AN INVESTIGATION OF PSI ABILITIES AMONG THE CUNA INDIANS OF PANAMA

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It is extremely unfortunate that the study of paranormal events among non-Western societies has been so sadly neglected by both anthropology and parapsychology. This negligence has hampered the development of both fields.

Since anthropologists, heretofore, have not generally seriously considered the possible reality of paranormal events, they have been reduced to explaining the persistence of magical practices primarily on the basis of sociological principles involving intra-group tensions. An equally plausible explanation would be that magical practices persevere because a learning schedule has been established that is maintained through the aperiodic reinforcement provided by the occurrence of genuine psychic events. Acceptance of paranormal phenomena would also cause a reassessment of how the shaman or other magical practitioner is viewed by anthropologists. The shaman is currently seen as psychotic because he keeps insisting that he is able to demonstrate phenomena which the anthropologist "knows" are nonexistent. The shaman must therefore be delusional since the anthropologist has ruled out the possibility of any correspondence existing between the shaman's perceptions and beliefs and the way the "real world" of the anthropologist operates.

The ethnocentric bias which can become instilled in any Western scientist's world view is nicely highlighted in the preface to *The Teachings of Don Juan* by Castaneda:[1]

> "Anthropology has taught us that the world is differently defined in different places. . . . The very metaphysical presuppositions differ: space does not conform to Euclidean geometry, time does not form a continuous unidirectional flow, causation does not conform to Aristotelian logic, man is not differentiated from non-man or life from death, as in our world. . . . The central importance of entering into worlds other than our own . . . lies in the fact that the experience leads us to understand that our own world is also a cultural construct."

Parapsychology must also be faulted for failing to take advantage of the rich possibilities for understanding paranormal events that could be provided by cross-cultural research. It has been estimated that 4,000–5,000 human societies existed during the last century. Imagine the diversity which that represents in terms of genetic patterns, diet, climate, child-rearing practices, forms of intrafamilial organization, styles of social interaction, emphases upon instinctual drives, uses of different hallucinogenic drugs, and types of trance states!

This listing is a highly attenuated one and dozens of other possible relevant dimensions could be added easily. At the present time, we are almost totally unfamiliar with what the contribution of any of these variables might be to the manifestation or enhancement of psychic phenomena. It would be impossible to find such heterogeneous sampling strata within our own culture, but if we do not quickly avail ourselves of this unparalleled opportunity, we may well be in the frustrating position that a modern-day ornithologist would find himself in if he wished to make a movie portraying the flying behavior of the passenger pigeon.

Since many of the members of this conference are anthropologists, I will not attempt to review what the contributions of anthropologists have been toward understanding parapsychology. My impression is that the contribution has been extremely minimal. The contribution of parapsychologists to better understanding anthropological material has also been very sparse. Although the urgency and importance of psi-oriented anthropological research is often acknowledged by parapsychologists while discussing the issue from the comfort of an armchair, they have, with rare exceptions, failed to undertake any efforts to investigate psi in a field situation.

There have been only three studies reported to date in which a quantitative approach has been used to evaluate the psychic abilities of non-Western groups. Foster (1943) tested a group of fifty pupils in an Indian school in Manitoba with ESP cards and obtained significant above-chance results.[2] In a brief report of only a few paragraphs, Pope (1953) mentioned that a headmaster in New Guinea tested nine adults and six native teachers with ESP cards and found an insignificant deviation above chance.[3] A book by Ronald Rose (1956) contained information about the card testing he carried out with Australian Aborigines, Maori subjects from New Zealand, and natives from Samoa.[4] He obtained highly significant above-chance results with the fifty Australian natives and with the Maoris but only chance results with the tests administered in Samoa. Thus, to date, the only quantitative evidence obtained for ESP in non-Western societies consists of the studies by Foster and by Rose, who found significant above-chance scoring with conventional ESP cards that were individually administered to each subject.

I would now like to describe my own testing program which has been carried out with Cuna Indian adolescents from the San Blas Islands which lie off the eastern coast of Panama. The testing design was a different one from that of Foster or Rose, in that a group testing format was employed and the evidence for ESP is not based upon an overall positive deviation.

There are approximately 360 islands in the San Blas group and about 18,000 Cuna Indians live on the forty islands which are inhabited. The Cunas have begun to accept some degree of Panamanian authority during recent decades but remain fairly independent and steeped in traditional beliefs. As a result of close inbreeding, they have acquired a distinct somatotype consisting of powerful shoulders and chests with spindly appearing legs. They are among the world's shortest people and have attained the world's highest percentage of albinos.

The mythology of these people is too complex to attempt any simple summary. The most important deity is the Earth Mother. A great deal of magic and ritual is practiced, and belief in evil spirits and ghosts is widespread. For more detailed accounts of Cuna culture and magical practices, the works by Nördenskiold (1938),[5] Stout (1947), and Keeler (1960)[6] should be consulted.

I had made an earlier visit to the islands in 1964 and carried out some informal GESP tests with conventional ESP cards and obtained encouraging results. In order to make the testing materials more relevant for this culture, I subsequently prepared colored pictures the size of playing cards, depicting five objects that would be familiar to Cunas, and I pasted these on individual pieces of cardboard. The five objects were: a jaguar in a jungle setting; an underwater view of a shark; a conch shell on sand; a large canoe with a sail; and a propeller airplane in the sky. Fifteen duplicates of each of these five stimuli were prepared, making a deck of 75 cards. These cards were used for the later testing sessions which were carried out in 1968, 1969, 1970, 1971, and 1972.

The subjects were students attending the Oller Junior High School on Nargana Island. Their ages ranged from eleven to eighteen years. This school is the highest-level school established by the Panamanian government and served, because of its central location, all the San Blas Islands. These adolescents spoke Indian dialect in their homes and in their Nargana residences, although classroom instruction was carried out in Spanish. Classroom size varied from about twenty to thirty pupils; the school as a whole contained slightly over 200 pupils. A school setting was utilized because it allowed a large number of subjects to be tested in a short period of time and because the subjects would be able to comprehend and follow the testing instructions.

The testing procedure involved a group GESP task. Each pupil was supplied with a strip of paper consisting of two CALL-CARD columns cut from a standard ESP record sheet. Stapled to this strip was an identical testing form with a piece of carbon paper placed in between. As the testing proceeded, the student wrote down his guesses for the target cards in the CALL column. Two runs of 25 trials apiece were completed at each testing session. When all fifty trials were finished, the student tore off the top strip and wrote some identifying information on the back. This consisted of his name, age, and sex. After these strips were collected, the target order was read to the pupils, who recorded it in the CARD column on their duplicate copy in order to provide them with the feedback concerning their performance. For official scoring purposes, only the original copies in the experimenter's possession were used.

I served as agent for all testing sessions. A session would begin with an explanation of the task in Spanish to the students. This explanation was given by one of the two English-speaking teachers or by Mac Chapin. After all the questions by the students were answered, I stationed myself outside the classroom while a testing assistant sat at a desk next to me. The deck of 75 cards was shuffled face down and the top 25 cards were removed to make up the first target deck. As I looked at each card for a period of about twenty seconds, I would call its number aloud in Spanish so that the students could coordinate their calls with the target order. After finishing with each card, it would be placed face down on the desk and the accumulating pile would be kept in place by the testing assistant until all 25 cards had been placed on the stack. The stack was then turned over and the target order was recorded under the joint scrutiny of the testing assistant and myself. The 25 cards were returned to the large deck and reshuffled for a few minutes. As before, the top 25 cards were removed to make up the target order for the second run. The procedure for completing the second run was identical for that described for the first run.

After the target for both of the runs had been recorded, I entered the classroom and instructed the students to remove their top testing strip and to write their name, age, and sex on the back of this form. These original sheets were collected and placed in a manila envelope before the target order was slowly read aloud so that the students could informally check the number of hits they had obtained by referring to the carbon copies in their possession. During the remainder of the classroom period, students were requested to write out their most recent dream on a special form provided to them. Two or three classrooms were generally tested per day and it usually required about three days to complete the testing program for the entire school.

The attitude of the students toward the testing seemed to be a blend of

humor and perplexity. There was usually some laughter after the procedure was explained, and there was considerable banter back and forth between the students as they commented upon the unusual request made by the visiting American. Sometimes the boys' responses were quite boisterous; the situation seemed to offer them an opportunity for a bit of attention-getting in front of their classmates. Although a few individuals would persist in the noisiness during the testing session, the overall level of cooperation was good.

A copy of the target order and the students' original record forms were stored in separate envelopes so that there was one envelope for each classroom tested. The records were scored by a laboratory assistant after my return to Charlottesville. Approximately five percent of the ESP records had to be discarded because it was apparent that the instructions had not been followed. Bases for exclusion included such errors as failure to include the proper number of trials or using scoring symbols that had not been part of the instructions. The subjects' method of recording their guesses was to use the initial letter of the object portrayed so that the letter "T" was used for "tigre" (jaguar), the letter "B" for "barco" (canoe) and so on.

The overall test results for the five years of testing is shown in Table 1:

TABLE 1. OVERALL ESP RESULTS

GROUP	GIRLS	BOYS	TOTAL
N Subjects	96	365	461
N Runs	362	1258	1620
Deviation	+67	−73	−6

As can be seen, a total of 96 girls and 365 boys had been tested. The 461 subjects completed a total of 1,620 runs which yielded an overall negative deviation of six hits below chance expectation. It will be noted that the girls obtained 67 hits above chance expectation while the boys produced a negative deviation of 73 hits.

Due to recent criticism by Stanford and Palmer (1973) concerning the use of the Critical Ratio for evaluating process-oriented research in parapsychology,[7] I have evaluated the difference in scoring level between the girls and boys by means of the *t* test. Since some subjects had only participated in a single testing session, while others had participated in two, three, or more testing sessions, the decision was made to use only the score obtained by each subject during their first testing session for comparison purposes. This analysis is shown in Table 2.

TABLE 2. ESP RESULTS FROM FIRST TESTING SESSION ONLY

GROUP	GIRLS	BOYS	TOTAL
N Subjects	96	365	461
N Runs	192	730	922
Deviation	+90	−38	+52
Session Ave.	10.94	9.90	10.11
	$t_{G \text{ vs } B} = 3.10$ $p<.01$		

Since only one testing session per subject was used, the number of runs per subject was two. Inspection of Table 2 indicates that the girls obtained a deviation of 90 hits above chance expectation while the boys obtained 38 less hits than would have been expected by chance. This difference in average scoring level yielded a *t* value of 3.10 which is significant beyond the .01 level. The girls' deviation above chance was independently significant beyond the .01 level ($t = 3.04$) while the scores of the boys was not significantly different from chance.

Since it had been noted that the girls' deviation had increased by limiting the consideration of scores to only those obtained during the first testing session, a comparison was made between the scores which had been obtained in just the first session with scores obtained in later testing sessions. If more than one later testing session score was available, the average was computed in order to provide a single score. Results obtained from this comparison are shown in Table 3.

TABLE 3. COMPARISONS OF ESP SCORES FROM FIRST TESTING SESSION WITH AVERAGE OF ESP SCORES FROM LATER TESTING SESSIONS

	GIRLS		BOYS		TOTAL	
	First	Ave. Later	First	Ave. Later	First	Ave. Later
N	56	56	174	174	230	230
Session Ave.	11.18	9.73	9.94	9.90	10.24	9.86
t	3.14 df 55 $p<.01$		NS		NS	
r	+.298 $p<.05$		+.103 p NS		+.150 $p<.05$	

A total of 56 girls had been tested on more than one occasion. The matched *t* test was used to compare the two sets of scores for each individual. The resulting *t* value of 3.14 was significant beyond the .01 level for the girls but was not significant for the boys or the combined scores. The scores for the 174 boys were almost identical for their first testing session and for subsequent testing sessions. The girls, however, did much better if the analyses were confined to their first testing session, since they scored essentially at chance when they were tested upon a subsequent occasion. The length of time elapsing between testing sessions did not seem to be an important factor for the girls. The scores shown in Table 3 represented at least a one-year interval between testing for 48 of the girls, but the level of decline was approximately the same for those girls who had been tested twice within the same year. In order to obtain an indication of whether individual subjects were performing at a similar level of success between testing sessions, a Pearson correlation coefficient was computed. As shown in Table 3, the correlation coefficient was positive for both the girls and the boys. The magnitude of the *r* was significant only in the case of the girls although it was also significant for the combined results. This significant positive correlation indicates that subjects tended to maintain their same relative standing within the group even though the scores for the girls were lower on the occasion of the testing session. Thus a girl who was near the top end of the distribution of ESP scores on the first occasion was also more likely to be in the top end of the distribution of scores on the occasion of the second testing.

I had noted the sexual differences in scoring level after the first few years and began to wonder what might account for their occurrence. Observation of their classroom behavior suggested that the boys viewed the testing situation in a more lighthearted manner than the girls and did not apply themselves with as much attention and effort as the girls. An attempt to follow up this speculation was made by soliciting teachers' ratings regarding the degree of cooperativeness they habitually displayed in the classroom. One of the teachers, Padre Davis, was a Catholic priest who taught English and science courses. The second teacher who provided ratings was Sammy Morris, who had previously taught English courses and who was now in charge of the physical education program. Both these teachers had spent several years in the United States and were very fluent in English. I asked each of them to go over their class roll books and to rate each student on a three-point basis. A rating of one was intended to indicate a student who was extremely conscientious, courteous, who completed homework assignments on time and who presented no behavior problems in the classroom. A rating of two was to be assigned to those pupils who did not display the model behavior of the level one students but who would not be considered any disciplinary problem. The rating of three was to be assigned only to those

students who created problems for the teacher and who did not seem to take their studies very seriously or who caused problems because of their lack of cooperation. Both teachers had an exceedingly difficult time in comprehending the nature of this rating task and the notion of making such an evaluation seemed quite alien to them. Since they are both native Cunas, this might represent a reflection of the traditional mores, which is to treat everyone alike and not to discriminate in any way within the group. These cooperation ratings were obtained in both 1971 and 1972. The relationship between the ESP scoring levels and the cooperation ratings are shown in Table 4.

TABLE 4. ESP LEVELS IN RELATIONSHIP TO TEACHERS' RATINGS OF CO-OPERATIVENESS

	GIRLS		BOYS	
Rating	N	$\bar{x}$	N	$\bar{x}$
1-1	16	7.94	29	10.31
2-1	18	10.89	40	9.88
2-2	6	10.83	49	9.94
2-3	—	—	14	10.43
3-1	—	—	5	10.80
3-3	3	8.33	11	10.00
1	7	10.43	24	9.42
2	8	10.50	19	10.16
3	1	12.00	9	8.78
$t_{1\text{-}1 \text{ vs } 2\text{-}1;2\text{-}2} = 2.38$ $p<.05$				

Most of the pupils were rated by both teachers although there were a few who were only rated by a single teacher. Those on whom only a single rating was available are shown in the bottom part of Table 4 while the remainder represent those subjects with ratings by both teachers. The analysis produced some surprises. The sixteen girls who had obtained the top level of cooperation ratings by both teachers obtained an average session score of 7.94 which was below chance to a significant degree ($t = 2.77$; p .02). If the girls obtained a rating of two by either one or both teachers their scores were somewhat above chance and the difference in scoring level between those girls with a rating of one by both teachers and those receiving a two by at

least one teacher was significantly different as is shown in the *t* value at the bottom of the table. A different pattern emerged for the boys. The 29 boys who had received a rating of one by both teachers obtained a score which was somewhat above chance while those who had a score of one and two or who had received a score of two by both teachers scored very slightly below chance. Thus the scoring patterns were in opposite directions for the girls and boys. For those boys who had received a rating of three by one teacher which was not matched by the other teacher, the scoring level was again somewhat above chance. For both boys and girls scores of threes from both teachers yielded ESP scores which were close to the chance level.

It is not easy to attach any meaning to the scoring patterns of Table 4. A tentative suggestion which emerged was that girls scored in a very negative direction if they displayed behavior in both the traditional academic subjects as well as on the playground which would be considered overly compliant or rigidly conformist. It seems as if the girls needed a little more spontaneity or flexibility in order to score at above-chance levels. One might venture the guess that the girls receiving a rating of one by both teachers were those who would be considered highly repressed and non-expressive of feelings and held themselves in strict control in all types of social situations. It is more difficult to make any such guesses as to what might account for the pattern of the boys' scores. Higher scores are associated both with the pattern of the over-control which might be represented by the pair of one ratings, but higher scoring is also associated with those combinations of scores reflecting the more obvious acting-out behavior represented by a rating of three.

Dreams were also obtained from subjects during each of the five years. A sheet with instructions printed in Spanish requesting the subject to report his most recent dream and to describe the events that took place in the dream and how the dreamer felt in the dream, etc., was employed. These dreams were translated by Mac Chapin, who spent three years among the Cunas as a Peace Corps volunteer and who is currently a doctoral candidate in anthropology. Mr. Chapin possesses an excellent grasp of the idioms used by the Cunas and is extremely familiar with their culture and patterns of thinking. He accompanied me during the 1970, 1971, and 1972 expeditions and explained the dream form to the students on several occasions.

Following up on the lead obtained from the teachers' ratings on cooperation, the dreams were examined with regard to whether any relationship might exist between ESP scores and the amount of aggression expressed in the dream. A score for aggression was tabulated if there was an instance of either physical or verbal aggression recorded in the dream. All of the dream scoring was carried out by Ms. Jeanne Cox who works as an assistant at my Sleep and Dream Laboratory. It was found that those dreams possessing an

instance of aggression were associated with higher ESP scores than those dreams lacking any aggressive incidents. This pattern was much more marked for the girls than for the boys. Since some previous research of mine in 1971 had indicated that animals in dreams also frequently represented aggressive or other unacceptable impulses, an examination was made as to how ESP scores would vary in relationship to the presence of animal figures. It was found that the presence of animals was associated with above-chance scoring, although they were not a frequently appearing category. Encouraged by these results, it was next decided to explore the role of sexuality in dreams. Dreams containing an instance of overt sexual activity such as kissing or intercourse were associated with above-chance ESP scores, whereas dreams scores in which a mention of a boyfriend or girlfriend occurred were associated with below-chance ESP scores. An attempt to interpret why these various scores were associated with ESP will be made at a later point in the paper and discussion will be withheld until I have described some of the other dream scores that were explored.

In scanning through the dreams, I noted that family members and relatives appeared with some regularity. A preliminary tabulation indicated that above-chance ESP scores were associated with the presence of either a family member or a relative. A more careful tabulation of the types of family members revealed that the above-chance scoring was only associated when either a single parent or both parents were referred to in the dream and below-chance scoring was found when siblings were mentioned or if a reference was only made to "my family." Analysis of the relative category indicated that below-chance scoring was associated with the presence of either aunts or grandmothers, while above-chance scoring was associated with any other type of relative or with the mention of an acudiente. An acudiente is a "summer parent" who acts as host for the student and provides lodging for him during the time that he is enrolled in school at Nargana Island.

Previously, both Johnson (1968) [8] and Honorton (1972) [9] had reported that ESP scores were higher for those subjects who reported a greater frequency of dream recall. Since only a single dream was available, it was decided to use dream length as a rough equivalent of the extent of dream recall. The translated dreams were available in typewritten form and those dreams containing more than five typewritten lines were classified as long dreams. When the dreams were divided in this fashion, it was found that long dreams were associated with above-chance scores, while short dreams were associated with below-chance scores, particularly for boys. Below-chance scores were also associated with those cases where fragments of several dreams were reported.

Rather than attempt to separately evaluate each of these dream elements, the decision was made to combine the various elements together so that a single dream score would be produced. The rating scheme used for dreams is shown in Table 5. The lowest dream score which could be obtained was a zero and the maximum score that could be obtained was a value of ten.

TABLE 5. DREAM RATING SYSTEM

CATEGORY	SUB-CATEGORY	POINTS
Length	Short (5 lines or less)	0
	Long (more than 5 lines)	1
Family	Siblings or unspecified family	0
	No reference to family	1
	Parents (single or joint)	2
Relative	Aunt, grandmother or unspecified	0
	No reference to relative	1
	Uncle, grandfather, cousin	2
Acudiente	No reference	0
	Summer parents	1
Animal	No reference	0
	Any type animal	1
Sexuality	Sexual interest (mention of boyfriend or girlfriend only)	0
	No reference to sexual interest or overt physical activity	1
	Overt physical activity	2
Aggression	No reference to aggression	0
	Physical or verbal aggression	2

This rating scheme is quite easy to apply to the dreams and the scores do not require any degree of clinical skill nor expert judgment to utilize. The dream is either over or under five lines long; siblings, parents, and specific relatives are mentioned or not mentioned; animals are either present or

TABLE 6. MEAN ESP LEVELS FOR GIRLS AND BOYS IN RELATIONSHIP TO DREAM CONTENT SCORES

DREAM CONTENT SCORE	SEX	N	AVE.
1	G	1	10.00
	B	—	—
	T	1	10.00
2	G	10	8.40
	B	25	9.08
	T	35	8.89
3	G	26	9.46
	B	73	9.29
	T	99	9.33
4	G	22	10.59
	B	75	10.09
	T	97	10.21
5	G	13	12.31
	B	63	10.14
	T	76	10.51
6	G	14	12.71
	B	45	10.44
	T	59	10.98
7	G	4	14.50
	B	21	10.43
	T	25	11.08
8	G	3	11.00
	B	11	11.36
	T	14	11.29
9	G	—	—
	B	2	11.50
	T	2	11.50

absent. It is only in the last two categories of sexuality and aggression that the criteria are not completely explicit, but even here it was found that there were very few cases where the scoring was not immediately apparent. All scoring was, of course, carried out without the scorer having any knowledge of the ESP score for the dream being rated.

Table 6 shows the relationship between the ESP scores and the composite dream score.

Since some subjects had been tested on more than one occasion, the results were limited to the first testing session in which both an ESP score and a dream score were available. As Table 6 indicates, there is a steady increase in the average ESP score as the combined dream score increases. Examination of the girls' score revealed that the results are not stable at the extreme end since there was only one subject with a dream score of one, and three subjects with a dream score of eight, but at all of the intermediate levels there is a step-wise increase in the ESP scores as the magnitude of the dream score increases. The same pattern appears for the boys and except for a difference of one-hundredth of a point appearing in the ESP scores associated with the dream scores of seven, there is a perfect step-wise increase in ESP scores for the boys as the magnitude of the dream content score increases. The same pattern occurs for the combined score of the two sexes and beginning with the dream content score of two, the same steady step-wise progression of the increasing ESP scores is demonstrated.

Table 7 was constructed in order to show the extremely consistent results that were obtained in each of the five years when the dream scores are employed.

Subjects were assigned to one of three dream-score groups. Those with high dream-scores (9-5) show high ESP scores, those with dream scores of 4 show ESP scores essentially at the chance level, while those with low dream-scores (3-1) show low ESP scores. For each one of the five year-levels the girls with high dream-scores have ESP scores greater than that obtained by subjects with lower dream-scores, and for each of the five years the boys with high dream-scores obtained higher ESP scores than the boys with low dream-scores. As would be expected, the same pattern occurs for the results of the two sexes combined. For 1968, 1970, and 1972 the results of the combined group show a significant difference in the scoring level between the high and the low dream-score groups. If the results for all five years are combined, the results for the girls are independently significant and those of the boys are also independently significant. As can be seen, the difference in average scoring level is more accentuated in the case of the girls.

These results using the dream scores could be interpreted in a variety of ways. My speculation is that two different components are represented in

TABLE 7. MEAN ESP LEVELS OF GIRLS AND BOYS WITH HIGH AND LOW DREAM CONTENT SCORES ARRANGED ACCORDING TO YEAR OF TESTING

YEAR		Dream Scores 9-5		Dream Score 4		Dream Scores 1-3		9-5 vs 1-3	
		N	Ave.	N	Ave.	N	Ave.	t	p
	G	8	13.88	8	11.63	10	10.10		
1968	B	47	10.79	25	9.24	43	9.30		
	T	55	11.24	33	9.82	53	9.45	2.89	<.01
	G	5	12.00	—	—	5	9.20		
1969	B	11	10.36	8	9.38	13	9.77		
	T	16	10.88	8	9.38	18	9.61	1.65	
	G	8	13.75	4	10.00	10	9.50		
1970	B	20	10.00	10	9.80	15	8.73		
	T	28	11.07	14	9.86	25	9.04	2.35	<.05
	G	9	11.44	2	10.00	2	10.50		
1971	B	25	10.72	11	11.36	10	10.30		
	T	34	10.91	13	11.15	12	10.33	.59	
	G	4	11.00	8	10.00	10	7.70		
1972	B	39	9.92	21	10.86	17	8.47		
	T	43	10.02	29	10.62	27	8.19	2.98	<.01
	G	34	12.59	22	10.59	37	9.19	4.90	<.001
Totals	B	142	10.39	75	10.09	98	9.24	3.10	<.01
	T	176	10.82	97	10.21	135	9.22	4.77	<.001

the dream measures. The first component is one consisting of the aggression, animal, sexuality and dream length scores. Those reports which contained the preceding elements seem to have more of a "dreamlike" quality to them and incidents would be described that one would be unlikely to encounter in everyday waking situations. Dreams in which the dreamer was attacked by crocodiles or sharks, dreams in which he was being pursued by some villainous oppressor, or dreams in which intercourse with some desirable but not ordinarily available partner, portrayed situations in which it might be said that a greater degree of primary process thinking

was present and in which censorship was minimal. The zero weight given to mention of boyfriends or girlfriends seemed relevant because reports in which such references were made seemed to be generally simple dreams which might consist of a description such as: "Last night I dreamed about my girlfriend and I went over to her house and talked to her and then we walked around town and saw many of our friends." Such reports seem to have more of a quality of a daydream to them or of a waking fantasy rather than any dramatic nocturnal production. Dream length seemed to be a variable that was strongly correlated with the amount of bizarreness or intensity and it was usually the longer reports which contained detailed descriptions of the plots and counterplots which gave the report a dream-like quality. Short reports, on the other hand, often consisted of straightforward narrative accounts of usual activities, such as going to the river to bathe, walking about the island, or gathering coconuts or mangoes on the mainland. This first component might be considered then to represent the dreamers' ability to accept their personal impulse life and to feel comfortable with the imagery that would accompany the expression of these impulses. The defense mechanisms of denial and repression would be expected to be more prominent in dreams not containing any of the elements associated with this first component. There have been other reports in the literature (Johnson and Kanthamani, 1967) which have indicated that high-defensive subjects produce psi-missing effects while low-defensive subjects produce psi-hitting.[10]

The second component consists of the family and relatives category. There is a strong emphasis in the Cuna culture upon the importance of family loyalty and harmony. Children are never physically beaten and there is a great deal of affection and nurturing given to the young child. The child is frequently not weaned until about four years old, is not subjected to any form of toilet-training until well after mastery of speech is attained, children are sung to sleep while they are rocked in a hammock, and they are constantly carried about on the hip of the mother or some other female relative. As a result, Cuna personality can be characterized as warm, friendly, and cooperative. The appearance of parental figures in the dreams might therefore represent that the dreamer has accepted the traditional Cuna values of interpersonal harmony and affiliation and will extend an attitude of cooperation and attention when he is requested to participate in the ESP task. The same reasoning would explain why the presence of other relatives would signify this same spirit of helpfulness on the part of the dreamer. My speculation as to why the presence of siblings or aunts or grandmothers are associated with psi-missing would be because some degree of sibling rivalry might be indicated by having dreams in which siblings are

present and such an attitude would not be a conducive one to the ESP task which is being posed; a task in which the subject is asked to work cooperatively with the agent in a mutual undertaking. The social structure of the Cunas is organized along matrilineal lines and when a man marries he is required to move into the home of his wife and offer allegiance to her parents and family. In such an arrangement, grandmothers and aunts often achieve positions of considerable authority and frequently take on the role of disciplinarians within the family. Thus, the presence of grandmothers or aunts may represent a somewhat disliked authority figure for the dreamer and if the dreamer has difficulty relating to such figures it would be expected that he would not succeed very well in relating to the agent, who might be viewed as occupying a similar role.

It is my feeling that the potential value of these dreams has only been tapped in a superficial way and that it would be possible to find many other relationships between certain dream scores and the level of ESP scoring. In its present format, the dream scoring system does a very creditable job in differentiating between the average ESP scoring level, but it seems quite probable that some relationships might exist between present dream scores and variance patterns within the ESP scores. For example, I made a quick tabulation of the presence of rivers in the dream imagery of the girls and examined what relationship it held in relationship to the ESP scores. I found that the presence of rivers was associated with either very high ESP scores or very low ESP scores. If a 2×2 Chi square table is constructed in which the presence or absence of river imagery is tabulated along one axis and the other axis consists of session scores of nine, ten, and eleven versus all other ESP scores the resulting χ^2 value of 4.02 is significant at the .05 level. This finding makes considerable sense to me because the river is a place about which ambivalent feelings are held by Cunas. On the positive side, it represents a source of their drinking water and a place where many pleasant social interactions occur while swimming and washing clothes, but it is also the location where cemeteries and their attendant ghosts are situated and there are many stories about crocodiles and jaguars appearing from out of the jungle at the river's edge. I have shown in an earlier study that a pattern of either extremely high or extremely low ESP scores is associated with ambivalent and conflictual attitudes toward the occurrence of ESP when such attitudes have been measured on a special sentence completion test.[11] Thus, if ambivalent attitudes exist toward the concept of rivers, it is not surprising that such ambivalence may be reflected in extremely high or extremely low scores toward ESP.

The preceding material documents that the attitudes of the percipients is an extremely important variable in accounting for the resulting level of ESP

scoring. The attitude of the agent is also an important variable although it is much more difficult to evaluate what facilitating or inhibitory role he might play. During the last few years of testing I have made some notes about my moods and the conditions surrounding the testing sessions when each class was tested. These notes were written out on the manila envelopes before the target order was read to the class. For example, in 1969 I had observed that whenever I reported that my concentration was extremely intense and that my attention was exclusively focused upon the target stimulus, very low ESP scores resulted. For the 1971 runs on which I had recorded this mood of intense concentration, a deviation of 46 hits below chance expectation was produced. There was a total of 83 runs in which I had noted that I was distracted to a minor degree, usually because of some nearby noise which bothered me, and the resulting level of ESP scoring produced 44 hits above chance expectation. The difference in scoring level between these two states of mind was significant beyond the .001 level. These findings suggest that better results are obtained when I, as an agent, do not become too intensely preoccupied with the target stimulus and when some components of my attention are shifted toward awareness of peripheral activities. The state of relaxed attentiveness was much more effective than making a fierce effort to fuse with a card in trying to force a vivid image of the stimulus into the forefront of my consciousness.

The results I have obtained with Cuna subjects seem to offer solid evidence that significant ESP results can be produced when non-Western subjects are tested. This study is the first report in the literature where an ESP interpretation is not based simply upon an overall positive deviation for the group, as was true in the Foster and Rose studies. The sceptic could easily claim that their results might have been attributed to sensory cues or carelessness or to unconsciously motivated mistakes in recording results. Such criticisms are not pertinent to my study. The overall deviation for the group was almost precisely at the chance level, and the recording of their guesses was done by the subjects themselves. Scoring of the ESP sheets was done by a laboratory assistant who was not involved with the test administration, the scoring was independently checked by still another assistant and the original ESP sheets are still available for further checking by still other persons.

The direct evidence for ESP consists of a significant difference in scoring level between the girls and the boys, significant decline in scoring level between successive testing for the girls, and a significant correlation between the scores obtained by the girls from one year's testing to a later year's testing.

Evidence for the role of personality factors upon ESP was demonstrated by the significant differences in ESP scoring between girls with different behavioral ratings by teachers and also by the extremely consistent year-

to-year patterning of ESP results when differentiations were made by means of dream scores. The role of the agent was also shown to bear a significant relationship to ESP scoring.

I can think of no alternative hypothesis, except chance and fraud, to account for the present results, because they are based upon inter-subject patternings within a classroom. Why would only members of a certain sex, tested only at certain occasions, possessing certain behavioral pattern ratings, and reporting certain types of dreams be the subjects to more correctly perceive the hidden target card that I was concentrating upon, while other classmates sitting nearby, and who had different personality characteristics, etc., fail to perceive exactly the same target stimulus?

These results also point out that we must obviously look closely at the motivational structure of the subjects and it would be inappropriate to assume that ESP will be demonstrated simply because the subject happens to be a member of a non-Western social group. Psi doesn't happen in a wholesale fashion for such groups. Each group is a collection of individuals and each individual will respond to the task in terms that are personally meaningful for him and in a manner consistent with his overall dynamic makeup.

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DISCUSSION

HALIFAX-GROF: I find this extraordinarily fascinating, and I do have a lot of questions, but the first one is: Do you think that the sex of the experimenter could in some way affect the performance of the boys?

VAN DE CASTLE: It could very well. Since I was the same agent throughout all five years and we never manipulated that variable; I don't know. There could have been some sort of competition and rivalry toward me by the boys, whereas with the adolescent girls, it may have been that this created some sort of a situation where they might have wanted to relate to me more favorably; I don't know. It would be very intriguing to see what would happen with a female experimenter.

HALIFAX-GROF: It would be very interesting in view of the matrilineal focus in the culture.

LEWIS: I have an understanding that one possible conclusion one might derive from your paper is of a linkage between frustration or repression and psychic ability, or have I misunderstood you?

VAN DE CASTLE: I think I would like to have it slant the other way. My speculation would be that the person who was more comfortable with his (their) impulse life, who can tolerate primary process thinking, who doesn't engage in as much censorship, who is open to inner awareness in a sense, is the person who is going to do better at the ESP test. It's the person with the heavy denial and repressive mechanisms—the uptight, keeping-a-lid-on type of person who will not do well. There's a lot of evidence in the parapsychological literature for this type of interpretation on the basis of various objective and projective tests that have been administered.

LEWIS: I thought that your data showed a link-up between high dream frequency and dream content and psychic ability.

VAN DE CASTLE: Yes, so that the higher ESP scores are obtained from the people who can acknowledge the aggression and the sexuality in their dreams.

LEWIS: That is the interpretation then, isn't it?

VAN DE CASTLE: That is the interpretation that seems to make sense to me.

LEWIS: Would it also be possible to interpret it in the opposite way? I mean, to see the dreams as an expression of frustration or repression?

VAN DE CASTLE: Yes. And here one has to clarify what their stance is on

the content of dreams. My stance is very decidedly in favor of the manifest content of the dream and the dream as mirroring, with some slight distortions, waking reality. I don't subscribe to the Freudian notion of the hidden latent content and that the manifest content really represents an elaborate disguise created through the process of dream work and that the meaning of the dream has to be elusive or we wouldn't be allowed to have it pass through censorship. So I would stand in strong opposition to the traditional analytic approach.

DEVEREUX: It seems to me from what Ioan pointed out, that he is interpreting things his way and, I would say, my way too. There is a confirmation of what I said this morning regarding my central thesis: ESP as a substitute for sexual self-realization, which is exactly what Ioan brought out.

VAN DE CASTLE: I think sexuality plays a far more important role in the production of psi phenomena than we have ordinarily acknowledged. In the paper I gave several years ago at U.C.L.A., when I was describing my experiences as a dream subject at the Maimonides Laboratory where an agent tries to transmit an art print to a dreaming subject—they let me be free to choose any agent I desired, and I always chose the most attractive, physically appealing girl available. I would develop a lot of fantasies about her and when I was lying in bed I would fantasize, "Come here, here's a nice warm spot beside me; come right here, etc." and by entertaining this type of fantasy level, we were able to do extremely well.

HALIFAX-GROF: I have heard that sexual gratification can obviate psi phenomena.

VAN DE CASTLE: I deliberately refrained from that because I feel that something like a Zeigarnik Effect was operative. If I could have physically consummated the relationship, it would have taken away the immediate drive and desire, but, by keeping it at the fantasy level and continuing to desire, but without the closure, I feel the necessary tension is created; we're now psychically consummating the relationship rather than on the physical plane.

DEVEREUX: May this then be in terms of what I have written in my book *From Anxiety to Method* on the relationship of counter-transference in scientific research? May it not be that this is a new repressive mechanism?

VAN DE CASTLE: It's a repression, though, in the service of science.

LEWIS: Did you try collusion with the girl?

VAN DE CASTLE: No. We would go out for coffee, and talk before the experimental sessions. I would let her know that I did find her interesting and appealing, but it was clear that nothing physical was going to happen. If she found me interesting, it would hopefully set up the same type of Zeigarnik Effect on her part.

KREITLER: I still would warn against a causal interpretation of a correlation in the sense implied in your remark that sexuality produces involvement which produces ESP. Perhaps you may interpret the correlation as indicating that the sexual tension or the readiness to endure sexual tension sets energy free, which in turn strengthens ESP phenomena.

VAN DE CASTLE: I would not want to make sexuality the exclusive motivation. Obviously, it depends upon the individual. For me, ESP is a form of social relationship. Being shy ordinarily, this was my way of relating and the testing situation was able to satisfy my needs and dynamics. For someone economically motivated, it might be necessary to provide a financial reward. If a minister were involved, the task might be structured that a high ESP score meant that you had really received the spirit and you were one with God. Sexuality can be important, though it's not, I think, the exclusive domain for the energization of psi processes. One must know the individual and then tap into what motivational structure would be relevant for him to succeed in the testing situation.

KREITLER: We relate to the same point. We fully agree that it could be a motive; it could motivate his behavior, but can we treat a motive as a cause of a phenomenon? I am motivated to do this and that, for instance, to think it's true, but I don't think because of the motive. The motive doesn't enable me to think. It induces me to use my cognitive ability, and so I would not conclude from the correlation between sex dreams, etc., that sex in itself produces ESP. It may only promote it.

VAN DE CASTLE: I agree. As we heard this morning, sex can get to be a very complicated subject. Orgasms and spasms, that is, the difference between orgasms and spasms can become a very fine distinction. I was treating sex here as more like sex with a little "s"; sometimes I think it can be love with a capital "L"; a variety of interpersonal motives can be linked to ESP performance.

DEVEREUX: One last brief remark, if I may. The great mathematician Lagrange once remarked that nature does not care how great the analytical difficulties are with which it confronts its students. Sex *is* complicated.