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YOGIC ATTAINMENT IN RELATION TO AWARENESS OF PRECOGNITIVE TARGETS[1]

BY S. M. RONEY-DOUGAL* AND JERRY SOLFVIN**

ABSTRACT: This study explored whether long-term yoga/meditation practice facilitates psi awareness. Data were collected in an Indian ashram setting in 2003 and 2004 from yoga practitioners with three levels of initiation: students (ST) (0.3–15 years practice); sanyassins (SN) (1–10 years practice); and swamis (SW) (4–33 years practice). These preliminary experiments focused on adapting Western laboratory procedures to the ashram setting with a Macintosh laptop serving as a portable laboratory. Participants had a short meditation followed by an awareness period to precognitively perceive a target video clip that they would see at the end of the session. They then rated four target clips on a 1 to 100 scale for similarity with their awareness experience. A reanalysis (using effect size *r*) showed no overall significant effect in either year (2003: $r = -0.09$; 2004: $r = 0.08$). Advanced practitioners (SW) in both years showed nonsignificant psi-hitting (2003: $r = 0.21$; 2004: $r = 0.07$), whereas the other two groups (SN and ST) were more variable in their scoring (2003: SN $r = -0.23$ and ST $r = -0.38$; 2004: SN $r = 0.05$ & ST $r = 0.13$). In 2003, in line with the hypothesis, the advanced group (SW) scored significantly better than SN ($p = .05$) or ST ($p = .04$). In 2004 these differences became nonsignificant. Implications and possible explanations are explored.

During the 1970s interest in maximising psi awareness focused on altered states of consciousness (Braud, 1974, 1978; Honorton, 1977; Tart, 1969, 1975; Ullman & Krippner, 1979). Part of this program of research investigated meditation as a psi-conducive state (for reviews see Braud, 1989; Honorton, 1977; Schmeidler, 1994). Most of the research used beginners in meditation and only a handful of studies were run, with mixed results that do, however, give highly significant results on a combined analysis (Honorton, 1977). Consciousness research is central in parapsychology. In the 1970s, Braud (1974) introduced the concept of the psi-conducive state. This is a model that has driven much of the parapsychological research into altered states of

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consciousness as a state conducive to the experience of psychic phenomena. The model states that psi functioning is enhanced when there is: (1) cortical arousal sufficient to maintain conscious awareness, (2) muscular relaxation, (3) reduction of sensory input, and (4) internal attention—in other words, when the receiver is in a state of sensory relaxation and is minimally influenced by ordinary perception and proprioception (Braud, 1975). At the same time, Honorton (1981) was developing his model of internal attention states from his readings of the classic yoga text known as Patanjali's sutras. These sutras (Satyananda, 1982) state that when one attains samadhi the "siddhis" (psychic powers) manifest. Meditation techniques take us into a state of consciousness that is considered traditionally to be a heightened, or even advanced, state of consciousness. In meditation there is internal noise reduction, external noise reduction, and various psychophysiological correlates, such as alpha rhythm and increased skin resistance, that have been found to be associated with greater psi awareness (Honorton, 1977). A full discussion of Patanjali's yoga sutras in relation to psi research has been provided by Braud (2006).

During the 1970s and 1980s, several experiments were conducted suggesting that meditation might help one to attain a state of consciousness conducive to psychic (psi) awareness.[2] In this early research, the unspoken assumption was that merely practicing meditation would enhance psychic awareness. The first study was by Schmeidler (1970). She reported that students obtained significant ESP scores (p = .01) after they had been instructed by a swami in pranayama (breathing techniques) and meditation. The pre-meditation scores were at chance. Dukhan and Rao (1973) also tested for pre- and post-meditation psi scoring. They worked with Western and Indian students in an ashram in South India using a combination of meditation practices. Beginners and more advanced meditators both obtained highly significant psi-missing prior to meditation (beginners, $p = 10^{-6}$; advanced, p = .012) and significant psi-hitting after meditation (beginners and advanced, $p = 10^{-4}$). Roll and Zill (1981) also found a significant difference, with the participants once again scoring negatively before the meditation and positively after. They did not specify the degree of meditation skill of the participants. They stated that they consider these results due more to the participants conforming to the experimenters' wishes than to the effect of meditation per se, because the significance of the study was primarily due to the decreased scoring before the meditation. Compliance with experimenters' wishes is an effect of which one must always be aware.

[2] In the current studies "psi awareness" is operationally defined as the score achieved on the psi task. As this score is related to the task in which the participant is asked to become aware of the target picture after the meditation session and prior to viewing the pictures on the computer, there is a suggestion that, in line with yoga psychology theory, there is some level of cognitive awareness of the target picture through psychic means when the person does accurately describe and choose the target picture at the end of the session. While "awareness" has other implications in other contexts, that is beyond the scope of the current research.

In contrast, Stanford and Palmer (1973) worked with a single participant (Bessent) who meditated before the ESP session and whose EEG was being monitored. In those sessions in which he produced relatively high alpha waves, he showed stronger psi ($p < .005$).

As well as exploring with different types of participants, experimenters also worked with both forced-choice and free-response methodology. Rao, Dukhan, and Rao (1978) tested participants both before and after a half-hour meditation session. The participants scored significantly higher on both types of test after the meditation. Braud and Boston (1986) used free-response methodology with a relaxation tape session and obtained significant scoring with 25 meditators. They used trained meditators from the Center of Healing and Enlightenment in Houston, but the degree and sort of meditation is not specified. Harding and Thalbourne (1981) tested people trained in Transcendental Meditation (TM), using three groups: nonmeditators, ordinary TM meditators, and siddhas (advanced TM meditators). Again they used both forced-choice and free-response methods, but they obtained null results. They considered that this was because the meditators had not really wanted to participate and considerable persuasion had been used to obtain participants for the study. Like Harding and Thalbourne, Rao and Rao (1982) used people who had trained in TM, though in this case for only a week. They compared those who had done no meditation with those who had done the one-week course. Participants were tested for both ESP and subliminal perception. The meditators scored above chance with both forms of target, whereas the controls scored at chance.

Rao and Rao's (1982) study suggests that in meditation one is learning to become aware — this awareness and openness being a generalized form of sensitivity to incoming information, whether subliminal or psychic. Some meditation practices result in habituation to external signals (e.g., yogic, in which attention is inward) and others (e.g., Zen) show no habituation at all (Murphy, Donovan, & Taylor, 1999). The yogic teachings stress again and again that one is learning to become more aware at all levels. They state that removing the noise of the internal dialogue allows greater sensitivity and awareness in general, of which psi awareness is an aspect that occurs at a certain stage in meditation attainment. Although meditation has been linked with other psi-conducive state techniques, such as the ganzfeld, it may be a very different state in that the person is being trained to go "beyond mind" into a state of pure awareness where there is very little or no thought. Honorton (1996) reports on his ganzfeld database collected during the 1980s and finds that practice of a mental discipline helps novice ganzfeld participants to score better in the initial session. However, meditation is not separated from hypnosis, relaxation, or biofeedback exercises, so in this analysis we cannot specifically see the effect of meditation on novice ganzfeld participants.

A meta-analysis of all the research done by 1976 shows that overall there were 9 significant meditation psi experiments out of a total of 16, giving

an overall $p = 6 \times 10^{-12}$ (Honorton, 1977). Schmeidler (1994), who summarises the research from 1978-1992, concludes that: "meditation is conducive to ESP success if (and only if) the meditators wholeheartedly accept the experimental procedure and the goals of the research" (p. 181).

The Ashram Studies

A so far unexplored hypothesis, which comes directly from Patanjali's sutras, is that *degree* of meditation attainment is related to enhanced psi functioning. Patanjali states that the "siddhis" (psychic faculties) manifest on attainment of Samadhi. There are two possibilities here: one is that as a person practices meditation, he or she gradually develops greater one-pointedness, greater awareness, and, bit by bit, greater psi awareness, which is the hypothesis that parapsychological research has used so far. The other is that *only* when one attains Samadhi (total one-pointed concentration) does the psi awareness manifest. Indian folklore considers that the more adept one is as a yogi, the more psychic one is, but this has never been explored scientifically.

An invitation to teach parapsychology at a university in an ashram (a yoga monastery) in India enabled this research to be conducted with experienced practitioners — swamis (yogic monks and nuns) — as well as with inexperienced practitioners (students). This is essentially field research, taking the methodology that has been designed in Western laboratories and adapting it to work with the participants in their own setting.

In 2002, a number of different types of experiments were run with students (Roney-Dougal, 2002). The design of the two studies being reported here emerged as the most suitable for development. Only students participated and static pictures were used as a target in a telepathy design. The experiments did not give any significant results, but they suggested that this topic was amenable to research and that the free-response method was suitable for research in the ashram setting.

Building on these findings, a preliminary experiment was run from January to March 2003, with individuals who were living and working in the ashram. Changes in methodology were made in order to tighten the procedure, and a computer program (Precog) was designed. Otherwise the basic free-response design was kept the same to see if significant results would emerge in this situation and if it was feasible to run a more tightly controlled experiment in future years, when circumstances permitted.

In 2004 the final ashram ESP experiment was run using equal numbers of participants in each of the three groups that were identified in 2003, each participant undertaking six sessions. A modified version of the Precog program was again used, as this had shown considerable suitability for work in this setting.

Hypothesis

The hypothesis for these experiments was that persons with a greater level of yogic attainment (i.e., more years of practice and a greater degree of attainment) will show greater psi awareness, such that the swamis will rank the target correctly significantly more often than the students.

This hypothesis was decided upon prior to the preliminary studies being undertaken. The design, procedure, computer program, questionnaires, and so on, were all then developed, dependent on what was appropriate for this particular setting, with changes made year by year. Then, when the Bial Foundation funded a formal continuation of these studies, Jerry Solfvin joined the team as statistical analyst, and this paper is a result of his reanalysis of the data in preparation for the more formal studies being undertaken at present. The hypothesis being tested has, however, remained consistent throughout.

Method

A basic free-response design was used in which a computer program chose a video clip at random from a pool. After meditating, the participants aimed to visualise this target, and after that they saw a set of four video clips, one of which was the target clip. These were rated on a 100-point scale according to similarity with the visualization experience. The target picture was then shown.

Materials

A precognition computer programme (Precog) was designed by Jezz Fox of Liverpool University for an Apple Macintosh G4 Powerbook.

In 2003, the Kathy Dalton set of dynamic targets (Dalton, Steinkamp, & Sherwood, 1996), which has 25 sets of four video clips, was used. In 2004, an adapted set of the University College Northampton target set, which has 23 sets of four video clips, was used. These were amended so as to contain primarily pleasant or neutral material, with no overt violence or sexual content.

A yogic attainment questionnaire (YAQ) was designed in 2002 with the help of the students and amended in line with improvements during its first year of use, and later with help from David Luke. This amended questionnaire was used in 2003 and then further developed for use in 2004, again with the assistance of David Luke (see Appendix A). This questionnaire has two main parameters: the first is the number of years the participants have practised different yogic disciplines, such as physical asanas and breathing techniques (pranayama) that are thought to be

related to the emotions, and meditation, which works at the mental level. Cleansing practices (shatkarmas) were included in the 2004 questionnaire, as yogic theory states that these facilitate the manifestation of psi. Thus the degree of yogic attainment could be clearly specified, with each participant estimating the number of hours per day or week that they practised the various techniques as well as specifying the number of years they had practised them. In addition, they stated whether or not they were practising regularly at the time of the research. In 2004, a second part of the questionnaire addressed a specific meditation practice (antar mouna) and the level the participant had attained with this practice. This meditation technique has six clear stages, ostensibly making it a good tool for the purpose of this experiment. Base level is whether one is distracted by the body; this is followed by awareness of the senses and whether one is distracted by them; the next state is becoming aware of the space behind the closed eyelids and of one's spontaneous thoughts and whether one is distracted by the senses; the next stage is choosing and then disposing of specific thoughts, and the degree to which one can accomplish this; at the next stage one maintains awareness of, and then disposes of, spontaneous thoughts; one then aims to be aware of the space behind the eyelids with no thought; and the final stage is maintaining focus on a visualized symbol.

Design

A precognition design was used so that the sessions could be run without any assistants, enabling SRD to work with the percipients at any time that was mutually convenient for them. By its very nature, precognition is double-blind, thus allowing full control with minimal need for the usual laboratory facilities such as soundproof rooms. Further details are given in the procedure section.

The program chose a target set using a pseudorandom algorithm for the participant, such that the participant never received the same set more than once. The participant was shown all four video clips, which they rated on a 1–100 point rating scale. This permits a first choice (direct hit), a four-rank scale, and a rating to be used for analysis. The program then showed the target video, chosen at random out of the four in the set (see Appendix B for assessment of the randomisation procedure).

As the 2003 sessions were completely exploratory and we were attempting to find a methodology that worked in the ashram situation, SRD accepted anyone who wished to take part and ran as many sessions with them as they were able to do. This enabled 102 sessions to be run in an 8-week period.

In 2004, the design was tightened in that there were equal numbers in each of the three groups identified in 2003, and each person did six trials so that a more reasonable estimate of their psychic awareness could be assessed. This resulted in a total of 108 trials run in a 10-week period.

In both years, the yogic attainment questionnaire (YAQ) was completed by each participant. In 2003 this was done after the first session, as each participant completed different numbers of sessions and some did only one session. In 2004, participants completed it after their final session, when they were also interviewed.

Participants

In 2003, the study included any visitors (V), students (ST), sannyasins, (SN, those who have taken some degree of yogic initiation: jigyasu and karma sannyasins), and swamis (SW, also known as poorna sannyasins, as they have taken full yogic initiation) who wanted to participate, with a range of 4 months to 33 years experience of yoga. This permitted a good spread of degree of yogic attainment, though inevitably there was overlap between the groups both in terms of number of years of practice and the fact that some students had received some degree of initiation. In these cases students were assigned to the sannyasin group. The numbers "by chance" turned out to be very even, with a total of 34 people participating, of whom 12 were students or visitors, 10 were initiated to some degree (jigyasu and karma sannyasins), and 12 were swamis. Between them they had completed 102 sessions, which again were "by chance" very evenly balanced, with the swami and sannyasin groups doing 35 trials each and the students 32 trials (see Table 1).

TABLE 1
2003 PARTICIPANT DEMOGRAPHICS

Expertise	*N*	*N* trials	Average years practice	Average age*	Gender
Student/visitor	12	32	3.7 (0.3 – 15.0)	35.7	7m, 5f
Sannyasin	10	35	6.0 (2.0 – 10.0)	31.4	5m, 5f
Swami	12	35	19.7 (4.0 – 33.0)	44.6	3m, 9f

Note. Years of practice range in parentheses. *Average age in years. Abbreviations: m = male; f = female.

Considering that the numbers were not preplanned, it is pleasing to have such equivalence. The swamis were older on average, and more female than male swamis participated, whereas gender numbers were fairly even for the other two groups. Another difference is that the swamis were, in general, Westerners, whereas the other two groups were composed primarily of Indians. Thus, there were demographic differences between the swamis and the others.

In 2004, six students, six sannyasins and six swamis did six sessions each, making a total of 108 sessions (see Table 2).

TABLE 2
2004 PARTICIPANT DEMOGRAPHICS

Expertise	*N*	*N* trials	Average years practice	Average age*	Gender
Student/visitor	6	36	2.8 (1.0 – 7.0)	32.2	3m, 3f
Sannyasin	6	36	5.7 (1.0 – 11.0)	29.8	3m, 3f
Swami	6	36	18.7 (14.0 – 27.0)	41.2	1m, 5f

Note. Range in parentheses. *Average age in years. Abbreviations: m = male; f = female.

The swamis are once again clearly a different group from both the students and the sannyasins in terms of both age and number of years of practice. Also, the swamis were entirely Westerners, whereas the other two groups were once again primarily Indians. Whereas gender was equal for both sannyasins and students, only one male swami participated.

Procedure

All the sessions in both years were run in SRD's quarters in the guesthouse in the ashram, consisting of a main room with a small office attached.

In 2003, on arrival, each participant was told the basic design and hypothesis of the experiment, and his or her details were written into the computer. The experiment was discussed until the participant felt comfortable. A candle and incense were lit to create a conducive environment and the participant then settled down to meditate for 10 minutes. Some used the candle for their meditation, but each person was free to choose what meditation technique to use, how to sit, and so on, as there was such a wide range of expertise.

After 10 minutes SRD entered the room and guided the participants through a "sankalpa," or resolution, in which they repeated a positive statement of intent to become aware of the target video clip that the computer would show them at the end of the session. They then had a 4-minute awareness session in which they were instructed to become aware of the "chidakasha," which is the space one sees behind one's closed eyelids, and to become aware of any impressions they experienced while looking into their own mental space.

After this period they were asked to complete their meditation and then went through to the computer. There was a 5-minute period in which they were encouraged to draw out and to describe any impressions they had received, and the computer recorded their mentation using the MicNotePad Lite application, which records everything spoken. They then saw four video stills on the computer and chose which video they wanted to watch first as a full-screen video. They then chose their second video to watch, and so on. As these studies were preliminary, this procedure was followed out of interest to see whether the participant chose to view the target clip first. There was no noticeable sign of this. SRD discussed the four videos with the participants in the light of their impressions, and the participants rated the videos. The computer then showed the target video, which was discussed. After the first session, the participant completed a yogic attainment questionnaire.

In 2004 the major change to this procedure was that the meditation period was 15 minutes and a specific meditation technique (ajapa japa) was done by all participants, with a 4-minute awareness period following. Also, the amount of discussion during the judging process was decreased from 2003, with the participants doing the judging more or less on their own after an initial training session.

RESULTS

The analyses for this study are primarily descriptive, in line with the exploratory nature of the study. The data were originally analysed using a different method (Roney-Dougal, 2003), and have been re-analysed in order to find a statistical treatment appropriate for further studies. The analysis procedures reflect the exploratory nature of the data. This study is part of a larger series that is still in progress and for which we wish to derive insights to inform future design and analysis. The underlying data for the primary variable, psi scoring, are the preferential ratings (1–100) assigned to a pool of four possible targets for each trial. Since ratings present two classic problems — idiosyncratic "meaning" of ratings, and possible violations of normality — we converted ratings into ranks. We continue to use and recommend others to use 1–100 ratings in data collection due to their ease of administration (it's easier to instruct participants about ratings than about rankings), for microanalysis of individual trials, and for possible future use to compare with other studies. For the analysis, however, ranks are not only more predictably Gaussian but also become candidates for several simple, sound, and powerful analytic methods. In this small-sample exploratory study we elected to use the average rank statistic for the key variable because of its use as a normal deviate in correlation and regression analyses and because it can be tested for significance with a *t* test (Solfvin, Kelly, & Burdick, 1978). Effect sizes can then be computed directly from the *t* statistic.

Part 1: Data from 2003

The gender and age breakdowns are presented in Table 3 along with the yogic attainment score (YAQ) averages, numbers of psi sessions completed, and test results for each subgroup. Figure 1 shows psi scoring by group and gender.

The data in Table 3 and Figure 1 show the predominant tendency towards psi-missing. With the chance level being mean rank of 2.5, and with *lower* rank scores indicating psi-hitting, it can be seen that three of the subgroups are very close to chance expectation on psi scoring (male and female SW, male ST), and the remaining three groups are psi-missing, but not significantly so. Thus, there is no suggestion of any subgroup scoring significantly different from chance expectation, nor is there any indication of between-group differences. Even the deceptively large visual difference in Figure 1 between male and female students does not approach statistical significance.

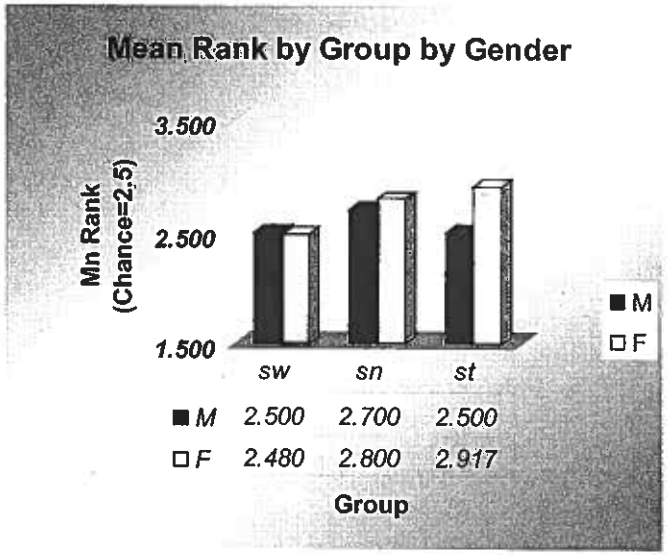

Figure 1. 2003 mean rank for participants (excluding visitors)

However, the picture changes if we note that those participants who completed only one or two trials gave poor and inconsistent results. Of these 16 participants, there were 2 visitors who completed one session each owing to the short period of their stay in the ashram. There were four students whose course finished at the time the research sessions were starting, so they were able to complete only one session each before leaving the ashram; one swami was too busy with other duties; and 4 participants started only at the

TABLE 3
2003 RESULTS SHOWING GENDER, AGE, YOGIC LEVEL AND PSI SCORE FOR ALL PARTICIPANTS

Grp		*n*	Age	Min/max	YAQ	*N* sess.	Psi rank	*t*	*p**
SW		12	44.6(9.6)	25/59	1074(897)	35	2.49(1.17)	-0.07	.943
	F	9	45.3(10.9)	25/59	1212(986)	25	2.48(1.26)	-0.08	.938
	M	3	42.3(4.5)	38/47	659(445)	10	2.50(0.97)	0.00	.999
SN		10	31.4(7.9)	22/50	380(285)	35	2.74(1.12)	1.12	.208
	F	5	31.4(4.5)	24/36	372(305)	15	2.80(1.26)	0.92	.374
	M	5	31.4(11.0)	22/50	388(299)	20	2.70(1.03)	0.87	.397
ST		9	38.2(8.4)	26/50	129(84)	24	2.71(1.08)	0.94	.356
	F	3	42.3(8.0)	34/50	182(100)	12	2.92(1.16)	1.24	.241
	M	6	36.2(8.5)	26/49	103(69)	12	2.50(1.00)	0.00	.999
V		3	28.3(0.6)	28/29	34(25)	8	2.63(1.06)	0.33	.749
	F	2	28.5(0.7)	28/29	47(16)	7	2.57(1.13)	0.17	.873
	M	1	28.0(--)	28/28	59(--)	1	3.00(--)	--	--

Note: Grp = group; Min/max = minimum/maximum age; YAQ = yogic attainment questionnaire; Psi rank = unweighted group mean; standard deviations in parentheses; SW = swamis; SN = sannyasins; ST = students; V = visitors; * two-tailed

end of the period of the study and so were able to complete only one or two sessions each before SRD left the ashram. For the remaining 5 participants, 3 completed two sessions each and showed an improved score on the 2nd trial. The final 2 both got "misses" on their single trials (rank 4 out of 4), so it is possible that they dropped out due to poor scoring. But if that were the case, these are only two data points out of the total 73, which would have negligible impact on the results. Thus we can remove them for post hoc exploratory analyses, leaving the 17 participants who did three or more trials, which is arguably a more valid sampling, though the student sample is reduced considerably.

In terms of years of yogic practice the demographics change slightly: students have practiced between 0.6 – 6 years; sannyasins from 2 – 10 years; and swamis from 10 – 33 years. Table 4 shows these selected data.

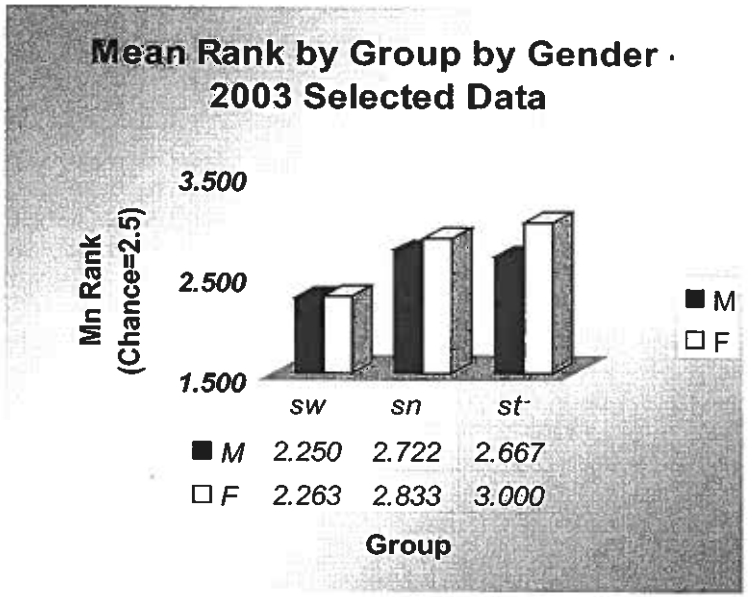

Figure 2. Mean rank for selected participants

All participants who completed at least three sessions averaged 2.60 (SD = 1.13) on the psi task for the 73 sessions, so there is still nonsignificant psi-missing overall. However, Figure 2 shows a different pattern than Figure 1. Eliminating the participants with fewer than three trials has little effect upon the psi scoring for the male and female sannyasin and student groups, as can be seen by comparing the graphs, but both male and female swamis can be seen to have performed much better than previously revealed. The swamis mean rank score of 2.26 (SD = 1.16) is in the psi-hitting direction, $t(26)$ = -1.08, p = .392, two-tailed. When compared to sannyasins and

TABLE 4
2003 RESULTS SHOWING GENDER, AGE, YOGIC LEVEL AND PSI SCORE FOR SELECTED DATA

Grp		*n*	Age	Min/max	YAQ	*N* sess.	Psi rank	*t*	*p**
SW		7	46.9(4.9)	41/59	1165(705)	27	2.26(1.16)	-1.08	.292
	F	5	47.8(5.5)	41/59	1265(838)	19	2.26(1.28)	-0.80	.432
	M	2	44.5(3.5)	42/47	916(3.1)	8	2.25(0.89)	-0.80	.451
SN		7	30.7(9.4)	22/50	287(164)	30	2.77(1.14)	1.29	.208
	F	3	29.7(4.9)	24/33	304(173)	12	2.83(1.27)	0.91	.382
	M	4	31.5(12.7)	22/50	275(182)	18	2.72(1.07)	0.88	.392
ST		3	37.7(11.0)	29/50	122(79)	16	2.88(0.96)	1.57	.138
	F	2	42.0(11.3)	34/50	141(100)	10	3.00(1.05)	1.50	.168
	M	1	29.0(--)	29/29	83(-)	6	2.67(0.82)	0.50	.638

Note: Grp = group; Min/max = minimum/maximum age; YAQ = yogic attainment questionnaire; Psi rank = unweighted group mean; standard deviations in parentheses; SW = swamis; SN = sannyasins; ST = students; * two-tailed.

students, swamis performed significantly better than each of the other groups, SW versus SN: $t(53) = 1.67$, $p = .05$, one-tailed; and SW versus ST: $t(41) = 1.79$, $p = .04$, one-tailed.

It seems reasonable to assume that excluding those who did not complete at least three sessions gives us a more valid indicator of psi scoring for the groups that they represent. This view is bolstered by reiterating that those participants with only one or two trials, regardless of group assignment, performed highly variably on the psi task. Thus, to eliminate them is to reduce extraneous variance in the psi data. As an added bonus to this "cleaning" of the dataset, a hitherto unseen trend becomes visible, the trend for swamis to perform better than sannyasins and students.

Using Effect Size Display

At this point it is useful to convert the psi scores from average rank to effect size in order to get a truer picture of the strength of these data. Effect size facilitates comparisons between groups with unequal n's and with data from other years or experimenters. The correlation effect size, ES(r), recommended by Rosenthal, Rosnow, & Rubin (2000) can be computed directly from the t statistic: ES(r) = t / sqrt($t2$ + df)

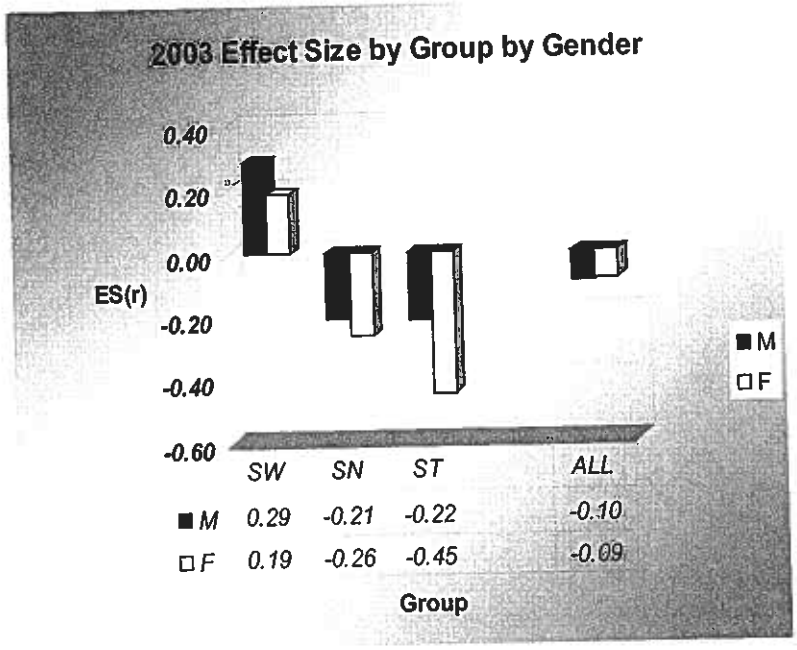

Figure 3. 2003 effect sizes for selected participants

The figure above shows the same data as in Table 2, but displays effect size: positive effect size indicates psi-hitting whereas negative effect size indicates psi-missing. In this effect size display, it can be seen that the 2003 data show some interesting (absolute value) effect sizes. Psi scoring in parapsychology ranges widely but generally a psi effect size of .25 to .35 would be considered "successful." We can see above that the male and female swami groups show small but respectable positive effect sizes, whereas the sannyasins and particularly the students had negative effect sizes (psi-missing tendency). Even in the absence of statistical significance these effect sizes can be helpful in planning subsequent research.

We must keep in mind that these results are post hoc; there have been multiple analyses and the p values above are presented only as a rough indicator of the magnitude of the relationships under discussion. Also with only three students retained in this data set, one can say very little with such a small sample.

Additional Analyses

In the data analyses above, there is a potential confound that clouds the interpretation. In the refined sample, those remaining in the swami group tend to be older and to have slightly higher yogic attainment scores (YAQ). Could this be responsible for the apparent shift in psi scoring in the swami group? If so, it is in line with the hypothesis that yogic attainment level is related to psi awareness.

Additional analyses were conducted to shed light on this question. First, simple Pearson correlations were computed between the mean psi rank, age, gender, years of practicing yoga, and YAQ. The results are shown in Table 5.

TABLE 5
CORRELATIONS MATRIX FOR 2003 PSI SCORE, AGE, GENDER, YEARS OF PRACTICE, AND YAQ

	Psi	Age	Gender	Yrs. practice
Age	-.15	-	-	
Gender	.03	.30	-	
Yrs. prac.	-.11	.67*	.43	
YAQ	-.57*	.33	.25	.65*

* $p < .05$; ** $p < .01$; *** $p < .001$

TABLE 6
2004 RESULTS SHOWING GENDER, AGE, YOGIC LEVEL AND PSI SCORE FOR ALL PARTICIPANTS

Grp		*n*	Age	Min/max	YAQ	*N* sess.	Psi rank	*t*	*p**
SW		6	41.5(8.5)	26/50	10047(6002)	36	2.42(1.25)	-0.40	.692
	F	5	41.2(9.4)	26/50	9993(6738)	30	2.33(1.21)	-0.75	.456
	M	1	43.0(--)	43/43	10320(---)	6	2.83(1.47)	0.55	.602
SN		6	29.5(3.8)	23/34	2565(1182)	36	2.44(1.03)	-0.32	.748
	F	3	32.3(1.5)	31/34	2994(765)	18	2.11(1.02)	-1.61	.126
	M	3	26.7(3.2)	23/29	2136(1535)	18	2.78(0.94)	1.25	.228
ST		6	32.2(1.9)	30/35	1440(834)	36	2.36(1.10)	-0.76	.452
	F	3	33.7(1.5)	32/35	2020(803)	18	2.39(1.09)	-0.43	.672
	M	3	31.0(1.0)	30/32	860(286)	18	2.33(1.14)	-0.62	.542

Note: Grp = group; Min/max=minimum/maximum age; YAQ = yogic attainment questionnaire; Psi rank = unweighted group mean psi score; standard deviations in parentheses; SW = swamis; SN = sannyasins; ST = students; V = visitors; M = male; F = female; * two-tailed.

In this correlation matrix, psi score is not significantly related to age, r=.15, $t(15) = 0.59$, $p = 0.561$, two-tailed, but it is significantly related to YAQ, $r = .57$, $t(15) = 2.69$, $p = .017$, two-tailed. Higher YAQ corresponds to better psi scoring as was hypothesised. In the original sample of 31 swamis, sannyasins, and students, these correlations were nonsignificant (w/age: $r = .10$; w/YAQ: $r = .13$).

The YAQ shows a positive, though nonsignificant, relationship with age, $r(15) = .33$, $p = .19$, two-tailed, and years of practice is significantly related to age and YAQ, $r(15) = .67$, and $r(15) = .65$, respectively, both $p < .01$, two-tailed. Finally, using multiple regression to predict psi scores based upon both of these predictors, we find that the YAQ accounts for virtually all of the explained variance, and age does not contribute significantly. Thus, age of participants is not a confound in these data. Yogic attainment, as defined by the questionnaire used in this study, may be. We cannot be certain whether it accounts for the different psi scoring of swamis, sanyassins, and students with these small sample sizes.

Part II: Data from 2004

In 2004, overall, the 18 participants (108 sessions) tended toward nonsignificant psi-hitting (mean rank = 2.41, $SD = 1.12$). The 2003 overall results tended toward nonsignificant psi-missing. The difference in scoring between the two studies is not significant. Tables 6 and 7 summarize this.

TABLE 7
COMPARISON OF 2003 AND 2004 MEAN RANK PSI SCORING FOR THREE GROUPS

Year	SW	SN	ST	ALL
2003 psi rank	2.26(1.16)	2.77(1.14)	2.88(0.96)	2.60(1.13)
N(selected data)	27	30	16	73
2004 Psi rank	2.42(1.25)	2.44(1.03)	2.36(1.10)	2.41(1.12)
N	36	36	36	108

Note: Psi rank = unweighted group mean psi score; standard deviations in parentheses; *N* = number of trials; SW = swamis; SN = sannyasins; ST = students.

Effect Size Analysis

The comparison of the groups for 2003 and 2004 can best be viewed by effect size measure ES(r). Figure 4 compares the 2003 and 2004 group/gender breakdown.

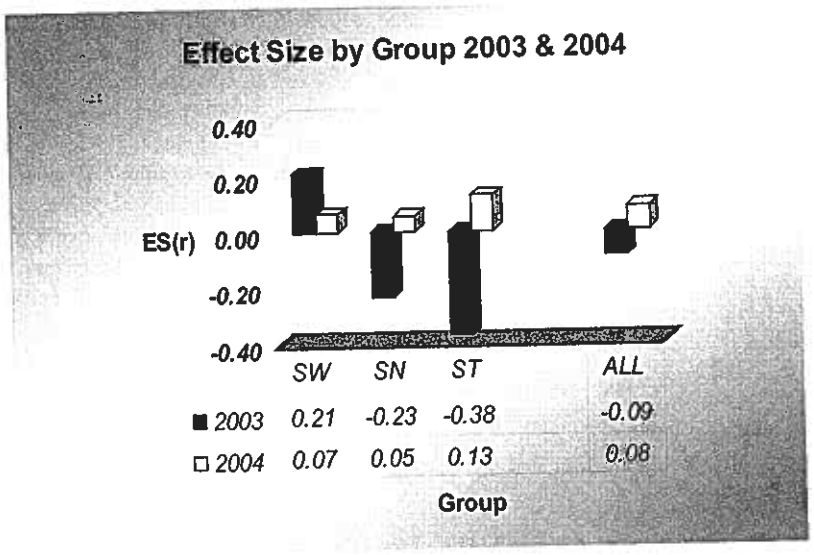

Figure 4. Effect size for 2003 and 2004

This figure shows that whereas the 2003 data was overall negative, it actually had the largest (absolute value) effect sizes. The swamis in 2003 scored at ES(r) = .21, a small but respectable positive effect, whereas the students and particularly the sannyasins were scoring rather strongly in the opposite direction. In 2004 all groups show nonsignificant scoring in the psi-hitting direction.

Figures 3 and 5 show the gender breakdown effect sizes for 2003 and 2004 data, respectively. Although males and females scored at about the same levels in their respective groups in 2003, that was not the case in 2004. Overall, in 2004 the females in all three groups scored positively, though nonsignificantly, mean rank = 2.29, E.S. = 0.19, $t(65)$ = -1.54, p = .12, two-tailed. Males in 2004 scored slightly negatively (mean rank = 2.60, E.S. = -.09). The overall male-female difference in 2004 is not statistically significant, p = .17, two-tailed.

In 2004, female sannyasins scored strongest, mean rank = 2.11, $t(17)$ = -1.61, p = .12, two-tailed. This is an effect size of ES(r) = .36, in the range often associated with "good" psi performance. With male sannyasins scoring nonsignificantly negatively, mean rank = 2.78, E.S. = -0.29, $t(17)$ = 1.25, p = .23, two-tailed, there is a significant difference between the male and female psi scoring, $t(34)$ = 2.03, p = .05, two-tailed. This gender effect does not hold for groups SW and ST, and it may be an artifact of fortuitous sampling.

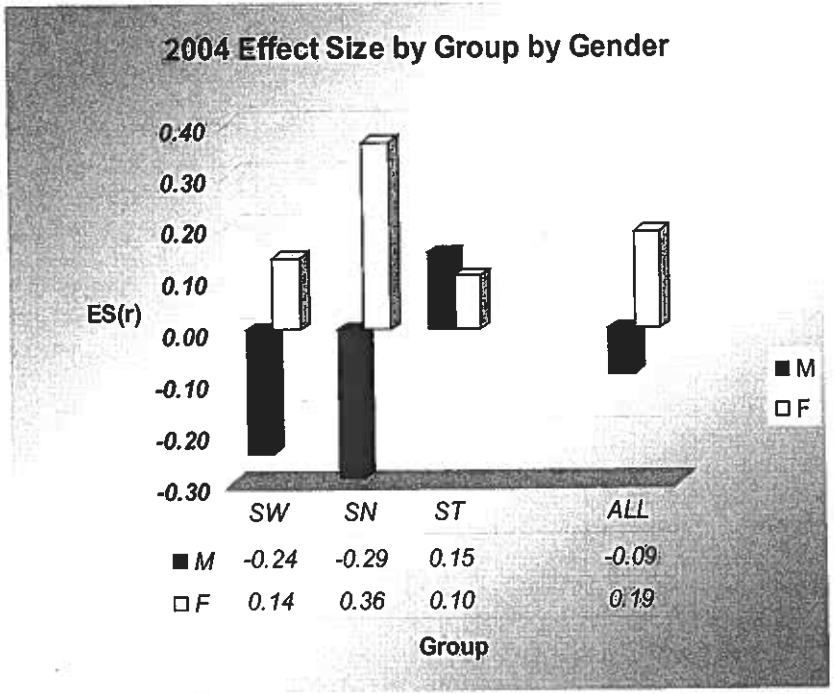

Figure 5. 2004 effect size by group by gender

The final question for the 2004 data is whether the correlation between psi score and yogic attainment score observed in 2003 was continued. The simple (Pearson) correlations among the key variables are shown below:

TABLE 8
2004 CORRELATION MATRIX FOR PSI SCORE, AGE, GENDER, AND YAQ

	Psi	Age	Gender
Age	-.10	-	-
Gender	-.34	.40	-
YAQ	.15	.71	-.31

In 2004, psi scoring is slightly correlated with gender, but near zero with YAQ and age, although both are in the hypothesised direction. Participants who were older and had higher YAQ scores tended to give more positive psi results. However, YAQ and age are correlated even more strongly in 2004 than in 2003. Thus, this is a complicated situation for which we have too little data and too many variables. The most we can hope for is to shed some light on this issue for planning our future studies. We already know from our earlier considerations that gender is a factor in this study, but now we can see that this is not entirely clear either. Gender correlates in 2004 with age (which was a potential confound in 2003) and with YAQ — female participants tend to be younger and have lower YAQ scores. (Note that we could throw "years of practice" into this porridge and almost certainly find further correlations, but we hope that age and YAQ cover that other variable sufficiently.)

Discussion

These studies have been a preliminary exploration of the hypothesis that increasing yogic attainment may be related to increasing psi awareness. In line with this hypothesis, in 2003, with participants who did at least three sessions, there was a significant difference between the swamis and the other two groups identified on the basis of yogic initiation level, which was corroborated by the significant correlation between the YAQ and psi score. This was not replicated in 2004. The significant difference in 2003 between the swamis and the other two groups occurred primarily because the other groups scored nonsignificantly in the psi-missing direction, whereas in 2004 all groups scored near chance but in the psi-hitting direction. Although the scores of the student and sannyasin groups are nonsignificant in themselves, the trend we see is a variability in scoring common to research with unselected participants. Perhaps the effect of many years of meditation is indicated by the consistency in scoring exhibited by the swamis as shown in Figures 1, 2, 3, and 4, which, although nonsignificant in these short studies, would, if sustained over a longer period, show the cumulative deviation exhibited by such studies as those of the PEAR laboratory (Jahn, Dunne, Nelson, Dobyns, & Bradish, 1997).

In the process we have found a methodology that is appropriate for an ashram situation so that controlled experiments can now be run. There was a wide range in nationalities and ages taking part in this research, so we are far removed from the typical university experiment that uses undergraduate students as participants.

The significant difference between the swamis and the other groups in 2003 occurred primarily because of the nonsignificant psi-missing of the students and sannyasins. The participants felt that they "weren't doing well," so this was addressed at a qualitative level in an effort to see what

possible reasons there might have been for this feeling. The following areas were identified and addressed:

(1) *Emotionality of targets.* Negative emotionality of targets was a contributor to some psi-missing with certain people. Though from a Western perspective the Kathy Dalton set of video clips is not particularly violent or negative, for people living in an ashram — where there are no films, television, radio, or newspapers — to see a tidal wave drowning people, or a person in battle with a monster, was a shocking experience. Swamis, who have lived in an ashram for many years, have not been exposed to modern television and films and so have a very low threshold for the emotional tension in films that most modern Western people would hardly notice. There were a number of comments in which people ranked these targets fourth just because they did not want to see them again. Therefore, in 2004 a target pool that had only positive emotional or neutral targets was drawn from the Northampton University target set. There is also a possibility that cross-cultural differences affect people's responses to the target pools. The participant pool comprised Indians from all parts of India, Australians, New Zealanders, British (both Anglo and Carribean), Swiss-Indian, Italians, Serbians, and so on. Only one Indian participant stated that he had no connection with the targets because they were outside his culture, so this factor appeared to play a minor role.

(2) *Judging.* One possible problem occurred at the judging stage. Because the participants were novices with regard to free-response methodology, SRD worked with them at the judging stage. Some participants found this intrusive and unhelpful, though many said it was helpful. This important aspect of the free-response design has not been sufficiently investigated. Free-response methodology is a two-stage process, the first stage requiring an open, holistic, intuitive, global, and dream-type cognitive mode for reception of the information; the second using the analytical, logical, and judging cognitive mode to decide whether the information is relevant to the actual target. In the ganzfeld type of design used here, participants do their own interpretation with or without assistance from the experimenter. In the remote viewing design the experimenter helps during the awareness period and someone else does the judging. Which method is preferable is open to debate, but the degree of assistance given by experimenters is rarely mentioned in reports, although it deserves to be. One early ganzfeld study that does address this issue is Palmer, Khamashta, and Israelson (1979), in which the authors compared participants' own scoring with that of independent judges.

(3) *Social and cultural dynamics.* It is possible that social and cultural dynamics were exhibited most strongly by the students: for example, age, gender dynamics, and the effect of ashram rules. The participants were working in SRD's room. The ashram has a rule that no one is allowed into anyone else's room. SRD was in the guesthouse and her room was being used as an office, and she had permission to run the experiment there.

However, some people were uncertain as to the permissibility of entering her room and there could well have been discomfort. It is also possible that, as the hypothesis was a comparison, the students unconsciously psi-missed so as to enable the swamis to score better. There is a strong element of compliance in Indian society — a desire to please — however that may manifest — in this case supporting the hypothesis by psi-missing. As discussed in the introduction, this element of compliance in a comparison design engendering psi-missing was also found by Dukhan and Rao (1973) and Roll and Zill (1981).

(4) *Experimenter effect.* An experimenter effect involving the students is also possible. SRD noticed that she was more relaxed about the psi-missing tendency of the students. However, there was tension around the psi-missing in general, and this is dealt with when the karma yoga attributes below are examined. This experimenter effect obviously has the greatest chance to affect results at the judging stage. As mentioned in Section 2 above, SRD had to help the participants at the judging stage so that they could fully understand what they had to do, especially in their first session — and some participants did only one or two sessions. At no time did she intervene in the participants' choice of target, but her presence did influence some of the participants and may well have influenced their ratings. Although SRD may at times have thought that a particular picture was the target, she made no conscious choice at any time, so there is no record of whether she was using accurate psi during this process. This is an obvious psychological experimenter effect, and there may also have been psychic influences from SRD.

(5) *Emphasis on siddhis.* Another factor is the yogic teaching stating that one must not put emphasis on the siddhis. Despite the fact that the head of the ashram gave permission for this research, there is a strong dictum that psi is a forbidden topic. This can be understood as a variant of the fear of psi (Tart, 1984) that is so prominent in Western society. Here it does not manifest as denial of psi, but psi is considered to be an unwise direction in which to focus one's intent, to the extent that people actively avoid the subject at every level. And yet in Patanjali's yoga sutras, one whole chapter is devoted to a discussion of this aspect of consciousness, and it expresses the view that one cannot gain enlightenment without having gained the siddhis. Therefore, the active avoidance of the siddhis is possibly a mistaken attitude. They give us some of our greatest problems in terms of ego and glamour; spiritual power is even more corrosive than temporal power; and to be distracted onto the path of attaining the siddhis for their own sake is fakirism rather than the path of a yogi. But one does have to deal with the problems that the siddhis raise, so to avoid them can be understood as a fear of them. It is better to be aware of that which can give rise to problems than to be in ignorance.

(6) *Ownership resistance.* Another factor is that of ownership resistance (Batcheldor, 1984). In the sessions there was a noticeable feeling

of "doing well" or of the reverse. This will be dealt with more fully in the following discussion of karma yoga. Another possible confound is that the participants were aware of the hypothesis, and this may have influenced their responses to the questionnaire. The problem of assessing the degree of yogic attainment is ongoing. Ideally, an independent measure would be preferred to a self-report scale. However, as yet there does not appear to be an adequate or reliable measure, so we have here relied on two different measures — the degree of initiation, which forms the three groups so we could assess the differences between them, and the YAQ, which is based on a self-report of their yogic practices. Neither is satisfactory.

One of the most interesting lessons to come from these experiments was the realisation that the instructions SRD was giving to participants in the pretrial discussion, and which often were discussed in the post-trial feedback, were remarkably similar to the attributes of karma yoga as defined by Sw. Niranjanananda Saraswati (Niranjanananda, 1993). He lists six attributes of karma yoga as follows:

(1) *Efficiency.* "In order to be efficient, it is necessary to be keen, to have awareness, and concentration, to be one-pointed and not distracted" (p.71). In the context of a psi session this means that one aims to become aware of the target video and not the other videos in the pool (displacement).

(2) *Equanimity.* "This means that there is balance of mind in both success and failure. If our mind becomes disturbed by failure and success, then we swing like a pendulum . . . from a positive and optimistic approach during success, to a negative and pessimistic approach during failure"(p.71). Everyone wanted to be "successful." Some came with an expectation of "failure." Learning that it is the process that is important and that whatever happens is useful was very difficult for most people, including the experimenter! Problems with equanimity and its related aspects almost certainly contributed to the psi-missing. One aspect of equanimity is the following:

(3) *Absence of expectation.* "Never think of renouncing action, only think of renouncing expectation of the results of the actions performed" (p. 72). When we do research we all have our expectations, our hopes and desires, normally outlined in the hypothesis. The experimenter holds these expectations and the participants try to perform accordingly to please the experimenter. There were some participants who, when they did not get a direct hit, would make a remark about how they were not fulfilling the expectations of the experiment.

(4) *Egolessness.* "Egolessness . . . implies that one has to be simple, sincere and desireless" (p. 72). Problems with ego were present throughout the sessions for most of the participants. Ego contributes both to lack of equanimity and to expectation. These manifested as people wanting to be successful because they were a swami, thinking they were not good enough because they were a student, and so on.

(5) *Renunciation of limited desire.* "It is understood that when we begin our journey, the motivating factor is a desire. 'I wish to' is the form of our desire. It is not elimination or renunciation of this desire but the renunciation of other limiting desires that is necessary. We must know which are the limiting desires that hold us back" (p. 73). This is an interesting factor because participants take part in research for a variety of motives. The one that seems to lead to the most positive results is one of interest in the process, in what is going on and inquiring how it works. This desire gives a motivating force that allows for equanimity. It is also a key factor in the experimenter effect, since the experimenter has the greatest desire for a particular result.

(6) *Duty, or dharma.* The final attribute of karma yoga is considering every action to be a duty. Obviously having this attitude helps in a psi experiment because with it one has complete equanimity. Most of the swamis participated solely because their guru had asked for their cooperation — out of duty to their guru. This was not so true of the students.

These attributes of karma yoga have been outlined here as possible aspects of psi functioning that are amenable to experimental testing under laboratory conditions. Through exploring these aspects we may well be able to understand better the dynamics involved in the controlled manifestation of psi. If it is true that development of meditation and associated states of consciousness are related to a learned as opposed to a spontaneous ability to become aware psychically, then this could transform parapsychology. At present we either rely on the few superstars, as in the remote viewing experiments (May, 1996), or on the uncertain results from unselected participants.

Conclusion

These studies were a preliminary exploration. Although the results are not statistically significant, they are all in the hypothesised direction, suggesting that more research is needed to explore possible relationships between years of living a yogic lifestyle and greater psi awareness. We are encouraged by the few tentative post hoc findings in the 2003 data that we have outlined in this paper. We are encouraged by the more positive atmosphere surrounding the data collection process in 2004. We are also more aware now of the pitfalls of collecting data in cross-cultural settings, of the costs of doing so, and of the numerous potential confounds to be avoided. Based upon our experience to date, we suspect that further fine-tuning of the design and procedure may yield interesting data during the next series of experiments with Tibetan Buddhist meditators.

So far, however, as most of the results have been nonsignificant, much more research will be needed to clarify the possible relationship between years of practise of yoga and meditation and the level of psychic awareness. Perhaps another reason for further research is that, as Patanjali states in his sutras, it is only when one has attained a certain level of Samadhi that the siddhis appear. It is possible that none of the participants in this study had attained that level of meditation.

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