

ESP DURING OUT-OF-BODY EXPERIENCES: A REVIEW OF EXPERIMENTAL STUDIES

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ABSTRACT: Experimental research on ESP during out-of-body experiences is reviewed under the following topics: psychological, physiological, psychokinetic, and other correlates. The evidence for ESP occurrence, as well as for the possible ESP-conductive properties of the OBE, is considered to be weak, although there have been some striking results. The research under review is compared to non-OBE ESP findings, and suggestions for further research are made in which extensions and replications of the work already done are considered, as well as the use of ideas from non-OBE ESP work. It is further suggested that ESP studies should also be done with spontaneous OBEs, since OBEs in this context may be different from those in experimental situations.

There have been a number of case studies of spontaneous out-of-body experiences (OBEs) in which it has been occasionally noticed that the experiencing person acquired information of events happening at a distance which he/she had no apparent way of knowing (e.g., Green, 1968; Hart, 1954; Palmer, 1979a; Poynton, 1975; for a review see Alvarado, Note 1). Previous to these—in the nineteenth century and even before—early “experiments” attempted to “project” a subject to a distant location to report on target characteristics. These experiments, done under a supposed hypnotic state, came to be known as “travelling clairvoyance” (e.g., Backman, 1891; Barrett, 1883; Haddock, 1849/1851). There was also the work of others, such as H. Durville (1908) and A. de Rochas (1906), in which different perceptual abilities were tested after it was claimed that the subject’s “double” was externalized by “magnetic passes.” However, there is not enough information in these reports to be sure that the subjects were having the *experience* of being out of their bodies.

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The paper being presented here will focus on modern (1960s–1970s) laboratory studies in which ESP was tested during OBEs.¹ For our purpose, an OBE will be defined as a non-dream experience in which a person thinks he or she perceives the environment from a point of view other than that of the physical body. Such a broad definition may be practical for the time being because it emphasizes the feeling of being out of the body that seems to be common to all the studies reviewed here. But because this general definition may also include under a single category potentially different types of OBEs,² caution must be taken when attempting to compare ESP results of different studies. Discussions on the conceptual problem and limitation of OBE definitions have been presented by Palmer (1978a) and Tart (1974).

ESP is defined here as the acquisition of information without sensory or inferential means; no assumption is made as to the underlying process (e.g., a hallucination of being out of the body that may be psi conducive by changes in the psychological set or state of consciousness, or the literal externalization of "mind" or some type of subtle body carrying with it the perceptual faculties of the subject).

This paper will present only brief descriptions of the relevant studies of ESP during OBEs with emphasis on their research findings; the original reports should be consulted for more methodological aspects. Studies will be discussed under category headings that indicate the general emphasis of the reports.

PSYCHOLOGICAL CORRELATES

Expectancies, Beliefs, Imagery, and State of Consciousness

Palmer and Vassar (1974) explored the effects of OBE induction on ESP scores with 60 volunteer subjects. The experimenters attempted to induce OBEs by the following methods: (1) a progressive muscular relaxation technique; (2) audio-visual stimulation to facilitate OBE

¹A few studies will not be considered in this paper because they consist only of brief mention of unpublished research (e.g., News and announcements, 1970; Roll, 1975, p. 253) and reports without the necessary details for proper evaluation (Green, 1975). No systematic attempt has been made to survey the non-English literature because of the lack of bibliographical and language resources.

²I am referring to comparisons of OBEs of different levels of vividness and the possible effect on the experience of different induction techniques (e.g., subjects' own procedures vs. experimental procedures with specific demand characteristics).

sensations (continuous sounds and a luminous rotating spiral disk); (3) instructions to travel to another room and try to see a target picture. Forty-two percent of the subjects, among 50 that were asked if they had OBEs, reported having the experience. The ESP results were in the negative direction without reaching statistical significance overall. Those subjects who reported OBEs had ESP-missing ($p < .05$); those who did not have OBEs obtained chance results. The difference between the groups was not significant.

Since subjects rated their own ESP performance on a blind basis, the data were checked to see if the OBE was associated with the ESP ratings.³ Subjects who reported OBEs gave higher average ratings than subjects who did not report the experience ($p < .001$). It was also found that ESP was positively correlated with responses to the Betts Vividness of Imagery scale ($p < .01$), and that subjects who reported moderate expectancy of success in the ESP task before the induction procedure obtained more positive ESP scores than subjects who reported more extreme (positive or negative) expectations.

Similar studies, with some differences in instructions, psychological set, and induction procedures, have also been done by Palmer. Palmer and Lieberman (1975) found significant ESP scores by subjects reporting OBEs ($p < .02$), chance scores by those without OBEs, and a significant difference between groups ($p < .05$). A visual ganzfeld was used instead of the spiral disk. Three of the subjects who saw their physical bodies during their OBEs obtained significant ESP results ($p < .05$). Further explorations with the Betts scale showed a significant positive correlation between the scale and ESP scores when the subjects took the questionnaire after knowing about their ESP results ($p < .01$), but no significant relationship when the ESP scores were received after the administration of the imagery scale. This suggests that the previous study's findings were artifactual.

Other ESP-related findings were: (1) a significant reversal of the Palmer and Vassar (1974) reported relationship between ESP and expectancy of success on the ESP task; (2) below-chance ESP scores by subjects who had read about OBEs and above-chance scores by those who had not done such reading; (3) significant positive correlations with variance ESP scores and reports of mental relaxation and maximum and percent-time detachment from the body; (4) a nega-

³This was not a measure of ESP, but of the magnitude of the ratings assigned to all pictures.

tive correlation with level of sophistication of body concept as measured by the Draw-a-Person Test. (A possible artifact was noticed when an analysis revealed that those subjects debriefed about ESP results before taking the test drew less sophisticated drawings than those who took the test after knowing about their ESP results; however, and as discussed in the report, the relationship cannot be attributed to the artifactual influence.)

Two other studies were done without finding significant results. In one of them (Palmer & Lieberman, 1976) the ganzfeld was substituted for a condition with eyes closed, while in the other (Palmer, 1979b) both ganzfeld and eyes-closed conditions were used.

According to Palmer (1978a), post hoc analyses of the performance of the subjects of the four experiments did not support the hypothesis that subjects who report OBEs have ESP scores that are significantly above chance and significantly higher than the scores of subjects without OBEs. However, further analyses showed the following: (1) both hypotheses were confirmed when the OBE induction procedure involved the monotonous sound accompanied either by the ganzfeld or by the eyes-closed condition; (2) subjects with OBEs scored below chance when the OBE induction procedure included a spiral disk or a bed vibrator (in addition to the other induction variables previously mentioned), but their ESP performance showed no difference from subjects without OBEs. Another post hoc finding was a significant relationship between ESP and scores on a hypnagogic-state scale derived from questions answered by the subjects describing their experiences during the experiment, but the relationship held only when "sensory deprivation" induction procedures were used (i.e., monotonous sound, ganzfeld, or eyes closed). Neither the OBE nor the hypnagogic scale scores were significantly related to ESP scores when considered separately; it seems that the *combination* of the OBE and the hypnagogic state was the factor related to ESP in the above studies.

Smith and Irwin (1981) used a procedure similar to that of Palmer and Lieberman (1975) to induce OBEs with 30 subjects, who were then asked to visit an adjacent room to perceive targets placed on a table. The subjects were classified as "Spiritists" or as "Laodiceans," according to whether they had a higher or lower level of concern for a metaphysical element in man indicative of immortality. Each subject was assigned an "OBEness score" based on the similarity found between his/her own description of the out-of-body sensations and the descriptions of OBEs from a spontaneous case survey (Green, 1968). No significant difference was found between the ESP scores of

the "Spiritists" and "Laodiceans," but the "OBEness score" was positively correlated with ESP ($p < .001$). However, a weakness of this study is the use of the same targets (two objects) for all subjects, which can create a "stacking effect."

Perceptual Aspects

In experiments done with Ingo Swann as subject at the A.S.P.R. (Mitchell, 1973), Swann was asked to induce an OBE and go to a shelf 10 feet above the floor of the room where he sat and to try to identify randomly selected objects there. In eight experimental sessions in which Swann correctly described the objects he perceived, the results were significant at the .000025 level. Attempts to correlate Swann's self-report of the quality of OBE vision with ESP showed that he seemed to be aware of whether or not he was successful in the ESP tests. Interesting (unpredicted) responses to targets were noticed, such as a reversal of the position of some aspects of a target. According to Mitchell (1973):

At times Swann reported that certain lighting setups were glaring or reflecting off glossy surfaces and that this reflection obscured part of the target. Several adjustments had to be made. . . . A soft, diffused overhead light and simple construction paper which absorbed light seemed to work best. Primary colors seemed to come through more clearly than pastels. Strong familiar forms seemed to be more readily perceived than unfamiliar objects and shapes. Materials such as leather, fabrics, and clay seemed to work better than plastic, glossy pictures or glass. (p. 46)

Palmer and Vassar (1974) covered the ESP targets with sheets of paper for some of the subjects but not for others in order to see if the accuracy of OBE perception would be affected, but no significant difference was found between conditions.

Perceptual OBE tests were done with Alexander Tanous as subject (Osis, 1975). Two kinds of apparatus were used: an optical device and a color wheel. Both presented a randomly determined composite picture as target, part of which was an optical illusion that could be perceived only from the viewing windows of the apparatus, the purpose being to see if results were consistent with localized OBE vision expected in an externalization model. Overall results were not statistically significant. Other analyses were made in terms of Tanous's feelings of success on specific trials, called high-confidence trials, which were characterized by feelings of being OB without any body, like a "spot of consciousness" or concentrated pinpoint of light, and by

a feeling of oneness with existence. Tanous obtained scores approaching significance ($p < .054$) on the high-confidence trials with the optical device only in the last part of the experiment, when, according to Osis, "he had mastered the test" (Osis, 1975, p. 54). A similar tendency was observed on tests with the color wheel; only the high-confidence scores, as opposed to the overall and low-confidence trials, were significant ($p < .04$). In the second half of this last study, there were significant scores ($p < .008$) on aspects of the optical illusions that were assumed to require localized OB vision in front of the apparatus. However, none of the analyses were predicted in advance; they were part of many other post hoc analyses, and the few significant values obtained should be evaluated in the light of future replications.

PHYSIOLOGICAL CORRELATES

Tart has done three OBE-ESP studies in which physiological readings were taken during the OBE periods, although no direct attempt to correlate ESP with the physiological readings was done. The first one published used Robert Monroe as subject (Tart, 1967). A randomly selected five-digit number was placed in a room outside the subject's perceptual range for Monroe to read during an OBE. EEG, eye movements, and heart activity were monitored. However, the number was not seen at any time.

In another experiment with an anonymous Miss Z (Tart, 1968), a five-digit randomly selected number was placed on a shelf out of the subject's reach, but in the same room (7 feet from the floor). Miss Z was lying down on a bed with EEG electrodes attached to her head. She tried to read the number for several nights while out of the body during sleep and was successful ($p = 10^{-5}$) only in the fourth and last attempt.⁴ An alphoid EEG pattern (7-8 Hz) as well as no REM or change in heart and galvanic skin response activity was found to coincide with OBEs, including the one involving the ESP incident. These findings seem to be related to the OBE, not to ESP during the experience.

Tart (1969) studied Monroe again using a procedure similar to that

⁴The possibility that the number could be perceived subliminally from the reflection of the target on the case of a clock standing above the target, although considered unlikely, led Tart (1968) to state that "Miss Z's reading of the target number cannot be considered as providing conclusive evidence for a parapsychological effect" (p. 18).

of the first study. Monroe could not read the target while out of the body, so the physiological correlates of the OBE will not be reported here.

One of Palmer's (1979b) studies considered physiological aspects of ESP, though the large number of analyses performed must be taken into consideration in assessing the significance of the findings. EEG data were correlated to ESP scores in 96 analyses, 10 of which were significant, indicating that:

ESP scores correlated positively with an overall proportion of EEG alpha and negatively with EEG beta. A composite index consisting of alpha minus beta correlated significantly with ESP scores for the baseline period . . . the correlation for the test period was significant only for the right hemisphere . . . , although the correlation for the left hemisphere was quite comparable in magnitude. (p. 138)

ESP/PK CORRELATES

A study done with Tanous explored possible relationships between ESP and PK effects during OBEs (Osis & McCormick, 1980). Tanous tried to "visit" the optical device of a previously mentioned study (Osis, 1975) to perceive the target while vibrations in front of the apparatus window were measured with strain-gauge sensors (Tanous knew about the sensors but the experimenters tried to create the impression that only the perceptual responses were the main concern at the moment). Measurements were taken in two sessions of four two-second intervals before and after the target generation for each experimental trial. There were 104 hits and 83 misses in 20 sessions. The mean activation level of the strain-gauges across the eight sampling periods was higher when ESP hitting occurred ($p < .002$). Mean strain-gauge activation level was also significantly higher just after target generation (when Tanous tried to see it) for ESP trials that were hits than for those that were misses ($p < .05$). (Blackmore [1981a] and Isaacs [1981] have criticized this study in terms of design and statistical evaluation. However, Osis and McCormick [1981a, 1981b] have presented detailed counterreplies.)

OTHER STUDIES

This section includes studies done just to obtain evidence for ESP or to relate it to other variables not discussed above.

Long-distance OBE-ESP studies done with about 100 volunteers by

the A.S.P.R. have not been formally published, but some available data may be included here (Osis, 1974b). Participants tried to obtain information of persons and objects placed in the target area. About 85% of the participants were unsuccessful, although they claimed to have perceived the target while out of the body. Osis (1974b), referring to the remaining subjects, writes:

Of those individuals . . . who have shown some signs of OOB perceptual power, we did not find a single one who could see things clearly every time he felt he was out of the body—the perception ranging from fairly good (i.e., clearly distinguishing some objects) to complete failure (i.e., producing very foggy or totally incorrect images). (p. 111)

Auditory targets were used by Harary and Solfvin (1977) to test for ESP during OBEs. Their subjects were six students in a parapsychology seminar who had never had OBEs, and two subjects who claimed they could induce the experience at will: Ingo Swann and George Kokoris. All of them had to identify tape-recorded sounds played at a distant location and to indicate whether the person in charge of monitoring the randomly selected tapes was present or absent. The six subjects passed through several procedures (not specified in the report) to induce OBEs. The results were analyzed separately in terms of inexperienced and experienced OBE subjects. Only Swann obtained significant results, scoring direct hits on the auditory and detection tasks ($p < .05$). (The published report does not say if it was planned in advance to analyze separately each of the two experienced subjects or if this was a post hoc analysis. However, in a recent communication, Harary (Note 2) informed me that the analyses were planned in advance.)

Stuart Blue Harary was the subject/experimenter of a series of OBE tests conducted by researchers of the Psychical Research Foundation (Morris, Harary, Janis, Hartwell, & Roll, 1978). Colored letters were used as targets in a distant location. Harary seemed to have some partial hits,⁵ but they were not statistically significant. There were four sessions in which he had to indicate the location of persons in different rooms. Only one session obtained significant results ($p < .05$); the overall results were not significant. Three-dimensional

⁵This information is not included in the official report of the studies discussed here, but may be found in Rogo (1976), where the following interesting qualitative (non-predicted) aspects of Harary's OBE vision are presented: (1) perceptual distortions, (2) unclear vision, (3) reversal of target positions.

objects were also used as ESP targets in two experimental sessions; one of them was considered a hit, while Harary did not make a choice in the second session. No statistical analyses were reported to assess the results of the first session. (These tests were not part of Morris's original design, but were done by Rogo [1976]. The targets, however, were not selected randomly.)

DISCUSSION

Several lines of research have emerged from the studies reviewed above: (1) the occurrence of ESP during OBEs, (2) the OBE as an ESP-conducive state, (3) characteristics of ESP during OBEs, and (4) correlates of ESP during OBEs. A discussion of each of these points follows.

Occurrence of ESP During OBEs

As can be seen in Table 1, six studies have reported significant results in the ESP task (Harary & Solfvin, 1977; Mitchell, 1973; Osis, 1975; Palmer & Lieberman, 1975; Palmer & Vassar, 1974; Tart, 1968), five did not obtain significant results (Morris et al., 1978; Palmer, 1979b; Palmer & Lieberman, 1976; Tart, 1967, 1969), and two did not report analyses to determine if the ESP scoring level reached significance (Osis, 1974b;⁶ Smith & Irwin, 1981). Of those studies reporting significant results, one derived the significance from post hoc analyses (Osis, 1975). Other studies seem weak as evidence for ESP because of the possibility (in principle) of sensory explanations (Tart, 1968) and because the same target was repeatedly used (Smith & Irwin, 1981). There are still a few reports left with significant ESP scores (Harary & Solfvin, 1977; Mitchell, 1973; Palmer & Lieberman, 1975; Palmer & Vassar, 1974), but, with a single exception (Mitchell, 1973), they seem to show inconsistent and generally weak results, though their significant results may not seem easy to explain without an ESP hypothesis.

Table 1 presents information about two types of subject and two types of OBE induction. There seems to be a slight tendency of better results with experienced OBE subjects using their own OBE induction techniques than with inexperienced subjects whose OBE was induced

⁶Osis did not report statistical tests, but wrote that most (85%) of the subjects were unsuccessful on the ESP task.

TABLE 1
OCCURRENCE OF ESP DURING OBEs IN THE LABORATORY

Study	Type of Subject	OBE Induction Technique	<i>p</i>	Comments
Harary and Solfvin (1977)	Inexperienced ^a and experienced ^b	Experimenters' and subjects'	.05	Only one of the experienced subjects (Swann) obtained significant results.
Mitchell (1973)	Experienced	Subject's	.000025	
Morris et al. (1978)	Experienced	Subject's	n.s.	There were a few hits, but no overall significance.
Osis (1974b)	Experienced	Subject's	Results not fully reported nor statistically analyzed, but it is said that 85% were unsuccessful.
Osis (1975)	Experienced	Subject's	.04 .008	Significant results obtained in post hoc analyses.
Palmer (1979b)	Inexperienced	Experimenter's	n.s.	
Palmer & Lieberman (1975)	Inexperienced	Experimenter's	.02	Subjects reporting OBEs scored significantly better than those without the experience.
Palmer & Lieberman (1976)	Inexperienced	Experimenter's	n.s.	
Palmer & Vassar (1974)	Inexperienced	Experimenter's	.05	ESP-missing with OBEers, but no significant differences with non-OBEers.

Smith & Irwin (1981)	Inexperienced	Experimenter's	No direct measure of ESP reported.
Tart (1967)	Experienced	Subject's	n.s.	Significant result on last of four trials conducted. Experimenter admits possibility of sensory explanation, although considered unlikely.
Tart (1968)	Experienced	Subject's	10 ⁵	
Tart (1969)	Experienced	Subject's	n.s.	

Note. Experiments are presented in alphabetical order of authors.

^a Inexperienced subjects are those with presumably no previous OBEs.

^b Experienced subjects are those with previous OBEs who are also presumably capable of inducing the OBE at will.

by the experimenters, but this problem should be studied systematically, comparing both types of subjects in designs in which the influence of previous OBE experience and OBE induction technique (if any) can be separately evaluated and in which individual subject differences (e.g., hypnotic suggestibility, absorption capacity, locus of control) are controlled.

Clearly, much more work is needed to provide stronger and more replicable and reliable evidence of ESP during OBEs in the laboratory. Nonetheless, the reported findings of such studies in relation to other variables are worthy of mention along with some suggestions for possible areas for further research.

The OBE as an ESP-Conductive State

The concept of the OBE as a psi-conductive state has been discussed in the parapsychological literature (e.g., Blackmore, 1978; Palmer, 1978c). However, most of the studies reviewed here have not been designed so as to explore this issue, since they do not allow for a comparison between subjects with and subjects without OBEs to determine if ESP is more frequent during OBEs than during other conditions. Palmer's studies are an exception (e.g., Palmer & Lieberman, 1975; Palmer & Vassar, 1974), but they seem to indicate that an interaction between the OBE, the OBE induction procedure, and the hypnagogic state is involved in the process (Palmer, 1978a). This has led Palmer (1978a) to suggest that ESP is induced by the hypnagogic state, while the OBE is a by-product of the induction procedures, with no relationship to ESP other than being caused by the same common variable. This seems to be a promising line of research when it is considered that spontaneous OBEs and OBE-induction techniques have been associated with the hypnagogic state (e.g., Eastman, 1962; Muldoon & Carrington, 1929; Tart, 1968), that OBE-like sensations have been noticed during ganzfeld non-OBE studies (e.g., Honorton, 1978; Sargent, 1980), and that there is some evidence to indicate that hypnagogic-like states show a positive relationship with ESP performance (e.g., Palmer, Bogart, Jones, & Tart, 1977; Parker, 1975). Further research along this line should be done to explore the problem in more depth, since Palmer's (1978a) analyses were post hoc.

The positive correlation between the "OBEness score" and ESP reported by Smith and Irwin (1981) perhaps may be interpreted as being consistent with the idea of the OBE as an ESP-conductive state, but since it deals with correlation data there may be other factors

independently responsible for ESP and the OBE. At the moment, the concept of the OBE as an ESP-conducive state has little empirical support.

Characteristics of ESP During OBEs

Interesting findings on the characteristics of ESP during OBEs have been reported in the studies reviewed above. This section will summarize those findings and compare them to non-OBE ESP findings. In evaluating this section, it should be kept in mind that some of the findings (both of the OBE studies as well as of the ESP studies that are mentioned for comparison) were not predicted in advance, so replication by future studies is needed to assess their significance and importance.

Perceptual organization. Data on this aspect is scarce and has not been reported systematically. Ingo Swann and S. B. Harary are supposed to have reversed the position of some aspects of the ESP target in their responses (Mitchell, 1973; Rogo, 1976). Whether this may be attributed to a brain hemisphere information-processing factor (Ehrenwald, 1977) or to other explanations, it is interesting to notice that similar effects have been recorded in non-OBE studies throughout the history of experimental parapsychology (e.g., F. W. H. Myers, 1885, p. 44; Targ & Puthoff, 1977; Warcollier, 1938).

Distortions (other than reversals) and unclear foggy OBE vision (such as that reported by Osis, 1974b) have been noticed in studies of spontaneous OBE phenomenology (e.g., Crookall, 1970; Osis, 1979; Alvarado, Note 3). The reasons for these problems are not understood, but again it is of interest to pay attention to the fact that non-OBE ESP studies have also reported unclear vision problems (e.g., Geley, 1924/1927) and distortions (e.g., reorganization and fragmentation) of target elements (e.g., Podmore, 1894; Sinclair, 1930/1971; Warcollier, 1948).

Though Osis's (1975) results suggesting that OBE perception acts like localized vision (i.e., follows optical principles and is consistent with a perspective in space) are part of many other analyses, they are interesting and important, since he is trying to falsify an externalization OBE model.⁷ However—and as pointed out elsewhere (Harary, 1978; Rogo, 1978a)—Osis's assumption that "conventional" ESP does

⁷Unpublished research with the same design shows that veridical OBE vision can be both localized and not localized on different occasions in the same subject (Osis, 1974a).

not show perceptual aspects similar to those of normal vision (e.g., aspects related to perspective, distance, position, and type of target) may be questioned. In this context we should consider non-OBE ESP studies that show similarities between ESP errors and mistakes of sensory perception (Adams, 1937; Kelly, Kanthamani, Child, & Young, 1975) and observations with gifted subjects of the past which suggest that ESP can apprehend written material in the form in which it appears, with mistakes or unclear writing, but not its real or "correct" meaning⁸ (Geley, 1924/1927, pp. 77-78; Lodge, 1890, pp. 535-536; Tischner, 1925, pp. 56, 67-68). Thus, it seems that ESP may show (or mimic)⁹ perceptual qualities on some occasions.¹⁰ Nonetheless, the use of a falsifiable model of OBE perception should not be abandoned but should be refined and modified to reveal as much as possible about OBE vision and other sensory modes.

Characteristics and type of target. With Swann, familiar objects and non-glossy surfaces seem to be better ESP targets than unfamiliar objects and surfaces reflecting light (Mitchell, 1973). This seems to be consistent with a perceptual model, but it is interesting to notice that Palmer and Vassar (1974) found that there was no significant difference in ESP scores when the visibility of the target was manipulated. The target familiarity issue is interesting in terms of theoretical discussions of the effect of degree of exposure to or familiarity with actual or potential ESP stimuli on ESP performance (e.g., Abramowski, 1914; Carington, 1945; C. P. Irwin, 1980, 1982), as well as the possible effect of emotional qualities of the targets on ESP scoring (for a review see Carpenter, 1977). On the other hand, Palmer's results are in line with experimental evidence suggesting that ESP performance is not impaired by conditions of poor target sensory visibility (e.g., Chauvin & Darchen, 1963; Geley, 1924/1927; J. B. Rhine, 1938), size of target (e.g., Chauvin, 1961; Pratt & Woodruff, 1939; L. E. Rhine, 1937), or distortions of ESP card symbols (McFarland & George, 1937).

⁸A discussion relevant to the topic of perceptual-like errors in ESP is presented by Blackmore (1981b).

⁹On this aspect it is interesting to quote Harary (1978), who writes that in this type of perceptual OBE studies "it should not be assumed that . . . psi is incapable of conforming to the demand characteristics of an experimental situation" (p. 267). It should be pointed out that although this type of post hoc argument concerning the unexplored possibilities of psi is a possibility in theoretical terms, it also suffers from conceptual problems (Alvarado & Martínez-Taboas, Note 4).

¹⁰I do not intend that this should be taken as support for a perceptual ESP model. For a discussion of this problem, see H. J. Irwin (1979).

The observation that Swann had good ESP results with targets made of leather, fabric, and clay and not with plastic and glass is interesting in the light of Roll and Pratt's (1968) discovery that Pavel Stepanek scored significantly only with cardboard targets and not with aluminum targets. However, psychological variables have not been ruled out in either study.

While most of the studies reviewed here used visual targets, one of them explored auditory stimuli (Harary & Solfvin, 1977). Since spontaneous OBEs show a wide range of perceptual abilities (e.g., Green, 1968; Twemlow, Gabbard, & Jones, 1982), it may be worthwhile to explore different perceptual modalities in future experimental studies.

Direction and magnitude of ESP. Most of the studies reporting significant ESP showed positive deviations from chance, but Palmer found evidence for ESP-missing (Palmer & Vassar, 1974). Post hoc analyses indicated that ESP magnitude was affected by the OBE state, whereas ESP direction was affected by the OBE induction technique (Palmer, 1978a).

Correlates of ESP During OBEs

Psychological. No relationship was found by Smith and Irwin (1981) between ESP and the needs or preferences for a belief in immortality. On the other hand, Palmer and associates (Palmer & Lieberman, 1975; Palmer & Vassar, 1974) reported a significant positive correlation between mental relaxation and ESP, and contradictory results with expectancy of success in the ESP task.

Psychological studies are of great potential importance, since it may be useful to know what characterizes a person who shows ESP during OBEs, and how the relationship compares to psychological studies of ESP in non-OBE conditions (for a review see Palmer, 1978b). Further investigations may include the study of OBE-ESP relationships to variables such as introversion-extraversion, neuroticism, and the sheep-goat effect,¹¹ among others.

Physiological. In only one study was there an attempt to correlate ESP with EEG measurements (Palmer, 1979b). Among other effects, a positive correlation was found between ESP and EEG alpha and a

¹¹I conducted a study of spontaneous OBEs in which an attempt was made to study ESP and the sheep-goat effect; unfortunately, the hypothesis could not be tested because only a few ESP reports were obtained (Alvarado, in press).

negative correlation between ESP and EEG beta. Replication is necessary, but the record of this type of research in non-OBE conditions is somewhat complex and confusing, making it difficult to predict clear-cut results (Morris, 1977). Nonetheless, physiological variables are so important to the theoretical understanding and possible control of the OBE and psi (e.g., through biofeedback techniques), that further studies should be designed on the topic. Perhaps those studies may be more fruitful if they follow specific research models such as those proposed by Braud (1978, 1981).

Others. Osis and McCormick's (1980) study presents a novel methodological approach to the relationship of ESP and PK during OBEs and to the testing of an externalization OBE model. As suggested elsewhere (Alvarado, 1982b), more work along this line may explore the question of whether the same ESP-PK relationship is found in positions other than the original measurement area, when the subject claims to leave the first detection area to immediately enter a second detection area, as when he stays in the same place all the time.

Characteristics of OBEs have been considered in relation to ESP. Tanous obtained positive ESP results when he felt himself without any body and at oneness with existence (Osis, 1975). The positive relationship found between ESP and the "OBEness score" (Smith and Irwin, 1981), seeing the physical body and maximum and percent-time detachment from the body (Palmer & Lieberman, 1975), suggests that "intense" OBEs, or OBEs similar to those of spontaneous studies, may be related to ESP.

Palmer & Lieberman's (1975) finding of a positive correlation between ESP-hitting and reading about OBEs, and a negative correlation between ESP-hitting and lack of such reading, is the opposite of what Haraldsson (1980) reported in a precognition study with readings on psychic phenomena in general.

CONCLUDING REMARKS

A review and a recommendation for further research of ESP during OBEs have been presented, as well as comparisons of ESP experimental findings in OBE and non-OBE conditions. In general, creative and thought-provoking work has been conducted in this area of psi research. Systematic research following specific models or concepts has been done by some researchers, but more in this direction will be needed in order to be able to falsify predictions and modify theoretical models according to empirical findings.

Perhaps, as pointed out by Rogo (1978b), more attention should be given to the study of the OBE state itself, since this approach may "help us learn when the OB percipient might be able to employ ESP and PK and when he would be incapable of employing these faculties" (p. 361). Recent OBE spontaneous studies concerned with OBE phenomenology (e.g., Alvarado, 1982a; Gabbard, Twemlow, & Jones, 1981; Twemlow et al., 1982) and psychological aspects of the experience (e.g., H. J. Irwin, 1980, 1981; S. A. Myers, 1982; Twemlow et al., 1982) point toward this direction, but more investigations are clearly needed to understand the OBE as a human experience. However, this does not mean that the exploration of OBE-psi relationships has to be neglected. At this stage of OBE research, none of the approaches discussed above should be preferred over others, since each one has valuable aspects to offer.

Finally, and somewhat related to the above point, I would like to suggest that ESP during OBEs should also be systematically studied in spontaneous contexts, since, as pointed out elsewhere (Alvarado, 1976), there may be differences between laboratory OBEs and those that occur in "real-life" situations, which would provide a valuable dual approach to the study of this problem.

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