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ESP and Changed States of Consciousness Induced by Meditation

KARLIS OSIS AND EDWIN BOKERT¹

ABSTRACT: An experiment based upon a theoretical model was designed to explore the relationship between ESP processes and changed states of consciousness induced by meditation. A pilot study and two experiments were performed over a three-year period. The changed states at each session were ascertained by means of scaled item questionnaires and free tape-recorded descriptions. Two tests were used: a closed circuit television version of Brugmans' test and a slide test. The questionnaire responses were factor analyzed and three stable replicated factors obtained; one additional factor was partially replicated. Factor scores of the stable factors, self-transcendence and openness in particular, were found to be associated with ESP. However, the "gating" of ESP to consciousness (as psi-hitting or as psi-missing) often was not swayed by the changed states processes and followed individual patterns.

THEORETICAL CONSIDERATIONS

Cases of ESP in Self-Induced Changed States of Consciousness

In the folklore of East and West, ESP has always been associated with changed states of consciousness. In the West, mediums and mystics have done their divinations in trance-like states which appear to be quite different from ordinary states of consciousness. In modern times Mrs. Upton Sinclair, the wife of the famous novelist, developed concentration techniques which proved very effective in producing ESP to order (20). Unfortunately, parapsychologists have not learned how to teach these skills to their subjects, so no modern laboratory experiment can boast of comparable results.

In the Far East, the yogis and Zen masters have worked out methods for inducing changed states of consciousness which they claim will bring paranormal abilities up to the level of awareness.

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And finally, our warm appreciation to all the people who took part so enthusiastically in our meditation groups.

Our studies of the lives of religious leaders of the East turned up a wealth of ESP anecdotes associated with them. It seems clear that Ramakrishna (17) used ESP in the process of interacting with his disciples, especially to induce changes in their states of consciousness. It is recorded that he once "saw" his chief disciple, Vivekananda, by ESP long before they first met. It was reported that Ramana Maharshi, the prototype for the guru in *The Razor's Edge*, had transferred his own peak experiences to his disciples by using silent concentration; or in other words, by psychic invasion (18). Many other such observations have been well documented, and although they are prescientific, they do indicate an area of investigation of great promise.

Experiments Relevant to ESP in Changed States of Consciousness

Psychical researchers concluded relatively early, in Myers' time, that there is much more ESP available in the deeper strata of consciousness than manifests at the surface levels of awareness. They also identified changed states of consciousness, such as trance, hypnosis, and automatism, as means of reaching these deeper strata. In fact, the research efforts of the classical period were largely devoted to just that part of the ESP information system: the "links" or "vehicles" between subconsciously acquired telepathic content and conscious awareness of it.

In the early states of modern parapsychology, the unconscious, or "elusive" nature of ESP was troublesome to researchers. In studying these effects, however, Rhine and his co-workers were able to derive important principles of the ESP processing system. Rhine (19) also indicated that incoming ESP signals were diverted either into psi-hitting or psi-missing on a subconscious level. Psi-missing could be due either to motivated mechanisms or to unmotivated cognitive errors such as dispersion and consistent missing. Although the evidence is far from conclusive, we feel it is more parsimonious to attribute all psi-missing to motivated error. The motivated unconscious mechanisms would operate a kind of bi-directional "switching system" which would switch incoming ESP information to a positive use—psi-hitting—or to a negative use—psi-missing. Consistent missing could then be interpreted in two phases: first avoiding the real target, then choosing a substitute response in a fixed manner.

An effort to bypass these problems entirely was made by Dean (4) in his plethysmograph experiments. He used changes in blood flow volume as an indicator of ESP. Such physiological responses are clearly outside of conscious awareness.

Recently there has been some excellent work which specifically

relates ESP to changed states of consciousness. But the emphasis has always been placed on states of low arousal, states which are fragmented or dissociated, and states which are not self-directed. Examples of this research are Ullman and Krippner's studies of sleep and dreams (23) and Tart's work with hypnosis (21).

We feel there is also much to be learned from studying changed states such as those aimed for by meditation techniques. Our interviews with psychics, creative artists, and persons who practice meditation strongly indicated the need for a study of highly integrated holistic states, where the resources of the entire personality seem to be mobilized in integrated action.

Optimal States of Consciousness for ESP: A Heuristic Model

Before describing more fully the process of meditation and our experimental investigations, we would like to give a theoretical model of ESP processing on which this discussion can be based. Of course, there are many more gaps than bridges in our parapsychological knowledge and our model is an incomplete one which will primarily be of heuristic value in guiding the design of these experiments and for understanding their results. In this model (Fig. 1) the system consists of two basic parts: the external channel, the unknown X factor, which connects the percipient and agent; and the internal processing. The channel has been relatively neglected in parapsychology. It is the medium which enables a "reaching out" to the source of information, or target, sometimes over thousands of miles, and is clearly a factor extending outside the human organism's boundaries. It is the "para" part of the paranormal. The internal processing, on the other hand, is located within the human organism. Our experiments focus on the internal processing.

Our model of the internal processing of ESP consists of three basic areas: activation of search (A); reception and assimilation of signals into meaningful information (B); and the processing of this information (C,D,E). Also presented are three of the possible outputs of this processing: psi-hitting, psi-missing, and blocking (F).

Activation (A): For ESP, activation is basically a subconscious process, very loosely connected with conscious control; we seldom can "will" ESP—it just happens when the conscious and subconscious processes play together. The conscious part enables clear focusing on experimental tasks, while the preconscious part carries the ESP through. Activation is at least a three-pronged process: (a) Initiating the search, "addressing," or locating in the outside world the sources of information needed, (b) activating the external signaling system (the ESP channel), and (c) activating the receptors.

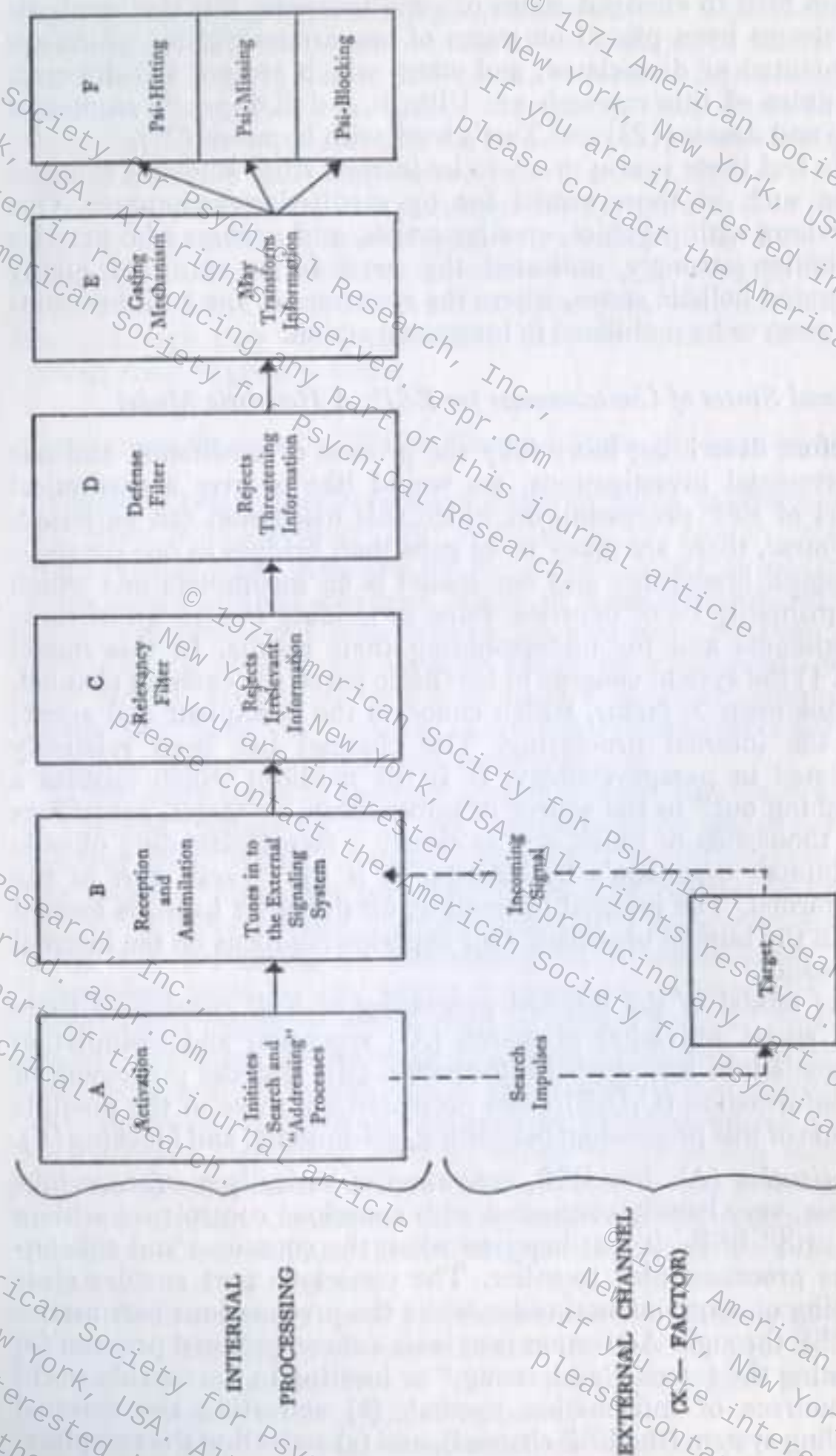


Fig. 1. Model for ESP information processing.

Reception and assimilation (B): To convert external signals into usable information, at least the following are necessary: (a) Activating the receptor mechanisms, in a process analogous to the activation and adaptation of sensory systems in normal perception. This involves a tuning in of the receptors to the external channel and to the information source selected. (b) Assimilating the signals into meaningful information. We will not be concerned with the assimilation process in this paper.

Relevancy filter (C): This is the first of the three subsystems which process the "assimilated," usable information. Its purpose is to protect the organism from information overload. The problem of relevancy, or the meaningfulness for the organism of the stimuli, has been central to parapsychology. We postulate a mechanism which screens out irrelevant information: the relevancy filter, which can be tightened or relaxed.

Defense filter (D): The concept of perceptual defenses has been worked out in psychology. Likewise, threatening or painful ESP information is often blocked. There are cases where ESP messages pertaining to death or injury are processed to awareness because of their relevancy, but they may suffer distortion. We postulate as our second subsystem of information-processing a defense filter which may block threatening or painful information. The tightness of the filter would depend on the general attitude of openness or defensiveness, and on the relevance of the information—painful but very relevant information might pass.

Gating mechanism (E) This third postulated subsystem of information processing is a much more complex process than the filters discussed above, which simply either pass or block information. Psychology has discovered a process called "gating" which may either remold, distort, or transform information before admitting it, or channel it directly to awareness. ESP uses such channels as displacement, automatism, symbolization, etc. We include in the model only the outputs (F) of the gating mechanism which are most relevant to experimental ESP in changed states: psi-hitting, psi-missing, and psi-blocking. There are many factors which may influence the gating mechanism to channel ESP in a particular direction. We will here just mention one which seemed to be important in the experiments to be described later: task rivalry. If a subject has two different types of ESP tasks to perform, he may sometimes respond with psi-hitting to the liked task and with psi-missing to the disliked one. Task rivalry can also produce psi-missing if the liked task is an activity in the experiment other than the ESP test and the disliked task is the ESP test.

Can one specify, within the framework of our model, the kind

of states of consciousness which will be favorable for ESP? In planning our experiments, we were guided by the four following points:

1. That successful ESP requires a state of consciousness which increases integration and smooth co-functioning between the subsystems of personality of our model. Especially, increased interaction—even fusing—between conscious and subconscious processes would be favorable to ESP.

2. That consciousness and the information processing system (C,D,E) must be relatively quiescent: over-bombardment with external or internal sensory stimulation and thoughts will block the passage of the ESP information to consciousness and increase the necessity for tighter filtering of incoming signals for relevancy and harmlessness.

3. That situations and attitudes which enable a nondefensive openness both to one's own depths (subconscious) and also to what is other than oneself (Murphy's "openness to the internal and external world") are necessary for good ESP reception. Such attitudes and situations would favorably influence the "gating" and tend to open the filters. Environment experienced as threatening or aggressive would probably be filtered out unless it was extremely relevant, e.g., as in crisis situations. Environment experienced as harmless and to which the organism turned, so to speak, with love and joy, would be optimal for ESP reception.

4. That ESP activation (A) and reception (B) mechanisms probably need to be sensitized and attuned to the external factors of ESP channels, whatever they might be. This seems to be facilitated by the feeling of loosening self-boundaries. A feeling of being connected with the environment and attuned, even loving, rather than being an island with a strong demarcation around the self, would be an ideal state for ESP reception.

The Induction of Optimal States of Consciousness for ESP Arousal

Anecdotal cases and experimental studies have suggested that states of consciousness which differ from the ordinary, everyday manner in which one experiences himself and the world about him may be more effective in activating ESP. K.O.'s interviews with creative artists, mainly painters, produced descriptions of a state of creative arousal which may be optimal for ESP and which filled many of the requirements of our model. However, it proved impossible in practice to get an artist to perform ESP tests when he was in the "white heat" of creation. When the Muse comes in, the artist wants everybody out of his studio so that he can paint furiously.

Changed states of consciousness induced by meditation also seem

to be ideal for ESP in terms of the model, and to be much more amenable to research. Maslow's study of so-called "peak experiences" (13) and our own studies of the literature of meditation and religious experiences indicate that certain kinds of states produced by meditation come close to this optimal state. We have already referred to the tradition of psychic occurrences in the lives of practitioners of meditation, East and West. Group interviews that we conducted with persons who appear to have had frequent ESP experiences also indicated a relationship between ESP and peak experiences induced by means of meditation.

Meditation techniques based on what is commonly called "stilling the mind," such as Zen and raja yoga, appear to decrease the ordinary, everyday preoccupations and noise level of the conscious mind. They also seem to produce greater wholeness and integration between the conscious primary and secondary processes.² Both yoga and Zen strongly discourage reliance on intellectualization, on relating to things only through our concepts of them. Self-boundaries also appear to be loosened in these states: the external is felt to be something intimately close, meaningful, and valued. Some meditation states seem to be characterized by strong arousal and intensity of experiencing, while others are states of quiescence, tranquility, and peace. It would seem so far that meditation states of either kind are rather ideally fitted to facilitate optimal activation of the ESP information system as well as the functioning of the other internal processing mechanisms.

However, when we considered the "relevancy filter" of our model, we felt there might be some difficulties. Psychic experiences seem to be common during mystical states, but mystical tradition has usually downgraded them, sometimes even to the point where they are prohibited. Perhaps ESP signals from such "trivialities" as ESP tests would simply not pass through the relevancy filter of the meditator. Another difficulty is the fragility of the meditational states. They seem to evaporate if interrupted by the secondary processes of task-oriented attitudes which are of course necessary for ESP testing. There was a likelihood that our tests would not be able to catch the whole of this quickly evaporating state.

There are many kinds of meditational techniques which induce changed states of consciousness and which permit an individual to transcend his usual organization of experience around his own ego needs. The experience which is the goal of meditation, however, is still practically nameless in psychology, although beginnings have been made in experimental psychology by Deikman (5), Kamiya

² Primary processes in this context should mean mentation of a predominantly feeling, conative, visionary, and intuitive nature. Secondary processes, we assume, are more ego-related, intellectual mentation.

(10), Kasamatsu and Hirai (11) and others. Personality theory is also only beginning to grapple with such experiences, e.g., Murphy (16), Maslow (13), and Allport (1). In parapsychology, LeShan has introduced concepts derived from peak experiences and mystical literature (12). However, his efforts are still basically philosophical, with some empirical underpinning. Our experiments, as far as we know, are the first systematic attempts to apply scientific methods to relate to ESP these little-understood experiences which are as exciting and unusual as ESP itself.

THE EXPERIMENTS

Selection of Subjects

Questionnaires asking about peak and ESP experiences were distributed during A.S.P.R. lectures. Persons responding positively were invited to group interviews, as were A.S.P.R. members whose experiences had come to our attention in other ways. Subjects were selected who reported during the screening interview: (a) a history of ostensible psychical experiences and (b) spontaneous or self-induced changed states of consciousness. Groups of six to eight individuals were formed, carefully selected for compatibility. The majority were female; their ages ranged from twenty-five to sixty-five, with the higher age-bracket predominating. Their education varied from no higher education to Ph.D. degrees. Professionally they were active in psychology, physics, engineering, education, social work, music, art, writing, and other fields.

Care was taken to select subjects from various religious backgrounds: a Unitarian, a person who had experienced Zen enlightenment, a practitioner of yoga, a Quaker, a reformed Jew, a Catholic, a member of the New Thought Movement, etc. We strove for this heterogeneity of belief background in order to decrease the influence of particular belief systems on the experimental data. Emphasis was placed on the experiential goals of the meditational practice. We also tried to select subjects to whom meditation was a kind of quest for meaning and growth in their lives. We did not select subjects whose only acquaintance with changed states was through psychedelic drugs, nor those whose methods of inducing peak experiences were based on sensory bombardment techniques (arousing cult-music, chanting, vigorous dance movements, etc.).

Meditational Procedure

The groups met weekly in two-hour sessions over a six-month period of time. The sessions began with a short period of social-

izing, during which coffee and tea were served. Each subject then rated his "mood" on a specially designed questionnaire (see Appendix 1A). Next, agent and percipient roles were assigned in the ESP tasks to be performed after the meditation. In the first few meetings of a group a subject might try several roles, but after that he would usually take the same role each time. The absence of a group member might cause one of the others to shift roles for that session.

To establish a set for the meditation, K.O. would suggest that each subject begin by trying to experience a sense of closeness, a feeling of oneness, with the other members of the group. Often a short quotation from the meditation literature or a poem was read. Then the room was darkened and a silent period of one-half hour followed.

Subjects were told to "do their own thing," to follow the meditation practice which they had found to be personally meaningful and effective. Some used Zen and Raja yoga methods, while others used self-hypnosis, depth imagery, or concentration techniques. Body postures were suggested which emphasized the straight spine and relaxed skeletal musculature. Most subjects sat in chairs, but some preferred Zen or yoga sitting postures. The amount of light in the darkened room was adjusted to group preference: from very dim lighting, where the outlines of the bodies seated in the chairs could be discerned, to total darkness where nothing could be seen. In no case was there enough light in the room to permit vision of color or any details of facial expression. Most subjects preferred to close their eyes in meditation, but those trained in Zen techniques kept their eyes open, their gaze resting a few feet in front of them on the floor. Through these procedures, subjects attempted to change their ordinary, everyday manner of experiencing themselves and the world around them.

Immediately following this half-hour meditation period, subjects participated in ESP tests, attempting to carry over the altered consciousness to the test situation. However, since the test equipment had to be used individually, some subjects had to wait until others were through. While waiting, subjects were instructed to continue their meditation. Finally, after performing the ESP tasks they completed a two-page questionnaire of psychological scales (Appendix 1B) and also tape-recorded subjective reports, later transcribed, of their meditation experiences.

Design

The research was divided into three parts:

Pilot study (1967 data)

Experiment I (1968 data)

Experiment II (January to August 1969 data)

The pilot study included fewer subjects and sessions, and fewer questionnaire items, than the 1968-69 experiments. Experiments I and II used the same basic procedure throughout.

The Questionnaires

The test instruments and procedures were developed in the pilot study. They included two questionnaires utilizing nine-point psychological scales:

(a) *Pre-session mood questionnaire.* This was intended to take stock of the baseline mood from which the meditation took off. We found that the meditation could turn out quite differently depending on whether the subject was depressed or elated to start with; tired or full of vitality.

(b) *Post-session questionnaire.* This proved to be much more difficult to develop. It had to be broad enough to cover all the major kinds of experience subjects might have during meditation. It also had to focus on the main dimensions of meditational experience as they were described in the psychological and historical literature. At the same time we wanted to keep the questionnaire culture-free, experiential and free of terminology associated with any particular belief system or philosophy. In all our conversations with subjects we demonstrated a respectful attitude to *all* belief systems, but indicated that only the experiential qualities of the meditation were of interest in this experiment. We also tried to abstain from the more poetic terms used in the research literature of psychedelic drugs ("timelessness," "spacelessness," "ineffability," etc.) as these seemed too amorphous and vague for a reasonably precise scientific instrument.

Only nineteen questions were used in the pilot study. However, the subjects criticized some questions and felt that additional ones would be required to cover their experiences fully. Discussions of the questionnaire were quite sophisticated, especially since some members of the group were psychologists. The least effective questions were dropped and others were improved in formulation. New questions, designed to better articulate the phenomenology of the meditator's experience, were introduced, bringing the total number to twenty-five. Although we have been aware of the need for some improvements and additional questions, we froze the questionnaire in its present form for the last two experiments so that uniform data could be obtained.

The ESP Tests

The Television Test: In the early twenties, Brugmans (2) and his associates at the University of Groningen developed a test utilizing motor automatisms, in which a blindfolded subject sat inside a curtained booth and moved his hand over a checkerboard outside the booth. Three agents watched through a window in the ceiling and tried by ESP to guide the percipient's hand to the square which had been chosen as the target. They achieved remarkable success. Dr. C. T. Tart suggested to us that a closed-circuit television could be used instead of the window in the ceiling, and we decided to try it. We used a matrix of 25 squares made of 2" x 2" tiles, so that the subject could feel their location with his fingertips, should he so desire. We choose a 5 x 5 matrix because based on it, Dr. Remi Cadoret, with the aid of the statisticians Greenwood and Turner, had developed an efficient system for scoring hits and near misses (3). This system was based upon the distance between the centers of the squares, and could also be adapted for scoring psi-missing. Thus if the subject chooses a square very near to the target, it results in a certain psi-hitting score, and if he chooses a square at the opposite end of the matrix a certain psi-missing score will result.³

The targets were randomized prior to the experiment and placed on a rotary "memory drum" in the sending room. The experimenter who sat near the percipient and recorded his responses was, of course, ignorant of the target sequence. The percipient sat in the room where the meditation had taken place, but moved to a seat behind a semicircular curtain next to one wall. The curtain was used to minimize distractions and to shield his eyes from the light. The light was focused on the matrix of tiles, which was set on a table before him. His arm reached to the tiles from under the curtain, and the TV camera was centered above the matrix and his hand.

At the other end of the building, the agent used the TV monitor to watch the percipient's hand moving over the matrix. A video-

³ The ESP score for any trial depends upon two things: the distance between the target and response squares and the average distance that would be expected by chance between this response square and a target square. This theoretical mean distance from the response square depends upon the position of the response square on the matrix. If it is in the center, no target square can be very far away, and the theoretical mean distance will be small. If it is in one corner, the target square may be as far away as the opposite corner, and the theoretical mean distance will be relatively large. By subtracting the actual distance between the target and response from the theoretical mean distance from that response square, we obtain an ESP score with a positive sign if the actual distance is smaller and a score with a negative sign if the actual distance is larger. Trials which receive a positive score are totaled to give the psi-hitting score for the run; trials with a negative score are totaled to give the psi-missing score for the run.

tape machine in the sending room recorded the motions of the percipient's hand. To help himself concentrate on the target square the agent placed a red chip on the correct square of a small 5 x 5 matrix. He then watched the television screen and tried to guide the percipient's hand to the chosen target square. The percipient was instructed to try to maintain the meditative state: not to think consciously about the location of the target, but rather to "surrender" his hand to the agent, in the manner of an automatism. Each percipient did a run of ten trials per meditation session. Between trials he rested his hand for five to ten seconds. He indicated his selection of a square for each trial by tapping it three times. The TV test was the only ESP test used in our pilot series, and was the test used by most subjects in the later experiments.

The Slide Test: The other ESP test used slides. They were selected from a large collection of photographs and art pictures and categorized by content.⁴

Pictures which were too complex or overly "busy" were eliminated. The collection totaled over 800 slides. For each subject an appropriate selection of at least 200 slides was made. We tried to adjust the selection to the idiosyncrasies of each person. Subjects were asked to indicate the content categories in which they were interested. If in a previous experiment a subject tended to repress or avoid slides with a certain kind of content, these were eliminated.

The agent looked at the colored picture projected on the wall; he was instructed simply to involve himself totally with the slide, to enjoy it, and from time to time to think about "sending" it to the percipient. The agent's role in the slide test was much less active than the role of the agent in the television test.

In another room the percipient tried to get impressions of the picture. Percipients worked individually, and were able to set their own pace by pressing a remote-control switch to change the slides. Usually each percipient was "sent" five slides per session. Again the instructions were to maintain the meditative state; the lighting was as dim as could comfortably be used. The responses were made on white paper in the form of sketches and descriptions of what the percipient imagined the slide to be.

The slide test was evaluated by blind judging. The judge took each session as a unit and, considering each slide separately, ranked each of the responses from one to five in order of its similarity to the slide. The rank given to the response which had actually been made to the slide determined the ESP score for that trial. For ranks one through five the scores were, respectively, +2, +1, 0, -1, and

⁴Photocopies of the slide target categories are available upon request to the authors.

—2. Then all scores with a positive sign were totaled to give the psi-hitting score for the session, and those with a negative sign were totaled to give the psi-missing score.⁵

For both the slide and television tests, we used feedback of results to the subjects as a means of motivation and of possible improvement in their ESP performance. Right after the experiment the slides used in the session were shown, and the participants in the television test also reviewed their own results on the videotape recording. Although we have not analyzed the results of feedback, our impression is that these reviews were often helpful in improving performance.

RESULTS

Our basic data consist of the descriptions of each subject's meditational experience for each session (questionnaire responses and the taped reports) and the results of the ESP test taken immediately after the meditation session. Our first set of evaluations is devoted to the meditation data and is designed to assess the basic dimensions of the changed states induced by the meditational procedures described above. After this we will describe the relations we found between the ESP scores and these dimensions.

Factor Analysis of the Data from the Changed States Questionnaires

Inspection of the scale data showed unmistakably that the responses to some scales were strongly skewed, especially in some subjects. Logarithmic transformation of the item scores was suggested by our statistical advisors and was applied throughout our data. The ESP scores were not transformed.

Factor analysis is a powerful statistical procedure for segregating basic dimensions of the data from a multitude of various measurements. It is widely used in psychology to ascertain basic personality characteristics, etc. Essentially, it groups the items (in our case, the psychological scales of both questionnaires) into natural clusters, or

⁵In neither experiment did the rankings given by the judges agree closely. In 1968 two judges were used: their scores for psi-hitting correlated .494 and their scores for psi-missing .295. In 1969 the two new judges agreed even less in their evaluations of the data from the first subject, so a third judge was added. When the results from the three 1969 subjects were pooled, however, agreement between the judges was about the same as in 1968. For psi-hitting, the results from Judges 1 and 2 correlated .300; from Judges 1 and 3, .494; and from Judges 2 and 3, .394. The psi-missing results from Judges 1 and 2 correlated .400; from Judges 1 and 3, .267; and from Judges 2 and 3, .476. Because of the increased number of judges in the 1969 experiment, we included a new measure of psi-hitting and psi-missing: the pooled results from the three judges.

factors, on the basis of intercorrelations. Then each item is weighted according to its importance for the factor by a quantity called factor "loading," which can have either a positive or a negative sign. The items with strong loadings are the descriptors of the factor. We used the Verimax orthogonal factor analysis method. Orthogonal factor analysis produces factors which do not correlate with each other; i.e., they do not overlap. Harman (7) describes this type of factor analysis.

Factor analyses were performed for the pilot study and for the 1968 and 1969 experiments. Five rotated factors were obtained each year. For the factor analyses, the questionnaire data from all group members, including the two experimenters, were used. Even if a member was not a subject in an ESP test for a session, his questionnaire data were included. The unit for the factor analysis was the subject session (individual subject's scores on questionnaires for each session). In the pilot study (1967) the analysis was taken from a sample of 12 subjects and 96 subject sessions. The 1968 data (Experiment I) represent a larger sample of 13 subjects and 197 subject sessions. At this time the total number of items on the post-session questionnaire was increased to 25, as described above, giving a total of 29 items on both questionnaires. The 1969 study (Experiment II) is a replication of the previous year. There was, again, some turnover of subjects. In addition, the meditation appeared to change as a result of personal growth of those subjects who remained. In 1969 the number of subjects grew to 25 and the number of subject sessions increased to 405. There had been two meditation groups in 1967 and in 1968; in 1969 there were three groups. In the factor analyses and the treatment of the ESP results, data from the different groups for each year are pooled.

We will present the factor loadings for each year's analysis in table form. The 1967 factor loadings are given in Appendix 2. Table 1 gives the loadings for the 1968 experiment, and Table 2 the loadings for 1969. For the sake of simplicity, items with a smaller loading than .3 are excluded. The factor loadings tend to be smaller in 1969 than in the other two years because of the larger number of subject sessions on which the analysis is based. Therefore the 1969 factors appear to be more compact, relative to the 1967 and 1968 factors, than is actually the case.

The algebraic sign of the loading is important. Also of interest is the end of the scale which is mainly represented in the data. For example, the elation/depression scale would describe elated feelings if the subjects checked the elation end of the scale most of the time; it could also describe depression if the depression end of the scale was used predominantly. To show this, we are also including the mean score for each item in the tables. Since scores on the scales

Table 1
FACTOR DESCRIPTIONS, LOADINGS, AND MEANS
1968 EXPERIMENT

Factor and Items	Factor Loading	Item Mean
Factor I: Self-Transcendence and Openness		
Merging with others	.65	4.5
Feeling it was good session	.62	5.8
Unity with group	.60	5.7
Oneness with the external	.59	5.6
Relaxation	.59	5.8
Serenity	.57	6.2
Affirmation of the external	.47	5.0
Sense of presence	.43	4.4
Refreshed after session	.37	6.0
Inner resources available	.37	5.7
Love and joy	.32	5.0
Factor II: Stillness of Mind		
Absence of visual images	.54	5.3
Alertness	.44	4.9
Lack of awareness of noise	.44	4.8
Experience sustained on same level	.44	4.5
Few thoughts	.38	4.4
Perceptual enrichment	-.39	2.9
Deep insights	-.38	3.6
Refreshed after session	.31	6.0
Merging with others	-.31	4.5
Factor III: Mood Brought to Session		
Elation	.84	5.8
Freedom from anxiety	.82	6.6
Content with self	.82	6.4
Great vitality	.41	5.0
Spontaneity	.33	4.8
Factor IV: Meaning Dimension		
Visual images relevant	.79	3.9
Thoughts relevant	.77	4.3
Deep insights	.50	3.6
Alertness	.38	4.9
Sense of presence	.35	4.4
Inner resources available	.33	5.7
Factor V: Intensification and Change of Consciousness		
Intensification of consciousness	.70	5.1
Way of experiencing changed	.60	5.3
Love and joy	.54	5.0
Perceptual enrichment	.53	2.9
Security	.48	5.8
Refreshed after session	.41	6.0
Deep insights	.37	3.6
Unity with group	.34	5.7
Feeling it was a good session	.34	5.8
Experience carried over to test	.33	5.4

Table 2

FACTOR DESCRIPTIONS, LOADINGS, AND MEANS
1969 EXPERIMENT

Factor and Items	Factor Loading	Item Mean
Factor I: Self-Transcendence and Openness		
Oneness with the external	.43	5.2
Merging with others	.41	4.3
Unity with group	.37	4.8
Change in way of experiencing	.35	5.2
Love and joy	.34	4.8
Security	.31	5.5
Factor II: Mood Brought to Session		
Elation	.55	5.7
Content with self	.54	6.1
Freedom from anxiety	.42	6.2
Great vitality	.41	5.3
Factor III: Meaning Dimension		
Visual images relevant	.48	4.2
Thoughts relevant	.47	4.4
Deep insights	.34	3.5
Factor IV: Forceful Exclusion of Thoughts and Images		
Relaxation	-.50	6.1
Affirmation of external	-.50	4.0
Alertness	.33	5.3
Absence of visual images	.32	5.1
Serenity	-.30	5.9
Factor V: General Success of Meditation		
Inner resources available	.41	5.4
Feeling it was a good session	.38	5.8
Few thoughts	.35	4.4
Experience sustained on same level	.33	4.3
Serenity	.31	5.9
Refreshed after session	.31	6.2

can range from 1 to 9, a score of 5 would represent the neutral point between the two extremes.

In describing the results of the three factor analyses, emphasis will be placed upon those factors which were replicated in the two experimental years (1968 and 1969). We interpret the meaning of each factor on the basis of the data in Tables 1 and 2, and in the context of our qualitative data and theoretical considerations. The most stable factors were Self-Transcendence and Openness, Mood Brought to Session, and the Meaning Dimension.

Self-Transcendence and Openness

Self-Transcendence and Openness was the most stable factor appearing in our data on meditational experience. It was replicated in each of the three years of factor analysis. The description or title of this factor was suggested by the cluster of three items loading highly on the factor in the 1968 and 1969 experiments. Two of the items were also present in a factor (Self-Transcendence and Mood Brought to Session) in 1967. These items appeared to describe various aspects of self-transcendence: a feeling of merging with the others; a sense of closeness and unity with the members of the group; and a feeling of oneness, as if the boundaries between "what is me and what is not me" were dissolving. A fourth item, loading less highly on the factor, also appeared in 1968 and 1969: the experience of strong feelings of love or joy. As a group, these items emerged as the most important basic dimensions of the changed state of consciousness induced by meditation.

There were, however, factor loadings in this basic dimension which varied from year to year. In the pilot study, the self-transcendence items were negatively associated with items relating to the subjects' pre-session mood. Following a change in 1968 in the questionnaire which sought to delineate more clearly and to increase the number of the items related to the mood brought to the session, these items became an independent factor no longer associated with Self-Transcendence and Openness.

In the first experimental year (1968), a number of items loaded highly on the Self-Transcendence and Openness factor which appeared to indicate the general success of the meditation: the feeling that it was a good session, relaxation, serenity, the availability of inner resources, and a feeling of being refreshed after the session. In 1969 these items were no longer associated with this factor, but became a factor in their own right.

In 1969 two new items emerged with high loadings in the Self-Transcendence and Openness factor: a change in the individual's way of experiencing, and a feeling of security. In the 1968 data these two items had loaded highly on another factor: Intensification and Change of Consciousness. What seemed to have occurred in 1969 was that the subjects now tended to associate a change in their way of experiencing with the basic dimension of Self-Transcendence and Openness. That is, they appeared to specify a particular direction of change in their way of experiencing, the direction being toward greater Self-Transcendence and Openness.

Mood Brought to the Session

In the 1968 and 1969 experiments, the pre-session mood became an independent, stable, and undiluted factor. In 1968, the four

questionnaire items relating to the individual's mood prior to the meditation received high loadings on this factor: elation, contentment with self, vitality, and feeling free from anxiety. The item of spontaneity was also associated with this factor in 1968, but in 1969 the factor reflected only the four items in the pre-session questionnaire.

Meaning Dimension

A third basic, stable factor appearing first in 1968 and replicated in 1969 was the Meaning Dimension. The three highest individual factor loadings, which appear in the two experimental years, clearly describe the factor: the presence of visual imagery and thoughts relevant to the meditation and the emergence of deep insights. In 1968, but not in 1969, this cluster of items relating to meaning was mixed with items describing alertness, a sense of presence, and the availability of inner resources.

Additional Factors

The remaining factors emerging from our three years of factor analyses were dimensions not replicated in the two experimental years. While three of these factors appeared both in the pilot study and in one of the two experimental years, they cannot be considered to be strictly replicated, because of the change in the questionnaire. These three factors were: Intensification and Change of Consciousness, General Success of Meditation, and Stillness of Mind.

Intensification and Change of Consciousness

This factor tended to be mixed and diluted, containing items which appeared also in two other factors. It also appeared to be relatively unstable, since it was not replicated in 1969. In the pilot study the nature of the items with high factor loadings suggested a dimension which could be described as intensifying and changing the state of consciousness, as well as an increase in energy and alertness. In 1968 a number of new items were found to load heavily on this factor, creating a mixed, relatively diluted picture. Omitting from consideration those items which were also contained in other factors, there still remained three highly loaded items which appeared to be essential to the factor and hence gave the factor its title: the intensification of consciousness, change in the way of experiencing, and the 1967 item of the uniqueness of the experience.

General Success of Meditation

In the pilot study a factor emerged which consisted of items describing, in a general way, whether the meditation did or did not go well. In 1968 the factor was not replicated. In 1969 a factor we again described as General Success of Meditation appeared, with only a single item carried over from the pilot study factor (few or many thoughts occurring during the meditation). It appears that the General Success of Meditation factor is a mixed and unstable dimension.

Stillness of Mind

This relatively mixed factor appeared in the pilot study, was replicated in the 1968 experiment and partially replicated again in 1969. In the pilot study, factor loadings appeared to describe a serene state of consciousness in which the mind was withdrawn from the environment and there was an absence of visual imagery. Although the factor was replicated in 1968, there was a carry-over of only two highly loaded items (lack of awareness of noise and the absence of visual imagery). But the new items further underscored the description of the factor as Stillness of Mind. These new items were: few thoughts and the negatively loaded items of deep insights and perceptual changes or enrichment.

Forceful Exclusion of Thoughts and Images

This factor in the 1969 experiment partially replicates the factor of Stillness of Mind. Items related to the absence of visual imagery and alertness were again present as in the previous year. But a new quality is added to this: negative loadings on the items indicating serenity, relaxation, and affirmation of the external. In other words, the stillness dimension is now coupled with feelings of tension, effort, and forcefulness. Stillness in 1969 was apparently associated with and achieved through disciplining of the mind, an effortful control of one's mental activities. The subtle differences between this factor and the Stillness of Mind factor may reflect individual differences in the process of stilling the mind and subjective reactions to this process.

Spontaneity and Enrichment

This factor appeared only in the pilot study and was not replicated in either 1968 or 1969. The items with high factor loadings describe a dimension consisting of spontaneity of imagery, perceptual enrichment, changes in the way of experiencing, and strong feelings of love or joy.

The Relationship of ESP to Changed States of Consciousness

The 1967 pilot study provided too small a sample for the factor analysis data to correlate the ESP scores with factor scores. However, we did correlate the ESP scores with the scores on the questionnaire items. Appendix 3 shows these correlations, with the items grouped by the factors in which they have heavy loadings. In this table are correlations with the ESP data from both the total subject sample (ten individuals, fifty-seven subject sessions), and from the seven individual subjects who had at least six ESP sessions (one run per session). The importance of psi-missing became apparent in this analysis. There are a large number of individual correlations with psi-missing and a very scant number with psi-hitting.

In our analyses of the data from the 1968 and 1969 experiments, we used both psi-hitting and psi-missing, and also a method called "canonical correlation" to combine the psi-hitting and psi-missing effects. However, we kept the data from the two years separate and did not combine the data from the television test with the data from the slide test.

Canonical correlation is described by Morrison (15) and also by Harman in his description of factor analysis (7). Canonical correlation is essentially similar to factor analysis. But instead of taking the correlations within one group of variables as determinants, canonical correlation takes as determinants the correlations between two groups of variables. In our case, the two groups are the dependent variables (psi-hitting and psi-missing) and the independent variables (the five factors). Since there are two dependent variables, two new combinations of these ESP variables are possible. The first new combination (first canonical variable) combines psi-hitting and psi-missing in such a way as to express the maximum association with the five factors. The second combination (second canonical variable) expresses the residuals of this association. The two new canonical variables do not overlap; that is, they are uncorrelated. The first canonical variable is of course the most important one. The second canonical variable was found to have no significant relationship with any of the factors, and thus can be dropped from further consideration. The theoretical basis for combining psi-hitting and psi-missing in a joint measure and relating this to independent variables is given by Turner and Osiris (22).

The advantage of canonical correlation is not only that it reduces the two ESP variables, in effect, to one. This could have been done more simply by using the deviation from chance per subject session as a measure rather than separating psi-hitting and psi-missing on the different trials. This deviation from chance, however, is only

one of an infinite number of possible combinations of psi-hitting and psi-missing. Canonical correlation gives a measure (the first canonical variable) which weights psi-hitting and psi-missing so as to produce the closest association with the factors. It also produces a measure, the canonical correlation coefficient, which expresses the total association between all of the independent variables and a canonical variable.

Figuratively speaking, canonical correlation gives us a picture of the forest. But we also need to look at the trees. We need to see the differences in the effects of changed states of consciousness on psi-hitting and psi-missing. We want to look at the effects of the changed states on the total subject sample (pooled data from all subjects). Data from the slide test and the television test will, however, be kept separate, as will data from the two experimental years. We will also consider the effects of ESP on the data from individual subjects. We performed a stepwise multiple regression analysis⁶ whenever the sample size was large enough to permit this (the total subject sample) and a Pearson Product Moment Correlation where the sample size was small (data from individual subjects). For a detailed description of the stepwise multiple regression analysis, see Morrison (15). In the 1968 and 1969 experiments, individual correlation analyses were made only for those subjects who had at least eight ESP session scores.

We arrived at the following four types of analysis of our data, in decreasing order of generality:

⁶Stepwise multiple regression analysis is the most widely used of multivariable statistical methods in the life sciences. It has its strength in making complex processes affected by a multitude of interacting variables accessible to research. But it also has its limitations, especially in the use of probability estimates.

There are two legitimate and widespread applications of statistical tests of significance: (1) for the use of hypothesis testing; (2) for selection or screening of important variables. In the present paper we have primarily used the second application. The F-test and resulting probabilities associated with these tests are exact and valid. However, the reader must be warned that because the particular F-test is selected from a large set of both possible and actually calculated F-tests, they should be regarded as conditional tests, rather than marginal tests. These are two standard terms of probabilities. That is, the probability levels associated with the tests and reported here depend specifically upon the sequential selection procedure which has been described elsewhere (15). There is no harm in this powerful use of the statistical test applied as a screen, as long as one keeps in mind this conditional nature of the probability levels. Perhaps some confusion could be avoided if instead of reporting probabilities, we reported the negative logarithms of the probabilities, and instead of probability we speak in terms of an informational measure of association, for that is the purpose of the use of the test and the use of the probability level in the screening procedure; i.e., of ascertaining the relative strength of association of the various variables involved. However, since the use of the ordinary probability levels is so widespread, we will adhere to the common practice and report those. A contemporary discussion of this entire problem has been given by Pope and Webster in a paper entitled "The Use of an F-Statistic in Stepwise Regression Procedures," presented at the 1970 Spring Meeting of the Eastern North American Region, Biometric Society, at Chapel Hill, North Carolina.

(a) Stepwise multiple regression analysis using the first canonical variable and the factors, for the total subject sample.

(b) Stepwise multiple regression analysis performed separately on psi-hitting and psi-missing, using the factors, for the total subject sample.

(c) Correlation of psi-hitting and psi-missing scores for individual subjects with the subject's factor scores.

(d) Correlation of psi-hitting and psi-missing scores for individual subjects with the subject's scores on each separate scale item.

Analysis (c) where factor scores were used for individual subjects, needs comment. It is mid-way between completely individualized and general analysis, because we used the factors derived from evaluations of the data from all members of the meditation group. In analysis (d), however, the data from a single individual is used as a unit by itself.

In 1968, the total subject sample of ESP data consisted of sixty-seven subject sessions (runs) from six subjects on the television test, and twenty-two subject sessions (runs) from two subjects on the slide test. These same six subjects on the television test and two subjects on the slide test are given individual correlational analyses (c) and (d). In the 1969 experiment, the total subject sample for the television test included 161 subject sessions from fifteen subjects. The slide test total subject sample included thirty-five subject sessions from three subjects. Individual correlational analyses were performed for eight of the television test subjects and all three slide test subjects. The number of sessions for the subjects who had individual correlational analyses ranged from eight to sixteen apiece in 1968, and eight to twenty apiece in 1969. There was only one case each year where a single subject took both ESP tests.

The Relationship of the First Canonical Variable to the Factors

Table 3 gives the significant F values produced for each of the 1968 and 1969 factors in a stepwise multiple regression analysis with the first canonical variable. The F values represent the highest F values attained by each independent variable (factor) in the five steps of the multiple regression analysis. The main trend is apparent: the factor of Self-Transcendence and Openness is significantly related to the ESP scores in three out of the four analyses performed. In our opinion, a definite relationship between ESP and Self-Transcendence and Openness, which cuts through the different subject samples, is indicated. This is the principal and most general finding of the experiment.

The factor of Mood Brought to Session had two significant F

Table 3

STEPWISE MULTIPLE REGRESSION ANALYSIS OF THE FIRST CANONICAL ESP VARIABLE AND THE FACTOR SCORES WHICH GAVE SIGNIFICANT F RATIOS FOR THE TOTAL SUBJECT SAMPLE, 1968 AND 1969

Factor	Television Data		Slide Data	
	1968	1969	1968	1969
Self-Transcendence and Openness		7.3***	14.0****	7.1**
Mood Brought to Session	5.9**			4.6*
Intensification and Change of Consciousness (1968 only)	6.2**			

*P = .05. **P = .025. ***P = .01. ****P = .001.

values out of four analyses. We would conclude that this factor is of some importance. The factor called Intensification and Change of Consciousness, which appeared in the 1968 but not in the 1969 experiment, showed a significant relationship with ESP scores only in the television data. It will not be possible to assess the importance of this relationship until the data from our next replication study, now in progress, are analyzed. None of the other factors showed significant relationships with the general ESP measure, the first canonical variable.

The canonical correlational analysis also provided a measure of the relationship between the five changed states factors, taken together, and the first canonical variable. This measure is the coefficient of canonical correlation (not to be confused with the canonical variable). It reached significance (.784, $P = .025$) only for the 1968 slide data. Our interpretation is that the changed states measures taken as a whole do not significantly relate to ESP as measured by our experiment. In other words, not all aspects of the changed states of consciousness affect ESP, but just those subsumed under self-transcendence and mood brought to session.

This analysis, our most general, does not permit us to determine the direction (positive or negative) of the change in ESP connected with the factors. The canonical variables for each of the four analyses (slide data 1968 and 1969; television data 1968 and 1969) represent different combinations of psi-hitting and psi-missing, and it would unduly complicate the picture to consider these weights and their algebraic signs as they relate to other variables. Our separate analyses for psi-hitting and psi-missing will show

how the factors relate differently to these effects, and will also give the direction of the relationships.

Psi-Hitting and Missing Related to the Factors

Results from the stepwise multiple regression analysis of psi-hitting and psi-missing and the factor scores from the total subject sample are given in Table 4. Certain important differences between

Table 4

STEPWISE MULTIPLE REGRESSION ANALYSIS OF PSI-HITTING AND MISSING SCORES AND THE FACTOR SCORES WHICH GAVE SIGNIFICANT F RATIOS FOR THE TOTAL SUBJECT SAMPLE, 1968 AND 1969

Factor and Experiment	Television Data		Slide Data	
	Psi-Missing	Psi-Hitting	Psi-Missing	Psi-Hitting
Self-Transcendence and Openness 1968			14.4*** (A)	
Self-Transcendence and Openness 1969	-4.6*	5.8**	22.3*** (B)	
Mood Brought to Session 1968		5.9**		
Mood Brought to Session 1969 (curvilinear)				5.2* (A)
Meaning Dimension 1969	4.3*		-5.6** (B) -5.6** (D)	
Forceful Exclusion of Thoughts and Images 1969				7.2** (C)
Intensification and Change of Consciousness 1968		-6.0**	5.7* (A) 4.8* (B)	
General Success of Meditation 1969				-4.5* (D)
General Success of Meditation 1969 (curvilinear)		-6.0**		

*P=.05. **P=.025. ***P=.01. (A)=Judge 1 (B)=Judge 2 (C)=Judge 3
****P=.001. (D)=Judges Combined

this table and Table 3, which gives the results using the canonical variables, should be noted. In Table 4, but not in Table 3, the F ratios either represent positive relationships with the ESP measures or have negative signs. F ratios, of course, do not have algebraic signs, but we have added them after deriving the direction of the

relationships with ESP from the beta statistic, which is given by the stepwise multiple regression analysis along with the F ratios.

Table 4, but not Table 3, also includes the results from the analysis of the curvilinear component of the factor scores. We performed this analysis of the data from the 1969 experiment only, to determine whether extremely high or low factor scores related differently to ESP than intermediate factor scores. Finally, in Table 3 the F ratios of the slide data involved results from all judges pooled. However, in the more detailed analysis of Table 4 we are also giving the results from the separate judges. In 1968 we had two judges, in 1969 three.

As we explained earlier, we are also using the pooled results of the 1969 judges, but not the 1968 judges, in Table 4 and all subsequent analyses of psi-hitting and psi-missing. The reader must certainly weigh the results differently if only one judge's data show a relationship, rather than two or all judges.

Our first question in looking at the separate results from psi-hitting and psi-missing is whether the significant relationships come mainly from psi-hitting or psi-missing. Inspection of Table 4 reveals that this depends on the ESP task. In the television test (excluding the curvilinear relationships) four out of five significant measures come from psi-hitting, which apparently dominates the scene. In the slide data, psi-hitting and psi-missing contribute equally (although there appear to be more F ratios in the slide data from psi-hitting, this must be given less weight because of the use of three judges on the same data). In the television data, good meditation (high factor score) generally increased psi-hitting and decreased psi-missing. In the slide data, however, the relationships were reversed in 1969 from the 1968 results.

Individual correlational analysis relating each subject's ESP scores to the questionnaire item scores was also performed. We scanned these correlation coefficients for patterns (see Tables 5 through 8). The direction of the correlations, positive and negative, varied from individual to individual on the same item. Our impression is that the same dimension of meditation experience shifts ESP processes toward psi-hitting in some individuals and toward psi-missing in others. Apparently the gating mechanisms in different subjects are affected differently by experiences of the same type. However, a striking uniformity in psi-hitting emerged in the 1968 data: the difference between the television test data and the slide test data. All but one of the correlations for psi-hitting are negative (17 negative) in the television data and all are positive in the slide test data (10 positive). This certainly looks like a uniform pattern, rather than a chance relationship in the data from that year. We scanned subjects' tape-recorded descriptions of their experiences

during the changed states sessions and testing. We found that 1968 subjects were enthusiastic about the slide test but often felt that the television test was rather monotonous. Perhaps task rivalry was operating to produce the above effect, with the meditation representing the favored task in comparison with the television test, but not in comparison with the slide test.

We feel that ESP activation and the gating processes intersected in various ways in our experiments, and this must be kept in mind as we turn to the description of correlations within separate factors. To facilitate easier understanding, we will deal with the major replicated factors one by one, first reviewing the effects on psi-hitting and psi-missing for the total subject sample, and then observing how individual subjects' ESP scores correlated with the particular factor scores. Then we will look at correlations between the individual subjects' ESP scores and questionnaire item scores.

Self-Transcendence and Openness

Self-Transcendence and Openness is a factor which we might expect to relate to ESP: the feeling of transcending self-boundaries might indeed be awareness of an effective ESP contact with the environment. It is the most stable of our factors and also is the factor most strongly associated with ESP as measured by the canonical variable (Table 3). In the analysis of the total subject sample which separates psi-hitting and psi-missing (Table 4), the television test data met our expectations: there was a decrease in psi-missing and an increase in psi-hitting with high scores on this factor. However, the slide data show a positive relationship between psi-missing and Self-Transcendence and Openness. At this point we can only say that scores on this factor are associated with ESP effects as we measure them, but that it is not possible to predict whether they will be expressed in psi-hitting or psi-missing. Gating to psi-missing and psi-hitting (Fig. 1) appears to be unrelated to the factor of Self-Transcendence and Openness.

Table 5 summarizes the data relating Self-Transcendence and Openness with ESP when the individual subjects are taken separately. It contains both the correlations of the individual subjects' factor scores with ESP, and also the correlations between the subjects' scores on the particular scale items which load highly on this factor and ESP scores. By grouping the individual scale item correlations according to the factors in which the scales have high loadings, we provide a framework in which the results from these smaller measurement units (items) can be seen in the larger perspective of the factors.

Table 5
SELF-TRANSCENDENCE AND OPENNESS
SIGNIFICANT CORRELATIONS BETWEEN INDIVIDUAL SUBJECTS' PSI-HITTING AND MISSING SCORES AND FACTOR AND ITEM SCORES, 1968 AND 1969

Factor and Item	Television Data		Slide Data	
	Psi-Missing	Psi-Hitting	Psi-Missing	Psi-Hitting
1968 Factor Score		-.487*	.609*(B)	
1968 Item Score:				
Merging with others	.502*	-.710*		
Unity with group	.558*	-.514*		
Oneness with the external	.698*	-.865**	.616*(B)	
Relaxation				
Serenity	.756*			
Sense of presence	-.509*	-.792*	.629*(B)	
Refreshed after session				.598*(A)
1969 Item Score:				
Oneness with the external				.592*(B)
Merging with others			.735*(C)	-.568*(A)
Unity with group	-.516*			
Way of experiencing			.661*(C)	
changed	-.649**		.654*(D)	
Love and joy			-.725*(D)	-.702***(A)
Security			-.516*(A)	-.585*(D)
			-.615*(C)	.581*(B)
			-.629*(D)	.573*(C)
				.678***(D)

*Correlations for a single subject on one item are placed in braces.
*P = .05. **P = .01. (A) = Judge 1 (B) = Judge 2 (C) = Judge 3
(D) = Judges combined

Inspection of Table 5 shows that the factor scores of individual subjects have very little relationship to ESP. The correlations of their individual item scores with ESP show one clear trend with regard to the television data: many (nine) correlations in 1968 and only two in 1969. Let us remember that we found no significant general relationship (for the total subject sample) in 1968 between the television test and self-transcendence, but a rather strong relationship in the 1969 data (Table 3). The individual correlations might give a clue as to why there was no general trend in 1968: strong individual patterns emerged which were opposite to the general trend—the more self-transcendence, the more hitting and less missing. It is rather puzzling to see that the individual self-transcendence scores often correlate positively with psi-missing (which we didn't expect) and negatively with psi-hitting (which we also didn't expect). We performed an analysis segregating the most important items directly describing self-transcendence:

"openness and closeness with group members," "merging with them," "oneness with the external." This analysis accentuated even more that reversal trend: four positive and one negative correlations with psi-missing, the opposite of what we expected. There were four negative and no positive correlations for psi-hitting, which again is the opposite direction. A possible explanation for this can be found in the taped reports from some subjects, where a greater openness was also experienced as a greater vulnerability. It appears that while intense self-transcendence did open the organism to incoming ESP signals, these signals did not always pass directly the "gates to consciousness" but the subject's response was shifted away from psi-hitting to psi-missing.

Mood Brought to Session

Mood Brought to Session is our most stable factor, which shows the most internal consistency. Let us recall that the multiple regression analysis with canonical variables (Table 3) showed two significant relationships of this factor with ESP: the 1968 television data and the 1969 slide data. Separate analysis of psi-hitting and psi-missing (Table 4) indicates that the television test scores were positively related to psi-hitting; in the slide data (Judge A) there was a curvilinear positive relationship. The linear component of the factor score was not significantly related to ESP. This suggests that positive and negative moods in their extremes strongly affected psi-hitting in the total subject sample. There is no general trend for psi-missing.

Table 6 gives the correlations from individual subjects on this factor. The individual correlations in the television data have the opposite trend to that in the pooled data from the total subject sample; negative correlations with both psi-hitting and psi-missing. Out of the thirteen individual correlations, twelve are negative. There are very few correlations with the slide data. If we give a weight of one-half to each judge's correlation in cases where the data from all of the judges do not correlate, we obtain three and one-half negative and no positive correlations: just the reverse of the television test data. Apparently the influence of the mood brought to session is task specific in individuals where it is strongly expressed, i.e., who achieved significant correlations as individuals. For the less interesting television test, the good mood shrinks the score in both directions, hitting and missing. In the slide test, the relationship is more straightforward. Apparently task rivalry is again a factor in the television data. These relationships with the two ESP tasks are complex, which is understandable. The mood which is brought to the session probably does not remain the same

Table 6
MOOD BROUGHT TO SESSION
SIGNIFICANT CORRELATIONS BETWEEN INDIVIDUAL SUBJECTS' PSI-HITTING AND MISSING SCORES AND FACTOR AND ITEM SCORES, 1968 AND 1969

Factor and Item	Television Data		Slide Data	
	Psi-Missing	Psi-Hitting	Psi-Missing	Psi-Hitting
1968 Factor Score		.743*		.694*(B)
1968 Item Score:				
Elation				.591*(A) ¹
Content with self				.584*(B)
Great vitality				.596*(B)
Spontaneity				.584*(A)
1969 Factor Score	.525*	-.502*	.609*(D)	-.682*(B)
1969 Item Score:	-.613*	-.474*		
Elation		-.515*	.584*(D)	
Content with self	-.719**			
Great vitality	-.479*			
Freedom from anxiety	.632**	-.488*		
Spontaneity	-.549*	-.490*		
Great vitality	-.681**	-.485*		
Spontaneity	-.602*	-.551*		
Great vitality		-.480*		

¹Correlations for a single subject on one item are placed in braces.
*P = .05. **P = .01.
(A) = Judge 1 (B) = Judge 2 (C) = Judge 3
(D) = Judges combined

after the meditation, but it definitely seemed to influence the changed states experience and therefore the subsequent ESP test.

Meaning Dimension

The factor analysis indicated the Meaning Dimension as the third stable factor of changed states experience. However, our main analysis of association between this factor and ESP (Table 3) did not produce any significant F ratios. This suggests to us that the results of other analyses involving the meaning dimension have to be interpreted with more caution than the results of the factors which were significant in the primary analysis. However, a close look at the results of the analyses of psi-hitting and psi-missing, as well as correlations of individual subject data, suggested patterns which might be very important for understanding the psi-information processing system. Of course the acceptance or rejection of these patterns would depend on verification in subsequent experiments. In the analysis of the total subject sample (Table 4), both psi-

hitting and psi-missing were significantly related to the Meaning Dimension in 1969, but not in 1968. The general trend was: the more meaning experience scored, the more psi-hitting and the less psi-missing. It is a reasonable trend toward hitting and away from missing.

However, the picture is quite different when we look at individual subjects' correlations between ESP and the meaning factor (Table 7). The first impression is that there are strikingly fewer indi-

Table 7

MEANING DIMENSION
SIGNIFICANT CORRELATIONS BETWEEN INDIVIDUAL SUBJECTS' PSI-HITTING AND
MISSING SCORES AND FACTOR AND ITEM SCORES, 1968 AND 1969

Factor and Item	Television Data		Slide Data	
	Psi-Missing	Psi-Hitting	Psi-Missing	Psi-Hitting
1968 Factor Score				.733*(B)
1968 Item Score:				
Visual images relevant			.598*(B)	.650*(A)
Deep insights				
Sense of presence	-.509*	-.707*	.629*(B)	
1969 Factor Score	-.605**		-.684*(C)	
1969 Item Score:				
Thoughts relevant			-.517*(C)	
Deep insights			-.807***(C)	
			.633*(C)	-.767*(A) ¹
				-.778*(C)
				-.825***(D)
				-.689*(C)

¹ Correlations for a single subject on one item are placed in braces.
*P=.05. **P=.01. (A)= Judge 1 (B)= Judge 2 (C)= Judge 3
(D)= Judges combined

vidual correlations with this factor than with the other stable factors. It appears as if some aspects of the meaning experience prevent the flow of ESP. There is quite a difference between the correlations of the television test and the slide test data. All correlations with the television test are negative, indicating a kind of filtering out process; i.e., high scores on the meaning dimension shrink both aspects of ESP (psi-hitting and psi-missing). On the slide data, both positive and negative correlations occur which might be attributed to gating mechanisms. It appears to us that the relevancy filter might have been at work in the television test. We suspect that when the meaning dimension is aroused in changed states, i.e., when subjects are grappling with the basic meaning of their

lives, ESP stimuli become relatively insignificant and might not pass the relevancy filter (Fig. 1). This seemed to be more true of the television test, where the square matrix used as stimulus has no intrinsic meaning. The slide test seems to be rather unaffected by the relevancy filter. Most subjects experienced the content of the slide pictures as meaningful.

A closer look at the items which correlated with the Meaning Dimension reveals that the item representing the primary processes (visual images) correlated positively with ESP. However, the items which emphasize secondary processes of thought (deep insights, thoughts felt as relevant) produced nearly exclusively negative correlations. We would not generalize too far, but it might well be that images are the vehicles for ESP and thinking the antidote for it. We feel the Meaning Dimension might turn out to be very important for ESP experiments, in providing insights on the operations of the relevancy filter and how to circumvent it.

Non-Replicated Factors

Table 8 gives the correlations between ESP and the scores of individual subjects on the factors which were not replicated over the two experimental years. It also gives the correlations with the items comprising the factors. They will be considered one by one.

Table 8

NON-REPLICATED FACTORS
SIGNIFICANT CORRELATIONS BETWEEN INDIVIDUAL SUBJECTS' PSI-HITTING AND
MISSING SCORES AND FACTOR AND ITEM SCORES, 1968 AND 1969

Factor and Item	Television Data		Slide Data	
	Psi-Missing	Psi-Hitting	Psi-Missing	Psi-Hitting
Stillness of Mind 1968				
Factor Score			.614*(B)	
Item Score:				
Absence of visual images		-.477*		
Lack of awareness of noise	.475*		-.715*(A) -.651*(B) ¹	
Experience sustained on same level			.690*(B)	
Perceptual enrichment		-.800*		
Deep insights		-.707*		.598*(A)
Refreshed after session				
Merging with others	.502*	-.710*		

¹ Correlations for a single subject on one item are placed in braces.
*P=.05. **P=.01. (A)= Judge 1 (B)= Judge 2 (C)= Judge 3
(D)= Judges combined

Table 8 (Continued)

Forceful Exclusion of Thoughts & Images 1969 Factor Score		-.663*(C)	.754*(C)
Item Score:			
Relaxation	.622**		-.633*(C)
Affirmation of the external Alertness	-.605**	-.504*(B)	.812*(B)
Absence of visual images	-.554*	-.664*(B)	-.730*(A)
Serenity	-.505*	{.761*(B) {.694*(D)	
Intensification & Change of Consciousness 1968 Item Score:			
Way of experiencing changed		-.651*	
Perceptual enrichment		-.800*	
Security	-.622*		
Refreshed after session		-.707*	.598*(A)
Deep insights	.588*		
Unity with group			
Experience carried over to test		-.541*	.586*(B)
General Success of Meditation 1969 Factor Score		.431*	-.643*(B)
Item Score:			
Inner resources available	-.488*	.727*	-.683*(D)
Feeling it was a good session	-.880**		-.756*(B)
Few thoughts	-.474*	{.700*(B) {.649*(D)	
Experience sustained on the same level	-.708*	.751*	.921***(C)
Serenity	-.505*	{.761*(B) {.694*(D)	
Refreshed after session	-.608*		.651*(A)

Stillness of Mind and withdrawal from the environment are not only the backbone of meditation techniques but are also recommended in parapsychological literature for producing ESP in the laboratory. However, here we drew a blank. Neither the canonical variable (Table 3), nor psi-hitting and psi-missing in the total subject sample correlated with this factor. There is only one pattern apparent in Table 8. All the correlations in the television data are positive for psi-missing and negative for psi-hitting.

Forceful Exclusion of Thoughts and Images, a cousin of the 1968 factor *Stillness of Mind*, is marked with more intensity and willful control. Again, our main analysis using canonical variables did not produce any significant F ratios (Table 3). In the analysis of psi-hitting and psi-missing for all subjects, the results from only one judge in the slide data related to psi-hitting (Table 4). Apparently this factor, like *Stillness of Mind*, is not a state which affects the subjects' ESP. In Table 8, no clear trends are apparent except that there are more correlations with psi-missing than with psi-hitting.

Intensification and Change of Consciousness was not a stable factor, but it related significantly to the canonical variable in one out of the two sets of data (the television data, see Table 3). The separate analyses for psi-hitting and psi-missing for the total subject sample somewhat strengthens this finding (Table 4). The factor has significant relationships with both the television and slide data on psi-hitting, and relationships with neither on psi-missing. Again, the typical pattern of task rivalry emerged: the relationships with psi-hitting were positive for the slide data, and negative for the television data. All the individual item correlations (Table 8) are in harmony with this trend, which again gives some support to the possibility that the dimension of this factor might be of some importance for ESP. However, there are not very many significant individual correlations. It appears that the association between this dimension of changed states and ESP is rather weak, but reaches significance because it is uniform for most subjects.

The factor of *General Success of Meditation* did not show significant relationships with ESP in our main evaluations. Therefore, our interpretations here too have to be seen merely as hunting for patterns to be confirmed in subsequent research. However, interesting patterns do emerge. In the data from all subjects, scores on this factor showed a curvilinear relationship with ESP (Table 4). This means that mediocre scores on this factor had more relationship to ESP than scores at either extreme. A look at individual item correlations in Table 8 provides us with another trend. Correlations from the television test contrast sharply with correlations from the slide test: in the television data all psi-missing correlates negatively and all psi-hitting correlates positively; in the slide test there is nearly a perfect reversal. We will not try to interpret this trend in the present data, but if it emerges again, it will be interesting because it is in sharp contrast with the general drift of patterns within other factors, which we have attributed to task rivalry.

On the whole, we found that the three stable factors—*Self-Transcendence and Openness*, *Mood Brought to Session*, and the *Meaning Dimension*—were rather strongly associated with ESP.

scoring. In other words, only part of the forest was important; other parts just produced some interesting trees—patterns which are promising and should be watched in future research.

ADDITIONAL DIMENSIONS OF MEDITATION DERIVED FROM SUBJECTS' FREE REPORTS

There were additional psychological dimensions of meditation which were not brought out in the factor analysis nor in our questionnaire items. These experiences were described in our subjects' post-session tape recordings of their meditation. The following are examples of these dimensions:

Imagery Related to Light

There was light, great blinding flashes of light.

I saw little effervescent particles of light, quivering like moonlight on a lake.

I saw an intense burst of light, like a 200-watt bulb turned on suddenly in the darkness right in front of my eyes.

Images of light may be associated with the emergence of new meanings, new insights, particularly the insight that "all is one"—the unity experience. Some experiences of light may also indicate a perception of a new dimension of reality which is observed for the first time, the perception of a reality that underlies all existence, i.e., the "ground of being" in Huxley's words (8).

Imagery and Sensations Associated with Energy

There was a sort of flickering, energetic quality. I felt aware of a radiating energy.

I had a feeling that there was an enormous field of golden force.

The feeling that all the energy was concentrated in one purposeful place was very, very strong.

I saw circles of light and dark energy, a central band of energy, dark and looking as through water. And I thought, "Oh yes, this is where everything grows."

Sensations of energy and force appear to be associated with the release of energy from the deeper, unconscious aspects of the self. When, through meditation, the individual's defenses against unconscious forces are lowered, energy is released and available to consciousness. Such energy is the wellspring of the individual's creativity, resources, and capacity.

Depths and Heights Imagery

He was going down, down under the sea. Then I saw the instrument panels that he had to use and he was exploring, exploring, exploring.

I finally reached my mountain top and there was the light.

Then I found myself looking up and then I thought, "Oh my God . . . I'm really flying, I am up . . ." and that at the top what seemed like eternity was the palest, palest light like earliest dawn.

Such imagery conveys a sense of reaching and exploring one's deeper self which is at the same time one's higher self. The symbolism suggests an acceptance, an affirmation of a deeper and more elevated experience than one ordinarily has.

Imagery Associated with the Body

It felt as if I had really, truly left my body. . . during the meditation it had been flying up, down, around, free all over.

This time I felt as if my mind was becoming detached from my body. . . I had very strange feelings in my body as if I were far away from it.

This implies a shift in the individual's identity. The person's consciousness is felt as no longer limited to and contained in the body. This may involve a detachment of interest in and attention to usual body stimuli and perhaps the body's defensive armoring.

Esthetic Experience

I saw a roc with a jewel in its beak which changed into a large jewel-like globe in a blue grotto. . . there was a radiance in the grotto.

There was a sensation of stars shimmering down like raindrops. . . Then I seemed to be in a beautiful forest with very tall, slender trees covered with red and gold and yellow leaves as if in autumn.

I saw carvings in jade of Chinese figurines, but they became very large and seemed to fill the whole screen. It was the Chinese goddess, Kwan Yin, in white jade and it was beautifully carved.

I saw a dark scene, a black landscape—around the edges of it I could see an amethyst light, but it was an amethyst such as I have never seen. It was beautiful. . . heavenly, this amethyst light, this glow, this radiance that surrounded the black blackness.

Esthetic imagery is often encountered in meditation, psychedelic and mystical experiences. Huxley (8) has suggested that this imagery reflects a shift in consciousness on the part of the individual from the ordinary, everyday world of common experiences to a new, higher level of awareness.

Feelings of Growth, Development, Creativity

I had the feeling that everything was alive and growing.

I had the feeling of things being edited away as if the form became more and more perfect, as if it were a very, very polished specimen of some kind that I was becoming. It was a very deep and refreshing experience.

The high point of the meditation was when I became involved in some words that I was thinking about during this week. It's a sentence from a book: "What an awesome thing it is to feel oneself on the verge of the possibility of really knowing another person!"

Such thoughts and feelings rather clearly indicate that the individual is experiencing himself as growing and developing.

Imagery Associated with Self-Concept or Self-Role

I had the image of a Tibetan monk with whom I identified.

I was Cortez leading the men.

The ship's captain was on the bridge.

Imagery related to self-role or self-concept generally reflects how the individual views himself in undertaking and experiencing the meditation. Often the roles are of explorers and adventurers suggesting that the meditator affirms the exploration of the deeper aspects of himself as an exciting, pioneering venture. Religious figures are also imaged quite frequently. The nature of the role or self-concept may indicate whether the individual views himself as essentially active or passive in the meditational experience.

Peak Experience

An example of a peak experience is given in the report of one subject in the meditation group:

It began with the reading of the poem of Alfred Noyes. The moment the lights went out I instantaneously felt the loss of self—that I just did not exist anymore. The darkness was that of the universe at the beginning. I was part of it and not frightened.

Throughout the half-hour I experienced the realization of the meaning of inner-and-outer-one. "The human psyche as the cosmos speaking... the oneness of microcosm and macrocosm,"—all these metaphors have had deep meaning for me, but this time I experienced it.

During the experience some thoughts and sensations—these little bits of me—were floating in and out. They were both part of me and not part of me. They were part of this great warm darkness. This was a darkness of the beginning—before the light came. This is where I have come from and where I will be going very shortly, and I was not afraid of it.

I cannot think of it as the great joy described by the mystics, nothing like that. Just a sense of the way it is—that is the way it is, neither joy nor pain.

It felt like floating back and forth in the ocean, like seaweed, in and out with the waves, but this is not describing it well. What I mean was that I was going in and out of the ego or self. I was moving effortlessly back and forth between these two states: the self and the not-self. And there was the feeling that they were not really different. That does not make sense now, but that's how it felt.

There was complete cessation of anxiety—"angst" in the existential sense, and also in the very personal sense of problems—of fear of illness, of loneliness, of death. All these had evaporated.

As I talk to you I can still feel it. It comes back, but not really. I know that I am enormously energized—but I also know that in a few hours I will be back in the way I was before with the old problems and fears—but *that's all right—that's the way it is.*

I experienced a sound which was extraordinary, the sound of a summer night with crickets—a continuous, high, sustained hum. Later I thought of the sacred word "Om"—it might have been that. But at the time of the experience I did not think of it. This is "the sound of silence," flashed through me, that it really was the sound of silence.

This experience was accompanied by total unawareness of my body. I have arthritis pains if I sit more than fifteen minutes in the body position I was using in the meditation, but this time I felt no pain—not even the body itself. I think I coughed once. I heard there was a cough and I think it must have been me. I just was aware that there was a cough.

It was the deepest experience I have yet had in meditation.

In this extended excerpt from one individual's meditation, there is presented a variety of phenomena which suggest a radical shift in the person's way of organizing experience. This appears to involve a shift from one's usual, everyday way of organizing experience to one in which there occurs a greater integration of the various subsystems of the personality. When this takes place the individual's experience tends to be more holistic, unified, value centered, and less shallow, dichotomized, judgmental, and ego centered.

William James in his *Varieties of Religious Experience* (9) conceptualizes this change in the way of experiencing as a shift in the center of the personality. Although we could not construct psychological scales which directly tapped this dimension, this complex alteration in personality function did seem to emerge in our qualitative data.

DISCUSSION

In these, our first investigations of meditation and ESP, we were necessarily more hypothesis-seeking than hypothesis-testing. There is very little previous work which is directly relevant to ESP in self-induced changed states of consciousness. We could not proceed as in the A.S.P.R. long distance experiments, where decades of parapsychological observation could be utilized in a multivariate design which separated the variable of interest to us from many other factors believed to influence ESP. The experiments described above, like any ESP experiments, were under the influence of a multitude of factors—personality traits, past experiences, personal relationships between subjects and experimenters and among group members themselves, etc. At this stage, they could not all be accounted for in the experimental design. However, we do believe that we have identified aspects of the meditational experience which are important for ESP and indicated others as not important.

Our factor analyses revealed some basic dimensions of meditation experience. It is important to remember that they are true dimensionalities, each having a positive and negative pole. In naming the factors, we emphasized the positive poles, but the actual experiences of subjects fluctuated between the poles, rarely reaching their limiting extremes. We must also not think of the factors as unrelated to each other in an individual experience: the experience is one living whole which is measurable in these factor dimensions but not identical with them.

A possible difficulty with our evaluation methods is the assumption of the linear nature of the variables, increasing gradually from very little to very much. Tart (personal communication) has pointed out that in changed states of consciousness there is often a rather abrupt shift of consciousness from one level to another. This seems clearly to apply to some of our scale data; for example, the feeling that one is "merging with others" is an unusual phenomenon which seems to come as a rather abrupt shift.

We must also recognize that our factors cannot contain anything which was not fed into the experiment by formulating the scale items. However, the nature of the items was not solely determined by our opinions and theories: they were developed through long exploratory studies and discussions with many members of meditation groups. We tried to adjust the items as much as possible to what these individuals considered important and real, and to keep the items in psychological terms which were free from cultural bounds and established belief systems. There remains the possibility that in doing this we left out something essential

for describing the actual experience. On the other hand, we still might have retained more of the culture than we bargained for. We feel that the factors which were replicated over the two experimental years represent real aspects of the changed states occurring in meditation, but will have to reserve judgment on the other factors.

On the basis of our model (Fig. 1) we assumed that ESP would be facilitated by a holistic state which produced increased interaction—even fusing—between conscious and subconscious processes. However, our ESP tests often required thought and judgment—what Freud called secondary processes—and these somehow seemed to disrupt the conscious-subconscious unity of the changed state. Obvious individual differences were apparent in subjects' free report data. Possibly more ESP came through for subjects whose state was less affected by testing procedures.

There were many instances of apparent spontaneous ESP in the meditation groups, and we think that the disruptive effect of the testing procedures is a major reason why the test results were not equally dramatic.

Another unexpected difficulty in our testing procedure was that some subjects felt a conflict between meditation and ESP testing: "task rivalry." Task rivalry where one aspect of the test is liked and the other disliked is well known in ESP testing and is called the "differential effect." On the liked task psi-hitting usually, but not always, occurs and on the disliked, psi-missing. This has been demonstrated in tests using double-aspect targets—for example, ESP cards with the symbols in five different colors. In our experiments, the meditation itself represented one task, and the ESP test another. Here a "differential effect" seemed to operate as a "preferential effect"—if the meditation was very gratifying, it became the preferred task, and the ESP test, by contrast, the less preferred. On the other hand, when the meditation experience was rather mediocre, the subjects seemed to enjoy the shift to ESP testing. The resulting trend toward psi-missing with a good meditation is generally stronger in the data from the television test, which subjects reported liking less than the slide test.

Initially we had hoped to find relatively simple relationships between altered states of consciousness and ESP. For example, if subjects experienced closeness and even merging with others in the group, we expected that this would be mirrored in a strong telepathic flow of information (many ESP hits). The results indicate that this expectation was not justified. Meditational experience seems to be related to both psi-hitting and psi-missing in a very complex and often individual manner. Our general impression is that the changed states experience does not sway all the

mechanisms involved in the ESP information system (Fig. 1), although it seems to affect the activation mechanisms. Much ESP appears to be stirred up in some levels of the system, but the filtering processes and gating mechanisms often act in an unpredictable manner.

Relationship of ESP to Basic Dimensions of the Meditational Experience

Self-Transcendence and Openness, our most important factor, is no stranger to modern personality theory; concepts similar to this have been worked out by James, Murphy, Maslow, Deikman, and others. This factor seems to combine the two kinds of openness described by Moriarty and Murphy (14): openness to the external and to the internal world. It seems to indicate both a lowering of the usual boundaries between the self and others (and the external environment) and a lowering of defensiveness between the surface and deeper layers of the personality.

Self-Transcendence and Openness proved in the main (canonical) analysis to be the most stable and reliable factor associated with the activation of ESP. In the total subject sample it tends, as expected, to increase the flow of ESP, both in psi-hitting and psi-missing. In the correlations from individual subjects, where the relationship must be very strong to reach significance because of the small number of runs, psi-missing is associated with high self-transcendence. We think that the gating of ESP in the direction of psi-missing may be due to task rivalry. Another possible explanation might be the arousal of anxiety after the individual achieves a peak state of openness. We have been trained since infancy to keep our defenses up. As Ehrenwald has suggested (6), only the mother-infant relationship seems to be the exception to this rule of human behavior.

The factor of **Mood Brought to Session**, establishing a baseline from which the changed states experience takes off, is compact and stable. Establishing the baseline is a stock in trade in any psychological research. This is the first time, however, that it has been introduced into a meditation experiment.

Our canonical analysis and the analysis of psi-missing and psi-hitting revealed the importance of this factor. Apparently the feeling level from which subjects start meditation exerts a strong influence on how the changed states experience will correlate with ESP. It appears that beginning the session with either a very good mood or a very bad one produces more effects than does a mediocre or even-keel mood (curvilinear relationships). Individual differences, however, are very marked; that is, for some subjects a bad

mood makes for good ESP after meditation, while for others a good mood seems best.

Finding a *Meaning Dimension* was also no surprise. The classical meditation literature abounds with examples of grappling with the basic meaning of one's life. Research with psychedelic drugs has unearthed many aspects of the meaning dimension which often appear to be overpowering in that kind of changed state of consciousness. Reintegration of surface personality with deeply felt meaning is a basic characteristic of successful meditation. However, such an illumination does not awaken very much ESP. Our meaning factor does not show any significant results in canonical correlation analysis. There is a general trend in the total subject sample toward increased psi-hitting and decreased psi-missing with higher meaning experience, but it is limited to the 1969 results. Our guess as to why this meaning dimension appears so little in relation to ESP is that it affects the relevancy filter (see Fig. 1). When subjects have experienced something of great importance to personal life during the meditation, this tends to overshadow the ESP message and make it seem trivial and irrelevant by comparison.

Non-Replicated Factors and ESP

The *Stillness of Mind* factor emerged in our pilot study and again in 1968. It was, however, not replicated in 1969. "Stilling the mind" is, of course, the backbone of the meditational methods of East and West. This stillness is in essence a process of selective activation. What are stilled are the individual's ordinary, everyday interests, concerns, problems, worries, etc. What are activated are the deeper, extraordinary aspects of the individual's experience.

The stillness factor did not appear in the canonical correlation. However, there were individual correlations of the factor loadings with ESP. For example, lack of deep insights was related to psi-hitting on the television test. Subject differences were also present. For some individuals the absence of visual images was related to ESP, while for others the presence of imagery was associated with ESP.

Complicating the picture even further was the emergence in 1969 of the factor *Forceful Exclusion of Thoughts and Images* which appeared to be a close relative of the stillness factor. Taken together, the 1968 and 1969 results suggested two distinctly different styles relating to the process of stilling the mind. One is a holistic, integrated experience having an intensity of consciousness and little cognitive content. The other is a more forceful, well-disciplined exclusion of content from consciousness. This latter dimension also does not relate to the canonical measure of ESP. According

to our model, stilling the mind would decrease the noise level in the ESP information system and thus facilitate psi processing. However, this is not borne out by our experiment. It could well be that this exclusion of content from consciousness continues during the testing and eliminates also the ESP message.

A factor entitled *Intensification and Change in Consciousness* was found in the pilot study and in the 1968 experiment. This factor was not, however, replicated in 1969. The dimension appeared to describe an intensification and qualitative change in certain aspects of consciousness such as positive feelings and perceptual enrichment.

Our results suggest that this factor has some importance for the activation of ESP, but it has little influence on the gating mechanism. The ESP thus generated could be expressed in either psi-hitting or psi-missing. We assumed in connection with our model that the arousal and energizing of several subsystems, especially the activation and receptor systems, would be important for successful ESP. The canonical variable was significantly associated with the intensification factor, supporting this hypothesis.

The factor analysis of the data for three different years showed us quite clearly that the results did not fully describe the meditation experience. There were a number of scale items which floated from one factor to another from year to year, often congregated in what we called a general factor which described the success or lack of success of meditational experience in the session.

The *General Success of Meditation* factor identified in the 1969 data showed a negative relationship with psi-hitting and also a curvilinear negative component. It is hard to interpret from only one experiment, but we strongly suspect that the linear model is not quite adequate for describing changed states of consciousness. It might be that the definite abrupt shift described by Tart is applicable here. On the other hand, a strongly negative experience during meditation may also be important. It is well known that negative experiences such as crisis situations seem to activate ESP in spontaneous cases (accident and death). On rare occasions meditation might be experienced negatively, like a bad LSD trip. Maslow coined the term "nadir" as opposed to "peak" experience (13). In fact, one of the highest scores ever achieved on the television test was obtained by a subject who had a nadir experience in the meditation which preceded the test. Negative confrontation with one's depths might activate ESP as does a positive encounter.

SUMMARY AND OUTLOOK

In this experiment we explored self-induced changed states of consciousness and their relationship to ESP. We isolated three stable dimensions of the changed state which were induced by meditation techniques: Self-Transcendence and Openness, Mood Brought to Session, and the Meaning Dimension. We also obtained some evidence of an increase in integration between subsystems of personality during such changed states. In addition, arousal and intensification of experience was indicated as an important dimension of changed states.

Correlational analysis revealed ESP activation, which was expressed in both psi-hitting and psi-missing, and was strongly embedded in other variables which influenced ESP scores. In particular, the factor of Self-Transcendence and Openness appears to be important for ESP, and worth cultivation.

We stumbled upon many complexities related to personality differences, experimental situations, and evaluations. Now that these complexities are recognized, they can be incorporated into an experimental design which would untangle the variables to be investigated from those we do not want to consider.

Realizing the importance of interpersonal relationships between agent and percipient, and possibly among the whole group, we are exploring this in ongoing studies. Physiological parameters also, as we found in subjects' self-reports, appeared to be very important in changed states and we are tooling up to include them in our experiments. Thus far, we can avow that the prescientific literature regarding changed states of consciousness appears to have many grains of truth which can be experimentally isolated. On the basis of the experimental results described above, we have come to the conviction that further investigation of this type of changed state can help to unravel some of the complexities involved in ESP processes.

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The Chester F. Carlson Research Laboratory
A.S.P.R.
5 West 73rd Street
New York, N. Y. 10023

APPENDIX 1A

Pre-Session Mood Questionnaire

Name _____

Date _____

1. I feel very happy and content with myself. _____ I feel greatly dissatisfied with myself.
2. I feel very tired. _____ My feeling is one of great vitality.
3. I feel very much elated. _____ I feel very low and blue.
4. I feel very anxious and upset. _____ I feel very free and at ease.

APPENDIX 1B

Post-Session Questionnaire

Name _____

Date _____

1. For me the session went extremely well. _____ The session went very poorly.
2. I saw no visual images during the session. _____ I experienced many visual images.
3. My visual images were irrelevant to what I generally wanted to achieve in the session. _____ My images were relevant to what I, in general, wanted to achieve.
4. I felt extremely wide awake and alert. _____ I was very sleepy this time.
5. During the session I became very serene. _____ My experience was not marked by a sense of serenity.
6. At times my body felt extremely tense and tight. _____ My body felt very relaxed and free of tension.
7. I felt an overwhelming sense of closeness with the others in the group as if all barriers separating us had been dissolved. _____ I did not experience a sense of closeness with the others.
8. At no time did I lose the strong sense of myself as an individual, distinct from the others. _____ I experienced a melting or merging with the others as if I became the group and the group became me.
9. I had few thoughts during the session. _____ My mind was filled with many thoughts.
10. The thoughts that occurred were irrelevant to what I generally wanted to achieve in the session. _____ The thoughts were relevant to what I wanted to achieve.
11. I was not aware of any positive emotional feelings during the session. _____ At times I experienced very strong feelings of joy or love.
12. I experienced a feeling of oneness as if the

boundaries between what is me and what is not me were dissolving. _____

I continuously maintained the strong sense of demarcation between myself and the world about me. _____

13. My insights and understanding became very deep and meaningful. _____

I experienced no deep insights. _____

14. At no time did I sense some awe-inspiring presence or some power greater than myself. _____

At times I sensed an awe-inspiring presence, or power greater than myself. _____

15. I was struck by an overwhelming feeling that everything in the world is "just right." _____

At no time did I experience a sense of affirmation, a feeling of "rightness." _____

16. I was not at all aware of any sounds or noises during the session. _____

At times, I became intensely aware of sounds and noises. _____

17. I felt a sense of "letting go": thoughts, images, etc., were spontaneously flowing unbound by my conscious control. _____

Whatever thoughts, images, feelings, etc., I had followed my own conscious direction. _____

18. My experience during the session left me completely worn out this time. _____

Following the session, I felt unusually refreshed and full of energy. _____

19. During or after the session objects or sounds appeared to take on extraordinary sensory qualities, e.g., brilliance, vibrance, clarity. _____

The experience did not seem to involve any changes in sensory perception this time. _____

20. I felt my experiences fluctuated and varied considerably during the session. _____

I felt that my experiences during meditation were sustained on the same level throughout the session. _____

21. My experience during the session carried over to and was present in the ESP test. _____

My experience during the ESP test was markedly different from what it was in the session. _____

22. I felt shut off from my inner resources. _____

At times I felt that all inner resources were freely available to me. _____

23. My way of experiencing was greatly heightened and intensified. _____

I did not feel any intensification of my way of experiencing. _____

24. I had a strong feeling of security or protection during the session. _____

I did not experience any feeling of security or protection. _____

25. My way of experiencing changed markedly during the session. _____

My way of experiencing did not change. _____

Appendix 2

Factor Descriptions, Loadings, and Means
Pilot Study (1967 Data)

Factor and Items	Factor Loading	Item Mean
Factor I: Intensification and Change of Consciousness		
Refreshed after session	.73	6.0
Alertness	.67	6.7
Uniqueness of experience	.60	4.4
Concentration	.54	5.7
Love and joy	.43	4.3
Factor II: Stillness of Mind		
Serenity	.60	5.9
Lack of awareness of noise	.60	4.9
Change in way of experiencing	.59	5.7
Stillness	.58	5.1
Sense of presence	.50	4.4
Uniqueness of experience	.48	4.4
Absence of visual images	.45	2.6
Factor III: Self-Transcendence and Mood Brought to Session		
Refreshed before session	-.73	5.3
Oneness with the external	.65	5.8
Good day before session	-.58	5.8
Unity with group	.44	6.3
Factor IV: Spontaneity and Enrichment		
Spontaneity of images	.70	4.6
Perceptual enrichment	.52	3.3
Change in way of experiencing	.47	5.7
Love and joy	.41	4.3
Factor V: General Success of Meditation		
Few thoughts	-.56	4.9
Relaxation	.53	6.4
Affirmation of the external	.45	2.3
Concentration	.42	5.7

APPENDIX 3

Significant Correlations between ESP Scores and Questionnaire Item Scores
Pilot Study (1967 Data)

Questionnaire Items Grouped According to Factors	Psi-Missing		Psi-Hitting	
	Total Subject Sample	Individual	Total Subject Sample	Individual
I: Intensification and Change of Consciousness				
Uniqueness of experience		.70*		
Concentration		.79*		
Love and joy		.85*		
		.81*		
II: Stillness of Mind				
Lack of awareness of noise		.99**		
Change in way of experiencing		.71*		.73*
Stillness		-.91*		
Sense of presence		-.99**		
Uniqueness of experience		.70*		
Absence of visual images		.75*		-.91*
III: Self-Transcendence and Mood Brought to Session				
Refreshed before session		-.90*		-.84*
Oneness with the external		.85**		
Unity with group		.80*		
		.72*		
IV: Spontaneity and Enrichment				
Spontaneity of images	.27*			
Perceptual enrichment	-.37**	-.82*		
Change in way of experiencing		.71*		.73*
Love and joy		.81*		
V: General Success of Meditation				
Few thoughts	.26*	.72*		-.80*
				-.76*
Affirmation of the external		.91*		
Concentration		.79*		
		-.85*		

*P = .05

**P = .01