composite measure of effortless experiencing, of creativity, and of hypnotizability continued to correlate with one another about .5 (Bowers and Bowers, 1979).

Another replication attempt (P. Bowers, 1979) with a different population and somewhat altered measures, found a weak correlation between effortless experiencing and creativity ($r=+.29$, $p<.05$). Absorption was correlated with hypnotizability and with creativity ($r=+.38$ and $r=+.43$ respectively). Absorption correlated with Gestalt Closure ($r=+.45$), which correlated with hypnotizability ($r=+.44$).

It seems reasonable, based on these studies, to examine the effortless experiencing construct that appears to link creativity and hypnotizability with respect to its bearing on psi success in the Ganzfeld.

CHAPTER II

GENERAL RATIONALE

The parallels between reported strategies of psi detection and the hypothesized relationship between creativity and hypnotizability are striking. Results suggest that the less creative and low hypnotizable tend to exert effort and make choices in giving imaginative responses, as do the unsuccessful psi subjects. The highs respond more effortlessly, whether with inspiration, a feeling that what is suggested happens by itself, an illumination, insight, vision, or feeling. The lows seem more comfortable when they can categorize and interpret all experiences in a stable frame of reference; they prefer to maintain what Shor (1959) calls Generalized Reality Orientation (GRO), and may panic if it is lost.

One might conceptualize the lows as relying more on automatization of perception resulting in a stabilized "normal state of consciousness" and the highs as more often entering a shift of state by means of what Gill and Brenman (1959) call "deautomazation." The highs seem to have the ability, perhaps the habit, of adopting flexible frames of reference in viewing or experiencing the world, an ability to shift comfortably and at will from one state of consciousness to another, from one way of processing information to another, neither becoming defensive from the ensuing disorientation, nor censoring illogical thought processes.

This inferred habit or ability is reflected in the high creative's tolerance for chaos, ambiguity, uncertainty, and risk as accepted relations and categorizations are put aside and new organizations are being sought, in the high hypnotizable's tolerance for 'trance' logic, and ability to hold two contradictory points of view at once, in the phenomenon of the "hidden observer", indicating dissociated parallel awareness. It also seems

reflected in the "trance state" of the psychic, and in the less cohesive, more bizarre and dream-like imagery of the successful Ganzfeld subject.

A common thread in the talents of the highs may be the ability to allow, utilize, and be able to access unconscious material and integrate the results into conscious thought, to use the wider associations and different rules of "primary process thinking" in a more accepting way than the lows. It may be that the lows censor, repress, or inhibit their potential abilities as a defensive strategy.

Primary process thinking is often called primitive or regressive, as in "regression in the service of the ego" or "adaptive regression," because of a Freudian assumption that primary gives way to secondary process developmentally in its domination of normal waking thought. However, primary process thinking may develop and become more sophistocated and complex alongside secondary process thinking during development (Suler, 1980), but perhaps more for the highs than the lows, especially in a society that emphasizes the value of logical thought.

The general question posed in this investigation is whether the Ganzfeld technique cuts through these differences in openness to the unconscious, allowing unselected subjects an equal likelihood of demonstrating psi success, or whether it might be more fruitful to select subjects who are most likely to enter psi-conducive states as part of their normal repertoire of conscious states, or more likely to shift comfortably from one state to another (if it is the shift itself, rather than the stabilized states, that facilitates the emergence of psi), to increase the repeatability of the psi-testing procedure.

Another general question posed is whether the personality attributes that are found to relate to psi success from among those examined (such as

hypnotizability, creativity, absorption capacity, dream recall quantity and quality) will interrelate and imply underlying common factors. While the specific prediction that hypnotizability will correlate with creativity is meant to replicate previous findings, it is also meant to validate the measures used in this investigation to operationally define creativity, and if this is successful, to form a frame of reference (the shared variance between hypnotizability and creativity) with which to examine other variables with respect to their relationship to psi success.

These general hypotheses will be tested by examining correlations of ESP scores obtained in the Ganzfeld with scores obtained on the other measures employed. In addition, moods of all participants will be monitored. The mood measures are exploratory, and are considered to be independent of the trait variables in influencing the direction of psi manifestation.

A list of specific predictions follows the Method section.

CHAPTER III

METHOD

Subjects

Sixty unpaid volunteers, thirty males and thirty females, were recruited by personal contact, word of mouth, or through visitors to the American Society for Psychical Research. The criteria were interest in participating in an ESP experiment, openness to the possibility of ESP, willingness to undergo a hypnosis induction, and the willingness to come on two separate days. Forty-five subjects were naive to Ganzfeld experience; fifteen had previously participated in ESP Ganzfeld experiments; nine of these had previously been tested by the author in single or multiple sessions. Ages ranged from 18 through 60, although most were between late 20's and early 40's. Occupations were varied, including actor, businessman, accountant, psychiatrist, researcher, secretary, writer, importer, stock broker, cab driver, musician, professor, artist, fund raiser, mathematician, undergraduate and graduate student.

"Good" and Irregular Subjects

When 60 sessions had been run, there were 11 sessions with irregularities. Two subjects had no mentation in the Ganzfeld, and were given an extra 10 minutes of Ganzfeld stimulation at the end with instructions to say something. One subject had a hearing aid and later revealed he couldn't hear all the instructions. One subject fell asleep during the hypnotizability test and missed some of the items, while seven others did not obey instructions on some items during the hypnotizability test (such as not putting hands out in front of them when requested to) and later found those items unscorable. Unscorable items were scored zero.

The experiment was terminated because of time constraints at this point. Psi results will be presented for all 60 subjects, and separately for the 49 "good" sessions.

Administration of Measures

Subjects were scheduled in small groups of two to eight participants for their first session. The group was seated around a long table with the experimenter at the head. Each subject was given a folder with his or her name, and asked to put all completed forms in their own folder. After signing a release form, each subject filled out a three page questionnaire (Appendix B) by circling the appropriate answer to each question. The questionnaire contained measures of handedness, absorption, dream recall frequency, dream quality, stability of dream frequency, self-report of creativity, tolerance of ambiguity; and independence of judgement.

When all questionnaires were completed, each subject was given a separate copy of the Barron-Welsh Art Scale (1963)[1] pictures and answer sheet. The instructions were read to the group, with the comment that this was a measure of personal preference, but that it would be most useful if they liked or disliked approximately an equal number of pictures, so if they found themselves liking everything, they should become a little more critical, and if they found themselves disliking everything, they should become a little more charitable.

The group was next given copies of the Gestalt Completion test.[2] The experimenter read the cover page instructions out loud, then administered

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[1]Available from Consulting Psychologists Press, Inc., Palo Alto, California.
[2]Gestalt Completion Test - CS-1 is from the Kit of Factor-Referenced Cognitive Tests, copyright © 1962 and 1975 by Educational Testing Service, Princeton, New Jersey, 08541.

the timed segments of the test to the group. At the end, the experimenter gave the group feedback about the correct response to each item.

Each subject then received a scoring booklet for the Stanford Group Scale of Hypnotic Susceptibility, Form C[3], and filled out the cover page. The experimenter gave a short talk about hypnosis, emphasizing that the hypnotizability measure included different talents, each of which varied from person to person, and that this was an opportunity to explore their own capacity to experience whatever they could of various kinds of hypnotic abilities. They were told that the experimenter wanted to stay blind to their scores until after the second session, so the standardized test would be played on a tape, and the experimenter would not be observing them during the test, except when it was necessary for her to move objects required by the procedure. She would be in the room, but would be sitting with her back to the group, working on something else.

The one-hour tape of the SGSHS-C was played, with the standard induction and instructions recorded with the experimenter's voice. Aside from placing and later removing some balls from the table, placing and removing pencils, and making sure test booklets were turned over at one point in the procedure, the experimenter did not observe the subjects. At all the times the experimenter faced subjects, they were sitting with eyes closed and not making any behavioral responses that would indicate what their score on the current item would be.

At the end of the tape, the experimenter read the final portion of the instructions, which asked subjects to fill out the response booklet in which

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[3]I am grateful to Patricia Bowers and the Waterloo Research Group for supplying a prepublication version of this test. (Department of Psychology, University of Waterloo, Waterloo, Ontario, Canada, N2L3G1).

they reported both their behavioral responses to each item, and their subjective responses to each experience. After the booklets were filled out, they were placed in each subject's folder, and the group members were thanked for their participation. The contents of each folder remained unexamined and unscored until after that subject completed the Ganzfeld session.

Targets

Forty full-page color photographs from National Geographic magazines were arranged in ten packs of four pictures each, such that each picture was as different as possible from the other three in color, form, content, and theme. Each pack of pictures had a corresponding duplicate pack of slides from which the sender's target was chosen and viewed, so that there could be no possibility of handling cues when the pictures were later blind-ranked in order of target likelihood. Packs of pictures and of slides were numbered 1 through 10 on the outside of their opaque containers, and pictures within each pack were labeled A through D. Slides were labeled in the upper right-hand corner so that a designated target slide could be located by its letter without looking at any slide in the pack.

Ganzfeld Procedure

Subjects were scheduled individually for the second session. Each was invited to bring a friend if possible to serve as sender. Those who came alone were provided with a sender by the experimenter.

Each subject was first shown the three rooms to be used by sender, experimenter, and subject, and introduced to the sender if they were unacquainted. The experimenter described the procedure to both subject and sender, said that the Ganzfeld has been used very successfully in other ESP experiments with ordinary people, that it seems an excellent way to gain

psi impressions that might not otherwise rise to consciousness, and seems to work best if one waits for impressions to come without trying too hard to make them come. The experimenter described her own successful experience as a Ganzfeld subject, and pointed out that since she had never had any recognized "psychic" experiences previously, it was probably possible for anyone to succeed. The subject was told there was a good chance he or she would also be successful, but it did not reflect on one's ability if one was not, since no one could expect to be successful every time, and a single trial was not as meaningful as a series of many trials.

The experimenter then read standard instructions for a 15-item mood questionnaire modified from Nowlis (1970), which subject, sender, and experimenter each filled out separately (Appendix C). When completed, all three mood questionnaires were placed, unexamined, in the subject's folder with the unscored material from the first session.

The subject was then taken to an electrically-shielded and sound attenuated isolation chamber and asked to relax in a comfortable reclining chair, and make themselves as comfortable as possible, removing shoes, earrings, contact lenses, and loosening any tight clothes. The sender was allowed to watch as ping-pong ball halves were taped over the subject's eyes with paper surgical tape and two light sources with red filters were positioned so that the subject reported a uniform red visual field.

Earphones connected to a cassette tape recorder allowed the subject to hear a short runner of white noise at the beginning of the tape. The subject was asked to adjust the level of the white noise with volume controls on the earphones until it was loud enough to mask external noises and to distort the sound of the subject's own voice, but not so loud as to be

irritating. When the volume was adjusted appropriately, the tape was stopped and repositioned to the beginning of the Ganzfeld instructions.

The subject was told that the tape would first give them physical and mental relaxation exercises, then instructions to talk out loud when the white noise began, and to share all their thoughts, images, and feelings as they passed by. They were told that any passing, fleeting image or thought might turn out to be important, that what seemed trivial or only a personal memory should not be discounted as irrelevant because the psi elements sometimes emerged that way, that it was all right to wait and be silent until something came, that it was best not to try too hard, but just to make a wish that the information would come, and that whatever happened, it was an interesting and enjoyable experience. They were told that the experimenter would be able to hear them through a one-way intercom and would be transcribing everything they said. They were told that the session would also be taped, so if they needed to talk too fast for transcription, the material would not be lost. The experimenter then started two tape recorders, one recording a blank tape, and one containing ten minutes of progressive muscular relaxation, suggestions for autonomic relaxation, and Ganzfeld free-response instructions (see Appendix D), followed by 35 minutes of white noise, left and closed the door of the isolation chamber.

The following steps were performed during the ten minutes of instructions on the Ganzfeld tape after the subject was isolated and before the subject began reporting his or her experience.

The experimenter first took the sender to another sound attenuated room to relax for a few minutes. The sender was told that an assistant would bring the target slide for them to view on a slide viewer for five minutes, and they could then either wait in the room until the experiment

was completed, or, if they had little time, they could leave the building at the end of the sending period. Either way, they would have no more contact with either the subject or the experimenter until after the judging was completed.

The experimenter then designated the pack of pictures for the session in a quazi-random way, by generating a number from 1 to 10 using the random function of a Casio scientific calculator, contingent on using each of the ten packs six times, on avoiding three or more repetitions of the same pack in a row, and on not using the same pack more than once for any participant. In other words, the number generated would designate the pack unless that pack had been used 6 times previously, or twice in a row previously, or unless that pack had been used previously when the subject had been a sender, or the sender a subject, in all of which cases another number would be generated.

The experimenter then retrieved the designated pack of slides for the session from a drawer in a closet where slide packs were kept, and gave it to an assistant with written instructions for randomizing the target within the pack (Appendix E) after the experimenter left, and the time the five minute sending period would begin and end. The experimenter then immediately entered the laboratory room, closed the door, turned on the one-way intercom, and waited for the subject to begin talking. The experimenter had no more direct contact with assistant or sender until the judging procedure was completed.

The assistant then randomized the target letter, wrote the target letter down and sealed it in an envelope, removed the appropriate target slide from its pack by looking at its letter label, took the target slide to the

sender at the beginning of the sending period, and retrieved the slide at the end, returning it to its pack.

In the cases where the sender was the assistant, the procedure varied only slightly. The sender was given the slide pack, sending time, instructions on randomizing, on sealing the target letter in an envelope, instructions to look only at the target, and remained out of contact with both experimenter and subject until judging was completed.

The experimenter transcribed the subject's mentation during the 35 minute white-noise period, then removed the appropriate pack of pictures for the session from the file cabinet in which packs were kept, returned to the subject's isolation chamber, removed the ping-pong ball halves and earphones and immediately asked the subject for a subjective estimate of white-noise duration, then read back the written mentation, asking for anything else the subject could remember that had not been verbalized.

Subject and experimenter then returned to the laboratory with the target pack and completed the mentation transcript, if necessary, by listening to portions of the tape of the session. The experimenter gave the subject a final questionnaire to fill out regarding the Ganzfeld experience (Appendix F), read instructions for judging (Appendix G), and laid out the four pictures in order, with the admonition to make no immediate decision. The mentation was reread, and the subject was asked to verbalize and write down any associations between each element of the mentation and each of the four pictures on a form with four columns corresponding to the four pictures. After all connections between the mentation and each of the four pictures was elicited, the subject gave each picture a different rating on a scale from 10 to 90 assessing target likelihood, which served as both a rank ordering (each picture was given a different number) and a set of ratings to

be converted to a z-score for the trial. The experimenter also rated each picture on a separate sheet at this time as a simultaneous independent judge, blind to the target, but not blind to the subject's choice. After ratings were recorded, the experiment was complete, and subject and experimenter entered the sender's room and opened the sealed envelope, revealing which picture was the target. The experimenter recorded the target and discussed the session with subject and sender.

Measures

A. Psi Measures:

1. Subject ranking (SRANK) and z-scores (SZSCORE):

In the original design, it was planned that subjects would both rank each picture in the session pack in order of target likelihood (SRANK), and give each of the four pictures a different rating on a scale from 10 to 90 to indicate the degree of correspondence between each picture and Ganzfeld mentation. This allows us to examine the data with several psi measures with different properties. With ratings, a z-score for the trial can be calculated by subtracting the mean of the four ratings from the target rating and dividing by the standard deviation of the four ratings (SZSCORE). Z-scores allow correlations with other measures which are expected to prove more sensitive than rankings if ratings are not evenly spaced.

Rankings are convenient for scoring the count of direct hits, binary categorization of "hits" and "misses", and sum-of-rank tests of significance.

2. Experimenter ranking (ERANK) and z-scores (EZSCORE):

At the suggestion of Gertrude Schmeidler, experimenter blind ranking (ERANK) and rating (for EZSCORE) was added before the experiment began, as the experimenter was a more experienced judge in the task than any of the subjects. It was hoped that this might add insight into the process of

judging, which is one of the crucial components for success in this method of testing ESP.

For simplicity, only the originally planned subject judging will be considered for hypothesis testing. The subject's direct hits (correct first-choices) and sum-of-ranks will test psi success, and SZSCORE will test correlations with other measures. However, binary "hits" will also be presented in tables evaluating psi-scoring, and correlations of other measures with SRANK, SZSCORE, ERANK and EZSCORE will be presented to give the interested reader a more complete view of the data.

B. Personality Measures

The following are considered to be measures of relatively stable characteristics of subjects' cognitive habits and abilities (Trait Variables):

1. Hypnotizability: (Group form modified from SHSS-C)

The Stanford Scales assume that behavioral responses to suggestion are non-volitional, thus tapping the "classic suggestion effect." P. Bowers (1982) developed an index of non-volitional behavior and found it correlated highly in a sample of 43 with traditional scoring of the SGHSS:C (r=.81) and moderately (r=.55) with the SGSHS:A. The relationship between effortless or involuntary ratings and the passing or failing of each item on the SHSS:C was individually significant for seven of the ten items. Of the three items which did not show this relationship, the hand lowering and amnesia items were usually experienced as involuntary whether they were passed or failed. The age regression item was often experienced as voluntary, even when it was passed.

Thus the more difficult Form C scale seems a measure of hypnotizability which taps the "effortless experiencing" construct. For convenience, hypnotizability was assessed using the Stanford Group Scale of Hypnotic

Suggestibility, Form C (SGSHS:C), which is a twelve item version of the SHSS:C modified for group administration and self-scoring.

Scoring of the SGSHS:C was equivalent to the individual Form C Scale, and most items were self-scored by subjects, who marked the appropriate boxes in the response booklet indicating that they did or did not physically respond as requested to each item (for instance, by raising a hand to indicate when they heard suggested music). Since the experimenter was not blind to ESP results at this point, any ambiguous scoring (on hypnotic dream and age regression items, where judgement occasionally was required) was resolved with a second opinion from someone experienced in such judging who was blind to psi scores.[4]

Resistance in Hypnosis

Hypnotizability items were scored in the standard way according to whether or not subjects exhibited the requested behavioral responses indicating a subjective hypnotic experience, but information was also collected about the degree to which their subjective experience conformed to suggestion whether or not their behavioral response did. The first subject to complete the experiment called attention to a discrepency between behavior (not complying with a post-hypnotic suggestion on cue) and subjective experience (reporting some feeling of compulsion to do so), by writing in the margin "I resisted it!" There were 13 such cases, where there was some reported feeling of compulsion to do what had been suggested but the action was inhibited, so that the item received a score of zero.

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[4]Grateful thanks are due to Howard Ehrlichman.

Similarly, there were eight cases in which a tactile hallucination was subjectively present to some degree but the behavior to indicate it was absent, and 11 cases where an auditory hallucination was subjectively experienced but not outwardly acknowledged when requested.

In addition, three subjects did not place their hands or arms in requested initial positions on three motor items, so that the items were unscorable. One such subject later explained that she thought her hands should move by themselves if she were really hypnotized.

Five subjects had an aversive emotional reaction to age regression and did not obey instructions to write their names. Instead, they cried, or wrote, "no, I won't go back," or "there was no happy day," so that the item was unscorable.

Some of these cases overlapped, so that there were 26 subjects in total showing some form of resistance, negativity, or inhibition to the hypnotizability test. Half of them were high hypnotizable (scoring from 6 to 12) in spite of unscorable items, which received a score of zero. A new variable was created to examine resistance or compliance in hypnosis as it might reflect a similar resistance or compliance in psi scoring.

2. Creativity:

My choice of candidate creativity measures to separate high and low psi scorers is to select measures derived empirically from high and low creative populations (based on personality as opposed to cognitive characteristics), rather than theoretical factor-analytic constructs that may be limited by the factors considered, and which have the additional problems of needing independent judges to rate them and of confounding performance anxiety during a "creativity test" with test performance. Empirical criteria such as occupation, although crude, seem to separate psi

performance on free-response tests, and self-evaluation of creativity might do as well. Batteries of several aspects of creativity may prove more powerful than reliance on a single measure. The most easily administered and straight-forward attempt to operationally define "creativity" in this study is a combination of the following (depending on intercorrelations):

a. Self-Report of Creativity (SR), which has been shown to correlate with independent ratings of lists of "creative activities" (Appendix B, question 9),

b. Barron Welsh Art Scale (BW) (Barron, 1953), which measures a preference for cognitive complexity and assymetry,

c. Independence of Judgement (IJ), a short 8-item form of Barron's (1963) Independence of Judgement Scale, where each item discriminated significantly between subjects who did and did not show independence of judgement in an experimental setting, (Appendix B, questions 26 thru 33). Three of the eight questions of the Independence of Judgement scale were flipped before summing (questions 26, 28, and 29 of Appendix B).

d. Tolerance for Ambiguity (TA), taken from Budner's (1962) Intolerance of Ambiguity Scale, since tolerance of ambiguity seems a prerequisite for the ability to reorganize information in new frames of reference (Appendix B, questions 10 thru 25). The direction of high scoring answers was counterbalanced on the Tolerance of Ambiguity Scale, starting with question 10 (Appendix B), so that questions 11 and 12 are flipped, 14 and 17 are flipped, etc., before summing scores.

3. Absorption (ABS):

To measure absorption, which is one of the few traits to correlate consistently with hypnotizability, I follow P. Bowers (1978) and use a very

shortened form of the Tellegen Absorption Scale (Tellegen and Atkinson, 1974), modified to allow ratings on a three point scale, rather than true-false. This measure is exploratory. (Appendix B, questions 2 thru 5)

4. Gestalt Completion (GC)

Crawford (1981) investigated differences in cognitive processing of high and low hypnotizable subjects as measured by the SHSS:C. She found that, in a sample of 22 male and 20 female university students, high hypnotizables scored significantly higher than low hypnotizables on several tests of Gestalt Closure for both sexes. There was a significant sex effect with females scoring higher for the Closure Speed Test, but not for the Street Test of Harshman Figures. In three subsequent studies, sex effects were inconsistent. In a sample of 47 low, medium, and high hypnotizable subjects from the same population, about evenly split by sex at each level of hypnotizability, females showed a significant correlation ($r=+.57$, $p<.01$) while males showed a non-significant correlation ($r=+.20$). However, these two correlations do not differ significantly from each other with the small sample size. The combined correlation was significant ($r=+.38$, $p<.05$). In a college sample of 41 males and 37 females, the females showed a significant correlation ($r=+.30$, $p<.05$) while the males did not ($r=.05$). These correlations were not significantly different from one another. In a high school sample of 37 males and 27 females, in which the females were significantly more hypnotizable than the males ($p<.01$), the correlation between hypnotizability and the Closure Speed Test was significant for the total sample ($p<.02$), and for the males ($p<.05$), but not for the females, who were underrepresented at the low end of the distribution.

Since in the Gestalt Closure tasks, solutions "pop" into the mind all at once, effortlessly, this may be another converging measure of "effortless

experience." Crawford reports that inspection of the scatterplots of the significant correlations showed, in general, high hypnotizables scored from moderate to high on the gestalt closure tasks, while low hypnotizables scored from low to high. Thus high gestalt closure, like absorption, appears desirable, but not sufficient to predict high hypnotizability.

It might be noted that Wasserstein (1981) found evidence to suggest performance on gestalt closure tasks is a localized right-brain function.

The Gestalt Completion Test is included as another exploratory psi prediction candidate.

C. Personality measures that may be more or less stable, depending on the individual:

5. Dream Recall Frequency (FRQDRM) (A measure of interest in and openness to internal states: Appendix B, question 6)

One might expect high creatives, high hypnotizables, and those scoring high on psi tests to all show higher dream recall, since, in recalling a dream, one must hover on the edge of two states of consciousness or ways of processing at once, both to retain the dream consciousness with its images and feelings, and to activate the linear, verbal apparatus that must encode the dream in words so it can be communicated. Dream recall may also be viewed as a measure of openness to one's unconscious, or as a measure of lack of repression, inhibition, or denial of inner thoughts and feelings. Honorton (1972) and Johnson (1968) found dream recall frequency correlated positively with psi success, although Sondow (1979) found no significant correlation, but that both lowest and highest recallers scored significantly above chance on the psi task.

6. Dream Quality (DRMQL) (The quality of dream imaginativeness, or how "dream-like" one's recalled dreams are, might be considered a

measure of tolerance for uncensored primary process material and lack of defensiveness: Appendix B, question 7)

Schechter, Schmeidler, and Staal (1965) collected reports of the most recent dream of each of 105 students of arts, sciences, and engineering, and gave a subset of the Independence of Judgement Scale (IJ) as a creativity measure. The major of each subject was used as another measure of creativity. Dreams were scored by two independent judges blind to subjects' test scores or majors.

Dreams were rated on a scale of ego functions indicating imaginativeness, where a score of one indicated logical, realistic dreams, with a healthy body image; ego the source of action; action directed toward human beings; dreamer involved in the dream; where impulses initiated are completed.

A score of four meant dreams predominantly disconnected and impossible in reality, possibly mutilated body images; dreamer may observe rather than participate; both source and object of action are animate; socially unacceptable drives may be present, either ungratified, or, if gratified, accompanied by anxiety.

Dreams rated eight were irrational, incoherent, bizarre; both source and object of action might be inanimate. Impulses may be denied, may be conveyed by character or setting rather than action, or may be gratified without anxiety.

Dream imaginativeness, by this scoring method, correlated significantly with the Independence of Judgement measure for all subjects ($r=+.38$, $p=.001$) and for art students considered separately ($r=+.42$, $p=.01$), but not for the science or engineering students considered alone. The science and engineering students had lower mean scores on Independence of

judgement than the art students, and did not differ from each other on dream imaginativeness. Both, however, differed highly significantly on dream imaginativeness from the art students (for each, p=.001). Dream recall was highest for art students and lowest for engineering students (X^2=11.02, 2df, p=.005). The same pattern appeared in attenuated form for the independence of judgement means of the three groups. Since the mean dream imaginativeness scores were so close to the bottom of the range for the science and engineering students, it is not surprising that significant correlations with creativity measures were not found in those groups.

D. State Measures with respect to Ganzfeld Experience:

The following measure individual differences in the effect of the Ganzfeld on changing the quality of mental functioning (Appendix F):

7. Time Estimate (TIMEST) (question 1)

8. Altered State in Ganzfeld (GANZALT) (question 2)

9. Percent time in altered state (ALTPERC) (question 3)

10. Quality of Ganzfeld mentation (GANZQL) How chaotic, unrealistic, dream-like, bizarre, disconnected (question 4)

11. Visual imagery quantity in Ganzfeld (GANZVIS) (question 5)

12. Effortlessness Scale (EFFORT) (questions 6 thru 10)

E. State measures with respect to interpersonal dynamics:

13. Moods of subject, experimenter, sender (Appendix C)

Fifteen mood adjectives that were thought more or less likely to relate to the direction of psi scoring were taken from A Short Form of the Mood ACL (Nowlis , 1970, p. 272). These 15 moods represented 8 of the 12 mood factors Nowlis hypothesized. If significant positive intercorrelations justify it, one can shrink the 15 adjectives to eight mood factors by taking the mean score of items within each of the eight factors. Four of the

mood factors were designated strong predictors of directionality (Surgency and Elation should be positive; Sadness and Anxiety should be negative influences), while four others were less certain. Activation and Fatigue might be argued to be broadly "feeling good" and "feeling bad," or it might be argued the more active, the less likely to relax, and the more fatigued, the more likely to enter a "psi-conducive state," while Skepticism might be a symptom of goatishness, or resistance, or it might be the healthy skepticism of not being a "super-sheep", that is, of having an open mind but not expecting anything, that might be conducive to positive psi. The relation of Aggression to psi directionality might depend on whether the focus of the feelings is related to the context of the experiment (participant or situation) or is directed elsewhere.

F. Relevant Variables monitored:

14. Sex (equal number planned)

15. Previous Ganzfeld Experience (number unplanned)

16. Handedness (number unplanned)

CHAPTER IV

SPECIFIC PREDICTIONS AND EXPLORATORY QUESTIONS

Hypothesis 1: The Ganzfeld procedure will be effective in eliciting significant evidence of psi success as measured by subjects' direct hits and sum-of-ranks.

Hypothesis 2: a.) Creativity will correlate significantly positively with hypnotizability. (If candidate creativity measures intercorrelate positively, they can be combined into a composite score.) b.) Sex differences will be examined. If sex is a moderating variable, females will show a stronger correlation between creativity and hypnotizability than males as in previous findings of K. Bowers (1969, 1971), K. Bowers and Van der Meulen (1970), and Perry, Wilder, and Appignanesi (1973), and c.) the relationship will be stronger at the higher end of the hypnotizability scale, as found by K. Bowers, 1971, K. Bowers and Van der Meulen (1970), Perry et al. (1973).

Hypothesis 3: Those scoring high both on creativity and on hypnotizability measures will be successful at the psi task.

Question 1: Is the Ganzfeld psi-conducive for most subjects? (Will those low on both creativity and hypnotizability also succeed in the psi task?) If Hypothesis 3 is correct, but the Ganzfeld technique also elicits psi in subjects on the low ends of these measures, then the technique may circumvent the barriers to free access to unconscious material that are hypothesized to exist in the low hypnotizable-and-creatives. In fact, there is evidence that the Ganzfeld technique may increase both creativity and hypnotizability scoring. For instance, Stembridge (1972) found the Ganzfeld with instructions to free-associate significantly increased creativity scores (originality and spontaneous flexibility), while Wickramasekera

(1969) and Sanders and Rehyer (1969) found sensory restriction enhanced hypnotizability scores.

However, if the low hypnotizable-and-creatives score at chance or below on the psi task, and high hypnotizable-and-creatives score positively, it will suggest that Ganzfeld repeatability may be enhanced by selecting subjects high on some combination of the measures investigated. Note that this does not assess whether the Ganzfeld is better than any other method of achieving a psi-conducive state, only whether subject selection along these lines will increase repeatability.

Hypothesis 4: Psi success will correlate positively with trait measures:

a. creativity

b. hypnotizability

c. absorption

d. dream quality

e. dream recall frequency

f. Gestalt Completion

Hypothesis 5: Psi success will correlate positively with state measures:

a. Ganzfeld quality

b. altered state estimates

c. amount of imagery

d. time estimation in the Ganzfeld (range flipped from questionnaire so that the predicted direction is positive)

e. effortless experiencing in the Ganzfeld (range of each question of the scale flipped from questionnaire so that the predicted direction is positive)

Hypothesis 6: Hypnotizability will correlate positively with

a. Absorption

b. Gestalt Completion

Question 2: Will the underlying common factor of effortlessness postulated in the relationship between creativity and hypnotizability relate positively to psi success? Effortless experiencing in the Ganzfeld is postulated as such a candidate variable. If it correlates positively with creativity and hypnotizability scores, and partialing it out removes the relationship between hypnotizability and creativity, as was found by Bowers (1978) with an Effortless Experiencing battery, then it is expected to correlate significantly positively with psi success.

Question 3: Will mood scores correlate with psi scores? One should expect "good" moods to correlate positively with psi success, "bad" moods to correlate negatively with psi success, and good mood minus bad mood to correlate positively with psi success. Expected directions of correlations are shown above the mood categories, with degrees of certainty, indicated by parentheses, as follows:

EXPECTED DIRECTIONS OF CORRELATION BETWEEN PSI SUCCESS AND NOWLIS MOOD FACTORS

(+) ?	+	+	-	-	(-)?	(-)?	(-)?
	Feeling Good:		Feeling Bad:				
Activation	Surgency	Elation	Sadness	Anxiety	Aggression	Skepticism	Fatigue
active	carefree	pleased	sad	fearful	angry	dubious	drowsy
energetic	playful			jittery	annoyed		sluggish
vigorous							tired

In particular, one should expect (Surgency+Elation-Sadness-Anxiety) to correlate positively with psi success. More tentatively, one might expect (Activation+Surgency+Elation-Sadness-Anxiety-Aggression-Skepticism-Fatigue) to correlate positively with psi success.

CHAPTER V

RESULTS

Intercorrelations of psi measures

Table 3 shows the intercorrelations between subject and experimenter psi measures (-RANK and -ZSCORE) for all subjects. As can be seen, all four measures are highly intercorrelated, with Pearson's r ranging from +.68 to +.94. Spearman rank-order correlations (which are also presented as appropriate for the square distributions of the psi measures) are not as strong, ranging from +.56 to +.83, but are still significant ($p<.001$).

Table 3

Pearson (r) and Spearman (r_s) Intercorrelations Among Psi Measures: Subject Rank (SRANK)[1], Subject Z-Scores from Ratings (SZSCORE), Experimenter Rank (ERANK)[1], Experimenter Z-Scores from Ratings (EZSCORE) for All Subjects (N=60)

	SZSCORE		ERANK		EZSCORE	
	r	r_s	r	r_s	r	r_s
SRANK	+.94***	+.83***	+.68***	+.61***	+.73***	+.61***
SZSCORE			+.71***	+.58***	+.73***	+.56***
ERANK					+.94***	+.82***

[1]SRANK and ERANK are flipped so that expected correlations are positive.
*** $p<.001$, 2-tailed.

Results of correlations between psi and other measures will be presented for all four of these psi measures, but hypothesis testing will be based only on subject psi measures, which were designated initially as the measures to be used. SZSCORE will test the relationship of psi success to other measures with correlations, and will be boldface in tables. Psi success for subgroups will be measured in terms of SRANK information

(direct hits and sum-of-ranks), but ERANK information will also be presented.

Evaluation of ESP Performance

Table 4 shows the psi data evaluated with z-scores for direct hits (target chosen correctly out of four) and for sum-of-ranks (taking all placements of the target into account). Hits (rank 1 and 2) are also listed as percentages to give the interested reader a more complete description of the data. As can be seen, experimenter judging is uniformly stronger than subject judging through all cuts of the data when direct hits or sum-of-ranks are considered, although, for binary hits, subject and experimenter judging are equal for females and for experienced subjects.

Hypothesis 1: Prediction of overall psi success measured by direct hits and sum-of-ranks:

As can be seen in Table 4, subject judging was close to chance with 12 direct hits for all 60 subjects and for the 49 "good" subjects, if sessions with irregularities are excluded. Thus Hypothesis 1 is not confirmed with subject judging. Experimenter judging found 18 direct hits both for all 60 subjects and for the 49 "good" subjects, which is marginally significant only for the latter ($z=+1.897$, $p<.029$, 1-tailed) when no correction is made for selection. Sum-of-rank analyses were non-significant for all sets of judgings.

Table 4

PSI RANKS: SUBJECT JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p
All	60	12	20%	-0.8944	ns	28	47%	-0.6351	ns
"Good" Subjs.	49	12	24%	-0.0825	ns	25	51%	0.0000	ns
Males	30	9	30%	+0.6245	ns	18	60%	+0.5715	ns
Females	30	3	10%	-1.8974	<.06*	10	30%	-1.5513	ns
Naive	45	10	22%	-0.4303	ns	23	51%	0.0000	ns
Prev. Ganz.	15	2	13%	-1.0435	ns	5	33%	-1.3856	ns

PSI RANKS: EXPERIMENTER JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p
All	60	18	30%	+0.8944	ns	29	48%	+0.2887	ns
"Good" Subjs.	49	18	37%	+1.8970	<.03**	26	53%	+1.0222	ns
Males	30	10	33%	+1.0541	ns	18	60%	+1.2247	ns
Females	30	8	27%	+0.2108	ns	11	37%	-0.7348	ns
Naive	45	15	33%	+1.2910	ns	24	53%	+0.8000	ns
Prev. Ganz.	15	3	20%	-0.4472	ns	5	33%	-0.6928	ns

* 2-tailed, since psi-missing was not predicted.

** 1-tailed.

Sex differences and psi

There is some indication that males and females differed in their response to the psi task. Males are the only group that scored slightly above the 25% expected first-choice hits in subject judging, choosing the target correctly 30% of the time, while females were correct only 10% of the time with 3 direct hits ($z=-1.8974$, $p<.06$, 2-tailed). Females scored insignificantly below chance expectation with experimenter judging. The difference in mean psi rank between males and females for subject judging is suggestive ($t=1.68$, 58df, $p<.1$, 2-tailed), as is the difference in means between males and females of psi z-scores from ratings for experimenter judging ($t=-1.72$, 58df, $p=.09$, 2-tailed). A Chi-Square of hits versus misses for males versus females is suggestive ($\chi^2=3.28$, 1df, $p=.07$, after Yates Correction), and a correlation of hits (top-half) versus misses (bottom-half) with sex is significant (Pearson's $r=-.267$, $p<.02$).

Tables 5a and 5b show the Pearson (r) and Spearman (r_s) intercorrelations, respectively, of psi measures for males and females. As can be seen, females' judging and experimenter judging show moderate relationships ($r=+.50$ to $+.59$, $r_s=+.47$ to $+.58$) while males' judging is consistently close to experimenter judging ($r=+.83$ to $+.84$, $r_s=+.81$ to $+.83$).

Table 5a

Pearson Intercorrelations Among Psi Measures:
Subject Rank (SRANK), Subject Z-Scores from Ratings (SZSCORE),
Experimenter Rank (ERANK), Experimenter Z-Scores from Ratings (EZSCORE)
for Males and Females (N_1=N_2=30)

	SZSCORE		ERANK		EZSCORE	
	male	female	male	female	male	female
SRANK	+.96***	+.91***	+.83***	+.50**	+.84***	+.56**
SZSCORE			+.84***	+.56**	+.84***	+.59***
ERANK					+.94***	+.93***

* p<.05, 1-tailed
** p<.01
*** p<.001

Table 5b

Spearman (r_s) Intercorrelations Among Psi Measures:
Subject Rank (SRANK), Subject Z-Scores from Ratings (SZSCORE),
Experimenter Rank (ERANK), Experimenter Z-Scores from Ratings (EZSCORE)
for Males and Females (N_1=N_2=30)

	SZSCORE		ERANK		EZSCORE	
	male	female	male	female	male	female
SRANK	+.95***	+.90***	+.83***	+.47**	+.83***	+.57**
SZSCORE			+.83***	+.54**	+.81***	+.58***
ERANK					+.94***	+.91***

* p<.05, 1-tailed
** p<.01
*** p<.001

Creativity Measures

Table 6 shows the intercorrelations among creativity measures. Self-Report of Creativity (SR) correlates moderately but significantly positively with each of the other measures of creativity (r=+.32 to +.49), and so might be taken as the central measure. Independence of Judgement (IJ) and

Tolerance for Ambiguity (TA) have the highest correlation (r=+.58), but the Barron Welsh Art Scale (BW) is not significantly correlated with either one.

Table 6

Pearson Correlations among Creativity Measures: Self Report (SR), Barron Welsh Art Scale (BW), Barron's Independence of Judgement Scale (IJ), and Budner's Tolerance for Ambiguity Scale (TA) for Total Sample (N=60)

	BW	IJ	TA
SR	+.32*	+.49**	+.36*
BW		+.20	+.09
IJ			+.58***

*p<.01, 1-tailed
**p<.0001, 1-tailed
***p<.00001, 1-tailed

In attempting to measure creativity, a combination of a battery of orthogonal measures, or a combination of a battery of moderately positively correlated measures would be justified. However, in this case, a combination of measures, some orthogonal, and some highly correlated, gives more weight to the factors underlying the highly related measures than one might wish. The issue is further complicated by differences in the relationships among measures for subgroups of the data, which will be presented below.

Sex Differences in Interrelations of Creativity Measures

As can be seen in Table 7, all creativity measures intercorrelate positively for males, with 5 out of 6 values significant, while for females, half of the pairs of measures show a correlation close to zero. Self-Report correlates significantly positively with all other creativity measures for males, while Self-Report is not related to Tolerance for Ambiguity for the

females in this sample. The difference between the correlations of SR with TA for males and for females is significant ($z=2.5142$, $p<.02$, 2-tailed).

Table 7

Pearson Intercorrelation Matrix among Creativity Measures: Self Report (SR), Barron Welsh Art Scale (BW), Barron's Independence of Judgement Scale (IJ), and Budner's Tolerance for Ambiguity Scale (TA) for Males and Females ($N_1=N_2=30$)

	BW		IJ		TA	
	male	female	male	female	male	female
SR	+.32*	+.32*	+.53***	+.45**	+.65***	+.10
BW			+.32*	+.05	+.24	-.04
IJ					+.66***	+.50**

* $p<.05$, 1-tailed
** $p<.01$, 1-tailed
*** $p<.001$, 1-tailed

Relations among Creativity Measures for High and Low Half of the Hypnotizability Measure

The hypnotizability measure used the more difficult hallucinatory items of the C-Scale, and the distribution of the sample was normally distributed. The sample was cut at the mean. Scores of less than 6 were considered "low hypnotizable," and scores greater than or equal to 6 were considered "high hypnotizable." This split was examined for possible qualitative differences in the pattern of correlations, since different cognitive habits or abilities may underlie the capacity to pass the more difficult cognitive items of this measure.

As can be seen in Table 8, creativity measures tend to show somewhat higher intercorrelations for high than for low hypnotizable subjects, with Tolerance for Ambiguity (TA) correlating most highly with Self-Report of Creativity (SR) for the highs, and hardly relating to Self-

Report for the lows. The difference in the correlation of SR and TA between lows and highs is significant (z=2.4873, p<.02, 2-tailed).

Table 8

Pearson Intercorrelation Matrix among Creativity Measures for High (N=27) and Low (N=33) Hypnotizable Subjects

	BW		IJ		TA	
	high	low	high	low	high	low
SR	+.36*	+.41**	+.67***	+.48**	+.69***	+.16
BW			+.14	+.23^	+.25	-.01
IJ					+.64***	+.56***

^ p<.1, 1-tailed.
* p<.05, 1-tailed
** p<.01, 1-tailed
*** p<.001, 1-tailed

Tables 8a and 8b show the creativity intercorrelations for low hypnotizables and high hypnotizables, respectively, with sex splits. As can be seen, males tend to show higher and more consistently positive intercorrelations among creativity measures than females, most markedly in correlations of SR with TA. There is a significant difference between the high hypnotizable males' and females' correlations of SR with TA (z=+2.5631). Differences between males and females tend to be stronger at the high end of hypnotizability, due to the highly significant correlations among SR, IJ, and TA for high hypnotizable males (r=+.70 to +.87). The concept of creativity (as measured by Self-Report) may differ in males and females as well as between high and low hypnotizables with respect to the presence or absence of tolerance for ambiguity.

Table 8a

Pearson Intercorrelation Matrix among Creativity Measures: Self Report (SR), Barron Welsh Art Scale (BW), Barron's Independence of Judgement Scale (IJ), and Budner's Tolerance for Ambiguity Scale (TA) for Low Hypnotizable Males and Females (N_1=N_2=30)

	BW		IJ		TA	
	male	female	male	female	male	female
SR	+.46*	+.37^	+.52**	+.44**	+.57**	-.10
BW			+.25	+.23	+.19	-.12
IJ					+.60**	+.53**

^ p<.1, 1-tailed
* p<.05, 1-tailed
** p<.05, 2-tailed

Table 8b

Pearson Intercorrelation Matrix among Creativity Measures: Self Report (SR), Barron Welsh Art Scale (BW), Barron's Independence of Judgement Scale (IJ), and Budner's Tolerance for Ambiguity Scale (TA) for High Hypnotizable Males and Females (N_1=N_2=30)

	BW		IJ		TA	
	male	female	male	female	male	female
SR	+.30	+.38	+.78****	+.42^	+.87****	+.21
BW			+.31	-.25	+.23	+.19
IJ					+.70***	+.32

^ p<.1, 1-tailed
*** p<.01, 2-tailed
**** p<.001, 2-tailed

Hypothesis 2a: Hypnotizability Correlates with Creativity

As can be seen in Table 9, for the entire sample, hypnotizability correlates significantly positively with Self-Report of Creativity (Pearson r=+.255, p<.05), non-significantly negatively with BW (Pearson r=-.15) and is negligibly correlated with IJ (Pearson r=-.09) and TA (Pearson r=+.00). A

composite of the mean z-scores of the four creativity measures (CREATZ) is not related to hypnotizability (Pearson r=+.00). Thus, for the entire sample, Hypothesis 2 is supported only with Self-Report (SR), the central measure of creativity.

Table 9

Pearson Correlations between Hypnotizability and Creativity Measures: Self-Report of Creativity (SR), Barron-Welsh Art Scale (BW), Independence of Judgement (IJ), Tolerance of Ambiguity (TA), and Composite Mean Z-Score (CREATZ)

	n	SR	BW	IJ	TA	CREATZ
All	60	+.25*	-.15	-.09	+.00	+.00
Male	30	+.13	-.24^	-.25^	-.10	-.15
Female	30	+.42**	-.00	+.16	+.14	+.28^
Low Hypn	33	+.07	+.10	+.11	+.00	+.10
High Hypn	27	-.17	-.29^	-.19	-.20	-.28^

^p<.1, 1-tailed.
*p<.05, 1-tailed.
**p<.05, 2-tailed.

Hypothesis 2b: Hypnotizability Correlates with Creativity for Females

As Table 9 shows, Self-Report correlates significantly positively with hypnotizability for females (Pearson r=+.429, p=.009, 1-tailed), but not for males (Pearson r=+.13). The mean z-score of the four creativity measures (CREATZ) correlates suggestively positively with hypnotizability for females (Pearson r=+.28, p<.07,1-tailed), but non-significantly negatively for males (Pearson r=-.15). Thus Hypothesis 2 is supported for females, as previous research has found, when the central measure of creativity is examined, but the predicted effect is attenuated to a

suggestive relationship for females if the mean of the four normalized creativity measures employed (CREATZ) is used as a composite creativity measure.

Hypothesis 2c: Hypnotizability Correlates with Creativity more strongly for High Hypnotizables

As Table 9 shows, for the 33 low hypnotizables, hypnotizability correlates negligibly with each creativity measure. Thus for the lows, all creativity measures are independent of hypnotizability.

For the 27 high hypnotizables, correlations with each of the creativity measures are non-significantly negative. Thus, for the high hypnotizables, there is suggestive evidence that hypnotizability and the creativity measures of this study may be inversely related.

Hypothesis 3: The Intersection of High Hypnotizability and High Creativity will Succeed at the Psi Task

Due to the unexpected null or inverse relationship of hypnotizability and creativity at the high end of the hypnotizability measure, it is not possible to examine a subgroup of extremely high-hypnotizable and high-creative subjects in this sample with respect to psi success. Thus, the hypothesis cannot be tested, but scoring will be examined with respect to those above the midpoint of each measure.

Using Self-Report as the creativity measure, and defining high creative as scoring above the mean, if we split the sample at the middle of the range of hypnotizability, with 33 subjects in the bottom-half and 27 subjects in the top-half of hypnotizability scores, there are 18 subjects who are in the high half of the hypnotizability range and also above the mean of self-report of creativity. In this group, there is only a single direct hit for subject judging ($z=-1.9052$), or a scoring rate of less than 6%, with

sum-of-ranks z=-1.3703. For experimenter judging, there are 3 direct hits (z=-0.8165), and sum-of-ranks z=-0.7379.

In fact, an examination of psi success for those of each sex in the top-half versus the bottom-half of the hypnotizability scale (Table 10) reveals that low hypnotizable males, unexpectedly, show more positive psi scoring by all measures than high hypnotizables or than high hypnotizable males. When the sample is cut in this way, it appears that only low hypnotizable males scored above mean chance expectation by subjects' direct hits or by sum-of-ranks. When experimenter judging is considered, low hypnotizable males had a direct hit rate of 44%, which is significantly above MCE ($p<.05$, one-tailed). Low hypnotizable females direct hit rate was 6% by subject judging, which suggests psi-missing ($p<.1$, two-tailed).

Table 10

PSI RANKS: SUBJECT JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p
Low Hypn	33	7	21%	-0.5025	ns	15	45%	-0.3114	ns
Low Male	16	6	38%	+1.1547	ns	10	63%	+1.0062	ns
Low Female	17	1	6%	-1.8204	<.1*	5	29%	-1.5185	ns
High Hypn	27	5	19%	-0.7778	ns	13	48%	-0.5164	ns
High Male	14	3	21%	-0.3086	ns	8	57%	-0.1195	ns
High Female	13	2	15%	-0.8006	ns	5	39%	-0.4961	ns

PSI RANKS: EXPERIMENTER JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p
Low Hypn	33	11	33%	+1.1055	ns	17	52%	+0.6228	ns
Low Male	16	7	44%	+1.7321	<.05**	10	63%	+1.4534	ns
Low Female	17	4	24%	-0.1400	ns	7	41%	-0.4339	ns
High Hypn	27	7	26%	+.0.1111	ns	12	44%	-0.1721	ns
High Male	14	3	21%	-0.3086	ns	8	57%	+0.1195	ns
High Female	13	4	31%	+0.4804	ns	4	31%	-0.4961	ns

*two tailed, since psi-missing was not predicted.
** one-tailed, since direction was predicted

Question 1: Psi Success for Low-Creative-and-Low-Hypnotizables

There are 12 subjects below the mean of both Self-Report of Creativity and of hypnotizability. In this group, subject and experimenter psi rank frequencies are identical, with 2 direct hits (16.7%), and 5 top-half hits (41.7%), which does not differ significantly from chance expectation. Thus the low-hypnotizable-low-creatives show no evidence of psi success in either set of judgings.

Hypothesis 4: Psi Success Correlated with Trait Measures

As can be seen in Tables 11 and 12, which show the Pearson and Spearman correlations, respectively, Dream Quality (DRMQL) is the only trait measure that correlates significantly positively with subject psi z-scores from ratings (SZSCORE) (Pearson's $r=+.257$, Spearman $r_s=+.265$, both $p<.05$, 2-tailed). Thus only Hypothesis 5d is supported for the entire sample. (Dream Quality correlates close to zero with experimenter psi scores).

The Barron Welsh Art Scale correlates suggestively positively with psi success ($r=+.179$, $p<.09$, 1-tailed) for subject judging and more weakly for experimenter judging. Absorption shows a weak and non-significant negative correlation with psi success for subject judging ($r=-.169$, $p<.1$, 1-tailed), but no relation to psi success for experimenter judging.

Table 11

Pearson Correlations between Psi Measures[1] and Trait Measures of Creativity (SR, BW, IJ, TA), Hypnotizability (HYPN), Absorption (ABS), Dream Quality (DRMQL), Dream Frequency (FRQDRM) , and Gestalt Completion (GC) for Total Sample (N=60)

	SR	BW	IJ	TA	HYPN	ABS	DRMQL	FRQDRM	GC
SRANK	+.00	+.17^	+.02	+.02	.00	-.14	+.17^	+.05	-.16
SZSCORE	**-.05**	**+.17^**	**+.02**	**-.00**	**-.05**	**-.16^**	**+.25****	**+.13**	**-.09**
ERANK	-.00	+.13	-.05	+.00	-.01	-.01	-.00	-.07	+.00
EZSCORE	-.00	+.13	+.06	+.09	-.03	-.02	+.04	-.11	-.00

1 SRANK and ERANK have been flipped so that all predicted correlations are positive.
^ p<.1, one-tailed.
* p<.05, one-tailed.
**p<.05, two-tailed.

Table 12

Spearman Correlations between Psi Measures[1] and Trait Measures of Creativity (SR, BW, IJ, TA), Hypnotizability (HYPN), Absorption (ABS), Dream Quality (DRMQL), Dream Frequency (FRQDRM) , and Gestalt Completion (GC) for Total Sample (N=60)

	SR	BW	IJ	TA	HYPN	ABS	DRMQL	FRQDRM	GC
SRANK	-.01	+.17^	+.01	+.03	+.00	-.10	+.20^	+.08	-.14
SZSCORE	**-.08**	**+.16**	**+.00**	**-.00**	**-.05**	**-.13**	**+.27****	**+.14**	**-.08**
ERANK	-.04	+.12	-.05	-.00	-.01	-.01	+.02	-.03	+.04
EZSCORE	-.06	+.08	+.05	+.07	-.04	-.02	+.01	-.11	-.00

1 SRANK, ERANK, TIMEST and EFFORT are flipped so that all predicted correlations are positive.
^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Table 13

Pearson Correlations between Psi Measures[1] and State Measures: Ganzfeld Quality (GANZQL), Altered State Measures (GANZALT, ALTPERC), Amount of Imagery in Ganzfeld (GANZVIS), Time Estimation (TIMEST)[1], and Effortless Experiencing in the Ganzfeld (EFFORT)[1] for Total Sample (N=60)

	GANZQL	GANZALT	ALTPERC	GANZVIS	TIMEST	EFFORT
SRANK	-.03	+.11	+.04	+.11	+.13	-.19^
SZSCORE	**-.05**	**+.14**	**-.00**	**+.06**	**+.12**	**-.23***
ERANK	-.15	+.09	+.11	+.07	+.09	-.09
EZSCORE	-.14	+.15	+.11	+.12	+.03	-.06

[1] SRANK, ERANK, TIMEST and EFFORT are flipped so that all predicted correlations are positive.
^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Table 14

Spearman Correlations between Psi Measures[1] and State Measures: Ganzfeld Quality (GANZQL), Altered State Measures (GANZALT, ALTPERC), Amount of Imagery in Ganzfeld (GANZVIS), Time Estimation (TIMEST)[1], and Effortless Experiencing in the Ganzfeld (EFFORT)[1] for Total Sample (N=60)

	GANZQL	GANZALT	ALTPERC	GANZVIS	TIMEST	EFFORT
SRANK	-.06	+.05	+.02	+.09	+.15	-.19^
SZSCORE	**-.09**	**+.06**	**-.03**	**+.03**	**+.15**	**-.26****
ERANK	-.19^	+.04	+.09	+.03	+.13	-.12
EZSCORE	-.21*	+.08	+.08	+.09	+.08	-.07

[1] SRANK, ERANK, TIMEST and EFFORT are flipped so that all predicted correlations are positive.
^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Hypothesis 5: Psi success and state measures

As can be seen in tables 13 and 14, no correlations between psi success and state measures were significant in the predicted direction, but EFFORT is correlated with psi success in the direction opposite to that hypothesized, that is, the more effort, the more psi success. For Spearman correlations, which some would argue might be more appropriate for the square distributions of the psi data, the negative correlation between EFFORT and subject psi is significant (r_S=-.26, p<.05, 2-tailed), and for experimenter judging, Ganzfeld Quality is suggestively negatively correlated with psi, contrary to prediction (r_S=-.218, p<.1, 2-tailed).

Hypothesis 6: Hypnotizability with Absorption and Gestalt Completion

Tables 15 and 16 show correlations between hypnotizability and both Absorption and Gestalt Completion. As can be seen, neither correlates significantly with hypnotizability for the total sample, contrary to prediction. Thus Hypothesis 6 is not supported. Absorption, however, is suggestively positively related to hypnotizability with rank order correlation (Spearman r_S=+.17, p<.1).

A further look at various cuts of the data reveals the odd pattern that for low hypnotizables, absorption is significantly correlated with hypnotizability (Pearson r=+.39, 31df, p=.012), with males and females each sharing a correlation of Pearson r=+.40. High hypnotizables, however show a non-significant negative correlation between absorption and hypnotizability for both sexes. The difference in correlations of absorption with hypnotizability between low and high hypnotizables is significant (z=2.56, p<.02, 2-tailed).

Gestalt Completion appears to bear little relation to hypnotizability for all cuts of the data except for high-hypnotizable males (Pearson's

r=+.50, 12df, p<.05; Spearman r_s=+.52, p<.03) and high-hypnotizable females, for whom the relationship between hypnotizability and Gestalt Completion is significantly negative (Pearson's r=-.46, 11df, p<.06; Spearman r_s=-.60, p<.02). The difference between the correlations of hypnotizability and Gestalt Completion for high hypnotizable males and females is significant (z=2.3865, p<.02, 2-tailed).

Restricting the sample to right-handed-only (N=51) does not strengthen the correlations, as can be seen in Table 17.

Table 15

Pearson Correlations between Hypnotizability and Absorption(ABS) and between Hypnotizability and Gestalt Completion (GC)

		Absorption		Gestalt Completion	
Sample	N	r	p	r	p
Total Sample	60	+.15	ns	+.04	ns
Male	30	+.14	ns	+.17	ns
Female	30	+.13	ns	-.09	ns
Low Hypnotizable	33	+.39*	.012	-.10	ns
Male Lo Hypn	16	+.40	.061	-.10	ns
Female Lo Hypn	17	+.40	.057	-.08	ns
High Hypnotizable	27	-.28	ns	+.09	ns
Male Hi Hypn	14	-.38	.089	+.50*	.035
Female Hi Hypn	13	-.30	ns	-.46^	.055

Table 16

Spearman Correlations between Hypnotizability and Absorption(ABS) and between Hypnotizability and Gestalt Completion (GC)

Sample	N	Absorption r_s	Absorption p	Gestalt Completion r_s	Gestalt Completion p
Total Sample	60	+.17	.094	-.00	ns
Male	30	+.20	ns	+.14	ns
Female	30	+.13	ns	-.13	ns
Low Hypnotizable	33	+.35*	.024	-.12	ns
Male Lo Hypn	16	+.25	ns	-.14	ns
Female Lo Hypn	17	+.39	.059	-.09	ns
High Hypnotizable	27	-.24	ns	+.03	ns
Male Hi Hypn	14	-.27	ns	+.52*	.030
Female Hi Hypn	13	-.36	ns	-.60**	.015

Table 17

Pearson Correlations between Hypnotizability and Absorption(ABS) and between Hypnotizability and Gestalt Completion (GC) for Various Cuts of Right Handed Subjects

Sample	N	Absorption r	Absorption p	Gestalt Completion r	Gestalt Completion p
Total Sample	51	+.15	ns	+.04	ns
Male	25	+.13	ns	+.14	ns
Female	26	+.14	ns	-.05	ns
Low Hypnotizable	27	+.38*	.027	-.04	ns
Male Lo Hypn	12	+.39	ns	-.10	ns
Female Lo Hypn	15	+.36	.095	-.06	ns
High Hypnotizable	24	-.28	.093	+.11	ns
Male Hi Hypn	13	-.35	ns	+.48*	.04
Female Hi Hypn	11	-.38	ns	-.38	ns

Question 2: Effortlessness, Creativity, Hypnotizability, and Psi

As expected, Self-Report of Creativity correlates significantly with hypnotizability. This is true whether hypnotizability scores are directly correlated (Pearson r=+.25, p<.05, 2-tailed), or whether the binary coding of hypnotizability (HILOHP) is used (Pearson r=+.33, 58df, p<.008, 2-tailed).

Effortless experiencing in the Ganzfeld (EFFORT) does not relate significantly to either hypnotizability (Pearson r=-.04), HILOHP (Pearson r=+.07), or Self-Report of Creativity (Pearson r=+.13). Although there is a suggestive positive correlation between EFFORT and the composite mean z-score of Creativity (CREATZ), with Pearson r=+.19, p<.1, 1-tailed, it results from a significant relationship between EFFORT and IJ (Pearson r=+.35, p<.006, 2-tailed). However, both IJ and CREATZ are unrelated to hypnotizability (Pearson r=-.09 and r=+.00, respectively). Thus EFFORT does not explain the shared variance of hypnotizability and creativity for the total sample, and partialling out the effect of EFFORT leaves the correlations between hypnotizability and creativity virtually unchanged.

Partialling out the effect of EFFORT leaves the correlations between every measure of creativity or hypnotizability with psi success (SZSCORE) virtually unchanged.

Sex Differences in the Relationship of Creativity and Hypnotizability to Psi Success with Effort Controlled

For males, correlations between hypnotizability and creativity are non-significant for both Self-Report (Pearson r=+.13) and CREATZ (r=-.15), as are correlations of hypnotizability as a binary split (HILOHP) with Self-Report (r=+.22) and with CREATZ (r=-.15). For males, partial correlations of hypnotizability with creativity with the effect of EFFORT controlled remain essentially unchanged.

Females, on the other hand, show significant or suggestive positive correlations between hypnotizability and creativity for both versions of each measure, and partialling out the effect of EFFORT attenuates the correlations, as follows: for hypnotizability with Self-Report (SR), the zero-order partial is r=+.429, 28df, p=.009, 1-tailed, and controlling for EFFORT, $r_{hSR,E}$=+.30, 27df, p<.06, 1-tailed; for hypnotizability with CREATZ, r=+.28, 28df, p=.065, 1-tailed, and with EFFORT controlled $r_{hC,E}$=+.13, 27df, ns; for HILOHP with SR, r=+.45, 28df, p=.006, 1-tailed, and removing the effect of EFFORT, $r_{HSR,E}$=+.35, 27df, p<.04, 1-tailed; for HILOHP with CREATZ, r=+.34, 28df, p<.04, 1-tailed, and removing EFFORT leaves $r_{HC,E}$=+.22, 27df, ns. Thus, removing EFFORT removes much but not all of the strength of the positive relationship between hypnotizability and creativity for females. This is in line with prediction.

For females, all measures of creativity and hypnotizability appear unrelated to psi success, with correlations close to zero. However, for females, EFFORT is significantly negatively correlated with SZSCORE (Pearson r=-.33, p<.04, 1-tailed) and is significantly positively correlated with all hypnotizability and creativity measures except BW (r varies between +.3 and +.46 for each). These relationships suggest that, for females, EFFORT (which might be considered a measure of cognitive strategy in the Ganzfeld) may be an intervening variable that is masking positive relationships between hypnotizability and psi and between creativity and psi.

Partialling out the effect of EFFORT from correlations of the measures of hypnotizability and creativity with psi success (SZSCORE) for females reveals a significant positive relationship between hypnotizability and psi success ($r_{hP,E}$=+.32, 27df, p<.05), and a suggestive positive

relationship between CREATZ and psi success ($r_{CP,E}$=+.28, 27df, p<.08). Although not significant, females' partial correlations between psi success and Self-Report of Creativity, Independence of Judgement, and Tolerance for Ambiguity are all elevated with EFFORT removed, from correlations close to zero to +.18, +.26, and +.16, respectively.

For females, EFFORT appears to partially explain the positive relationship between creativity and hypnotizability, as was expected. However, rather than being the hypothesized common element that is shared by creativity, hypnotizability, and psi success, EFFORT appears to be a confounding intervening variable that masks positive relationships between psi success and hypnotizability and to a lesser extent, between psi success and creativity.

Question 3: Good or Bad Moods Correlated with Psi

The results of experimenter pre-session good and bad moods will be discussed below. A fuller discussion of all mood data collected can be found in Appendix H. The 15 mood adjectives were collapsed into eight factors (see Appendix H for details) which were designated good moods (Surgency and Elation, and maybe Activation) or bad moods (Sadness and Anxiety, and maybe Aggression, Skepticism, and Fatigue). Conservative and liberal combinations of factors to predict psi directionality were constructed before examining the data as follows:

Conservative (using only the most likely factors): Goodmood is defined as (Surgency + Elation)/2. Badmood is defined as (Sadness + Anxiety)/2. Psimood = Goodmood - Badmood.

Liberal (using all factors): Goodmood2 is defined as (Activation + Surgency + Elation)/3. Badmood2 is defined as (Sadness + Anxiety + Aggression + Skepticism + Fatigue)/5. Psimood2 = Goodmood2 - Badmood2.

Table 18 shows the Pearson correlations between psi measures and experimenter "good- bad- and psi-" mood composite measures constructed in two ways. All experimenter mood composite measures correlate suggestively or significantly in the predicted directions with subject psi z-scores.

Table 18

Pearson Correlations of Psi Measures[1] with Conservative and with Liberal "Good- Bad- and Psi-Mood" Composites for Experimenter Moods (N = 60)

	Conservative (4 factors)			Liberal (All factors)		
	GoodMood	BadMood	PsiMood	GoodMood2	BadMood2	PsiMood2
SRank	+.13	-.12	+.15	+.14	-.13	+.15
SZScore	+.17^	-.22*	+.23*	+.17^	-.17^	+.19^
ERank	+.07	-.26**	+.18^	+.12	-.10	+.12
EZScore	+.08	-.19^	+.15	+.11	-.09	+.11

[1] SRANK and ERANK have been flipped so that all predicted correlations are positive.
^ P<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Sex Differences in Correlations between Experimenter Mood and Psi

An examination of each sex separately reveals the predicted correlations come almost exclusively from sessions with female subjects, as can be seen in Tables 19 and 20. (See Appendix H for details). For females, (Table 19) both methods of constructing good-, bad-, and psi-moods correlate with all psi measures in the predicted directions. Both constructions of Psimood correlate suggestively positively with SZSCORE for females. For males, on the other hand, (Table 20) both methods of constructing good-, bad-, and psi-moods are negligeably related to psi measures.

Table 19

Pearson Correlations between Psi Measures[1] and Conservative and Liberal "Good- Bad- and Psi-Mood" Composites for Experimenter Moods for Females (N = 30)

	Conservative (4 factors)			Liberal (All factors)		
	Goodmood	Badmood	Psimood	Goodmood2	Badmood2	Psimood2
Srank	+.13	-.05	+.11	+.22	-.15	+.21
Szscore	**+.21**	**-.20**	**+.24^**	**+.27^**	**-.22**	**+.27^**
Erank	+.12	-.24	+.20	+.21	-.15	+.21
Ezscore	+.10	-.15	+.15	+.20	-.14	+.19

[1] SRANK and ERANK have been flipped so that all predicted correlations are positive.
^ P<.1, 1-tailed.

Table 20

Pearson Correlations between Psi Measures[1]
and Conservative and Liberal "Good- Bad- and Psi-Mood" Composites
for Experimenter Moods for Males (N = 30)

	Conservative (4 factors)			Liberal (All factors)		
	GoodMood	BadMood	PsiMood	GoodMood2	BadMood2	PsiMood2
SRank	+.08	-.06	+.09	+.03	+.00	+.02
SZScore	**+.08**	**-.17**	**+.13**	**+.04**	**-.00**	**+.03**
ERank	-.04	-.18	+.03	-.03	+.10	-.06
EZScore	-.01	-.08	+.01	-.05	+.13	-.08

[1] SRANK and ERANK have been flipped so that all predicted correlations are positive.

CHAPTER VIII

SUPPLEMENTARY ANALYSES

The Components of the Effortlessness Scale

Because the effortlessness scale (EFFORT) correlated significantly with psi in the direction opposite to expectation with regard to the two assumptions underlying this paper, namely that effortlessness indicates openness to unconscious material and openness to unconscious material facilitates psi detection, the scale was broken into its five component questions (see Appendix F, questions 6-10).

Intercorrelations between the five measures (Table 21) indicate that INTERP and CONTROL are independent, while HAPPEN and CONTROL are highly related, suggesting at least two independent factors are operating in the EFFORT scale.

A factor analysis of the five EFFORT components reveals a two-factor structure accounting for 64.6% of the variance, with high loadings of CONTROL and HAPPEN on Factor 1, and INTERP on Factor 2. EFFORTIM and DETAIL load positively on both factors, however, with slightly heavier weights on the interpretation factor than on the control factor. Due to the importance of INTERP, CONTROL, and HAPPEN to psi success, it was decided that examining results of the effects of the separate EFFORT components would be more illuminating than examining the two resulting EFFORT factors which are obscured by the spread of EFFORTIM and DETAIL.

Table 21

Pearson Intercorrelations among EFFORT Components: Effortlessness of Next Image (EFFORTIM), Detail Immediate (DETAIL), Interpretation of Images Immediate (INTERP), Control of Next Image (CONTROL), and Ganzfeld Experience "Just Happened" (HAPPEN)

	DETAIL	INTERP	CONTROL	HAPPEN
EFFORTIM	+.33***	+.29**	+.31**	+.24*
DETAIL		+.21*	+.30**	+.16
INTERP			-.06	+.25*
CONTROL				+.59****

* p<.05, 1-tailed.
** p<.05, 2-tailed.
*** p<.01, 2-tailed.
**** p<.001, 2-tailed.

As can be seen in Tables 22 and 23, showing the Spearman and Pearson correlations, respectively, the significant negative correlation between EFFORT and psi comes mainly from the last two questions, and most strongly from HAPPEN, which asked whether the imagery in the Ganzfeld "just happened" or whether one "made it happen" on a 5-point scale. Scores ranged from "just happened" to the midpoint of the scale, a 3 point range. Thus no subject in the sample felt strongly that they made the experience happen, the question is whether they felt it "just happened" or whether they had any sense of internal effort at some time while it happened.

Table 22

Spearman Correlations between Psi Measures and Components of the Effortlessness Scale for All Subjects (N=60)

	EFFORTIM	DETAIL	INTERP	CONTROL	HAPPEN
SRANK	+.07	-.07	-.21^	-.20^	-.35***
SZSCORE	**+.03**	**-.05**	**-.21^**	**-.33*****	**-.43******
ERANK	+.05	-.07	+.05	-.24*	-.26**
EZSCORE	+.09	-.01	+.02	-.22*	-.26**

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.
*** p<.01, 2-tailed.
**** p<.001, 2-tailed.

Table 23

Pearson Correlations between Psi Measures and Components of the Effortlessness Scale for All Subjects (N=60)

	EFFORTIM	DETAIL	INTERP	CONTROL	HAPPEN
SRANK	+.07	-.05	-.22*	-.18^	-.32**
SZSCORE	**+.04**	**-.03**	**-.21***	**-.28****	**-.40*****
ERANK	+.08	-.04	+.03	-.23*	-.24*
EZSCORE	+.12	+.00	-.01	-.18^	-.23*

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.
*** p<.01, 2-tailed.

Dichotomizing the HAPPEN variable with scores on or off the "just happened" endpoint continues to show a relationship with psi. A Mann-Whitney U Test comparing scores on or off the endpoint of the HAPPEN scale with subject hits versus misses in the psi task is significant (U=281, z=-2.7389, p=.006), as are Chi-Square Tests of the distribution of scores on or off the endpoint of the HAPPEN scale with subject hits versus misses in the

psi task for both subject and experimenter judging (X^2=8.3374, 1df, p<.004, X^2=9.7611, 1df, p<.002, respectively, after Yates Correction). Pearson r's with this binary coding of HAPPEN and psi are significant for both subject and experimenter judging (r=-.4062, 58df, p=.0006, and r=-.4367, 58df, p=.0002, respectively).

An examination of various cuts of the sample shows the HAPPEN measure is negatively related to psi for all subgroups (Table 24 shows the rank-order correlations). When the sample is cut by sex and high-low hypnotizability, the relationship between SZSCORE and HAPPEN is highly significant for three of the four groups; low-hypnotizable males and females (Spearman r_s=-.60, 14 df, and r_s=-.59, 15 df, respectively, each p<.05, 2-tailed), and high-hypnotizable females (Spearman r_s=-.76, 11 df, p<.01, 2-tailed). The effect is attenuated in high-hypnotizable males, but the direction is the same. Another small sample, experienced Ganzfeld subjects, also displays the same significant relationship (Spearman r_s=-.59, 13 df, p<.05, 2-tailed) as does its complement, the 45 naive subjects (Spearman r_s=-.37, p<.05, 2-tailed).

Table 24

Spearman Correlations between HAPPEN[1] and Psi Measures[1]

SAMPLE	N	SRANK	SZSCORE	ERANK	EZSCORE
Total	60	-.35***	-.43****	-.26**	-.26**
Good Ss	49	-.39***	-.48****	-.30**	-.28
Experienced	15	-.56**	-.59**	-.04	-.18
Naive	45	-.27	-.37**	-.34**	-.28
Male	30	-.28	-.35*	-.37**	-.27
Female	30	-.49***	-.63*****	-.17	-.30
Low Hypn	33	-.30	-.43**	-.13	-.13
Male Low	16	-.52**	-.60**	-.42	-.35
Female Low	17	-.33	-.59**	-.01	-.11
High Hypn	27	-.40**	-.42**	-.43**	-.41**
Male High	14	-.18	-.25	-.47	-.35
Female High	13	-.88*****	-.76***	-.40	-.54
Right Handed	51	-.41***	-.50*****	-.27	-.25
Male Rt Hand	25	-.21	-.30	-.29	-.16
Female Rt Hd	26	-.66*****	-.78*****	-.24	-.34

1 HAPPEN and Psi RANKs have been flipped so that all predicted correlations should be positive.
*p<.05, 1-tailed.
** p<.05, 2-tailed.
*** p<.01, 2-tailed.
**** p<.001, 2-tailed.

As can be seen in Table 25, Pearson correlations of HAPPEN and of the variable collapsed to a binary on-or-off-the-endpoint scale (HAPBIN) with subject psi z-scores (SZSCORE) continue to show a strong negative relationship for all groups except high hypnotizable males.

Table 25
Pearson Correlations between Subject Psi Scores (SZSCORE) and HAPPEN and the Binary Happen Measure (HAPBIN)

SAMPLE	N	HAPPEN	HAPBIN
Total	60	-.40***	-.43****
Experienced	15	-.51**	-.67***
Naive	45	-.36**	-.33**
Male	30	-.29^	-.20
Female	30	-.54***	-.69****
Low Hypn	33	-.37**	-.51***
Male Low	16	-.49*	-.49*
Female Low	17	-.54**	-.69***
High Hypn	27	-.44**	-.34*
Male High	14	-.28	-.01
Female High	13	-.75***	-.75***

[1] HAPPEN and HAPBIN have been flipped so that all predicted correlations should be positive.
^p<.1, 1-tailed.
*p<.05, 1-tailed.
** p<.05, 2-tailed.
*** p<.01, 2-tailed.
**** p<.001, 2-tailed.

Tables 26 and 27 show the Spearman correlations between the Effortlessness components and psi measures for males and females. For females, ease of interpretation of images (INTERP) was significantly negatively related to psi success for subject judging (although independent in experimenter judging of the females), but, for males, it tended to relate positively with psi success as was originally predicted. CONTROL and HAPPEN relate significantly negatively with psi success for both sexes, with each of equal importance for males, but HAPPEN outweighing CONTROL in the strength of the relationship for females.

Table 26

Spearman Correlations between Psi Measures and Components of the Effortlessness Scale for Males (N=30)

	EFFORTIM	DETAIL	INTERP	CONTROL	HAPPEN
SRANK	-.07	+.00	+.10	-.29^	-.28^
SZSCORE	-.08	+.03	+.13	-.37**	-.35*
ERANK	-.06	+.04	+.31*	-.38**	-.37**
EZSCORE	-.00	+.15	+.24	-.28^	-.27^

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Table 27

Spearman Correlations between Psi Measures and Components of the Effortlessness Scale for Females (N=30)

	EFFORTIM	DETAIL	INTERP	CONTROL	HAPPEN
SRANK	+.17	-.06	-.41**	-.13	-.49***
SZSCORE	+.05	-.03	-.49***	-.35*	-.63****
ERANK	+.15	-.05	-.03	-.10	-.17
EZSCORE	+.15	-.05	-.05	-.11	-.30^

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.
*** p<.01, 2-tailed.
**** p<.001, 2-tailed.

Resistance to hypnosis and psi

Table 28 shows the pattern of psi success for those with no resistance to hypnosis (Positive in hypnosis) versus those who showed some form of conflict or resistance (Negative in hypnosis) by inhibiting appropriate behavioral responses that would have indicated, for scoring purposes, positive subjective experiences that they later reported feeling,

or by not responding to instructions during the hypnotizability test, causing some items to be unscorable.

As can be seen, "negativity" in the hypnotizability test is associated with negative psi scores for both subject and experimenter judging and a "positive" response to hypnotizability (that is, no conflict, whether items are passed or failed) is associated with more positive (or, for females, less negative) psi scores for both sets of judgings. However, this difference is weak. T-tests comparing psi-rank means of the positive and negative groups are not significant for subject judging and are only marginally suggestive for experimenter judging (for subject ranks, $t=-1.54$, 58 df, ns; for experimenter rank, $t=-1.67$, 58 df, $p=.1$, 2-tailed).

More than half of female subjects and less than a third of the male subjects showed some resistance to the hypnosis measure. A Chi-Square test of sex by resistance to hypnosis is suggestive ($X^2=3.326$, 1 df, $p<.07$, after Yate's Correction, with Phi equivalent to Pearson's $r=+.27$, $p<.02$).

Among the 33 low hypnotizables, males and females showed an almost identical distribution, with about a third of each showing resistance to hypnosis and two-thirds responding without conflict. However, for the 27 high hypnotizables, 11 out of 13 females and only 4 out of 14 males showed some resistance to hypnosis. For the high hypnotizables, a Chi-Square test of sex by resistance to hypnosis is significant ($X^2=6.455$, 1df, $p<.02$, after Yate's Correction, with Pearson's $r=+.56$, $p=.001$). Thus resistance to hypnosis appears to be a possible relevant variable with respect to the low psi scores of females and, in particular, high hypnotizable females.

Table 28

PSI RANKS: SUBJECT JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p
Neg in Hypn	26	3	12%	-1.5852	ns	9	35%	-1.4910	ns
Pos in Hypn	34	9	27%	+0.1980	ns	19	56%	+0.3835	ns
Female Neg	17	1	6%	-1.8204	<.05*	4	24%	-1.9524	<.05*
Pos	13	2	15%	-0.8006	ns	6	46%	0.0000	ns
Male Neg	9	2	22%	-0.1925	ns	5	56%	0.0000	ns
Pos	21	7	33%	+.0.8819	ns	13	62%	+0.5855	ns

PSI RANKS: EXPERIMENTER JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p
Neg in Hypn	26	6	23%	-0.2265	ns	9	35%	-0.9648	ns
Pos in Hypn	34	12	35%	+1.3862	ns	20	59%	+1.3038	ns
Female Neg	17	4	24%	-0.1400	ns	5	29%	-1.0847	ns
Pos	13	4	31%	+0.4804	ns	6	46%	0.0000	ns
Male Neg	9	2	22%	-0.1926	ns	4	44%	0.0000	ns
Pos	21	8	38%	+1.3859	ns	14	67%	+1.5614	ns

*1-tailed.

Resistance and Psi

The 11 subjects with "irregular" sessions and the 26 subjects who showed any conflict or resistance during the hypnotizability test were combined. Because of overlap (irregular sessions included irregularities in hypnosis, such as falling asleep), there were 31 subjects showing what

could be considered "resistance" to some aspect of the experiment compared to the 29 subjects who were both "Good" and "Positive in hypnosis" (No Resistance).

Table 29 shows the psi results for subjects with and without "resistance" as defined above. Subjects with "resistance" (n=31) avoided choosing the target significantly often with only 3 direct hits (z=-1.97, p<.05, 2-tailed). Experimenter judging was also negative for the "resistance" group, but not significantly. The subjects with no signs of resistance scored non-significantly above chance with subject judging. For experimenter judging, eliminating subjects with resistance to aspects of the experiment leaves a 41% direct hit rate in the remaining 29 "good subject" and "positive in hypnosis" group, which is significant, z=+2.037, p<.05, 2-tailed. Although post-hoc, this tends to support the original psi hypothesis.

Table 29

PSI RANKS: SUBJECT JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p
Resistance	31	3	9.7%	-1.9702	<.05**	12	38.7%	-1.4458	ns
No Resistance	29	9	31.0%	+0.7505	ns	16	55.2%	+0.4983	ns

**2-tailed.

PSI RANKS: EXPERIMENTER JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p
Resistance	31	6	19.4%	-0.7259	ns	12	38.7%	-0.9639	ns
No Resistance	29	12	41.4%	+2.0370	<.042**	17	58.6%	+1.4948	ns

**2-tailed.

A Pearson correlation of Resistance by psi (SZSCORE) is significant (r=+.23, 58df, p<.04, 1-tailed). However, Resistance also correlates significantly with Sex (Pearson r=+.30, 58df, p<.02, 2-tailed). Twenty females compared to 11 males showed some resistance during the experiment, while 19 males and 10 females had no resistance. A Chi-Square Test of Resistance by Sex is significant (X^2= 4.2714, 1df, p<.04, after Yates Correction). This may also help explain the curious psi-missing by females in this study.

Resistance also correlates with EFFORT (Pearson r=-.22, 58df, p<.05, 1-tailed), due to the relationships with the components DETAIL (Pearson r=-.23, 58df, p<.04, 1-tailed) and HAPPEN (Pearson r=-.28, 58df, p<.02, 2-tailed). That is, those subjects with "resistance" tended to "let it happen."

Factor Analysis of State, Trait, and Effort Variables

The 9 trait variables of Table 11, the 5 state variables of Table 13 (excluding EFFORT), and the 5 effortlessness questions of Table 22 were factor analysed using a Principal-Components Analysis and Varimax Rotation, yielding 7 factors accounting for 68.8% of the variance. The loadings of all 19 variables on each final rotated factor are shown in Table 30.

As can be seen, Factor 1 (CREAT) loads highly on the creativity measures, most strongly on Independence of Judgement, Self-Report, and Tolerance for Ambiguity. The Barron-Welsh Art Scale and Dream Quality are more weakly represented.

Factor 2 (ALTGNZ) loads highly on measures of Altered State in the Ganzfeld and more weakly on Effort to get imagery, flipped so that the positive sign means no effort was required.

Table 30

Rotated Factor Matrix

	F1	F2	F3	F4	F5	F6	F7
	CREAT	ALTGNZ	HAPABS	AMTPP	DRMQL	HYPN	GCTIME
EIGENVALUE	3.499	2.255	2.133	1.491	1.304	1.232	1.164
PCT OF VAR	18.4	11.9	11.2	7.8	6.9	6.5	6.1
ABS	+.2457	+.0849	**+.4266**	-.2490	+.0189	+.2948	-.0446
GC	-.1520	+.1202	+.2200	-.0614	+.1633	-.1075	**+.7996**
BW	**+.3985**	+.1301	-.1623	+.0857	+.2726	**-.4040**	+.1849
SR	**+.7468**	+.2840	+.0718	-.0997	+.0134	+.2106	-.0062
IJ	**+.8143**	+.0109	+.0058	+.2648	-.1190	-.1352	-.1367
TA	**+.7434**	-.0706	+.0326	+.0701	+.0608	+.0102	+.1014
HYPN	+.0226	+.0868	+.0220	+.0827	+.1494	**+.8661**	+.1008
FRQDRM	+.1741	+.1255	-.0708	**+.6373**	+.1918	+.0867	+.2540
DRMQL	**+.3506**	-.1600	-.0706	+.1155	**+.7635**	-.0412	+.0662
TIMEST	-.2556	-.0772	+.1932	-.1467	+.1381	-.2631	**-.6048**
GANZALT	-.0103	**+.8077**	-.0010	-.0023	+.0594	-.1991	+.1255
ALTPERC	+.1227	**+.6714**	+.0853	+.0915	-.2699	+.1958	+.1208
GANZQL	+.0174	**+.7427**	+.1836	+.1193	**+.3427**	+.2575	-.0032
GANZVIS	+.2548	+.2931	-.2300	**+.6090**	-.2161	+.3041	-.0234
EFFORTIM	+.2530	**+.4782**	+.2311	**+.4593**	-.3319	-.0298	-.2649
DETAIL	-.0489	-.0536	+.2626	**+.7690**	-.0815	-.1089	-.0912
INTERP	+.2962	-.1856	+.0331	+.2087	**-.7422**	-.1721	-.0168
CONTROL	-.0676	+.1930	**+.8545**	+.2224	+.1358	+.0779	-.0854
HAPPEN	+.0487	+.0081	**+.8023**	+.0140	**-.3394**	-.0937	+.2077

Factor 3 (HAPABS) might be called External Locus of Control of Stream-of-Consciousness, where loadings are high on the HAPPEN measure (flipped from the questionnaire so that positive means Ganzfeld imagery "just happened"), the CONTROL measure (positive means there was no perceived control of imagery), and there is a moderately positive loading on the measure of Absorption. If one perceives being absorbed in movies, books, music, or daydreams as having attention passively captured by the (external or internal) stimulus, so that there is no perceived control of attention, then the positive Absorption loading on this factor makes sense.

Factor 4 (AMTPP) might be called Amount of primary process, with positive loadings on Detail (details there immediately), Frequency of dream recall, and Amount of visual imagery in the Ganzfeld.

Factor 5 (DRMQL) might be called Uncensored primary process, with high loadings on Dream Quality and on Interpretation of images not immediate, with low moderate loadings on Ganzfeld Quality, "Made it happen", and Effort exerted to perceive the next image. That is, Factor 5 loads on bizarre, chaotic, irrational dreams recalled (morning recall), images in the Ganzfeld not always in an interpretable state, and some slight conscious orientation to making imagery and experiences in the Ganzfeld happen. One might think of this factor as the capacity to tolerate uncensored unconscious information that is not repressed, modified, or distorted to fit into a preconceived framework (such as a reality orientation) before entering consciousness.

The indication that "effort" may be involved in allowing unconscious images into consciousness without an interpretive framework suggests that, perhaps, turning off the censor or the interpretative framework takes some sort of internal "work." Perhaps there is a need for the illusion of continual mastery and understanding of one's internal world, fitting all contents of attention into an interpretive framework, a need to control (censor, repress) disturbing or unintegrated aspects of the unconscious, to remain "in control," and perhaps this needs to be opposed if one desires to allow a state of chaos that must preceed the emergence of any totally new structure. One might speculate that those high on this factor have a flexible rather than rigid ego structure, and perhaps are oriented to creative work, change, or growth rather than maintaining a fixed world view or personality structure.

Factor 6 (HYPN) is dominated by the hypnotizability measure, and Factor 7 (GCTIME) loads positively on Gestalt Completion, and negatively on Time estimation (flipped, so that time contraction is positive, and negative means time is not contracted).

Table 31 shows the Pearson correlations between the seven factors and the psi measures for all 60 subjects. Correlations using other cuts of the data can be examined in Appendix I.

Table 31

Pearson Correlations between Seven Factors (PC and Varimax Rotation) and Psi Measures for All Subjects (N=60)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	+.02	+.13	-.30***	+.05	+.20^	-.07	-.20^
SZSCORE	-.00	+.10	-.38****	+.09	+.25**	-.15	-.13
ERANK	+.01	+.09	-.24*	-.04	-.05	-.08	-.04
EZSCORE	+.07	+.12	-.22*	-.01	-.03	-.10	-.05

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.
*** p<.02, 2-tailed.
**** p=.002, 2-tailed.

As can be seen, F3 (HAPABS) is significantly related to subject psi scoring (Pearson r=-.38, 58df, p=.002, 2-tailed), and more weakly related to experimenter psi scoring, where external locus of control of attention leads to psi-missing and internal locus of control leads to psi-hitting. F5 (DRMQL) is significantly related to subject psi scoring in the expected positive direction (Pearson r=+.25, p<.05, 2-tailed), but is unrelated to experimenter judging.

CHAPTER VII

DISCUSSION

This research was designed to cast a wide exploratory net in the hope of elucidating interrelations among variables associated with hypnotizability, creativity, and successful psi functioning. Speculations were stated as 18 hypotheses to be formally tested. One of these was untestable. There was suggestive support for only one of 12 testable formal hypotheses concerning psi. Psi scoring was not significant overall. Only dream quality correlated significantly positively with psi success as predicted. Effortless experiencing in the Ganzfeld correlated significantly negatively with psi, contrary to prediction. There was suggestive support for 2 of the 5 formal hypotheses concerning correlates of hypnotizability. Creativity correlated marginally significantly with hypnotizability as predicted only for the Self-Report measure (Pearson $r=+.26$, $p<.05$), but not for the composite creativity measure. For females, Self-Report correlated significantly with hypnotizability as predicted (Pearson $r=+.43$, $p<.009$), and the creativity composite mean z-score correlated suggestively with hypnotizability ($r=+.28$, $p<.07$). In short, formal findings were null after correction for selection.

One can conclude nothing about the reality of psychic interactions from the data obtained in this experiment. One can add the null results obtained here to the list of unsuccessful Ganzfeld experiments listed in Table 2 (Appendix A). However, one can take a what-if approach to the psi hypothesis, especially considering the converging evidence of Table 1 (Appendix A), which is negligibly weakened by a single addition to Table 2. .Exploratory measures of mood, unanticipated evidence of resistance to

instructions, subdivisions of subjects, and a breakdown of the scale that correlated with psi success opposite to prediction yielded interesting post-hoc findings. If one takes a what-if attitude, some of these findings seem to clarify why overall results were null. Further examination of the data from this perspective reveals internally consistent patterns and ideas for future research that question some of the basic assumptions underlying the formal hypotheses, in particular, that psi success depends more on unconscious than conscious processes. I will discuss and speculate about these patterns in the data, recognizing the risk of type I error, but proposing consistent interpretations of the results which suggest explanations of the findings and which generate ideas for future research. The speculations that follow, based as they are on post-hoc analyses, are, of course, to be considered highly tentative. Whether or not a "perhaps" appears with a sentence, the sentence should be read as if some such tentative word had been written.

This study began with the premise that psi was an unconscious process and therefore open access to the unconscious ought to be of use in detecting it. The implicit assumption was that psi interactions are fairly common, but can be blocked by inhibitions of unconscious material. Thus those least blocked should demonstrate the most psi ability. One of the forgotten questions was how the conscious orientation to the psi task might focus on the information desired, rather than being psychically flooded by all the irrelevant information in the universe, or, at least, by a finite but still confusing subset of it all. If it is possible to acquire information psychically, how does one get information about the target and avoid getting just as much information about other pictures in the pack? The most strikingly consistent post-hoc finding of the present study suggests an

answer to this unasked question. The HAPPEN component of the EFFORT scale may be a measure of a conscious component steering the stream of consciousness toward relevant information.

In retrospect, one might postulate three components to success in the psi task, namely, 1) openness to the emergence of unconscious material in consciousness (which this experiment attempted to tap with the trait measures employed, most successfully with Dream Quality); 2) an orientation to focus on the particular information required (which might be tapped by the HAPPEN scale); and 3) the ability to recognize the connections between the mentation and the target (judging ability), which may involve both ease with primary process associations, and absence of emotional resistance. The first component without the second may lead to staying in personal preoccupations, or to undirected psi, which may alight on compelling control pictures, or go further afield. The first and second without the third may lead to low psi detection with subject judging, but higher psi detection with independent trained judging.

Lack of repression: an unconscious component to psi success

Of the measures planned to reflect lack of repression, the best seems to have been the Dream Quality score. High scores indicate home recall of bizarre and unrealistic dreams (i. e., little repression). A positive relationship was hypothesized between psi success and such lack of repression, and this is supported by the data for the entire sample, where the correlation is marginally significant. It is also supported by the uniformly positive correlations through all cuts, as can be seen in Table 32.

Table 32

Pearson (r) Correlations between Dream Quality and Psi (SZSCORE)

Cuts	All	M	F	PG	NG	L	H	ML	FL	MH	FH
n	60	30	30	15	45	33	27	16	17	13	14
r	+.25**	.24^	+.26^	+.42^	+.18	+.23^	+.32*	+.04	+.36^	+.46*	+.11

^p<.1, 1-tailed.
*p<.05, 1-tailed.
**P≤.05,2-tailed.

It might be noted that the relationship is strongest for those with previous Ganzfeld experience (PG)(r=+.42), high hypnotizable males (MH)(r=+.46), and low hypnotizable females (FL)(r=+.36). These are also the only three groups that show below-chance psi scoring in experimenter judging (see z-scores of direct hits, Table 4, p. 83, and Table 10, p. 93). The correlation is close to zero for low hypnotizable males (ML), the group with significant psi-hitting in experimenter judging. Thus Dream Quality relates positively to psi success most strongly in subgroups where there is more failure than success at the psi task. This variable may be separating psi-missing from psi-hitting in a manner perhaps similar to the S.I.I.; that is, for some, an unconscious blocking mechanism may censor both dream imaginativeness and target information. (Dream recall frequency was not significantly related to psi success in the total sample, but also shows a somewhat similar pattern with stronger positive correlations with psi in subgroups that psi-missed).

Making it happen: the conscious component

When the Effortlessness Scale (EFFORT) is broken down into its five component questions, the most striking relationship with psi emerges, that of HAPPEN, which is significantly related to psi success throughout the

data, even when collapsed to a binary variable (see Tables 24 and 25, pp.110 and 111).

Partialling out the effect of HAPPEN from the significant correlation between EFFORT and SZSCORE (r=-.235, 58df, p<.07, 2-tailed) destroys the relationship ($r_{ES,H}$=+.02). Thus HAPPEN completely explains the negative correlation between EFFORT and psi success.

Table 33

Comparison of Psi Success for Happen Binary Dichotomy
(On or Off the "Just Happened" Endpoint)

PSI RANKS: SUBJECT JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p (2-tailed)	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p (2-tailed)
Just Happened	28	2	07.1%	-2.1822	<.03	7*	25.0%	-2.4509	<.02
Made it Happen	32	10	31.3%	+0.8165	ns	21**	65.7%	+1.3440	ns

* z=-2.6456, p<.009, 2-tailed.
** z=+1.7678, p<.08, 2-tailed.

PSI RANKS: EXPERIMENTER JUDGING

Subjects	N	Direct Hits (Rank 1)	% DHits (MCE=25%)	z	p (2-tailed)	Hits (1&2)	% Hits (MCE=50%)	Sum of Rank (z)	p (2-tailed)
Just Happened	28	5	17.9%	-0.8729	ns	7*	25.0%	-1.4368	ns
Made it Happen	32	13	40.6%	+2.0412	<.05	22**	68.7%	+1.8183	<.07

* z=-2.6456, p<.009, 2-tailed.
** z=+1.8183, p<.07, 2-tailed.

As can be seen in Table 33 above, dichotomizing the sample according to whether subjects are on or off the "just happened" endpoint of the HAPPEN scale reveals significant psi-missing in subject judging for all psi measures shown when "it just happened," and significant or suggestive psi-

hitting in experimenter judging for all measures when there is a modicum of perceived control of the Ganzfeld experience ("made it happen").

Although psi appears to have aspects that indicate an unconscious process, the unexpected significant negative correlations between HAPPEN and subject psi measures suggests that there may be an important conscious component to psi success in the Ganzfeld, perhaps equivalent to the "Demand" component of the old method described by White (1964), that is, a conscious orientation to the task and motivation to succeed at it.

The state of consciousness described as psi-conducive in White's analysis of introspective reports has been compared to the "passive volition" of biofeedback (Green and Green, 1973-74) in which ego involvement and conscious striving are minimized, while the orientation to the goal of the task is preserved in consciousness. HAPPEN may be measuring the degree to which the goal of the task directs the interests of attention as it allows material into the stream-of-consciousness.

This idea is consistent with the introspection of one of the successful male subjects, who had previous experience in the Ganzfeld, and training in experimental parapsychology, and who marked a two rather than a one on the Happen question. He described his recognition of the personal symbolic meaning of the images that were drifting into his mind during the Ganzfeld, which he would dismiss as his own unconscious preoccupations, and he would make a conscious effort to clear his mind of them and see something totally different, something about the target. He had only a few such images, but they were highly specific to the target.

It may be that this extra conscious effort (which is different from conscious striving in that it does not block the manifestation of unconscious material, but sorts through it, and continually reorients to the

psi task whatever it may be that directs the stream of consciousness) is an integral component to psi success in terms of "hitting," which is how success is defined in the experiment. Some of those with potential "high ability" may become "open to contents of their unconscious," letting associations and ideas "just happen" without trying to steer them, and not orienting clearly to the task of obtaining information about the target (and not about the control pictures). This may actually result in just as much psychically acquired information, but if the information is not focused on the target picture, the psi effect will not be detectable with this judging procedure. One could rejudge each verbal report against two orthogonal packs, the target pack and a control pack matched for maximum distinguishability, to see if there is more evidence of general diffuse psi information across the entire target pack for those of predicted high ability who just "let it happen."

Relation of Happen to Dream Quality

HAPPEN is unrelated to all personality measures except Dream Quality (Pearson $r=-30$, $p<.02$, 2-tailed, Spearman $r=-.34$, $p=.004$), where the more chaotic and unrealistic their remembered dreams, the more they "made it happen" in the Ganzfeld. It is possible that this correlation is meaningful in that those who recall more bizarre, dream-like dreams (as opposed to those who have more "dream-like" dreams as judged from REM awakenings but do not recall them in the morning) may be more at home with more of the contents of their unconscious, more able to recognize what is as usual and what is different or puzzling among the jumble of images and ideas, or more likely to pick out and examine the odd or different passing thought, instead of letting it flit by too fast to catch it in attention. One might even wonder if those scoring high on the dream quality scale would more often use their

dreams for some purpose in their waking life, as a source of ideas, for instance, or problem solving, and thus be in more of a habit of directing thoughts toward a conscious goal while in an altered state, which would also be reflected in the Happen measure.

Since HAPPEN (with questionnaire range flipped) correlates significantly negatively with SZSCORE (Pearson r=-.40, 58df, p<.002, 2-tailed) and with Dream Quality (Pearson r=-.30, 58df, p<.02, 2-tailed), and Dream Quality correlates significantly positively with SZSCORE (Pearson r=+.25, 58df, p<.05, 2-tailed), one might ask to what extent their relationship with psi is due to a common aspect, or to what extent each relates to psi independently.

A partial correlation of HAPPEN with SZSCORE controlling for Dream Quality is slightly attenuated but remains highly significant ($r_{HS,D}$=-.35, 57df, p<.006, 2-tailed). However, a partial correlation of Dream Quality with SZSCORE controlling for HAPPEN shows a non-significant relationship ($r_{DS,H}$=+.15, 57df, ns). In other words, HAPPEN relates to psi scoring nearly as strongly when the effect of Dream Quality is removed, but removing HAPPEN takes away much of the strength of the weak relationship between Dream Quality and psi, although it does not explain all of the association.

The vague wording of the HAPPEN question seems to be important. Although the difference in the meaning of the wording seems slight, CONTROL, which is highly correlated with HAPPEN (Pearson r=+.597, 58df, p<.0001, 2-tailed), is completely unrelated to Dream Quality (r=+.00).

Sex differences in the relationship of hypnotizability to EFFORT

As can be seen in Table 34, males and females show opposite relationships between hypnotizability and EFFORT (the effortlessness scale is flipped from the questionnaire so that higher scores on EFFORT mean

more effortlessness). Females become more passive in the unstructured Ganzfeld task ($r=+.42$, 28df, $p\leq.01$, 2-tailed) while males report more conscious control over their free-association ($r=-.33$, 28df, $p,.05$, 1-tailed) the more highly hypnotizable they are. The difference between the males' and females' correlations of hypnotizability and EFFORT is highly significant ($z=-2.9046$, $p<.004$, 2-tailed). Both low and high hypnotizable males tend to use more conscious effort in the Ganzfeld the more hypnotizable they are, with the relationship significant for the high hypnotizables ($r=-.46$), and both low and high hypnotizable females tend to show an increase in passivity (less conscious effort) in the Ganzfeld the more hypnotizable they are.

Table 34

Pearson (r) Correlations between EFFORT and Hypnotizability for Sex and High-Low Hypnotizability Cuts

Cut	All	M	F	L	H	ML	FL	MH	FH
n	60	30	30	33	27	16	17	13	14
r	-.04	-.33*	+.42***	-.02	-.38*	-.25	+.28	-.46*	+.13

^p<.1, 1-tailed.
*p<.05, 1-tailed.
***p≤.01,2-tailed.

For females but not for males, hypnotizability and creativity are positively related and partialling out EFFORT explains some of the relationship between them. For females, psi success did not appear to relate to either creativity or hypnotizability. However, for females, partialling EFFORT out of correlations between psi success and hypnotizability (and, to a lesser extent, creativity) unmasks hidden positive relationships that were confounded by EFFORT.

This suggests that the emphasis on the unconscious nature of psi ability that has been the underlying focus of this study has been incorrect, and that, for females, a tendency to use a more passive strategy (less effort) in the Ganzfeld with higher hypnotizability counteracts a tendency for higher hypnotizability to be beneficial for psi success.

Effortless experiencing

Although the EFFORT measure was adapted from P. Bowers' (1978) effortlessness battery, her measures assessed effortlessness over conscious fantasy and directed imagery tasks, as well as hypnotizability tasks and divergent thinking tasks. My assumption that the unstructured free-associational psi task in the Ganzfeld would reflect the same individual differences in effortless experiencing of imagery and fantasy as might the hypnotizability test or a conscious fantasy task was questionable. The question of locus of control[1] of imagination may arise as a confound when the imaginative task is not suggested.

Sex Differences in Amount and Control of Primary Process Imagery

Pine and Holt (1960) found that TAT literary quality was positively correlated with control but not amount of primary process for males and positively correlated with amount but not control of primary process for females, as measured by Rorschach scores. Pine and Holt (1960) and Rogolsky (1968) found that for males, control of primary process, measured by Rorschach scores, was more highly correlated with drawing ability than was amount of primary process, while females showed no significant correlations. K. Bowers (1971) suggests differences in the pattern of

[1] In this context, locus of control refers to conscious versus unconscious steering of attention, rather than internal versus external control. Unconscious processes in control of attention are inferred at the "just happened" endpoint, when control of attention is perceived as externally initiated.

hypnotizability correlates for males and females may stem from differences in the organization of imagination, with women's imagination more stimulus incited and men's more impulse incited.

It could be argued that such a difference in locus of control of imagination could manifest as differences in amount versus control, where external locus of control could flood the imagination with competing claims on attention, producing a greater amount of material, while internal locus of control might steer imagination toward the most personally relevant material, producing greater control over it as a problem-solving or insight-generating tool.

In the present experiment, Dream Recall Frequency (FRQDRM) and the amount of visual imagery in the Ganzfeld (GANZVIS) might be considered measures of amount of primary process, while Dream Quality (DRMQL) and Ganzfeld Quality (GANZQL) might be considered measures of control over primary process. An examination of the distributions of these measures for males and females reveals higher means for females on FRQDRM and GANZVIS, and higher means for males on DRMQL and GANZQL, supporting the locus of control of imagination sex dichotomy. The differences are significant for FRQDRM ($t=2.32$, 58 df, $p=.024$, 2-tailed), and suggestive for GANZQL ($t=-1.77$, 58df, $p=.082$, 2-tailed).

In addition, females were significantly more likely to see details of imagery initially and males to add details later ($t=-2.01$, 58df, $p<.05$, 2-tailed), and males had significantly more difficulty interpreting their images than females ($t=-3.52$, 58df, $p=.001$, 2-tailed). Males and females did not differ significantly on any other state, trait, or effort variable.

Why did females psi-miss?

Females were strikingly unsuccessful in choosing the correct target from the control pictures in this experiment. A Pearson correlation of sex by psi success (SZSCORE) is suggestive ($r=+.19$, 58df, $p<.08$, 1-tailed), and a correlation of sex by binary hits (ranking the target in the top-half or bottom-half of the pack) (SUBHIT) is significant ($r=+.267$, 58df, $p<.04$, 2-tailed). However, one cannot conclude from these results that females differ from males in psi ability. There is no converging evidence in the literature to support a sex difference in psi success favoring males. Most of the experienced Ganzfeld subjects were female, and, in fact, several had been asked to participate after having been successful previously.

However, several relevant variables interacted with sex and may all have contributed to the lack of success of the female group. Females were significantly more likely to interpret immediately what they were seeing in the Ganzfeld than were males. Females more often showed resistance to various aspects of the experiment than did males. A correlation of INTERP with sex is significant (Pearson $r=-.42$, 58df, $p<.001$), as are correlations between resistance and sex (Pearson $r=+.30$, 58df, $p<.02$, 2-tailed), INTERP with psi ($r=-.219$, $p<.05$), and resistance with psi (SZSCORE) (Pearson $r=+.23$, 58df, $p<.04$, 1-tailed). Experimenter mood had more of an effect on females' psi performance in predicted directions than on males' performance, and the experimenter more often reported negative moods that correlated with psi-missing when females were subjects. For instance, experimenter sadness correlated with sex significantly (Pearson $r=-.30$, 58df, $p<.05$, 1-tailed), and also related significantly to psi success (Pearson $r=-.22$, $p<.05$, 1-tailed). When either experimenter sadness or subject resistance are partialled out of the correlation between sex and psi

success (SZSCORE), the suggestive zero-order correlation falls to partial correlations $r_{SP,R}$=+.13, and $r_{SP,ES}$=+.13, respectively, and when both are partialled out, the correlation approaches zero ($r_{SP,R+ES}$=+.08). When INTERP alone is partialled out of the correlation between sex and psi (SZSCORE), the partial correlation falls to $r_{SP,I}$=+.11. When all three are controlled, the relationship between sex and psi success, as measured by SZSCORE, becomes essentially zero (r=+.03). Thus subject resistance, differences in cognitive strategy (INTERP), and differences in experimenter mood can explain all of the sex difference in psi scoring when z-scores from subject ratings of target and control pictures (SZSCORE) is considered as the psi measure.

Table 35 shows the effects of partialling these three relevant variables out of six possible psi measures correlated with sex. As can be seen, of the six psi measures considered where a sex difference in favor of the males is significant or suggestive, only the relationship between sex and SUBHIT remains weakly suggestive after controlling for three relevant variables that affected females more than males.

Table 35

Partial Correlations between Sex and Psi Measures;
Subject Z-Scores (SZSCORE), Subject Rank (SRANK), Subject Binary Hits (SUBHIT), Experimenter Z-Scores (EZSCORE), Experimenter Ranks (ERANK), and Experimenter Binary Hits (EHIT)
Controlling for Interpretation Ease (INTERP), Resistance (RESIST), and Experimenter Sadness (SADE)

Psi Measures	**SZSCORE**	SRANK	SUBHIT	EZSCORE	ERANK	EHIT
			Zero Order Partials			
r	**+.19**	+.21	+.26	+.22	+.18	+.23
(58df)						
p (1-tailed)	**.072**	.049	.019	.045	.074	.036
			First Order Partials			
Controlling for:						
RESIST	**+.13**	+.16	+.23	+.17	+.12	+.18
(57df)						
p (1-tailed)	**ns**	ns	.039	.098	ns	.079
INTERP	**+.11**	+.13	+.18	+.23	+.22	+.21
(57df)						
p (1-tailed)	**ns**	ns	.081	.035	.045	.049
SADE	**+.13**	+.18	+.27	+.17	+.11	+.19
(57df)						
p (1-tailed)	**ns**	.080	.017	.096	ns	.066
			Third Order Partials			
Controlling for RESIST, INTERP, and SADE						
r	**+.03**	+.08	+.17	+.16	+.13	+.16
(55df)						
p (1-tailed)	**ns**	ns	.099	ns	ns	ns

Controlling for either resistance (RESIST) or experimenter sad mood (SADE) appears to weakly diminish the relationship of sex to psi for both subject and experimenter psi measures. Thus one might speculate that

female missing due to general resistance in the subject or due to social factors caused by experimenter bad mood probably takes either the form of avoiding target information or of acquiring too much control picture information, either of which would affect experimenter judging as well as subject judging. On the other hand, controlling for interpretation ease (INTERP), diminishes the sex effect in subject judging but not in experimenter judging. This suggests that INTERP may be a judging variable, where the experimenter may have kept a more flexible interpretive framework of subjects' imagery while judging than did female subjects, so that interpretations prematurely imposed on imagery caused judging errors for subjects more often than for the experimenter. One is reminded of Delanoy's (1981) description of what happened when vague shapes were interpreted, then the interpretations were elaborated, leading to a detailed scene that was usually not relevant to the target. In other words, premature closure in interpreting a vague shape or misinterpretation of a partially glimpsed fragment was more likely to occur for the females than the males in this sample, and explains much of the difference between males' and females' judging, but does not explain the difference between psi success of males and females in experimenter judging.

As can be seen in Tables 49 and 51 of Appendix I (pp. 162-163), low hypnotizable females were more likely to show target relevant information (and less control picture information) when they were more highly creative (measured by F1), while for high hypnotizable females, the more creative, the worse for psi success.

An interpretation of this reversal might rest on two different mechanisms. The positive correlation with low hypnotizables might result from the contribution of those at the bottom of the creativity measures;

that is, repression of creativity is associated with repression of psi, leading to a positive correlation, while for the high hypnotizable females, there might be more "undirected psi" due to obeying suggestions to just "let it happen." In fact, high hypnotizable females more often "just let it happen" (61.5%) than did low hypnotizable females (41.2%), low hypnotizable males (50%), or high hypnotizable males (35.7%).

Suggestions for future research

A design with a more stable psi measure (three to five sessions, rather than a single session) might better preclude confounding by psi-missing due to uncontrolled factors such as an aversive emotional reaction to the content of a specific target picture for some of those with predicted "high ability" in a single trial. Creativity might better be measured by a composite of a long battery of different aspects of the concept.

It may also prove more fruitful to employ a set of measures to predict directionality as well as magnitude, as in Honorton's (1964, 1966) use of the S.I.I. to separate psi-hitters from psi-missers. There are several possible measures that suggest themselves as separators in the present data; Dream Quality; "resistance" to other aspects of the experiment (as reflected in both the good versus irregular sessions, and in the resistance or compliance in hypnosis); the experimenter's "good" or "bad" mood. Another possible influence on directionality may be the conflict-arousing potential of the target picture, which might be unique to each subject, and which might be explored in depth in future research with techniques such as autonomic measures on exposure to each picture, or a measure of perceptual defense to the contents of the target picture with brief exposures.

In the search for ways to enhance repeatability in psi experimentation, variables of interest include testing conditions (both

techniques for inducing "psi-conducive states of consciousness" such as dreaming, Ganzfeld stimulation, relaxation, etc., and interpersonal variables such as experimenter attitude, mood or personality interactions between participants); selection of subjects with more likelihood of demonstrating psi interactions; practice with feedback; and training in psi-conducive techniques. This experiment attempted to explore subject selection with respect to variables related to openness to unconscious material and processing. However, the pattern of results suggests that monitoring subjects' internal strategies and perhaps developing training strategies involving aspects of internal locus of control of imagination may offer a route toward increasing reliability in the detection of psychic interactions.

Conclusions

This experiment attempted to explore psi in relation to subject selection for variables related to openness to unconscious material and unconscious processing. Overall, results were null. However, the pattern of results and some post-hoc findings suggest further research is desirable.

APPENDIX A

TABLE 1

SUCCESSFUL GANZFELD STUDIES (p<.05)

EXPERIMENT	DATE	TYPE PSI	GANZ TIME	N TRIALS	N SUBJ.	TARGETS	TYPE JUDGING	SIZE PACK	P (HIT)	MAIN ANALYSIS	P
ASHTON, et al.	1981	GESP	23	32	4	Art Prints	SJ	4	0.25	Z-Score	0.012
BRAUD. et al.	1975	GESP	35	10	10	Pictures	SJ	6	0.50	Exact Bin.	0.001
BRAUD &WOOD	1977	GESP	30	180	30	MBTS	Bin.,SJ	4	0.50	T-Test	0.000003
CHILD & LEVI	1979	GESP	30	14	14	MBTS(Color)	SJ	5	0.20	T-Test	0.002
DUNNE et al.	1977	GESP	15	6	1	Viewmaster	IJ	6	0.18	Sum of Ranks	0.01
HONORTON & HARPER	1974	GESP	35	30	30	Viewmaster	SJ	4	0.25	Z-Score	0.017
HONORTON	1976	GESP	35	7	4	Viewmaster	SJ	4	0.25	Exact Bin.	0.0013
KEANE & WELLS	1979	CLAIR	35	54	18	Art Prints	SJ	4	0.25	T-Test	0.029
RONEY-DOUGAL	1981	GESP	35	80	8	Taped Words	SJ,2IJ	4	0.50	T-Test	0.04
SARGENT et al.	1981	GESP	30	32	32	Art Prints	SJ	4	0.25	Sum of Ranks	0.017
SARGENT & MATTHEWS	1981	GESP	31	26	26	Pictures	SJ	4	0.25	Exact Bin.	0.012
SARGENT (2)	1980	GESP	35	20	20	Art Prints	SJ	4	0.25	Exact Bin.	0.041
SARGENT (3)	1980	GESP	35	20	20	Art Prints	SJ	4	0.25	Exact Bin.	0.041
SARGENT (5)	1980	GESP	35	30	30	Art Prints	SJ	4	0.25	Exact Bin.	0.0004
SCHMITT & STANFORD	1978	CLAIR	35	20	20	Pictures	SJ	4	0.25	Exact Bin.	0.00094
SMITH et al.	1976	GESP	40	40	20	MBTS	Bin.	NA	0.50	T-Test	0.015
SONDOW	1979	GESP	35	100	20	Pictures	SJ,2IJ	4	0.25	Exact Bin.	0.0004
SONDOW et al.	1981	GESP	35	40	40	Emotional	SJ	4	0.25	Sum of Ranks	0.04
TERRY et al.	1976	GESP	30	15	15	MBTS	Bin.	NA	0.50	T-Test	0.018
TERRY & HONORTON	1976	GESP	30	27	12	Viewmaster	SJ	4	0.50	Exact Bin.	0.00296
TERRY & HONORTON	1976	GESP	30	60	6	Viewmaster	SJ	4	0.25	Exact Bin.	0.00059
YORK & MORRIS	1977	CLAIR	35	49	49	Art Prints	SJ	5	0.20	Binomial	0.0034

TABLE 2

UNSUCCESSFUL GANZFELD STUDIES (p>.05)

EXPERIMENT	DATE	TYPE PSI	GANZ TIME	N TRIALS	N SUBJ.	TARGETS	JUDGING	SIZE PACK	P (HIT)	MAIN ANALYSIS	P
DELANOY	1982	GESP	32	72	6	Pictures	SJ	6	0.18	Sum of Ranks	ns
HABEL	1976	GESP	30	90	30	Pictures	SJ	4	0.50	Exact Bin.	0.55
PALMER & AUED	1975	GESP	20	40	40	Pictures	SJ	5	0.20	NA	ns
PALMER et al.	1977	GESP	35	30	30	MBTS(Color)	SJ,2IJ	4	0.25	T-Test	ns
PALMER et al.	1979	GESP	35	20	20	Pictures	SJ,IJ	4	0.25	T-Test	ns
PALMER et al.	1980	GESP	15	20	20	MBTS(Color)	IJ	4	0.25	2x2 Anova	ns
PARKER	1975	GESP	30	30	30	Art Prints	SJ	4	0.25	Exact Bin.	ns
PARKER et al.	1977	GESP	35	72	24	Art Prints	SJ	6	0.18	NA	ns
ROGO	1976	GESP	7	20	20	Viewmaster	SJ	4	0.25	Z-Score	ns
ROGO et al.	1977	PREC	20	20	4	MBTS	Bin.	NA	0.50	Z-Score	ns
SARGENT et al.	1981	GESP	15	40	40	Pictures	SJ	4	0.25	NA	ns
SARGENT (1)	1980	GESP	35	26	26	Art Prints	SJ	4	0.25	Exact Bin.	ns
SARGENT (6)	1980	GESP	23	36	3	Art Prints	SJ	4	0.25	Exact Bin.	0.18
SARGENT	1982	GESP	35	20	20	Pictures	SJ	4	0.25	Sum of Ranks	0.067
STANFORD & NEYLON	1975	CLAIR	25	40	40	Pictures	SJ	5	0.20	T-Test	ns
STANFORD	1979	CLAIR	15	80	80	Nat. Geog.	3IJ	4	0.25	2x2 Anova	ns
TERRY	1976	GESP	35	68	17	MBTS	Bin.	NA	0.50	Z-Score	ns
WOOD et al.	1977	GESP	35	96	24	MBTS	SJ,Bin.	4	0.50	Z-Score	ns

Appendix B
Creativity Questionnaire

Name_____

Please circle the appropriate answer to each question.

1. Are you: right handed ambidextrous left handed

2. Do you ever become so involved in a daydream that you become unaware of your surroundings?

Almost never Occasionally Often

3. Do you ever become so involved in a book that you become unaware of your surroundings?

Almost never Occasionally Often

4. Do you ever become so involved in a movie that you become unaware of your surroundings?

Almost never Occasionally Often

5. Do you ever become so involved in music that you become unaware of your surroundings?

Almost never Occasionally Often

6. How often do you remember your dreams?

ALMOST NEVER,FEW IN LIFE	LESS THAN ONE/MONTH	ABOUT ONE A MONTH	ABOUT TWICE A MONTH	ABOUT ONCE A WEEK	ABOUT 3 TIMES/WEEK	ALWAYS, ALMOST EVERY NIGHT
1	2	3	4	5	6	7

7. Are your dreams usually:

LOGICAL, REALISTIC, ORDINARY, AS IF AWAKE						CHAOTIC, BIZARRE, DISCONNECTED
1	2	3	4	5	6	7

(2)

8. Does your dream recall seem to remain about the same or to vary in different periods of your life?

My recall stays about the same — My recall varies from high to low during different spans of time

9. Please give an overall estimate of your creativity, compared to your peers.

Much less creative than is usual			average				much more creative than is usual
1	2	3	4	5	6	7	8 9

Please indicate how much you agree or disagree with each of the following statements:

STRONGLY AGREE	MODERATELY AGREE	SLIGHTLY AGREE	NEUTRAL	SLIGHTLY DISAGREE	MODERATELY DISAGREE	STRONGLY DISAGREE
1	2	3	4	5	6	7

10. An expert who doesn't come up with a definite answer probably doesn't know too much.

1 2 3 4 5 6 7

11. I would like to live in a foreign country for a while.

1 2 3 4 5 6 7

12. People who fit their lives to a schedule probably miss most of the joy of living.

1 2 3 4 5 6 7

13. There is really no such thing as a problem that can't be solved.

1 2 3 4 5 6 7

14. It is more fun to tackle a complicated problem than to solve a simple one.

1 2 3 4 5 6 7

| STRONGLY AGREE | MODERATELY AGREE | SLIGHTLY AGREE | NEUTRAL | SLIGHTLY DISAGREE | MODERATELY DISAGREE | STRONGLY DISAGREE |

(3)

STRONGLY AGREE	MODERATELY AGREE	SLIGHTLY AGREE	NEUTRAL	SLIGHTLY DISAGREE	MODERATELY DISAGREE	STRONGLY DISAGREE
1	2	3	4	5	6	7

15. A good job is one where what is to be done and how it is to be done are always clear.

1 2 3 4 5 6 7

16. In the long run it is possible to get more done by tackling small, simple problems rather than large and complicated ones.

1 2 3 4 5 6 7

17. Often the most interesting and stimulating people are those who don't mind being different and original.

1 2 3 4 5 6 7

18. What we are used to is always preferable to what is unfamiliar.

1 2 3 4 5 6 7

19. People who insist upon a yes or no answer just don't know how complicated things really are.

1 2 3 4 5 6 7

20. Many of our most important decisions aare based upon insufficient information.

1 2 3 4 5 6 7

21. A person who leads an even, regular life in which few surprises or unexpected happenings arise, really has a lot to be grateful for.

1 2 3 4 5 6 7

22. Teachers or supervisors who hand out vague assignments give a chance for one to show initiative and originality.

1 2 3 4 5 6 7

23. I like parties where I know most of the people more than ones where all or most of the people are complete strangers.

1 2 3 4 5 6 7

STRONGLY AGREE	MODERATELY AGREE	SLIGHTLY AGREE	NEUTRAL	SLIGHTLY DISAGREE	MODERATELY DISAGREE	STRONGLY DISAGREE

(4)

STRONGLY AGREE	MODERATELY AGREE	SLIGHTLY AGREE	NEUTRAL	SLIGHTLY DISAGREE	MODERATELY DISAGREE	STRONGLY DISAGREE

24. The sooner we all acquire similar values and ideals the better.

1 2 3 4 5 6 7

25. A good teacher is one who makes you wonder about your way of looking at things.

1 2 3 4 5 6 7

26. I like to fool around with new ideas, even if they turn out later to be a total waste of time.

1 2 3 4 5 6 7

27. The best theory is the one that has the best practical applications.

1 2 3 4 5 6 7

28. Some of my friends think that my ideas are impractical, if not a bit wild.

1 2 3 4 5 6 7

29. The unfinished and the imperfect often have greater appeal for me than the completed and the polished.

1 2 3 4 5 6 7

30. I must admit that I would find it hard to have for a friend a person whose manners or appearance made him somewhat repulsive, no matter how brilliant or kind he might be.

1 2 3 4 5 6 7

31. A person should not probe too deeply into his own and other people's feelings, but take things as they are.

1 2 3 4 5 6 7

32. Young people sometimes get rebellious ideas, but as they grow up they ought to get over them and settle down.

1 2 3 4 5 6 7

33. Perfect balance is the essence of all good composition.

1 2 3 4 5 6 7

STRONGLY AGREE	MODERATELY AGREE	SLIGHTLY AGREE	NEUTRAL	SLIGHTLY DISAGREE	MODERATELY DISAGREE	STRONGLY DISAGREE

Appendix C

Sample Mood Questionnaire

NAME_____DATE_____SESSION_____

Each of the following words describes feelings or mood. Please use the list to describe your feelings <u>at the moment</u> you read each word. If the word definitely describes how you feel at the moment you read it, circle YES to the right of the word. If the word only slightly applies to your feelings at the moment, circle the small yes. If the word is not clear to you or you cannot decide whether or not it applies to your feelings at the moment, circle the question mark. If you definitely decide the word does not apply to your feelings at the moment, circle the NO.

Work rapidly. Your first reaction is best. Please mark all words. This should only take a minute.

	feel definitely YES	feel slightly yes	don't know ?	don't feel NO
angry	YES	yes	?	NO
carefree	YES	yes	?	NO
drowsy	YES	yes	?	NO
dubious	YES	yes	?	NO
active	YES	yes	?	NO
fearful	YES	yes	?	NO
playful	YES	yes	?	NO
sluggish	YES	yes	?	NO
sad	YES	yes	?	NO
energetic	YES	yes	?	NO
annoyed	YES	yes	?	NO
jittery	YES	yes	?	NO
pleased	YES	yes	?	NO
tired	YES	yes	?	NO
vigorous	YES	yes	?	NO

Appendix D

Ganzfeld Taped Instructions

Get as comfortable as you can. Loosen any clothing that may be too tight. I want you to become very relaxed. Lets go through a few exercises to get rid of all muscular tension. When you relax, don't think about the instructions. Just follow them passively and automatically.

Keep the rest of your body completely relaxed and curl your toes down into a tense position. Tense up more and more and notice the discomfort. Hold this tension while I count from 5 to 1, letting go at the count of 1. 5-4-3-2-1- Relax. Relax your toes completely and feel the difference. Now arch your toes up toward your face and feel the tension all along your legs. Hold this. 5-4-3-2-1- Relax. Feel the relief in your legs. Now point your toes and tense up your whole legs and calves. Remember to keep the rest of your body relaxed. 5-4-3-2-1- Relax. Enjoy the feeling of relief as you let go of the tension. Relax all tension. Release all pressures. Let your body fall into a state of deep relaxation. Deeper and deeper. Now tense your stomach muscles as tightly as you can as I count. 5-4-3-2-1- Relax. Let go completely. Relax. Arch your back, now, and feel the tension all along your spine. 5-4-3-2-1- Relax. Settle down comfortably again. Let go of all your weight. Let go of all the tension in every muscle of your body. Now focus your attention on your arms and fists. Relax the rest of your body completely. Tense your fists and bend your arms at the elbows, flexing your biceps. Hold this as tightly as you can. 5-4-3-2-1- Relax. Let your arms flop to your sides. Relax completely. Now take a deep breath and fill your lungs. Feel the tension all over your chest. Hold it. (pause) Exhale. Feel the relief as you exhale. Relax. Make sure your whole body is relaxed. Now press your head back as far as it will go. Feel the tension in the muscles of

your neck. 5-4-3-2-1- Relax. Remove all strain and tension. Relax your neck, and your throat. Relax your mouth. Relax your scalp. Relax your eyes and all your facial muscles. Relax. Relax. Relax. Focus on the part of your body that is most relaxed, and imagine that same pleasant, positive, relaxing feeling to spread, engulfing the entire body in one comfortable, warm, pleasant feeling of relaxation. Relax totally and completely. Your whole body feels quiet, heavy, comfortable, and relaxed.

Now just passively attend to the parts of your body as they are mentioned and the effects will automatically occur. Don't try to make anything happen because it will happen on its own. Your hands are heavy and warm. Feel warmth flowing into your hands and feet. Your forehead is cool. Your breathing is calm and regular. Its taking care of itself, as if something is breathing you, calmly, regularly. Your solar plexus, the central area of your body, is warm. Warmth is flowing into your hands. Your forehead is cool. Your hands are heavy and warm. Take deep breaths and become more deeply relaxed with each exhalation. With each breath imagine yourself falling deeper and deeper into complete relaxation. To relax even more deeply, count with me backwards from 20. With each count feel yourself going deeper and deeper into a profoundly relaxed state. Feel yourself becoming more deeply relaxed with each count. 20-19-18-17-16-15-14-13-12-11-10-9-8-7-6-5-4-3-2-1--Take a deep breath and go deeper. You are now in a very relaxed, peaceful state.

During this experiment, we want you to think out loud. Report all the images, thoughts and feelings that pass through your mind. Do not cling to any of them. Just observe them as they go by. At some point during the session we will send you the target information. Do not try to anticipate or conjure up this information. Just give yourself a suggestion, right now, in

the form of making a wish, that the information will appear in consciousness at the appropriate time. (pause) Keep your eyes open as much as possible during the session and allow your consciousness to flow through the sound you will hear through the headphones. One of us will be monitoring you in the other room. Now get as comfortable as possible. Release all conscious hold of your body and allow it to relax completely. As soon as you begin observing your mental processes, start thinking out loud. Continue to share your thoughts, images, and feelings with us thoughout the session.

Appendix E

Randomization Instructions

1. On a piece of paper, write down the four possible combinations of Heads and Tails that might occur in 2 tosses of a coin, in any order you like. (For instance, you might write Tails Tails; Heads Tails; Heads Heads; Tails Heads, or you might put them in a different order.)

2. Number your list of pairs of coin faces from 1 to 4.

3. Toss a coin twice and write down each outcome.

4. Take the number corresponding to that outcome from your list, and translate it to the corresponding letter, where 1=A, 2=B, 3=C, and 4=D.

5. Write the letter down and seal it in an envelope.

6. Open the pack of slides and take the slide with that letter out. Do not look at the other slides.

7. Insert the slide in the viewer so that the letter faces you in the upper left-hand corner of the slide.

8. At the beginning of the sending period, press the slide into the viewer so that it lights up and stays on by itself.

9. "Send" for 5 minutes.

10. Remove the target slide (by pressing down slightly until it releases) and replace it in order in the target envelope.

Appendix F

Post-Session Questionnaire

NAME_____DATE_____SESSION_____

1. How long did the Ganzfeld session seem to last? Give a subjective estimate of how long it felt to you (in minutes). _____

2. How successful was the Ganzfeld in altering your state of consciousness as compared to your usual waking state?

1	2	3	4	5	6	7
very unsuccessful						very successful

3. What proportion of time during the Ganzfeld was spent in an "altered state of consciousness" of some kind?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

4. How would you characterize the quality of your Ganzfeld experience?

1	2	3	4	5	6	7
structured, rational, directed						spontaneous, dream-like, bizarre

5. How much visual imagery did you experience in the Ganzfeld?

1	2	3	4	5	6	7
almost none						a great deal of imagery

Post-session questionnaire (2)

6. How much effort was required for you to experience imagery?

1	2	3	4	5
High ease, images just popped into mind	Images came quite easily	Images came with some effort	Images came with moderate effort	Images came with great difficulty

7. How detailed were initial images?

1	2	3	4	5
details of images there immediately	details mostly there but I changed slightly	added some details to images	added most details after initial images	almost all details of image added after initial vague images

8. How difficult was it to describe or interpret your imagery?

1	2	3	4	5
images immediately obvious, no difficulty interpreting	images usually obvious	sometimes obvious, sometimes had difficulty interpreting	usually hard to determine what I was seeing	images interpreted with great difficulty and uncertainty

9. How much control did you feel over what images you would see next?

1	2	3	4	5
the flow of images was automatic, no conscious choice about directing it	flow of images was usually without my control, little choice of what would be next	images sometimes followed each other by themselves, other times I directed the flow of images	mostly I chose consciously what to see next, sometimes something would appear "by itself"	I almost always decided what to imagine next

10. In general, did your imagery just happen, or did you make it happen?

1	2	3	4	5
just happened				made it happen

Appendix G

Judging Instructions

Only one of these four pictures was the target that someone looked at and tried to send to you while you were in the Ganzfeld session. You are now going to hear a review of everything you said in the Ganzfeld. After each phrase or image, indicate which pictures you can connect to your phrase or image. For instance, if you thought of something green, and you see something green in three of the four pictures, write green under the space for each of those three pictures. If you thought of your father, and two of the pictures have elements that somehow remind you of your father, write father under both pictures. If you thought of a cow, and one picture has a horse, another a hamburger, write cow under both pictures. Look for similar objects, names, shapes, forms, spacing of objects, colors, details, similarity of mood or feeling, similar ideas, personal associations, and memories between your images and each picture.

Only you know what you actually experienced during the session, and, when looking at the pictures, you may remember something that passed by too quickly to report, or you may think of an association to one of your images that helps you make a connection to a picture which may not occur to you before seeing the picture. If any of these pictures trigger additional images you did not report, report them now. Please briefly describe all associations between your imagery and each picture, to help independent judges choose which picture they think was your target based on your report.

(2)

After you look for correspondences between your images and thoughts during the session and each of the pictures, then decide how likely you think it is that each picture was the target. Give each picture a <u>different</u> number anywhere between 10 and 90, to describe how likely you think it is that the picture was the target, where the higher the number, the more certain you are that the picture was indeed the target.

10 means you are absolutely convinced this was <u>not</u> the target picture.
20 means you are fairly certain this was <u>not</u> the target picture.
30 means you feel this picture was probably not the target.
40 means you aren't sure but think this picture was possibly not the target.
50 means you can't decide whether or not this picture was the target.
60 means you aren't sure but think its possible this may have been the target.
70 means you feel there's a good chance this picture was the target.
80 means you are fairly certain this picture was the target.
90 means you are absolutely convinced this picture was the target.

It is possible you may want to give all four pictures numbers over 50 or under 50. Just remember to give each picture a <u>different</u> number, even if they are very close, eg. 50, 51, 52, 53.

Name_____ Date_____ Target Pack____

Please list all correspondences and associations between your Ganzfeld experience and each of the four pictures under the appropriate letter for each picture.. Then assign each picture a <u>different</u> number between 10 and 90.

A	B	C	D

Appendix H

Moods Correlated with Psi

Table 36 shows the distribution of the 15 adjectives among the eight represented factors of those 12 factors hypothesized by Nowlis. High intercorrelations (Table 37) among the mood adjectives within the hypothesized factors justified shrinking the fifteen adjectives to eight mood factors, by taking the mean score within each factor.

Table 36

Distribution of the Fifteen Mood Adjectives among Eight of Nowlis's Hypothesized Mood Factors and Associated Psi Directionality Predictions

Feeling Good:				Feeling Bad:			
(+) ?	+	+	–	–	(–)	(–)	(–)?
ACTIVATION	SURGENCY	ELATION	SADNESS	ANXIETY	AGGRESSION	SKEPTICISM	FATIGUE
active	carefree	pleased	sad	fearful	angry	dubious	drowsy
energetic	playful			jittery	annoyed		sluggish
vigorous							tired

Table 37

Minimum* Pearson r within Factors for Experimenter, Subject, and Sender

	Activation	Surgency	Anxiety	Aggression	Fatigue
Experimenter	+.70	+.68	+.72	+.72	+.79
Subject	+.66	+.61	+.51	+.70	+.55
Sender	+.62	+.55	+.50	+.59	+.66

* All correlations within factors are significant with 58df, $p<.001$, 2-tailed.

Experimenter Mood

Table 38 shows the correlations between the Nowlis Mood Factors and Psi Success for Experimenter Moods for all 60 subjects.

Table 38

Pearson Correlations between Psi Measures[1] and Nowlis Mood Factors for Experimenter Moods (N = 60)

	Activation	Surgency	Elation	Sadness	Anxiety	Aggression	Skepticism	Fatigue
SRANK	+.08	+.13	+.10	-.13	-.08	+.06	-.02	-.16^
SZSCORE	**+.07**	**+.14**	**+.16**	**-.22***	**-.17^**	**+.08**	**+.04**	**-.15**
ERANK	+.13	+.04	+.09	-.26**	-.19^	+.15	+.22*	-.08
EZSCORE	+.09	+.05	+.08	-.19^	-.14	+.11	+.15	-.08

[1] SRANK and ERANK have been flipped so that all correlations are as predicted.
^ P<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Sadness correlates significantly negatively with psi for SZSCORE ($r = -.22$, $p<.05$, 1-tailed). Experimenter Fatigue appears a stronger negative influence than Activation does a positive one on the direction of psi scoring. Six out of eight experimenter mood factors correlate with psi measures in the directions predicted, although the relationships are weak. Only Aggression and Skepticism relate weakly to psi opposite to prediction, and only for experimenter judging are their relationships with psi non-negligeable.

Sex Differences in Correlations between Experimenter Mood and Psi

An examination of the correlations between Nowlis Mood Factors and Psi measures for each sex separately reveals the predicted correlations come almost exclusively from sessions with female subjects, as can be seen in Tables 39 and 40. For females, all mood factors except Aggression

and Skepticism correlate with all psi measures in the predicted directions. For males, on the other hand, all experimenter mood factors appear unrelated to subject psi scores, except sadness, which correlates non-significantly in the predicted direction.

Table 39

Pearson Correlations between Psi Measures[1] and Nowlis Mood Factors for Experimenter Moods for Females (N = 30)

	Activation	Surgency	Elation	Sadness	Anxiety	Aggression	Skepticism	Fatigue
SRank	+.27^	+.19	+.06	-.03	-.05	+.13	-.05	-.30*
SZScore	**+.21**	**+.23**	**+.17**	**-.22**	**-.13**	**+.15**	**+.02**	**-.28^**
ERank	+.27^	+.05	+.16	-.32*	-.12	+.19	+.19	-.17
EZScore	+.27^	+.05	+.13	-.19	-.09	+.12	+.12	-.18

^ p<.1, 1-tailed.
* p<.05, 1-tailed.

Table 40

Pearson Correlations between Psi Measures[1] and Nowlis Mood Factors for Experimenter Moods for Males (N = 30)

	Activation	Surgency	Elation	Sadness	Anxiety	Aggression	Skepticism	Fatigue
SRank	-.05	+.06	+.08	-.25^	+.00	+.05	+.00	+.01
SZScore	**-.04**	**+.04**	**+.09**	**-.18**	**-.12**	**+.07**	**+.06**	**+.03**
ERank	-.00	-.00	-.08	+.03	-.19	+.16	+.27^	+.09
EZScore	-.07	+.02	-.05	-.03	-.07	+.15	+.17	+.10

^ p<.1, 1-tailed.

Subject Mood

Subject moods were uniformly unrelated to subjects' psi success, as can be seen in Table 41. Note that subjects who felt skeptical had a better

chance of successful psi detection in experimenter judging (Pearson r=+.18, p<.1), just as with the experimenter moods above, when the experimenter felt skeptical, there was also more likelihood of successful experimenter judging (Pearson r=+.228, 58df, p<.04, 1-tailed).

Table 41

Pearson Correlations between Psi Measures[1] and Nowlis Mood Factors for Subject Moods (N = 60)

	Activation	Surgency	Elation	Sadness	Anxiety	Aggression	Skepticism	Fatigue
SRANK	-.04	+.02	-.04	-.02	-.01	-.01	+.08	+.06
SZSCORE	**-.00**	**-.02**	**-.07**	**+.07**	**+.04**	**+.03**	**+.10**	**+.01**
ERANK	-.01	-.03	-.00	+.11	+.11	+.11	+.18^	+.08
EZSCORE	+.01	+.02	+.04	+.07	+.04	+.03	+.16^	+.08

[1] SRANK and ERANK have been flipped so that all correlations are as predicted.
^ P<.1, 1-tailed.

Sender Mood

As can be seen in Table 42, senders' moods were almost unrelated to psi success except perhaps for Elation and Sadness, which related weakly to psi in the directions opposite to those expected.

Pearson Correlations between Psi Measures[1] and Nowlis Mood Factors for Sender Moods (N = 60)

	Activation	Surgency	Elation	Sadness	Anxiety	Aggression	Skepticism	Fatigue
SRANK	-.00	-.11	-.16^	+.18^	-.09	+.08	+.01	-.09
SZSCORE	+.03	-.08	-.18^	+.17^	-.13	+.03	+.00	-.09
ERANK	+.00	-.09	-.06	+.13	-.06	-.05	-.05	+.08
EZSCORE	-.04	-.10	-.08	+.14	-.08	-.06	-.03	+.06

[1] SRANK and ERANK have been flipped so that all correlations are as predicted.
^ P<.1, 1-tailed.

Appendix I

Factors Correlated with Psi

Tables 43 and 44 show the Pearson correlations between the factors and psi measures for each sex separately. As can be seen, females alone are responsible for the positive relationship beween psi success and F5 (DRMQL), while for males, the correlation is close to zero. Both males and females show the relationship between psi and F3 (HAPABS) for subject judging, but only the males also show the effect for experimenter judging. Notice that the degree to which the Ganzfeld led to an altered state of consciousness (F2: ALTGNZ) is significantly positively related to psi scoring for females (Pearson r=+.34, p<.05, 1-tailed), but is unrelated to psi scoring for males. Males show a suggestive negative relationship between F6 (HYPN) and psi success.

Table 43

Pearson Correlations between 7 Factors and Psi Measures for Females (N=30)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	+.14	+.29^	-.26^	+.16	+.34*	+.05	-.18
SZSCORE	**-.00**	**+.34***	**-.41****	**+.15**	**+.38****	**-.04**	**-.05**
ERANK	+.06	+.24^	-.11	-.05	-.01	-.05	+.09
EZSCORE	+.12	+.19	-.13	+.00	-.00	-.12	+.01

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Table 44

Pearson Correlations between 7 Factors and Psi Measures for Males (N=30)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	-.01	-.06	-.41**	+.09	+.00	-.22	-.19
SZSCORE	**+.02**	**-.15**	**-.40****	**+.16**	**+.07**	**-.29^**	**-.17**
ERANK	-.00	-.12	-.46****	+.07	-.19	-.17	-.15
EZSCORE	+.07	-.02	-.38**	+.10	-.16	-.16	-.09

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.
**** P<.01, 2-tailed.

One can examine the differences between factor-psi correlations for those with previous experience in a psi-Ganzfeld experiment and those who were naive with respect to Ganzfeld experience in Tables 45 and 46. As can be seen, F3 (HAPABS) is suggestively negatively related to psi scoring for experienced subjects and highly significantly related for naive subjects, while F5 (DRMQL) is significantly positively related to psi only for experienced subjects. Notice that both F1 (CREAT) and F6 (HYPN) are positively correlated with psi success for experienced subjects (not significantly with an sample of only 15), but, for naive subjects, the direction of the correlations is negative, with almost no relationship between F1 (CREAT) and psi, and a suggestive negative relationship between F6 (HYPN) and psi.

Table 45

Pearson Correlations between 7 Factors and Psi Measures for Subjects with Previous Ganzfeld Experience (N=15)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	+.27	+.11	-.40^	+.07	+.49*	+.28	-.12
SZSCORE	**+.11**	**+.12**	**-.38^**	**+.14**	**+.55****	**+.16**	**-.11**
ERANK	+.34	+.10	+.07	-.30	-.26	+.32	-.03
EZSCORE	+.34	+.16	-.12	-.14	-.12	+.29	+.02

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Table 46

Pearson Correlations between 7 Factors and Psi Measures for Subjects Naive to Ganzfeld (N=45)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	-.02	+.13	-.29*	+.06	+.06	-.18	-.22^
SZSCORE	**-.01**	**+.10**	**-.39******	**+.10**	**+.13**	**-.26***	**-.13**
ERANK	-.07	+.09	-.35***	+.02	-.06	-.19^	-.04
EZSCORE	-.00	+.10	-.26^	+.02	-.04	-.22^	-.08

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
*** p<.02, 2-tailed.
**** p<.01, 2-tailed.

The significant negative correlation between F3 (HAPABS) and psi success remains apparent for both low hypnotizable (Pearson r=-.34, p<.05, 2-tailed) and high hypnotizable subjects (Pearson r=-.42, p<.05, 2-tailed),

as can be seen in Tables 47 and 48. The positive relationship between F5 (DRMQL) and subject psi is suggestive for both lows and highs (Pearson r=+.28, +.25, respectively). For the high hypnotizables, F4 (AMTPP) is also suggestively related to subject psi success in the expected direction (Pearson r=+.26, 25df, p<.1, 1-tailed), but is unrelated for the low hypnotizables

Table 47

Pearson Correlations between 7 Factors and Psi Measures for Low Hypnotizable Subjects (N=33)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	+.11	+.08	-.21	-.06	+.18	-.09	-.28^
SZSCORE	**+.13**	**+.13**	**-.34****	**-.03**	**+.28^**	**-.17**	**-.26^**
ERANK	+.12	+.14	-.13	-.07	-.17	+.00	-.14
EZSCORE	+.19	+.15	-.10	+.01	-.07	-.04	-.14

^ p<.1, 1-tailed.
** p<.05, 2-tailed.

Table 48

Pearson Correlations between 7 Factors and Psi Measures for High Hypnotizable Subjects (N=27)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	-.06	+.17	-.42**	+.21	+.28^	-.06	-.11
SZSCORE	**-.13**	**+.11**	**-.42****	**+.26^**	**+.25^**	**-.04**	**-.00**
ERANK	-.11	+.07	-.38*	+.00	+.24	-.08	+.07
EZSCORE	-.04	+.11	-.36*	-.02	+.07	-.00	+.05

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Table 49

Pearson Correlations between 7 Factors and Psi Measures

for Female Low Hypnotizable Subjects (N=17)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	+.31	+.10	-.20	+.25	+.33^	-.08	-.20
SZSCORE	**+.27**	**+.22**	**-.48****	**+.25**	**+.46***	**-.19**	**-.15**
ERANK	+.40^	+.12	-.03	+.01	-.17	+.14	+.08
EZSCORE	+.48**	+.12	-.00	+.13	-.06	+.06	+.02

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Table 50

Pearson Correlations between 7 Factors and Psi Measures

for Male Low Hypnotizable Subjects (N=16)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	-.07	+.04	-.62****	-.19	-.10	-.13	-.27
SZSCORE	**-.01**	**+.01**	**-.60*****	**-.14**	**-.01**	**-.21**	**-.27**
ERANK	-.15	+.14	-.56**	-.06	-.34^	-.14	-.36^
EZSCORE	-.08	+.17	-.52**	-.01	-.22	-.15	-.28

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.
*** p<.02, 2-tailed.
**** p<.01, 2-tailed.

Table 51

Pearson Correlations between 7 Factors and Psi Measures for Female High Hypnotizable Subjects (N=13)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	-.17	+.48*	-.55*	-.03	+.39^	-.00	-.14
SZSCORE	**-.40^**	**+.44^**	**-.48***	**+.00**	**+.30**	**-.00**	**+.06**
ERANK	-.38^	+.36	-.25	-.15	+.37	-.34	+.10
EZSCORE	-.32	+.27	-.28	-.15	+.21	-.26	-.00

^ p<.1, 1-tailed.
* p<.05, 1-tailed.
** p<.05, 2-tailed.

Table 52

Pearson Correlations between 7 Factors and Psi Measures for Male High Hypnotizable Subjects (N=14)

	F1 CREAT	F2 ALTGNZ	F3 HAPABS	F4 AMTPP	F5 DRMQL	F6 HYPN	F7 GCTIME
SRANK	+.01	-.09	-.33	+.45*	+.18	-.19	-.09
SZSCORE	**+.00**	**-.20**	**-.39^**	**+.52***	**+.20**	**-.13**	**-.04**
ERANK	+.10	-.31	-.49*	+.25	+.06	+.06	+.04
EZSCORE	+.20	-.13	-.35	+.25	-.10	+.00	+.09

^ p<.1, 1-tailed.
* p<.05, 1-tailed.

An examination of the four non-overlapping groups of low and high hypnotizable females and males (Tables 49 through 52 above) discloses the uniformity of the negative relationship between psi success and F3 (HAPABS), which is suggestive or significant for subject judging in all four

groups, and most strongly significant for low hypnotizable males (Pearson r=-60,14df, p=.014, 2-tailed), who were most successful in the psi task.

Notice that F1 (CREAT) correlates positively with psi success for low hypnotizable females (r=+.27), more strongly in experimenter than in subject judging (r=+.48), and negatively for high hypnotizable females (r=-.40), and essentially zero for both low and high hypnotizable males. The difference in correlation between low and high hypnotizable females is suggestive for subject judging (z=-1.69) and significant for experimenter judging (z=2.064).

The significant positive relationship between F2 (ALTGNZ) and psi success that was seen for females is stronger in the high hypnotizable females (r=+.44) than in the low hypnotizable females (r=+.22), while it is close to zero for low hypnotizable males, and slightly negative for high hypnotizable males (r=-.20).

F4 (AMTPP) is significantly positively related to psi success for high hypnotizable males (r=+.52), and non-significantly positively related for low hypnotizable females (r=+.25), but is unrelated for high hypnotizable females, and the correlation is non-significantly negative for the low hypnotizable males who were most successful at the psi task.

Appendix J

Randomization and Response Bias

As can be seen in Table 53, the randomization procedure resulted in a balanced distribution of target placements within packs. Looking at the pattern of first choices for subject (S) and experimenter (E), there appears to be a response bias in experimenter judging toward favoring the last picture in a pack (D), and a tendency to avoid choosing the third picture (C). However, in examining the number of times pictures in these places were chosen when, in fact, they were correct, it appears the experimenter was correct more often than chance expectation for both the most chosen (D) and least chosen (C) placements.

For the target packs used in this experiment, the second picture (B) in the pack was chosen by subjects only once out of the 13 times it was the target (8% of the time). However, it was chosen 15 times in the remaining 47 trials (32% of the time) when it was not the target A post-hoc examination of the 10 pictures labeled B in their packs revealed five of them to have bizarre and powerful (distortions of the human form) or possibly frightening content (depicting danger, death, anger, or violent aggression). An examination of the entire target pool reveals only 7 other pictures among the remaining 30 that might be considered threatening.

Table 53

Randomization and Response Bias for Target Placement within Packs for Subject (S) and Experimenter (E) First Choices

		A	B	C	D	Sum
NUMBER OF TIMES TARGET (MCE=15)		14 (-1)	13 (-2)	17 (+2)	16 (+1)	60
NUMBER OF TIMES CHOSEN (MCE=15)	(S)	13 (-2)	16 (+1)	12 (-3)	19 (+4)	60
	(E)	10 (-5)	18 (+3)	9 (-6)	23 (+8)	60
TIMES CHOSEN WHEN TARGET (% TIMES CHOSEN) MCE=25%	(S)	2 (15%)	1 (6%)	3 (25%)	6 (32%)	12
	(E)	2 (20%)	3 (17%)	4 (44%)	9 (39%)	18
TIMES CHOSEN WHEN NOT TARGET (% TIMES CHOSEN) MCE=75%	(S)	11 (85%)	15 (94%)	9 (75%)	13 (68%)	48
	(E)	8 (80%)	15 (83%)	5 (56%)	14 (61%)	42

It would be interesting in future research to see if such anxiety provoking pictures exert a "pull" when they are not the target and a "push" when they are. This is an idea of psi-missing mechanisms for threatening target content that is complementary to one proposed by Schmeidler (1985) for attractive control picture content, where, in a psi task that requires both resemblances to the target and avoidance of resemblances to control pictures for success, a preconscious global "scan" of the whole array in which the target is embedded may lead to the emergence into consciousness of more especially relevant, prominent or compelling features in the

background (the control pictures) than aspects of a less personally relevant target picture, leading to psi-missing.

Both subject and experimenter judging chose (B) pictures more often than any other in the pack when (B) was not the target. Perhaps the "prominent feature in the background" displacement to a control picture was operating for some subjects to some of the (B) pictures when not the target, or, perhaps when not the target, a picture with powerful or negative emotional content sometimes tends to be given more weight during the judging process because it draws attention.

However, when a target picture is anxiety-provoking to a subject, if the feeling of a picture "enters" or activates associated feelings or thoughts at an unconscious level (by unknown mechanism) that threaten to raise subjects' anxiety during the Ganzfeld, there may be psi-missing, that is, avoiding the target, presumably using psi, more often than one should expect by chance, by several mechanisms.

First, threatening target information may be blocked before entering conscious attention, so that there is systematic avoidance of target elements. This might either take the form of avoiding the entire target pack, or only avoiding the target. Avoidance of the target should be reflected in very low ratings of the target by all judges. In fact, avoidance of the target might be mediated by focusing on one or more control pictures to the exclusion of target information. This mechanism should be apparent in high control ratings and be reflected in highly negative z-scores derived from ratings for both subject and independent judging. High or low ratings of control pictures would distinguish among these mechanisms of avoidance.

Second, target elements may enter awareness but be censored by lack of verbal report. In all these cases, there should be a measurable

systematic avoidance of elements of the target picture in the reported mentation, so that there are fewer associations to the target than what one would expect by chance (which might be defined, for instance, by establishing a baseline of average number of associations from groups of mentation reports to the picture when it was not in the target pack for the session).

On the other hand, if aspects of the threatening target picture get as far as the verbalized report, an unconscious "censor" may sometimes block the subject's acknowledgment of associations to the picture, sometimes with denial, dismissal, and by distraction to perceived connections to preferred control pictures, so that attention is directed away from recognizing connections to the target, which the subject gives a low rating. In other words, the information is in the subject's mentation but the subject (judge) shows systematic resistance to seeing correspondences to the target. This can happen when either the concept of psi success is disturbing, or when specific target content resonates with an area of conflict in the subject (judge).[1]

These psi-missing mechanisms might be predicted by examining subjects' reactions to threat, with subliminal presentations of threatening

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[1]A possible example of the former is Palmer's (1979) study of Trancendental Meditators, where TM subjects scored below chance (psi-missed), independent judges trained in clinical psychology scored above chance (psi-hit) with the same data, with a significant difference between the subject and independent judgings. Since aggrandizing psychic powers is considered a false path that does not lead to the goal of enlightenment, it might be argued the subjects with this belief system were motivated to "not see" correspondences that were apparent to clinically trained judges.
As an example of the latter in the present data, a highly creative and fairly highly hypnotizable actress who was in therapy for stage fright became very uncomfortable, reported feeling alternately too hot, too cold, like going to the bathroom, and like throwing up during much of the Ganzfeld session, and judged the target picture of dancers on a stage as her last choice. Only after feedback did I think to ask her what her stage fright symptoms were, which turned out to be all the unpleasant physical experiences she had reported in the Ganzfeld but not associated to the stage picture.

material, and autonomic and verbal report measures, while types of psi-missing might be distinguishable by examining the pattern of subject and independent judgings. In the case of avoidence of target information, both subject and trained independent judges should find few correspondences between mentation and target and both should give the target a low rating. In the case of non-verbalized information, the subject might have useful recognition memory (maybe a "feeling" about the target) that would be unavailable to independent judges, thus one might find trained independent judges giving the target a lower rating than subjects did. In the case of avoidance in the judging, one should expect independent judges to find many correspondences that subjects missed or denied, and give the target a higher rating than subjects. One might predict the first and third mechanisms would vary directly with subjects' tendency to use denial as a defense against anxiety.

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