

**COMPARING CONSCIOUS AND PHYSIOLOGICAL MEASUREMENTS
IN A COGNITIVE DMILS STUDY IN BALI
116-04**

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Introduction

This project aims at comparing physiological responses (heart rate) with conscious responses (button presses) to develop a more sensitive measure of psi in a cognitive DMILS experiment in a cross-cultural setting. It continues and extends the research program that we have developed in Bali for the past four years.

DMILS has been an important methodological approach in parapsychology for 25 years, since William Braud (Braud & Schlitz 1983) developed it. His first experiments with distant mental influence were directed at physiological processes, specifically at electrodermal activity. Electrodermal activity has remained the dominant physiological process measured, but other DMILS experiments have been directed toward muscular tension, muscular tremor, ideomotor reactions, blood pressure, and breathing rate, among others.

The basic methodology is straightforward. There are two individuals, the subject, who is hooked to the appropriate physiological measuring device, and another person whose aim is to influence the specific physiological responses of the subject. Sometimes, the two are connected by video so that the influencer can see the subject. The time of the experiment is divided into epochs randomly assigned. In some of them the influencer is asked to influence the physiology of the subject, but during the control epochs, the influencer remains neutral. The experimenter simply compares the physiological responses during the influence periods with those during the control periods to see if a statistically significant difference exists. Braud has consistently gotten positive results over the various experiments using different physiological targets. DMILS experiments have been performed for decades by Braud and other labs with success (for overviews, see Braud, 2003; Braud & Schlitz, 1991; Schlitz & Braud, 1997; Schmidt, 2003).

In an important methodological change, Braud, Shafer, McNeill, & Guerra (1995) used a similar experimental design to change the target from a physiological response to a cognitive one. In this protocol, the subjects meditate on a burning candle, and are asked to press a button when they notice that their minds have wandered from their focus meditation. Meanwhile, the Influencer is asked to help the other persons in their focus meditation during the Help periods, which are randomly counterbalanced with Control periods. Braud's (Braud, et al. 1995) first experiment achieved significance ($p < .05$, two-tailed, effect size $r = .25$).

Brady and Morris (1997) employed the same experimental design in Scotland to successfully replicate this finding ($p < .05$, one-tailed, effect size $r = .27$). Brady and Morris were particularly interested in investigating more deeply the relationship between the pairs in the dyad.

Studies in Bali

2001 Study

The authors of both studies suggested that meditation training might facilitate psi success, but they did not explore this suggestion, so in studies supported by the Bial Foundation, we explored whether meditation training would facilitate psi. In the first one, after training half of our 40 subjects in meditation for two months, we ran a study to see if training affected cognitive DMILS performance. As in previous experiments, we used 8 epochs of one minute Help periods counterbalanced by 8 control epochs. We achieved an overall significance in our main hypothesis, with fewer button presses in the Help condition as opposed to the Control condition. The mean of the total button presses in the Control period was 2.58 ($SD = 2.18$), and in the Help period it was 1.89 button presses ($SD = 1.64$). These means were statistically significant from each other, indicating that overall there were significantly fewer distractions in the Help period ($t(37) = 2.151$, $p < .025$, one-tail, Cohen's $d = .36$ (Cohen 1988), power = .33). Further, we found that the best success (although not reaching significance) occurred when the Helper had been trained in meditation, while the Helpee had not. This result had intuitive plausibility, as it paired a person who was in need of help with a trained Helper.

2002 Study

In Study 2, we ran 60 trials in which all of the Helpers were trained meditators, while none of the Helpees were meditators. There was a significant difference in the predicted direction in the button presses between Help ($M = 2$, $SD = 2.04$) and Control ($M = 2.48$, $SD = 2.57$) condition, $t(59) = 2.23$, $p < .02$, one-tail, Cohen's $d = .21$, power = .20. While we achieved significant results again, our overall success did not improve, and since many other factors had changed (location of the experiment, for one), it was not possible to attribute this success unreservedly to our pairing trained Helpers with untrained Helpees, but these pairings remain intuitively plausible. These studies have been published recently in the *Journal of Parapsychology* (Edge, et al., 2002) with grateful acknowledgement to the Bial Foundation for its generous support.

Because success in the DMILS studies has been fairly consistent, they have been used in process-oriented experiments. Caroline Watt has used them to investigate the experimenter effect. In the first one, Watt and Brady (2002) ran two studies to see how the expectations of the participants affected the results of a DMILS study. They wanted to see if the manipulation of the participants' expectations about the experimenter would affect such things as their psi scores (with the positive expectancy condition producing higher psi scores versus the negative expectancy condition), and their perceived success at the psi task. In neither study did they find that the manipulation of expectancy had an effect.

In the second study, Watt and Baker (2002) again pursued an understanding of the experimenter effect, with one experimenter making psi-supportive or psi-unsupportive suggestions prior to the run. While this manipulation had an effect on psychological measures, it did not have an effect on psi, as no significant DMILS results were found.

Another study has been reported by Watt (Watt & Ramakers, 2003), this time employing nine psi believers and five psi disbelievers, who were trained to be the experimenters, in order, once again, to see if she could find an experimenter effect in the DMILS protocol. As opposed to the previous studies, this one recorded an overall significant psi effect, due entirely to the runs with the psi believing experimenters. Since there were no significant differences between the participants or experimenters on a number of questionnaire measures, Watt concludes that these results point to a experimenter psi effect rather than an experimenter interaction effect, being the locus of these experimenter effects.

October, 2003 Study

We have also used DMILS in a process-oriented way in Bali. In the last study in Bali described above, one of the trained meditators was a traditional healer (Balian), and his results were unique. In six trials with two different Helpees, in only one run did the Helpee press the button indicating that his focus had wandered. The relationship between the Balian and the Helpees appeared to be so dramatic that we thought it was worthwhile to pursue in our next study (in October, 2003) the question of whether Balian, paired with non-meditators, would produce better results than non-healers who were meditators. However, we found a no significant difference in the psi scores between the meditators and Balian, $t(38) = 1.74$, $p = .09$, two-tailed, $d = .56$, power = .39. Interestingly, the responses of Helpees to the meditators were higher than with the Balian: Meditators: $M = .55$, $SD = .21$; Balian: $M = .41$, $SD = .29$. Four of the five meditators were Resident Interns of Suryani, and, in a post hoc analysis, we found that runs using only these meditators achieved significance. We decided, therefore, to use Resident Interns as meditating Helpers in the next study, with non-meditators as the Helpees in May, 2004.

May, 2004 Study

We had become increasingly worried about using button presses as the measure of focus. For one thing, the number of times the subjects pressed the button was significantly lower in Bali than in previous studies in the US and in Scotland (a difference of an average in each condition of between 2-3 in Bali and 12-19 in the West), although we used exactly the same instructions to the subjects in Bali about when to press the button as they did in Scotland. Obviously there were cultural differences causing these radically different responses, but we have not yet been able to discern what they were. Another problem with using button presses as a measure of lapses in focus meditation derives from the fact that we asked the subjects to press the button when they notice that their minds wander from the focus meditation, but we have no indication how long their minds have been unfocused. With one or two minute epochs, we may have been getting some

button presses in the beginning of an epoch (e.g. a Control period) when, in actuality, they may have lost their focus for the entire previous epoch (perhaps, a Help period) but had not noticed this (or vice versa). In general, button pressing is quite a generalized response when we would like a much more finely tuned indication of focus of attention in DMILS.

This problem led us to adopt another exploratory study. Originally, we had wanted to monitor the subjects by getting both button press responses and EDA measurements, but experts at the University of Edinburgh warned us against doing this, not only because the button presses would interfere with the EDA of the subject, but because EDA measurements in hot, humid climates like Bali were unreliable. On the recommendation of these experts, we adopted a protocol of measuring heart rate, along with button presses. Heart rate has been associated with attention (Simons et al., 2004), and heart rate has been monitored in meditation (Peng et al., 1999). In our exploratory study, an inexpensive monitor used by runners to measure their heart rate was employed. The measurements could be taken through a wall, so an experimenter (Bob Morris) sat in a room next to the Helpee's room and wrote down changes in heart rate during the experimental period. Thus, we took two quantitative measures during this study, the button presses and the heart rate data.

The results of the major hypothesis were in the predicted direction with there being fewer button presses in the Help condition than in the Control condition, although the results did not quite reach statistical significance due to an unusually high number of psi index scores of .5. However, an early analysis of approximately 20% of the heart rate data yielded very interesting results following our predictions: (1) heart rate variability tended to be lower to a significant degree in the Help than in the Control condition, while (2) the mean heart rate appeared to be similar in both conditions. These tantalizing results suggested further study because they imply that these physiological measurements (heart rate variability) might offer a more sensitive measure of psi success in a cognitive DMILS study than the traditional motor response (button press).

On the basis of these results, we applied for, and received, funding to run a series of studies in Bali using more sophisticated heart monitoring equipment to compare the two kinds of data we can collect—the button presses and heart variability data. However, the final analysis of the entire set of data did not yield consistently positive results.

Average heart rate did not vary significantly between the Control and the Help conditions, Control ($M = 84.93$, $SD = 12.38$), Help ($M = 85.13$, $SD = 12.67$), $t(20047) = 1.13$, *ns*, two-tailed, although it was slightly elevated in the Help condition. This difference remained non-significant when we controlled for the moderating effects of epoch (1st to 8th), run (first vs. second), and Helper.

Heart rate variability (measured in heart rate standard deviation units) had a significant positive correlation with button presses, both in the Control and in the Help condition ($r = 0.47$, $N = 63$, $p < 0.0005$, two-tailed). Furthermore, different Helpers tended to “generate” significantly different heart rate variations, $F(7, 343) = 3.75$, $p < 0.001$. However, counter to our predictions, heart rate variability was not significantly

different between the two conditions, Control ($M = 2.83$, $SD = 1.09$), Help ($M = 2.89$, $SD = 1.35$), $t(589) = 0.11$, *ns*, one-tail.

When we examine the data from the heart rate more closely, we get unexpected results. We started from the premise that we want the heart rate (HR) to be similar between the two conditions (Control vs. Help). The results suggested that on average overall that is the case, but when we started taking into account the other variables (epoch, run, Helper) there were differences. For example, HR started high in the first epoch and tended to decrease thereafter. So HR showed significant differences between some epochs (for instance, the first and the last). At the same time this pattern was not exactly the same in the two conditions. For example on the 6th epoch HR rose in the Help condition while it dropped in the Control condition. In addition, in the Control condition after the 6th epoch HR rose for some unknown reason. Also different Helpers generated different HRs in the two conditions.

Therefore, all those variables influenced the effect various conditions had on HR, which added a great deal of noise to the results. These results suggested changes to our design in this study. For example, our computer driven program allows for us to make sure, before we initiate the run, that the Helpee's heart rate pattern is stable, and thus perhaps eliminate the effect of the epoch mentioned above.

In terms of the heart rate variability we found that as the heart rate variability increased so did the number of button presses in both conditions. Although we cannot be sure, it is reasonable to speculate that the heart rate variability seemed to correlate with the realization of a lack of focus on the candle, which gives support for our pursuing this question in this study. We seemed to have support for a correlation between cognitive state and HR variability, but it seems to do with conscious recognition (of the lack of focus) rather it necessarily being an indicator or psi. We need to have a more robust indication of psi in the study in order to tease these factors out.

Additionally, we carried on a number of interviews with the Helpers and the Helpees during the study, and more extensive interviews with the Helpers after the study. These interviews suggested changes to the protocol to help to give us a better chance to have greater psi facilitation in this study.

JULY 2005 STUDY

Background

The focus of this study was to enquire whether heart variability is a more reliable indicator of psi influence. Further, through extensive interviews with Helpees focusing specifically on the phenomenology of the button presses, we aimed to see if we could understand why the average of button presses in Bali tends to be so much lower than in America and Scotland.

Cross-cultural Background

Cross-cultural research in parapsychology is important for at least three reasons. First, although every culture reports some kind of parapsychological phenomena, how these phenomena are explained and incorporated into the cultural worldview differs. Given that parapsychological phenomena have

psychological elements, such research can provide a window into cross-cultural psychological functioning. Wierzbicke (1993) has argued that some concepts are cross-cultural, so some expressions of and explanations of paranormal functioning may hold across cultures. However, Edge (2002) has argued that many psychological concepts do not hold cross-culturally, and that dualism and atomism are inappropriate concepts in most cultures. In particular, alternatives to Euro-American dualistic thinking in philosophy and parapsychology need to be investigated conceptually and empirically in order to better understand alternative approaches to the world and especially to parapsychological phenomena. A recent example has been published (Strauss, 2004) related to profound cultural differences in cognition as basic as simple arithmetic.

Bali is a good place to engage in such a study for several reasons. First, it is a well-researched culture (Covarrubias, 1972; Edge, 1993; Edge, 1994; Edge 1996; Edge, 1998; Geertz, 1973; Lansing, 1974; Lansing, 1983; Jensen & Suryani, 1992; Suryani and Jensen, 1993). Second, Edge's research there has given him access to people and places that make such an experiment possible, and Professor Luh Ketut Suryani, Professor of Psychiatry at Udayana University, has been trained in Western psychiatric thinking and methodologies, but she is also deeply involved in and committed to Balinese culture. Third, it is a culture that believes in the existence of paranormal functioning, and research into the Sheep-Goat Effect suggests that this is an important, although marginal, factor in psi production. Fourth, there is a positive correlation between psi success and altered states of consciousness, shown in Ganzfeld experimentation, as well as in others. Bali has a deep and rich history of altered states; indeed, altered states are widely practiced as important parts of rituals, and so they are fully integrated into the culture. Suryani and Jensen (1993) argue that trance is ubiquitous in Bali, not just in these more dramatic cases, and is found in gamelan players, as well as in some ritual praying. Meditation groups, practicing non-traditional Balinese forms of meditation, are becoming popular in Bali now, and Prof. Suryani is known as perhaps the foremost proponent and practitioner of meditation throughout Indonesia.

Second, we can examine approaches to psi training and production that may have been overlooked in Western models. Non-EuroAmerican cultures have developed subtle technologies of the inner world, developing mental and physical practices that differ from Western ones. Their approaches to training and production have often been profound; the subtleties of various yogic techniques surpass traditional EuroAmerican meditative approaches. This suggests that there may be other methodologies, training techniques, and practices developed in non-EuroAmerican cultures, created within their cultural worldview, which may lead us to provide more robust results in parapsychological experiments. In the last experiment, Annemieke Bikker, a consultant, conducted in-depth interviews with the Helpers that brought out some of these cultural differences. In the present study, we wanted to extend these expanded interviews to the Helpees. Advances in meditation training, practice, and influence can have profound influences in increasing the positive effects of meditation in life (Anton, 1999; Calderon & Schnieder, 1999; Harmon et al., 1999; Kabat-Zinn & Wheeler, 1998; Kulkarni &

O'Farrell, 1998; Speca & Carlson, 1998), including a better quality of life (Gimbel, 1998; Shapiro & Schwartz, 1998).

Third, cross-cultural work has been gaining greater and greater importance in psychology, challenging many traditional psychological assumptions. Psychologists are beginning to realize that traditional theories have been developed in the West and may not be universal. Richard Nisbitt (2003), formerly a proponent of universalism in psychology, has recently written a persuasive book, *The Geography of Thought*, which argues that Westerners and Easterners think in fundamentally different ways. Another book, *The Handbook of Culture and Psychology*, edited by David Matsumoto (2001), details the various and competing approaches to bringing culture in psychology—including the approaches of cross-cultural psychology, cultural psychology, psychological anthropology, and indigenous psychologies. Although these competing methodologies differ in subtle ways, they all agree that psychology will not be complete until cultural differences are taken seriously and folded into an expanded psychology. The same holds true in parapsychology, and this work offers the opportunity for parapsychology to make a contribution to this emerging area.

In taking into account all the above in the behavioral DMILS methodology of the current study, we anticipated (a) to increase our rate of success in detecting psi functioning, and (b) to develop a protocol that is more culturally sensitive to the needs and approaches of the Balinese.

Experimental Hypotheses and Planned Analyses

There were three main hypotheses:

- A. We predicted that there would be fewer button presses in the Help condition than the Control condition. This is the basic DMILS prediction that the concentration and intention of the Helper during the Help conditions would result in the Helpee pressing the button fewer times in the Help condition, thus suggesting that the Helper was able to help the Helpee in focusing meditation.
- B. The second hypothesis predicted that heart rate variability (HRV) would be lower during Help epochs than during Control condition epochs. This would suggest that the Helper had been successful in calming the Helpee's cognitive state.
- C. A third hypothesis was that HRV would positively correlate with the number of button presses.

Interview Objectives

In the interviews, we sought to obtain a better understanding about why on average the Balinese press the button fewer times than in similar experiments conducted in the US and Scotland. By exploring this overall objective we focus on three possible explanations:

- A. The Balinese Helpees do not understand the instructions regarding the button press.
- B. They are better at meditating.
- C. They are embarrassed or feel restricted to press the button.

Methodology

Experimental Design

The overall design was the same as in our previous cognitive DMILS studies. A Helper (a trained meditator) in one room was asked to assist a Helpee (someone untrained in meditation) engage in meditative focus on a lit candle in a non-adjointing room. The Helpee was asked to press a button whenever she noticed that her attention had wandered from the meditative focus and then to return to her meditation. Each run lasted 16 minutes and there were 60 runs in total.

The button was connected to a laptop computer, which registered the button presses. The computer also ran a program, adopted from Dr. Paul Stevens' routine developed at the University of Edinburgh but significantly modified and upgraded by Dr. Richard James, including the integration of the *HeartMath Freeze-Framer* software, described below. A pre-trial preparation period for the commencement of each run was integrated allowing time for the DMILS and the Freeze-Framer programs to start and a 30-60 second period for the Helpee to calm and settle in. This preparation period was followed by 16 one-minute epochs (8 Control and 8 Help ones). At the start of a run, the computer produces the order of the Help and Control epochs, randomly selecting the order within a two-minute couplet (Help epoch followed by Control epoch or vice versa); these were shown in order on a monitor in the Helper's room to guide the Helper. Thus, there was a series of 8 Help/Control couplets, producing a total of 16 one-minute epochs, following the preparation period, for a total of 16 minutes for each run.

The second change was the introduction of the heart monitor. The equipment used was the HeartMath Freeze-Framer, developed to be a biofeedback instrument of heart rate, and heart rate variability (HRV), which in turn, their literature suggests, reflects the *coherence*, or balance, between the parasympathetic and sympathetic systems. We used the HRV as a measure of calming of cognition, with less variability suggesting cognitive calming; we believe that this score might be a better measure of the focus (or lack of focus) of the Helpee and thus be more sensitively used to measure the production of psi, with greater HRV showing up in the control epochs (and consequently, less variability during Help periods in a run). The use of the coherence scores was exploratory for this study.

Participants

The Helpers had been trained in meditation by Suryani. All but one of them had been involved directly or indirectly in at least one previous study, so they were aware of the design and the purpose of the experiment. Their mean age was 23.7 years ($SD = 13.7$ years, range 27 to 61 years). Of the Helpers, one was a female. Each was paid Rp. 900,000 (approximately \$93.75) at the end of the experiment. Each came on 3 days and participated as Helpers in a total of 10 runs (4 on one day, and 3 on the other two). They were not told prior to the experiment that they would be paid.

All of the 60 Helpees were volunteers recruited by friends and colleagues of Suryani. Their mean age was 22.9 years ($SD = 7.2$ years, range 16 to 43 years), while 25 (41.7%) of them were females. Of the Helpees, 6 (10%) were unemployed, 26 (43.3%) were university students, 17 (28.4%) were high school students, and 11 (18.3%) were in

full-time employment. All had been asked if they had time to participate in an experiment concerning meditation, that they were Balinese Hindu, and that they were not practicing meditators. They were paid Rp. 100,000 (approximately \$10.36) for their participation in one run.

In total 30 (50% of the sample) of the Helpees were interviewed, of which 23 (76.7%) were male. Four Helpees were professionals, 13 were pupils, 11 were university students and for 2 Helpees the status was unknown. The mean age was 21 years ($SD = 5.47$ years, range 16 to 42 years). (See Appendix 1: Schedule 2005)

Physical Layout

Once again, we rented rooms in Sanur, a beach side community not far from Denpasar, the capital of Bali. We rented five rooms on the top floor in the Sanur Paradise Plaza Hotel at the end of a hallway (see Figure 1). One of the rooms (#450), the closest to the main section of the hotel, served as the *Reception Room* for Helpers and Helpees. Suryani greeted the Helpees in this room and gave an initial explanation of the experiment (see Procedure below for details); snacks were always available for experimenters and participants in this room. In a second room (*Interview Room*; #449), Bikker carried out in-depth interviews with the Helpees during the first three days of the experiment ($n = 30$). In the final three days, a Balinese psychiatric resident carried out short interviews in this room, and collected additional quantitative data (the latter were used in this study). The other three rooms were further down the hall and were separated from the above ones by a corridor. The first one (#448) was the *Helper Room*. The second one (#447) served as the *Experimenter Room*, where Edge worked and controlled the programs. The last room (#446) was the *Helpee Room*. The room next to the one the Helpees used and all subsequent rooms were unoccupied during the duration on the study. The Helper and Helpee were separated by 28 feet, two walls, and the Experimenter room, which was located between them.

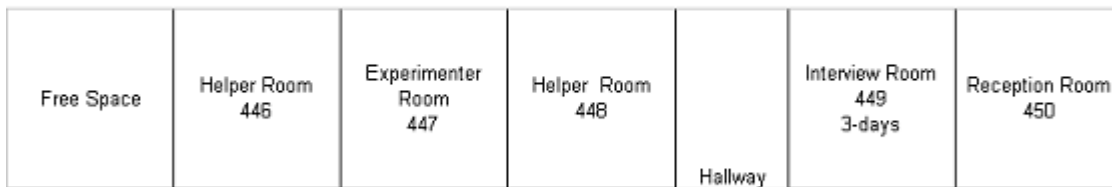


Figure 1: Experimental rooms at the Radisson Sanur Paradise Plaza Hotel

The Helper sat on a pillow on the floor of the semi-darkened room facing a lighted candle approximately 2 meters away. A monitor and computer speaker were stationed to the side and were controlled by the computer in the Experimenter Room; the monitor gave the instructions of “Help” or “Control” (in written English), while the speaker made a soft chime sound to indicate to the Helper that a new epoch had begun.

Before each run, it was made clear that the Helpers understood the meaning of the English instruction on the monitor; had they expressed uncertainty, there was an option to use the Indonesian words instead (however, none did).

The Helpee was also in a semi-darkened room, sitting on a pillow on the floor and facing a lighted candle, about 3 meters away, toward the direction of the Helper. The Helpee had a button that was held in one hand, and a heart rate monitor clipped to the ear (and to the clothing for security). The wires for the button and for the heart rate monitor were connected to the computer and strung outside of the buildings from the Helpee room to the computer in the Experimenter room. As part of the safety precautions, the button was tested before each run (indeed, pressing the button was built into the program as part of the procedure to set up the next run). If the button did not function properly or the ear clip did not produce good data, the program told us so and we were able to stop at that point and adjust, check, or reposition the two apparatuses.

Equipment

The experiment was run from a new HP Pavilion laptop, based on a program written by Richard James. The heart rate and HRV were measured using the Freeze-Framer 2.0 program developed by HeartMath of Boulder Creek California. We used a USB hardware kit with an ear sensor that clipped to the ear and had a lapel clip. This is a commercially available product that is typically used for biofeedback sessions; we did not use it for this purpose but only to retrieve the heart rate data and the coherence data.

Procedure

In this study, we ran 60 Helpees, carried out over 6 days between July 17 and July 22, 2005. Each day we had 10 runs. In the morning, one Helper participated in 4 runs, 2 with a break and then 2 more. In the afternoon, each Helper participated in 3 runs, two consecutive ones and another after a break.

Suryani, along with one the psychiatric residents not involved as a Helper at that time, greeted the Helpees at the Reception Room (sometimes the Helpees came singly and sometimes they came in groups of 2-6). They made the Helpees comfortable and offered them refreshments. After explaining the experiment to them, she took them to the Helpee and Helper rooms, introduced the Helper to them, and explained the experiment again, showing them the candle, how to sit in meditation, how to attach the ear clip, how the button press worked (having them test it out), and asked them if they had any questions. The Helpee who was slated to go first stayed in the Helpee room while the others went back to the Reception Room. She then asked the Helpee to sit and get ready to meditate. Suryani placed the ear clip onto the Helpee, making sure it was comfortable.

During the first 31 runs Tiliopoulos (who was stationed at the door of the Helpee room) then communicated through walkie-talkie with Edge to begin the program (Bikker took up this roll thereafter), which then first asked for the Helpee's button to be pressed to assure a connection. When the button was pressed and the program was initiated, Edge communicated to Tiliopoulos (and in the later runs, Bikker) who told Suryani. Suryani left the room and went back to the Reception Room. Tiliopoulos then went to the door of the Helper's room, informing them that the run was to begin. The Helper got ready, and

when Edge turned the Helper's monitor on and this was confirmed by Tiliopoulos (and later Bikker), he closed the Helper's door, and after a short delay to give time for the Helper to finish settling, Edge initiated the next phase of the program, which began the DMILS experiment, during which the computer selected a Help or a Control condition. These continued in a randomized ABBA/BAAB counterbalanced way, pseudo-randomly sorted 10,000 times using the inbuilt Visual Basic algorithm, which was seeded by the PC clock. As before, at the beginning of each epoch, the computer sounded a bell and the screen showed either "Help" or "Control" which guided the Helper. Thus, there were 16 one-minute epochs in each run (half Help and half Control) after which the computer told the Helper that the experiment was over.

Tiliopoulos (and later Bikker) timed the 16 minute run on a stopwatch, and when he confirmed with Edge that the run was completed, Suryani went into the Helpee's room. When she was satisfied that the Helpee was finished with the meditation, she went to the Helper's room for a short interview (or had them fill out a questionnaire).

Interview Procedure

During the first three days, the Helpee proceeded to the Interview Room, directly after they had finished the meditation session, where Bikker conducted an in-depth semi-structured interview, using a Balinese interpreter. These interviews lasted between 10 and 30 minutes and were audio recorded for later transcription. The interviews consisted of about eight open questions, depending on whether or not the Helpee had pressed the button. The questions related to the situation in which they pressed the button, the meditative state, the meaning of concentration, and strategies to reach this, distractions, and suggestions for the next study. The interviews were conducted with the help of a Balinese translator. In total three different translators took part during the interviews as none could work during the entire period. All interviews were audio recorded and transcribed verbatim.

Results

1. Experiment results

A. Button-Presses in Control-Help conditions

Overall, there was a nonsignificant difference in the button presses between Control ($M = 2.45$, $SD = 3.08$) and Help ($M = 2.75$, $SD = 3.33$) condition, $t(59) = 1.27$, $p = .10$, one-tail, Cohen's $d = .16$, power = .24.

However, at a closer inspection of the data, a number of interesting findings emerged. First, the concentration levels of the Helpee had a highly significant mediating effect on the number of button presses between Control and Help, $F(1, 55) = 42.31$, $p < .0005$. Analyzed further this effect indicated that concentration levels had high negative correlations with number of button presses in both conditions, $r(\text{Control}) = -.68$, $N = 60$, $p < .0005$, two-tailed; $r(\text{Help}) = -.60$, $N = 60$, $p < .0005$, two-tailed, suggesting that, as it would have been expected, the more focused the Helpees were, the fewer times they tended to press the buttons. Controlling for that (obvious) effect, it was found that there was a significant interaction between the two conditions and Helpees' sex, $F(1, 55) = 4.49$, $p < .05$. Interestingly, when broken down, this interaction suggests that, although

male Helpees tended, on average, to press the button more times during the Help condition (counter to our first prediction), for female Helpees the result was the opposite. In other words, it appears that the DMILS prediction held true, to an extent, only for female Helpees.

B. Heart rate variability

Counter to our second prediction, although on average HRV tended to be slightly lower in the Help condition, this difference was not statistically significant, Control ($M = 5.84$, $SD = 1.64$), Help ($M = 5.79$, $SD = 1.64$), $t(59) = 0.46$, $p = .32$, one-tail, Cohen's $d = .06$, power = .07. However, by exploring the data further, a similar interaction to the previous hypothesis was found. Specifically, HRV interacted with the Helpees' sex, $F(1, 58) = 4.23$, $p < .05$, once again suggesting that, while on average, the males' HRV was higher during the Help condition, for the females the opposite was true. In fact, our second prediction was statistically confirmed for the female Helpees, Control ($M = 6.06$, $SD = 1.86$), Help ($M = 5.78$, $SD = 1.64$), $t(24) = 1.80$, $p < .05$, one-tail, Cohen's $d = .36$, power = .55.

C. Heart rate variability vs. button presses

Heart rate variability exhibited low and positive correlations with button presses (i.e. towards the predicted direction), both in the Control and in the Help condition, which, however, were nonsignificant, $r(\text{Control}) = .17$, $N = 60$, $p = .21$, two-tailed; $r(\text{Help}) = .21$, $N = 60$, $p = .12$, two-tailed.

D. Further analyses

In addition to the preplanned analyses, the behavior of the coherence data was investigated. Although the mean coherence was almost identical between the Control ($M = 721.17$) and the Help ($M = 721.18$) conditions, the mean coherence variability tended to be significantly higher in Control ($M = 50.25$, $SD = 18.48$) than in Help ($M = 47.43$, $SD = 17.22$), $t(59) = 2.38$, $p < .01$, one-tail, Cohen's $d = .31$, power = .76.

E. The effects of external disruptions

Throughout the study, approximately 119 incidents of external disruption were recorded. These were primarily auditory, e.g. noise generated by external sources. The disruptions appeared to have occurred more or less evenly between the Control (46.5% of total disruptions) and the Help (53.5%) condition. It was checked whether these disruptions had an effect on the number of button presses in either condition. No such effect was observed. In fact, overall and within each condition, participants appeared to be pressing the buttons significantly more when no disruption was present, $\chi^2(1) = 146.93$, $p < .0005$.

2. Interview results

Background information

Within the interview sample the average button press was 5.6 ($SD=5.90$), ranging from 0 to 22 presses. Five people did not press the button at all, 14 people pressed the button and were below the average (i.e. 1 to 5 times) and 11 people pressed the button

more times than the average (i.e. 6 to 22 times) (see Table 1). As the key focus of the interviews was to explore the use of the button press, we checked whether there was a difference in the average button presses between the group of Helpees which was interviewed ($M = 5.6$) and the group of Helpees which was not interviewed ($M = 4.8$), and no significant difference was found, $t(58) = 0.459, p = .65$.

Table 1
Number of button presses.

Number of button presses	Number of Helpees	Number of button presses	Number of Helpees
0	5	8	1
1	3	9	1
2	5	10	1
3	2	14	1
4	2	15	1
5	2	16	1
6	2	17	1
7	1	22	1

A. The button press

Understanding of instructions of button press

The same sheet as used in Scotland with instructions for the Helpees formed the core of the instructions given in Bali. At this stage it is unclear how the Helpees in the US were instructed. During the interviews, it became apparent that all Balinese Helpees had understood the function of the button press in similar terms. All mentioned that they had to press when they were not concentrated, which they expressed in terms of their mind not being focused on the candle, being distracted, or not feeling calm inside.

However, the instructions were given to the Helpees in different ways. While in Scotland the instructions were read out to the Helpees, this did not happen in Bali. Instead, Professor Suryani explained the instructions herself and thereby embedded it more into a Balinese context. Through the interviews it became clear that she introduced two important differences. The first related to the practice of the candle meditation as the Helpees were taught that within candle meditation one tries to make the light of the candle straight through one's focus and concentration. In other words, when one is focused on the candle, the candlelight is straight and when the candlelight moves, one is not fully concentrated. The second difference related to the function of the button press, as the Helpees were told that when they pressed the button they would receive help from the Helper in order to concentrate again and feel calm. In that sense, the button was not only a mechanism to indicate to the experimenters when they were not in focus (function of self-monitoring), it also became a mechanism in order to ask for help.

It could be argued that within the different cultural settings of the studies, the way the instructions were given and the emphasis of the content may have introduced a cultural factor. When the sheet of instructions is read out as was done in Scotland more attention is given to the possibility of being unfocused; for example, the instructions read: "*Most people find it fairly difficult to keep their mind empty of thoughts and it is expected that you will experience the intrusion of random thought*" as well as on the

importance of pressing the button when this is the case, for example: “*signal each time an intrusion occurs.*” The core of the instructions given to the Balinese Helpees seems to revolve more around being focused, as more explanation is given on how to meditate and focus and also on how to receive help for focusing.

As a consequence, the Balinese Helpees experienced specific issues that could not have occurred elsewhere: for example, some Helpees reported that they felt guilty for pressing the button and asking for help, or they felt they should not press the button as they should be able to concentrate by themselves, or they wondered why they did not feel anything after they had pressed the button.

Using the button press

Nobody had a problem with the actual act of pressing the button. While last year it had been reported that some Helpees had found it difficult to move their hand or body when they felt unfocused, due to being in a meditative state, none of the interviewed Helpees reported a similar experience. One Helpee (participant 8) mentioned that she was uncertain as to whether or not she had pressed the button, as she did not hear a sound.

Time to refocus after pressing the button.

Interestingly, the Helpees had no trouble giving an estimate (and many up to the second) about how long it took them on average to regain their focus after they had pressed the button. When taking the answers at face value, we could--by multiplying the time they mentioned to regain their focus with the number of times they had pressed the button--calculate how much time they had been out of focus. On average, they were 2.4 minutes ($SD=1.56$) out of focus (the five people who had not pressed the button were excluded, as well as two other participants, one because he could not answer the question, and the other because according to his answer he would have been out of focus for 22 minutes).

Table 2
Minutes being out of focus by number of Helpees ($n=23$)

Minutes being out of focus	Number of Helpees	Frequency of button presses per Helpee
0 to < 1 min.	6	3, 4, 5, 5, 6, 9
1 to < 2 min.	3	2, 10, 22
2 to < 3 min.	4	1, 2, 2, 17
3 to < 4 min.	5	1, 1, 2, 3, 15
4 to < 5 min.	3	2, 4, 17
5 to < 6 min.	2	8, 14

Table 2 would indicate that the number of button presses is not necessarily a clear indication as to how long the person was out of focus. For example, one person (participant 3) pressed the button 15 times, and it would have taken 15 seconds to regain the focus, therefore he would be 3 minutes and 45 seconds out of concentration, while another person (participant 8) pressed the button 2 times and it took her 2 minutes to regain concentration, so therefore she was 4 minutes unfocused. Clearly, the attempt to remember how long one was out of focus after each button press is subjective, and we do

not take the answers as being accurate in any sense and therefore should be handled with care.

It is important to note that in Bali no one pressed the button more than once during the period when he or she was unfocused. For example, a person who pressed the button twice was out of focus two times. The Helpees were explicitly told not to do so, and during the interviews they confirmed that they had pressed the button only once when they felt unfocused. However, in Scotland and the US this issue was less emphasized, and it may have been the case that when the Helpees in Scotland and the in US were not concentrated (or uncertain about it) that they pressed the button more than once during this period. As a result, this would increase of the average of the button presses. Although we suspect that this may have happened, it is a speculation as we do not have any information on this.

B1. Candle meditation

Meaning of concentration

Nearly all Helpees explained being concentrated as being focused on one thing, without any distractions from anything else. They were asked to rate on a scale from 1 to 100 how much they had concentrated and a strong association was found between the actual number of button presses and the self reported level of concentration, indicating that the better the focus, the fewer times they pressed the button ($r = -.71, p < .001$, two-tailed, $n = 30$).

Within the meditation that Suryani teaches, being in a meditative state is experienced as: “When meditation occurs, breathing will decrease in volume, resulting in hypoventilation. The body will begin to feel lighter, and the person will experience a feeling of peace” (Suryani & Jensen, 1993, p. 163).

The five people with zero button presses said that in general they found it easy to distinguish between conditions within which they were focused and within which they were not. As such, they had no problem realizing that they were focused during the entire duration of the experiment. However, others mentioned that during the experiment they were sometimes confused as to whether they were in full concentration or in half concentration or concentrating at all. When they realized they were questioning their state of consciousness, they would press the button. However, it highlights an interesting issue that there is a grey area between being focused and being unfocused.

Additionally, people would highlight different feelings during the meditation. The people with zero button presses reported to be stable and focused, even though some experienced physical sensations like tearing of the eyes, and one mentioned that the air-conditioning was making her feel cold. However, they said that although these circumstances changed their state of consciousness, it did not interfere with their concentration. When asked why they could concentrate so well, they would refer to the fact that they needed concentration for praying as well as being taught by their parents how to be quiet and focus. Several other Helpees also stressed that although they had never done candle meditation (or meditation with the eyes open) the fact that they prayed helped them with the particular task of the experiment.

Throughout the interviews, the importance of experiencing feelings of peace and calmness became clear. The exact interpretation seems hard to unravel and it could mean that feeling peaceful is a pre-requisite to be able to create the state of being concentrated

or vice versa; others would use the words “feeling peaceful or calm” and “concentration” interchangeably, thereby indicating that when one feels peaceful and calm, one is concentrated by default.

The Helpees who pressed the button once tended to attribute their loss of concentration to an outside factor, like a closing door. The Helpees with two or more button presses would attribute their loss of concentration to outside factors as well, but equally to themselves for experiencing thinking about other things, like about a family situation or a friend or to their anxiety in relation to taking part in the experiment.

Another important issue that came up was the movement of the candle light. As mentioned under the previous heading, it was explained to them that when one is concentrated one should be able to keep the light of the candle still, and that when the light moved; this is an indication that one is not focused. Following this philosophy, it would mean that there is a paradox when people say: “*the candle light is moving, but I was very concentrated*”. The issue of the movements of the candlelight came up at various occasions, though in slightly contradictory ways. Either people used it to monitor themselves in the sense that when they saw the candlelight move they realized they were not focused and pressed the button; as such they were following the instructions they were given. Others used the movements to concentrate and they would follow the movement of the candle (for example: *I try to follow the light of the candle, when it moves left I turn left, when it moves right I turn right*, participant 17). Some, including one person with zero button presses would comment that the candlelight kept on moving throughout, but that did not affect them in their concentration; in other words it did not matter for their concentration whether the candlelight was moving or not.

B2. Effect/ perception of Helper and being helped in relation to the meditation

The aim of the experiment was to see the effects of joint meditation, and the Helpees were asked several questions about their perception of receiving help. Most of the Helpees ($n = 23$) had met the Helper before they entered the meditation room and seven had not. Ten people, including the five with the zero button presses said that it had no effect on their meditation, six said that it would have been better not to see the Helper beforehand as the image of the Helper was a distraction or for realizing that one should be able to focus by themselves without help. The others said that it had had a positive effect on them, mainly because it made them feel more stable and secure. As mentioned before the Helpees were told that when they pressed the button, they would receive help. As such, the button press carried the meaning of being a device to ask for help. Interestingly, although many attributed their ability to concentrate again after they had pressed the button to the Helper, some did not while the feelings they experienced were described in a similar fashion. For example, after they had pressed the button the Helpees felt helped by regaining their concentration or feeling peace; this then became a sign that they had received help from the Helper. Others said that after pressing the button, they felt calm or that they could concentrate again, but that this was done by them or because of help that was attributed to the candle, but in neither case to the Helper.

Additionally, as we are examining the influence the Helper has on the concentration of the Helpees, it could be the case that the Balinese Helpers are better at helping the Helpees than the Helpers in the other countries and as a consequence the Balinese Helpees press the button less. Although, Pearson’s correlations between the

Helpers concentration and number of button presses do not show any significant results to back this up, it may be worth exploring further.

C. Feeling embarrassed or restricted to press the button

The third hypothesis was related to whether the Helpees felt restricted or embarrassed about pressing the button thereby showing that they were not good at meditating. Given that Bali is a shame culture (Geertz, 1973) the question of embarrassment is a viable one. Due to the sensitivity surrounding shame, this issue was hard to examine directly. Instead, it was explored through various indirect questions. First, the Helpees were asked how often they thought they had pressed the button and 13 people named the number correctly, 8 said fewer than the actual number and 9 said more. Although some people gave a figure much fewer than they had actual pressed (for example, 10 instead of 15, participant 3), the other way around was also true (for example, 10 instead of 6, participant 7). The Helpees were very open to talk about the frequency they had used the button press. Also, the Helpees seemed open when they mentioned that they found it hard to concentrate or to be continuously focused on the candle. However, this does not necessarily reflect the times they pressed the button. For example, one Helpee (participant 21) who pressed the button twice said that he found it difficult to concentrate, while another Helpee (participant 23) who pressed the button seven times said that it was easy for him to concentrate. One factor that was difficult to control during the experiment was the noises within the hotel that interfered with the silence needed for the experiment, so sounds like the air condition, people in the swimming pool, doors, etc were beyond our control. The Helpees mentioned often that these sounds made them loose their concentration and led to pressing the button. However, they did not seem to hide behind these distractions as an explanation as to why they could not concentrate. They equally spoke about distractions that came from inside, like their thoughts wandering or feeling pressured because of the experiment as well as feeling uncomfortable for sitting in cross-legged position or having to be quiet or alone for such a long period of time as explanations that made them loose their concentration. Although it is hard to be conclusive about whether or not the Helpees felt embarrassed about pressing the button, the overall feeling was that they were not, as they seemed very open to express their level of concentration even if according to them they could not focus very well.

D. Suggestions

In order to be able to learn for the next study we asked at the end of each interview whether they had any suggestions for us in order to make the study more comfortable for them. Seven of the Helpees had no suggestions (including three of the Helpees with zero button presses; the other two mentioned that they preferred it if the room was more dark), thereby also indicating that they were content with the set up of the study. Most of the suggestions given related to the factors that they had given that had become a distraction for them during the experiment. The suggestions are grouped under the following five headings:

NOISE

Nine Helpees referred to the noises they heard while in the meditation room. Specifically the sounds of the air condition, the candle (dripping of candle wax) and noises coming from the swimming pool were singled out. However, as described above, there is no indication that the distractions correlated with button presses.

TEMPERATURE

Four Helpees mentioned that the room was too cold due to the air conditioning.

LIGHTING

Seven made a comment about the lighting in the room, six indicating that they needed the room to be darker in order to concentrate, and one needing the room to be lighter. However, it needs to be noted that during the study the curtain came loose several times, letting in the sunlight when people were trying to meditate. So it could well be that the room was well lit, but that the sunlight interfered.

SETTING

Five Helpees made a comment about the setting of the room, mainly in terms of preferring the room to be cleared of all furniture and only having the candle in front of them. One person mentioned that it would be better to have the meditation done outside as that is more in line with the Balinese experience of praying.

MEDITATION

Six people made comments that were indirectly related to the set up of the study and that had more to do with their own experience of the meditation practice. These were:

1. Include younger people in this study as it is better that they learn to meditate while they are still young
2. Prevent the candle light from moving as it almost died due to the air conditioning.
3. "My suggestion is 'just focus' if we work just focus on the work; Maybe if I practice every day, and make meditation a habit it will be easier, also maybe it would be easier if I can close my eyes, this is a little bit pain".
4. More comfortable if not need to sit cross-legged and spine straight.

Discussion

Interview discussion points

The aim of the interviews with the Helpees was to increase our understanding as to why the average of button presses in Bali is so much lower than in America and Scotland, thereby exploring the cultural aspect of the experiment. We looked specifically at three issues as possible explanations in relation to the relatively low button presses in Bali. Without having a comparison group with American or Scottish Helpees, the answers why Balinese press the button on average fewer times can only be speculative. However, the interviews did give some clear insights. These can be summarized as follows:

1. The Balinese understood the instructions of the experiment; however the instructions they were given emphasized more the state of being focused throughout the experiment, while the instructions in Scotland emphasized more the state of not being focused. With this difference in emphasis it may have been the case that the Helpees in Scotland were more inclined to press the button than the Helpees in Bali. Unfortunately, we do not have any indication on how the Helpees in the US were instructed, so we cannot compare them at this stage.
2. The Balinese Helpees pressed the button only once during the period they were not focused because they were explicitly told to do so; this instruction was absent in Scotland and there the Helpees may have pressed more often.
3. The Balinese Helpees also emphasized that they have more exposure to experience concentration through praying etc. Given the importance of religion and meditation within the Balinese culture, it makes sense that the Balinese Helpees felt more at ease concentrating on command than in Scotland and the US.

During the interviews we worked with three different Balinese translators, and it has to be noted that they differed in the extent and depth of translation. Clearly, working through translators meant that a certain depth of understanding is lost; however, all were very helpful in explaining certain cultural background issues in relation to questions that came up during the interviews and as such were invaluable with the interpretation of aspects of the results.

Conclusion

Although our main prediction for fewer button presses during the Help condition did not hold for all participants, we found an interesting difference between sexes. Females tended to respond the predicted direction for the DMILS scores and heart rate variability. In fact, as predicted, the heart rate variability of females was higher in the Control condition than in the Help condition. We do not know why the females would have scored in the predicted direction and not the males, but this is a subject worth pursuing in future experiments.

Through the interviews, we were able to glean an in-depth understanding of the phenomenology of the experience of the Helper and especially the Helpees. Although some of the Helpees thought the external noise distractions may have affected them, an analysis of the data did not support this conclusion. We learned, however, that we need to use a standardized set of instructions for the Helpees, which we will incorporate into the next study. We had used a standardized set in the first two successful studies, and returning to this protocol will strengthen the experiment. We also learned that we need to pay attention to the individual needs of the Helpees, asking them more carefully if the temperature and lightening in the room is comfortable.

Although we focused through our interview data on the question of why there were significantly fewer button presses in our Balinese data than in the data from America and from Scotland, we still have not found an adequate resolution to this question. Confusion in the instructions given the Helpees does not seem to explain the lower number of button presses since the number of presses was equally as low in

previous studies. However, there were an unusually large number of participants who did not press the button at all during the 16 minute run—16 runs out of 60, when this had happened only 6 times in the previous 4 studies comprising 120 runs. The instructions may have had an affect on this number.

One reason why there is such a great difference in the average number of button presses during a run, with the Balinese number being significantly smaller than in the US and in Edinburgh, is that the Balinese may perceive the incidents of loss of focus as a state, i.e. from losing focus to regaining it is perceived as a single incident, and thus they tend to press the button very few times, perhaps only once, during that whole period. However, it is possible that Westerners perceive the loss of focus as a time-point event, i.e. every moment they are out of focus they feel the need to acknowledge it by pressing the buttons. Interview data seems to suggest that the Balinese tend to think of the loss of focus as a state; we will pursue this question in further interviews. Of course, we do not have comparative data from EuroAmerican cultures.

June 2006 Study

Background

Cultural issues always arise in non-EuroAmerican contexts; indeed, one of the aims of this study is to explore one of these: why there are significantly fewer button presses in Balinese experiments as opposed to EuroAmerican experiments. In the previous experiment, we confronted another one—a culturally-induced understanding of the candle flames which led to confusion over the instructions given to participants. Because of this confusion, we are wary to draw any conclusions from the previous study. Some of the Helpees interpreted the instructions as telling them to ask for help from the Helper by pressing the button (rather than simply as an indication of having lost their focus), and some of them did not press the button because they thought they could regain their focus without the help of any Helper. The non-significant results could stem from the lack of psi interaction during the experiment, or from the confusion in the instructions.

Similarly, the suggested results that female Helpees were successful in producing significant results in the DMILS portion of the experiment may have similarly been a result of artifact. However, ad hoc analysis combining this study with results of previous studies revealed some useful results that support a gender difference in the data. These results are:

(1) We found a near significant difference between the average PIS of female Helpees ($M=.58$, $SD=.29$) and male Helpees ($M=.47$, $SD=.27$), $t(86)=1.77$, $p=.08$, 2-tails. This basically suggests that female Helpees tended to produce psi hits, while males did not.

(2) There was a significant difference between the average PIS of female Helpers ($M=.40$, $SD=.21$) and male Helpers ($M=.56$, $SD=.30$), $t(86)=2.40$, $p=.02$, 2-tails. This result indicates that female Helpers tended to produce psi misses!

(3) If we combine the above two findings, we can get something like the graph below

(see Figure 2). This picture suggests that the best possible outcome was achieved by a Female Helpee with a male Helper, while the worst was when the sex of the participants was reversed!

(4) Finally, we dichotomized the button presses for each of the two conditions (Control-Help) into "No presses" vs. "Yes presses" (i.e. whether they had pressed the button in that condition or not), and we checked these against the sex of either Helpers or Helpees. The only interesting result we got was an association between the Helpees' sex and the above dichotomized button presses in the Help condition (a near significant result, $p = .08$), which basically shows that in the Help condition, Female Helpees tended to have a more balanced profile between press-no press, while Males tended to press the button more often.

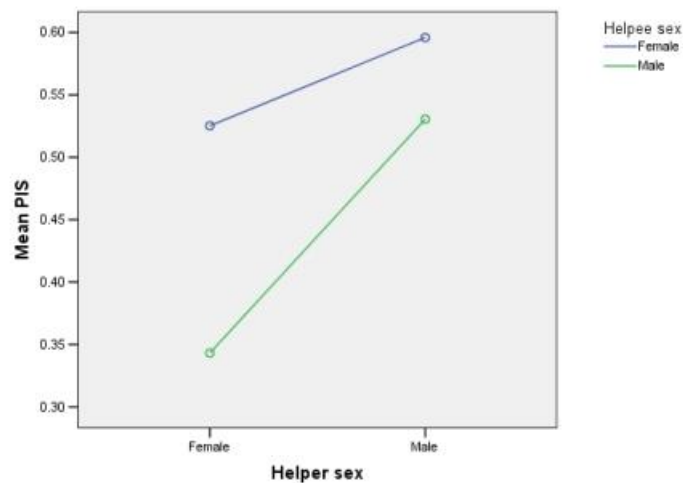


Figure 2: Interaction of males/females with PIS scores

This result suggests that the preferred combination is a male Helper and the female Helpee. In the past the data has suggested that we use Helpers trained in meditation, while the Helpees should be untrained in meditation. This time, we will continue using trained Helpers and untrained Helpees, but we will mainly use male Helpers and females Helpees.

Additionally, we cannot draw any hard conclusions about the heart rate variability data (HRV). The results were in the predicted direction but were not significant (although there was a weakly significant interaction with HRV, sex and condition. The males' HRV was higher during the Help condition, and the opposite was true for female Helpees. Although there was confusion about the instructions concerning the button presses, this confusion should have affected HRV less since we were suggesting that the HRV correlated with the meditative focus. We are going to pursue the question again in this study whether HRV will be a more sensitive measure of psi interaction between the Helper and Helpee than the button press.

Finally, we will pursue further through in-depth interviews of Helpees and Helpers the question of why the Balinese press the button significantly fewer times in experiments than Americans or Scots.

Methodology

Experimental Design

We kept the experimental design the same for this experiment as in the last one (and basically the same for all of our cognitive DMILS studies). A Helper experienced in meditation sat before a computer screen in one room. The Helper was asked (during the Help condition) to engage in focus meditation on a lit candle sitting on a stand two meters away and to intend to help a Helpee who is also sitting in front of a lit candle in a non-adjointing room. The Helpee is asked to press a button whenever the attention has wandered from the meditative focus and then return to meditating. The button press was recorded by computer. Each run lasted 16 minutes, and there were a total of 60 runs.

The button was connected to a laptop computer, which registered the button presses. The computer also ran a program, adopted from Dr. Paul Stevens' routine developed at the University of Edinburgh but significantly modified and upgraded by Dr. Richard James, including the integration of the *HeartMath Freeze-Framer* software, described below. A pre-trial preparation period for the commencement of each run was integrated allowing time for the DMILS and the Freeze-Framer programs to start and a 30 second period for the Helpee to calm and settle in. This preparation period was followed by 8 two-minute epochs (4 Control and 4 Help ones). At the start of a run, the computer produced the order of the Help and Control epochs, randomly selecting the order within a four-minute couplet (Help epoch followed by Control epoch or vice versa); these were shown in order on a monitor in the Helper's room to guide the Helper. Thus, there was a series of 4 Help/Control couplets, producing a total of 8 two-minute epochs, following the preparation period, for a total of 16 minutes for each run. In the past study, we used 1 minute epochs, but we changed to 2 minute epochs in this study. One of the conceptual problems in the cognitive DMILS studies is that it is possible for a Helpee to lose focus during the last part of one epoch and not realize that they had lost focus until they were into the next epoch (which may have been a different condition), so the button press indicated that they had no focus in only one condition when, in reality, they had lost focus during both conditions. A two-minute epoch reduces the chances for this kind of confusion in the experiment. We also felt that it would be easier for the Helpee to focus for two minute periods rather than potentially switching from Help to Control every minute.

We continued the use of heart monitor. The equipment used was the HeartMath Freeze-Framer, developed to be a biofeedback instrument of heart rate, and heart rate variability (HRV), which in turn, their literature suggests, reflects the *coherence*, or balance, between the parasympathetic and sympathetic systems. We used the HRV as a measure of calming of cognition, with less variability suggesting cognitive calming; we believe that this score might be a better measure of the focus (or lack of focus) of the Helpee and thus be more sensitively used to measure the production of psi, with greater HRV showing up in the control epochs (and consequently, less variability during Help periods in a run). The use of the coherence scores was exploratory for this study as well.

Participants

All of the Helpers were males and had been trained in meditation by Suryani. All but one of them had been Helpers in the previous study, and some of them had

participated in earlier studies, as well. Thus, the Helpers were comfortable with the design of the experiment and understood its goal. Their mean age was 47.3 years ($SD = 15.6$, range 28 to 62 years). They each received Rp. 1,000,000 for participating in the 10 runs in which they were the Helper (approximately \$108.50).

All of the Helpees were female volunteers recruited by Suryani and her friends. They used word of mouth to find individuals who were interested in participating in the experiment. All participants had a minimum of a high school education. Their mean age was 23.6 years ($SD = 7.1$ years, range 17 to 56 years). They each received Rp. 100,000 for participating in the experiment (approximately \$10.50). (See Appendix 2: Schedule 2006)

In total 50% of the Helpees were interviewed, as well as all 6 Helpers.

Physical Layout

As in the past, we carried out the experiment in hotel rooms since there were no adequate experimental rooms available at the university. The hotel we used this year is the Hotel Sanur Beach, an excellent hotel in Sanur on the east coast of Bali, not far from Denpasar, the capital of Bali, and within easy access to the participants. We rented four of the eight rooms on a wing of the hotel (four on each side of a corridor); the other four rooms remained empty for the duration of the experiment (see Figure 3).

The Helpees came to the Reception area from the lobby of the hotel. Suryani greeted the Helpees. She gave them an explanation of the experiment (reading the instructions to them, the same ones used in the Brady & Morris (1997) study (see Appendix 3), showing them the button press and letting them try it out, as well as showing the ear clip. Snacks were available for everyone in the Reception area.

Annemieke Bikker carried out interviews in room 168; she used a Balinese translator. Because of plumbing problems, the interview room was switched after the 35th run to a room next to the reception area. Room 170 was the experimenter room, where Edge worked the computer that ran the experiment. The Helpees room was 169, across the hall from Edge (who kept his door partially open during the experiment to monitor noise, etc.). The Helper's room was 172, next door to Edge. Cables ran from Edge's room to the other two rooms. All subsequent rooms in the hall remained unoccupied during the experiment, as well as the suite above the wing of rooms (it was a two story building).

The Helper sat on a cushion on the floor of the semi-darkened room facing a lighted candle on a stand approximately 2 meters away. A monitor and computer speaker were stationed to the side and were controlled by the computer in the Experimenter Room; the monitor gave the instructions of "Help" or "Control." These instructions were written in English except for one Helper who preferred instruction in Indonesian; the rest preferred instructions in English. The speaker made a soft chime sound to indicate to the Helper that a new epoch had begun.

The Helpee was also in a semi-darkened room, sitting on a cushion on the floor and facing a lighted candle, about 2 meters away. The Helpee had a button that was held in one hand, and a heart rate monitor clipped to the ear (and to the clothing for security). The wires for the button and for the heart rate monitor were connected to the computer and strung through the hallway from the Helpee room to the computer in the Experimenter room. As part of the safety precautions, the button was tested before each

run (indeed, pressing the button was built into the program as part of the procedure to set up the next run). If the button did not function properly or the ear clip did not produce good data, the program told us so and we were able to stop at that point and adjust, check, or reposition the two apparatuses.

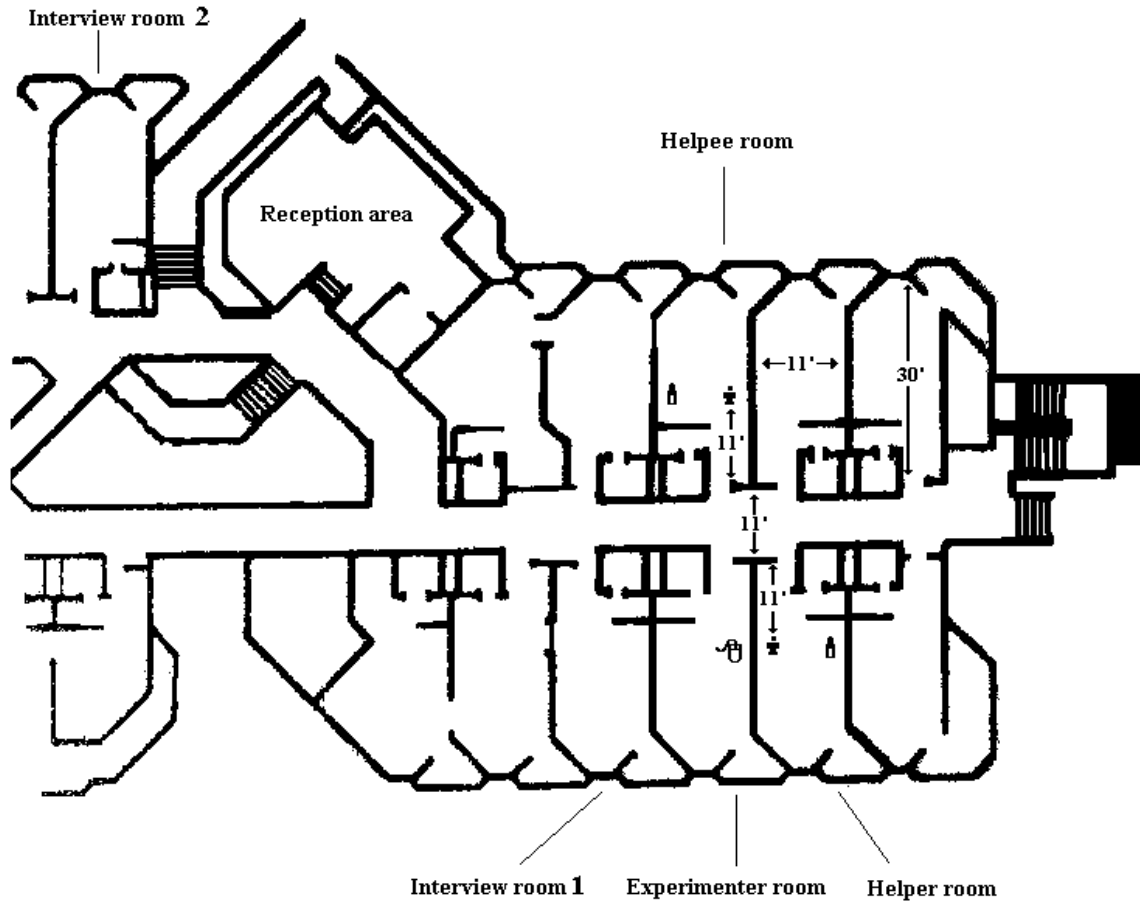


Figure 3: Experimental rooms at Hotel Sanur Beach

Equipment

The experiment was run from a new Toshiba laptop, based on a program written by Richard James. The heart rate and HRV were measured using the Freeze-Framer 2.0 program developed by HeartMath of Boulder Creek, California. We used a USB hardware kit with an ear sensor that clipped to the ear and had a lapel clip. This is a commercially available product that is typically used for biofeedback sessions; we did not use it for this purpose but only to retrieve the heart rate data and the coherence data. All data was collected on the laptop and backed up immediately onto a memory stick.

Experimental procedure

Over a period of six days between June 25, 2006 and June 29, 2006, we ran 60 subjects. The first day we ran 11, while on days 2, 3, and 5 we ran 12, and we ran 13 on

the 4th day (see Appendix for Schedule). Each Helpee had one run each, while each Helper participated in 10 runs over 3 days.

Suryani greeted the Helpers. The five Helpees participating in the morning came at the beginning of the morning sessions (at 9 am); the afternoon Helpees were asked to come in two groups (at 1 pm and at 3 pm). Suryani made them comfortable and showed them the button press and the ear clip and asked if they had any questions. She also showed them a lit candle and explained to them how they were to engage in focus meditation on the candle, not staring but with “soft eyes” At that time she led them through a practice meditation session of a few minutes and thereafter asked if they had any questions about the meditation practice. She also read the instructions to them. Then she took them to the Helpee room and again explained the experiment and showed them the layout and asked if they had questions. She also generally showed them the Helper’s room and the experimenter room. Then (if the Helpees came in a group) she let the others go back to the Reception room down the hall and took the next Helpee into the Helpee room, attached the ear clip and asked if they were ready. At that time the door to the Helpee’s room was open and she looked across to Edge to indicate that the Helpee was ready. Edge started the program which first asked for the Helpee to press the button. Suryani asked the Helpee to do so, and Edge indicated that the task had been accomplished. She then left the room. Edge continued the program, which brought up the FreezeFramer screen showing the heart rate; Edge waited 30 seconds into the program to assure that the Helpee had relaxed into meditation and continued the program.

Tiliopoulos was stationed outside Edge’s room, and at the appropriated time in the sequence of the program, when Edge turned on the Helper’s monitor, Tiliopoulos checked that this was accomplished and indicated so to Edge. This took about 15 seconds, and Edge commenced the next stage of the program, initiating the Help/Control sessions showing up on the Helper’s monitor. In effect, this started the DMILS program. These Help/Control epochs continued in a randomized ABBA/BAAB counterbalanced way, pseudo-randomly sorted 10,000 times using the inbuilt Visual Basic algorithm, which was seeded by the PC clock. As before, at the beginning of each epoch, the computer sounded a bell and the screen showed either “Help” or “Control” which guided the Helper. Thus, there were eight 2-minute epochs in each run (half Help and half Control) after which the computer informed the Helper that the experiment was over.

Tiliopoulos timed the 16 minute run with a stopwatch and checked with Edge that the run was finished. Suryani then entered the Helpee’s room and when she was satisfied that the Helpee had finished the meditation, she guided her to the interview room and then went into the Helper’s room for a short interview with the Helper about their experience at focusing and helping the Helpee.

It was decided before the experiment to ignore any run in which there were no button presses and to run the Helpee again since so many Helpees did not press the button at all during the last study. This happened to four Helpees.

Experimental hypotheses

First Hypothesis – We predicted that there would be a significant difference in the number of button presses in the Help and the Control conditions, with more button presses in the Control condition than in the Help condition.

Second Hypothesis – We predicted that the heart rate variability (HRV) would be lower in the Help condition than in the Control condition, indicating that the Helper had been successful in calming the Helpee.

Third Hypothesis – We predicted that the HRV would positively correlate with the number of button presses.

Results

I. Experimental Results

Three runs were identified as univariate outliers and were excluded from the analyses. Also excluded were 14 runs that had a PIS index of 0.5. The final number of runs to be analyzed were 43.

1. Button-Presses in Control-Help conditions

The mean PIS score was .41 ($SD = .24$). Overall, there was a nonsignificant difference in the button presses between Control ($M = 3.26$, $SD = 3.06$) and Help ($M = 3.65$, $SD = 2.35$) condition, $t(42) = 1.11$, $p = .13$, one-tail, Cohen's $d = .17$, power = .29.

2. Heart rate variability

As it was expected, the mean heart rate was similar in both condition, Control ($M = 84.8$, $SD = 12.13$), Help ($M = 84.6$, $SD = 12.14$), $t(42) = 0.73$, $p = .47$, two-tails. However, counter to our second prediction, there was no statistically significant difference in the HRV between the two conditions, Control ($M = 8.74$, $SD = 4.11$), Help ($M = 8.96$, $SD = 4.56$), $t(42) = 0.65$, $p = .26$, one-tail, Cohen's $d = .09$, power = .16 .

3. Heart rate variability vs. button presses

Supporting our predictions HRV variability exhibited a statistically significant, moderate, and positive correlations with button presses, both in the Control and in the Help condition, which, however, were nonsignificant, $r(\text{Control}) = .36$, $N = 43$, $p = .008$, one-tailed; $r(\text{Help}) = .34$, $N = 43$, $p = .01$, one-tailed.

4. Further analyses

As the current dataset was being analyzed, evidence emerged that suggested an implicit role of the Helpers' identity in the PIS performance. We investigated further these clues and collapsed the data from both of the studies sponsored by this latest BIAL grant, i.e. study 2005 and the current one. By observing the combined data and focusing on the Helpers' performance, an interesting pattern emerged (see Figure 4). It appears that only two of the Helpers tended to generate DMILS hits. Although these results were not statistically significant, they appear to suggest that perhaps there are additional elements, which we were not aware of and thus had remained uncontrolled, that may have to do, perhaps, with the meditation abilities or training of the Helpers or, for that matter, other psychophysiological functions, that may have catalytically influences the direction and intensity of our results, possibly across all our Bali studies. Our Balinese research team is currently starting a pilot study in an initial attempt to identify, at least, the general domains that these influential elements occupy.

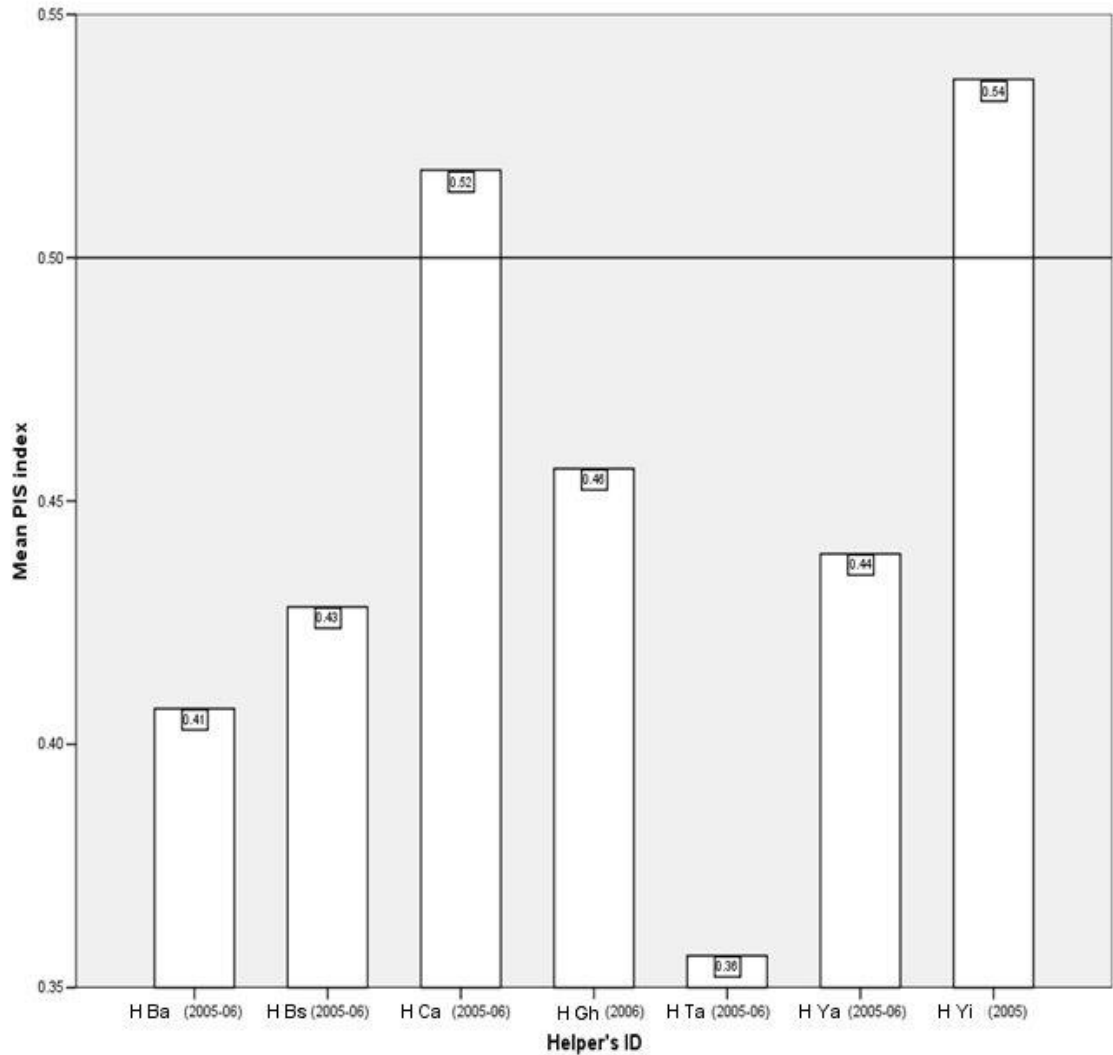


Figure 4: Helpers' success on the DMILS

II. Interviews

Interview background

The DMILS study in Bali has been repeated in various settings over nearly a decade. For the last three years, the study has incorporated a qualitative element through which the views of the participants were explored. In 2004, we asked the Helpers several questions about the tasks they performed during the experiment as well as on broader issues related to the experience of joint meditation. Through their answers several misunderstandings came to light that were consequently resolved in the following study. For example, some Helpers had understood that help on the monitor meant that the Helpee had lost his or her concentration. In 2005, we interviewed 30 of the Helpees directly after they had completed the meditation session. The main aim of these interviews was to obtain an understanding of why the Helpees in Bali pressed the button press on average less frequently (2-3 times) than the Helpees in similar studies in the US

and Scotland (12-19 times). We concluded that there was a difference between the instructions given to the Helpees in Scotland and those given in Bali. Unfortunately, we do not have the information on how the Helpees in the US were instructed. In Scotland the emphasis was on the condition of not being in focus and the Helpees could press the button more than once when they were not focused on the candle. However, in Bali the state of being in focus was core and the Helpees were explicitly told to press only once when they were not focusing on the candle. Additionally the Balinese Helpees expressed that through praying they were often exposed to situations which required concentration. The third and current interviews build on the previous two qualitative studies, equally designed to explore further the issues surrounding joint meditation and bring further understanding of cultural differences.

Objectives

The main objective of the qualitative study was a continuation of the objective from last year: Why do the participants in Bali press the button on average fewer times than the participants in the US and Scotland did. To pursue this question, we examined the following three issues:

- 1) The understanding of the button press by the Balinese Helpees;
- 2) The Balinese Helpees' experience of meditation practices;
- 3) Feelings of embarrassment or restrictions to press the button experienced by the Balinese Helpees.

In order to gain more insight and collect comparative data for future studies the secondary objective was to explore the experience and ideas of the Helpers in relation to providing help to the Helpees.

Setting and participants

The interviews with the Helpees were conducted in the room next to the experimental room. As stated before, due to malfunctioning of the facilities in the room the last four interviews were carried out in another room, next to the welcoming area. In both places, the interviews were far away from the meditation rooms and could not have caused any disturbances to the meditators.

In total, we interviewed 30 Helpees, 50% of the entire sample. All Helpees were females, 6 were university students and 24 were professionals. The mean age was 26 years ($SD = 6.3$) and ranging from 18 to 42 years. The mean button press within the interview sample was 9.6 ($SD = 9.5$), ranging from 2 to 39. Twenty of the interviewees were below the average, with 2 to 8 presses and 10 were above the average, with 11 to 39 presses. No significant difference in number of button presses was found between the Helpees who were interviewed ($M = 9.6$) and the Helpees who were not interviewed ($M = 8.8$), $t(60) = -0.288$, $p = .78$. Table 3 shows the range and frequency of button presses by the Helpees. So, 4 Helpees pressed the button 2 times during the meditation session.

Table 3. Number of button presses within interview sample

Below average (< 9.6)		Above Average (> 9.6)	
Number of button press	Number of Helpees	Number of button press	Number of Helpees
2	4	11	1
3	6	12	1
4	1	14	1
5	4	16	1
6	2	18	1
7	2	20	2
8	1	21	1
		34	1
		39	1
Total	20 Helpees	Total	10 Helpees

Last year the mean of the interview sample was 5.6 ($SD = 5.9$, range= 0 to 22).

Procedure

The in-depth semi-interviews with the Helpees took place during the first four days of the experiment (See Appendix 4 for interview questions). Directly after the Helpees had finished the meditation session Professor Suryani brought them to the interview room. The in-depth interviews were semi-structured and consisted of 16 open questions, which were grouped around three areas. These areas related to their experiences of the button press, the practice of meditation and praying, and their experience of receiving help. A Balinese translator helped with the translation during the interviews unless the Helpee spoke sufficient English and felt comfortable doing so. In total six translators, including some of the Helpers themselves helped with the translation. Due to the difference in translators, the level of translation and interpretation varied widely between the interviews. The interviews with the Helpees lasted between 15 and 50 minutes and were audio recorded and transcribed afterwards.

Additionally, we asked the Helpers some questions on their practice of meditation and their experience of helping the Helpees. Questioning was done throughout the duration of the experiment.

Interview Results

1. The button press

Knowledge prior to the study

Three people knew a little about the experiment before coming to the hotel, but none of the Helpees knew about the button press or the aim of the experiment. All they knew was that the experiment involved a candle meditation organized by Professor

Suryani. The reason that most Helpees took part was to learn about the meditation and/or because they were asked either by Suryani or someone who knew Suryani.

Instructions about the button press

Through the interviews it became clear that all Helpees had understood the function of the button press. All said that they pressed when they were not focused on the candle. Last year an important finding was that the Helpees in Bali received the instructions in a different manner than in Scotland and this had created a discrepancy. For example, the Balinese Helpees were told that if they needed help they should press the button or that a straight flame from the candle was a sign of concentration. This year the sheet with instructions that was read out to the Helpees in Scotland was used in Bali. In an additional explanation the Helpees were told that their aim was to focus on the candle flame through their mind, should try not to blink and press the button when they were no longer focused on it. The previous year the Helpees reported that their strategy was to make the candle flame straight by using their mind. However, in spite of reading the instructions to them and explaining them, and our introducing a short meditation training this year to introduce them to the procedure and having them ask questions about the meditation, it is apparent that questions remained. As the Helpees' main strategy this year became to 'just focus at the candle,' at times they questioned whether they really were focused or not. For example, one Helpee said, *I don't know what I am doing here. What is concentration...At first I look at the candle and it is moving... Then it feels like I am controlling the light, it's not moving...does this mean concentration?* (participant 16). This confusion highlights the fact that the instructions form an important part of how the Helpees experience the meditation and that one needs to take care in giving instructions and answering questions.

The question of the button press

A major question in the study was how to measure whether the Helpees are focusing on the candle or not. Currently we rely on the self-reported method of the button press. As described in the quantitative section, the heartbeat measure provides additional information to learn about the state of the Helpees. Through the button press we know about moments when the Helpees were not in focus, but not when they were in focus nor how long they were out of focus.

We suspect that the Helpees in Scotland and the US pressed the button more than once in the period they were out of focus. Through the interviews, we know that the Balinese Helpees were told to press the button only once when they were unfocused. All but one said that they had done so. Clearly, this will contribute to a lower average of presses than when they were allowed to press the button more frequently.

When asked how long it took them to get their concentration back after they had pressed the button 17 Helpees responded less than 10 seconds, 7 Helpees said between 1 and 3 minutes, and 6 could not give a time scale. As was also pointed out earlier in this report about the first study, the number of button presses is not a clear indication as to how long a person was out of focus. For example, participant 38 said that it took her about 3 minutes to get back into focus. As she pressed the button 3 times that would mean that she was around 9 minutes out of focus (assuming her estimation is accurate),

while participant 8 also pressed the button 3 times, but needed 10 seconds to refocus and was there for 30 seconds out of focus. Although the question of how long it took to refocus on the candle calls for a subjective response, it points to the insufficiency of the information that comes through the button presses. The heart rate measure was a complementary method of measuring the condition of the Helpee, which is further described in the quantitative section of the report.

2. Practice of meditation and praying

Experience of meditation

Based on earlier results the aim in this study was to recruit only female Helpees who had little or no experience in meditation. However, from the interviews it appears that only 20 of the Helpees did candle meditation for the first time and that 10 had done candle meditation before. Additionally, only 10 Helpees had never meditated before (mean button press 14, $SD = 13.3$, ranging from 3 to 39) and 4 were experienced meditators, doing meditation every day for many years (mean button press 3.8, $SD = 2.2$, ranging from 2 to 7). The others had meditated either seldom/irregularly or a lot in the past, but had stopped due to a change in living conditions.

A significant difference was found when comparing the average number of button presses between the Helpees who had never meditated ($M = 14$, $SD = 13.3$) and those that meditated on a daily basis ($M = 3.8$, $SD = 2.2$), $t(9.92) = 2.362$, $p = .04$. One person who had never meditated before found the candle meditation easy, because she realized that when she prayed she used her mind in the same way. The others found it difficult to concentrate and referred to reasons such as not being able to stop their thoughts, bodily discomforts (legs, blinking) or because the mediation was part of an experiment; as participant 37 put it '*Now someone asks me to focus, and I have no motivation from within, because I am told to do so*'. On the other hand, the Helpees who meditated a lot found the session rather easy. The reasons given had either to do with the previous experience of meditation or praying or because they felt peaceful in the setting of the experiment. Additionally, all Helpees who had never done meditation before with Suryani were anxious about the session beforehand. This related mainly to not knowing what would happen and to worries about how they would perform in the study; it was difficult to figure out the amount of influence this worry had on the button presses. The people who had experience and knew Suryani prior to the experiment were less troubled.

Meaning of meditation

When asked what they felt as a result of the meditation, nearly all Helpees spoke in terms of feeling more calm and/or more focused during and/or afterwards. Only two Helpees spoke explicitly about meditation as a means to achieve something within their lives, like '*being able to do better business*' (participant 1).

According to Suryani's approach to meditation, different forms of meditation are used for different purposes. For example, candle meditation is practiced to increase one's self-esteem and improve one's communication skills by being able to look the other person in the eye. Suryani has been promoting relaxation and candle meditation since we began a series of studies in 2002 and recently has written a book (Suryani 2006) on the benefits of candle meditation. The current study took place just after the publication of

her book, which received a lot of publicity. As such, the Helpees got an introduction to candle meditation from someone who is seen as an expert on it and has a lot of knowledge about candle meditation. This knowledge was absent in Scotland, where the purpose of candle meditation was left rather open and no authoritative figure on meditation was present. At the same time, the Helpers that took place in the study in Bali were all, but one, experienced meditators. The difference surrounding the aim and experience of candle meditation and the weight it was given within the context the study was held may have influenced the preconceptions of the Balinese Helpees in a way that might have not been the case in the US and Scotland.

Besides one Helpee who did not consider herself religious, all claimed to pray and take part in ceremonies. In terms of the relation between praying and meditation all Helpees expressed a clear opinion, some emphasizing the differences and others the similarities. Overall, it could be argued that meditation and praying were seen as similar in the sense that a level of concentration is required for both, but different in terms of the object of one's focus and the activities involved. Generally, the border between the similarities and differences was thinly sketched. The focus in meditation was on either the candle/ breathing or oneself, whereas the focus in praying was on something outward, going towards the Gods. Within meditation one needs to focus, while praying involved more asking God for guidance, chanting and moving.

In practical terms, it was said that meditation could be done anywhere, any time, while praying requires more preparation. Some Helpees added that they would use praying in meditation or vice versa.

In broad terms, the Helpees seem to express the overlaps and differences in a similar way as Suryani and Wrycza (2003) explain:

“Prayer is different from meditation. In meditation, we direct our attention within to be aware of what is happening within ourselves. We connect with our essence. We return to our deepest Self. This contrasts with prayer where we direct our attention to that which we take to be outside ourselves, the ultimate Other” (p. 49).

Clearly, the Balinese Helpees who are all Hindu have more exposure to situations in which a level of similar concentration with both prayer and meditation is required. As such, it would be interesting to do a comparative study with Christians and ensure that the same instructions are given for comparison reasons.

3. Experience of receiving help

Receiving help

Before arriving at the hotel, no one knew that the experiment involved a joint meditation. As mentioned earlier, Suryani showed some of the Helpees around the different experimental rooms without emphasizing the role of the Helper. As a result, only 7 people were aware that someone was trying to help them while they were meditating. It seems that whether people know or do not know is related to how they experienced the meditation session. For example, all but two of the Helpees who did not know about the role of the Helper and assumed that they were doing the experiment alone reported that they did not feel any help and that they did not believe that some one could influence them through meditation. The two Helpees who did not know about the role of

the Helper, but nevertheless felt help, expressed confusion on why they felt the way they did, '*Why is it so easy to concentrate today?*' (participant 8). Unlike the others, they believed that it was possible to receive help from others through meditation.

Interestingly, the Helpees who did know someone was there to help them would report conflicting results. On the one hand, some did not believe that someone could influence them as they argued that meditation can only be done by oneself and could not pinpoint whether they had received help or not as they were confused about what to feel. On the other hand, some did believe it to be possible and, of these, some felt help and some did not. Overall the majority did not feel any help from the Helper during the meditation session. However, some Helpees had found help by other means. For example, some mentioned that the instructions of Suryani guided them through the meditation, one person felt relief by pressing the button, several others by the peacefulness of the place, and one by the pressure of performing well for the experiment.

Last year most of the Helpees had met the Helper beforehand and about half of them felt more secure and stable as a result of someone being there for them. This year no one answered along these lines. This could again imply that the instructions given to the Helpees beforehand are of major importance on how they experience the session.

Feeling embarrassed or restricted to press the button

Like last year, we tried to gain an insight into whether people had any issues about not being able to focus on the candle. As shame is a sensitive issue to research (particularly in a shame culture), we explored this topic through several indirect questions. It was noted that people spoke very openly about how often they had used the button press, whether they found it difficult to concentrate or not, and were not using any distractions in the hotel as an excuse for not being able to concentrate. The overall conclusion was that although it is hard to be explicit on this issue, the results indicated that the Helpees were not using the button press less because they felt ashamed to do so; Helpees seemed very open in their responses.

Remembering the number of button presses

When asked how often they had pressed the button, 6 Helpees answered correctly, 10 Helpees said more than the actual number and 14 said fewer. The yellow boxes in Table 4 indicate the remembered presses, which are higher than the recorded number and the green boxes indicate the remembered presses below the recorded number. A clear cut-off point appears at 7 recorded button presses; with any higher number the Helpees remembered a much lower number of presses than the computer recorded. However, within this group (≥ 7 presses), only 4 Helpees said that they found it hard to concentrate, while in the group of < 7 presses, 7 Helpees mentioned that they had trouble concentrating. So, whether the Helpees found it easy or difficult to concentrate does not seem to reflect the number they press the button.

Table 4. Recorded and remembered number of button presses with 7 as cut-off point

Group 1: < 7 presses (n=17)		Group 2: >= 7 presses (n=13)	
Recorded number of button presses	Remembered number of button presses	Recorded number of button presses	Remembered number of button presses
2	2	7	3
2	3	7	5-6
2	3	8	5
2	5	11	6-7
3	2	12	10
3	3	14	8
3	3	16	10
3	3-4	18	8
3	5	20	5-10
3	5-6	20	10
4	4	21	10
5	4	34	Does not remember
5	5	39	>20
5	6		
5	6-7		
6	5-6		
6	8		
Average 3.6	Average 4.4	Average 17.5	Average 6.4

Encountered distractions

Regardless of level of concentration or number of button presses, interfering thoughts were the main reason people got distracted. The Helpees who pressed the button 7 times or more would more often refer to distracting noises coming from the room or outside. This could indicate that they were less focused and more susceptible to background noise.

As the Helpees were open about what they experienced during the meditation it looks unlikely that they felt restricted about using the button press. However, it also has to be noted that due to the difference in language and customs it was much harder for the interviewer to determine whether the Helpees were answering to please the interviewer.

Suggestions

As we had done last year, at the end of the interview we asked the Helpees whether they had any suggestions for us in order to make the study more comfortable for them. Half of the interviewed Helpees (in comparison to a quarter last year) had no suggestions and mentioned either that they felt comfortable under the current setting (especially because they experienced the place as calm) or that they did not have any relevant suggestions as they could not change the fact that the meditation was part of a research project. The other half did have recommendations although some of the suggestions would contradict each other. The recommendations related to the condition of the room and to the set up of the experiment.

1. Room

Four people were not comfortable with the temperature in the room, either it being too cold (due to the air-conditioner being switched on) or too hot (due to the air-conditioner being switched off). Another person mentioned that fresh air in the room would be better; however, opening the windows would also have increased the noise coming from outside. Two people made the comment that it would have been easier if they were alone with the candle in the room without being surrounded by furniture to distract them. Two others mentioned that because of the light coming through the window the room was not dark enough to concentrate well on the candle. One person was bitten by an insect during the experiment and mentioned that the room should be insect free.

2. Experiment

Most people seemed comfortable in the hotel; only one person said that the location was not good, because of there being too many people around. One person suggested that it would be a good idea to ask about the physical condition of the Helpee prior to taking part in the experiment and another to use a different device than the button press as the Helpees could pretend to concentrate even if they were not. The following three remarks were all made by different people who engaged in meditation for the first time: they said that it would be better to repeat the study many times so that the Helpees could practice their concentration and perform better, a 16 minutes meditation session was too long and preferred it to be shorter, and that it would be better to tell as little as possible about the study, so that no thoughts would interfere when doing the meditation.

Last year 23 had made remarks mostly in relation to the noises they heard whilst meditating, too much light coming through the window, and the room being too full of furniture. This year similar comments were given, though in lesser quantity. Together with the positive remarks most Helpees had about the hotel, we could conclude that the current setting was an improvement in comparison to last year.

Description of the Helpers

The Helpers that most frequently helped interview the Helpees (but never the ones they were the Helper to) were H Bs (8 times) and H Ta (7 times). In descending order, the others helped: H Ba (6 times), H CA (4 times), H Gn (3 times) and HYa (2 times). Five of the Helpers had also been involved with the previous studies.

All Helpers said they started meditation a long time ago. At the time of the experiment four Helpers reported that they meditated every day, one regularly but not every day, and one hardly ever. The last person was the only Helper who found the meditation sessions difficult to carry out. They reported that the switch from Help to Control periods and vice versa was clear, though initially there was still some confusion on whether Help indicated that the Helpee had pressed the button asking for help. This misunderstanding stems from previous years as described earlier in this report. The way the Helpers experienced the Help period varied. All had trouble putting into words the feeling of helping the other person. Table 5 gives an overview of their experiences.

Table 5. Ways of helping the Helpee by the Helpers

Helper	Frequency meditation	Ways of helping the Helpee
1 H CA	Every day	During meditation he could not feel the condition of the other person. Only after the session had finished did he have a general idea about the other person, though this depended partly on the sensitivity of the Helpee. During the help period he focused on the candle.
2 H Ya	Every day	During the session he could feel whether the Helpee was concentrated or not. He helped by expanding his energy through focusing on the candle and not so much on the other person. If during the help period the Helpee was already well concentrated then he only helped a little. Sometimes he could not help because their energies did not connect or because he did not feel the other person. Then he let go. It is important to him to be able to distinguish between what he felt for real and what he thought he felt in his imagination.
3 H Ta	Hardly ever	Initially he tried through his mind to help the Helpees (telepathy). After Professor Suryani talked to him because he was tired, he started helping by focusing on the candle only.
4 H Bs	Every day	During the meditation he could feel whether the Helpee was concentrated or not. He tried to connect with the Helpee by focusing on the candle (not the person) and by sending energy through the candle. He felt whether their energies connected.
5 H Ba	Regularly	He could not feel the other person. He helped by focusing on the candle.
6 H Gn	Every day	He asked God to help him in his meditation. Then he focused on the candle (not the person) through which he could feel whether the Helpee was nervous or calm.

Interestingly, whether they could or could not feel the other person during the meditation varied. All acknowledged that there were different levels in meditation and that some are better than others, and that training remains the key to be able to tune into the other person.

According to Suryani, who has been meditating since an early age, the best way to help is by focusing on the candle and letting your spirit help the other person. Sometimes the spirits connect and other times they do not. One should not force through the mind to help someone as that is too influential and tiring and often scares people away.

Unfortunately, we have insufficient data on the Helpers that took part in the study in the US and Scotland and therefore cannot make further comparisons.

Interview Conclusions

Interview

The aim of the interviews was to explore further why on average the Balinese Helpees pressed the button fewer times than in the US and Scotland, thereby focusing on several cultural aspects. The interviews looked at issues surrounding the button press, the practice of meditation and praying, receiving help, and feelings of embarrassment for not being able to focus on the candle. The interviews provided further insights, which are summarized as follows.

The Balinese Helpees understood the instructions of the experiment. More confusion was expressed as to whether they were really focused or not and more questions were asked during the interview about the aim of the experiment and candle meditation. This brings out the point that the instructions form an important part of how the Helpees experience the meditation session.

Like last year, the Balinese Helpees were instructed to press the button only once when they were unfocused. After the Helpees pressed the button they tried to refocus again and were able to give an estimate of how long, more or less, it took them to do so. No one was out of focus for the entire session. The fact that only single presses occurred during the out-of-focus period will have attributed to a lower average than in Scotland and the US where the Helpees were not given the instruction to press only once if they could not focus. Last year the average button press was 5.2.

The role of praying came up as a regular explanation as to why the Balinese Helpees found the meditation session not difficult. Many could point to a direct overlap between praying and meditation. Moreover, most seem acquainted with the practice of meditation. During the DMILS studies in Bali we have always made sure to include only Hindu Balinese in our sample; as such it would be fruitful to repeat the study in Scotland and the US with for example Christians only. The sample in Scotland consisted mainly of people part of the psychology unit and their background in praying and meditation is unknown.

Throughout the interviews, we worked with six different translators. Some Helpees spoke English and did not need a translator. By not working with the same translator continuously a certain consistency across the interviews was lost. However, they all had different viewpoints and their comments and explanations have been a great help with the analysis of some of the results.

General Conclusion

This report encompasses the final two cognitive DMILS studies of a series of six supported by the Bial Foundation. In the first two studies, we sought to see if a traditional Western scientific methodology could be imported to Bali and successfully applied, with the appropriately cultural changes. In each of these two studies, we achieved statistically significant results, with fewer button presses being reported in the Help condition than in the Control condition. In the first study, we found that the best pairing of Helper and Helpee seemed to be with a Helper trained in meditation and a Helpee untrained. In general, we used that arrangement in the following studies.

The remaining four studies were process oriented studies probing various conditions: 1) to see if we could improve the results by manipulating relevant variables, 2) as well as to see if we could determine why the Balinese pressed the buttons during these studies significantly fewer times than they had in the studies in the US and in Scotland. We will discuss each of these goals in turn.

The aim of DMILS studies has been to determine if a Helper can affect a Helpee under controlled conditions, either affecting their physiology (as in traditional DMILS studies), or to affect their focus meditation. Our studies in Bali fall under the latter methodology. Rather than affecting the physiology directly of a Helpee, a Helper seeks to affect the cognitive functioning of the Helpee by intending during the Help condition

for the Helpee to be able to focus better on a lit candle. (We do not want to enter into a discussion of the mind-body problem; we simply note that the experiment is set up under that assumption.)

Asking the Helpee to press a button each time he or she notices that their mind has wandered from the focus meditation has the advantage of being a simple, straightforward method of marking when one is lacking focus rather than meditating with focus. However, this method has the disadvantage of being a rather “blunt instrument.” It is highly conceivable that a person would lose focus half way through an epoch but not notice that fact until the next epoch, when he would press the button, but if the two epochs were opposite conditions—one a Help and one a Control—then it would not be a very sensitive measure of when the Helpee was actually in focus and when not in focus. These studies investigated whether heart rate variability (HRV) would be a more sensitive measure of lack of focus, assuming that more variability would occur when a person was not in focus. Thus, these two studies investigated whether HRV could be used to measure psi success.

In neither of these two studies were we successful in achieving a statistically significant difference between Help and Control conditions, either with the button presses or the HRV. Although a post hoc analysis in the first study suggested that women Helpees scored in the predicted direction in both the button presses and the HRV. Therefore, we used only male trained Helpers and untrained female Helpees (in a few exceptions, some Helpees had studied meditation much earlier but had not practiced it for a long time).

Therefore, we are left with the question of why we achieved statistically significant results in the first two studies in Bali, but did not achieve it in the final four. The consistency of the results in the first two studies suggest that cognitive DMILS studies, and perhaps other protocols used by parapsychologists, can be successfully transported to a non-EuroAmerican culture such as Bali so long as it is sensitive to the culture. Watt (Watt & Baker 2002; Watt & Brady 2002; Watt & Ramakers 2003) also did not achieve statistically significant results in her first three process-oriented studies in Edinburgh after a successful initial study (Brady & Morris 1997), so our results in Bali do not differ significantly from similar attempts in a EuroAmerican setting. Thus, we are justified in asserting that the original question—whether a traditional protocol used in parapsychology can be transported to a non-EuroAmerican culture successfully—can be answered affirmatively. But, experiments in non-EuroAmerican cultures fall victim to the same inconsistencies that we see in EuroAmerican cultures.

With regard to the second question—why the Balinese pressed the button significantly fewer times than in the US and in Scotland—we made progress but we do not have the full answer. Through interview data, we can conclude that the Balinese see falling out of focus as a state; that is, the time from the instant of losing focus until they regain it is viewed as one state and is responded to as one event. Thus, they tend to press the button only once during this time. Although we do not have comparable data on this, it seems that EuroAmericans might view the time from losing focus to regaining it as potentially a series of events, where they might try to regain focus but not achieve it, and thus they may press the button at that time. Such a strategy would increase the button presses in EuroAmerican cultures. We believe, however, that other cultural factors may be at work. Meditative prayer is a part of daily life in Balinese Hinduism, but it may be

that the Balinese are more adept through their cultural practices to be able to engage in focus meditation in the experiment, even if they have not been formally trained in meditation.

I mentioned above that we have demonstrated that a EuroAmerican protocol can be transported and used in a non-EuroAmerican culture. Through the interviews, we have also shown that this process of transportation is fraught with potential difficulties. Cross-cultural communication is difficult in many contexts, and there is no reason to believe that it is any less easy in a scientific context than in any other. We have seen that it is easy for a participant in the experiment to understand instructions in a different way than intended by the Western parapsychologist. These subtle miscommunications are confounding factors in any cross-cultural experiment. Based on our experience, the participants in any cross-cultural experiment must make extraordinary precautions to insure that everyone understands all of the details of the experiment in the same way.

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APPENDICES

Appendix 1: Schedule 2005

Schedule HRV DMILS Study 1, July, 2005

Run #	Day	Time	Helper	Name	Helper run #	Helpee	Name
1	<i>Day 1: July 17</i>	9:30	1		1	1	
2		10:00	1		2	2	
3		11:00 *	1		3	3	
4		11:30	1		4	4	
5		1:00 *	2		1	5	
6		1:30	2		2	6	
7		2:00	3		1	7	
8		2:30	2		3	8	
9		3:00	3		2	9	
10		3:30	3		3	10	
11	<i>Day 2: July 18</i>	9:30	4		1	11	
12		10:00	4		2	12	
13		11:00 *	4		3	13	
14		11:30	4		4	14	
15		1:00 *	5		1	15	
16		1:30	5		2	16	
17		2:00	6		1	17	
18		2:30	5		3	18	
19		3:00	6		2	19	
20		3:30	6		3	20	
21	<i>Day 3: July 19</i>	9:30	2		4	21	
22		10:00	2		5	22	
23		11:00 *	2		6	23	
24		11:30	2		7	24	
25		1:00 *	1		5	25	
26		1:30	1		6	26	
27		2:00	3		4	27	
28		2:30	1		7	28	
28		3:00	3		5	29	
30		3:30	3		6	30	
31	<i>Day 4: July 20</i>	9:30	5		4	31	

32		10:00	5	5	32
33		11:00 *	5	6	33
34		11:30	5	7	34
35		1:00 *	6	4	35
36		1:30	6	5	36
37		2:00	4	5	37
38		2:30	6	6	38
39		3:00	4	6	39
40		3:30	4	7	40
	<i>Day 5: July</i>				
41	21	9:30	3	7	41
42		10:00	3	8	42
43		11:00 *	3	9	43
44		11:30	3	10	44
45		1:00 *	2	8	45
46		1:30	2	9	46
47		2:00	1	8	47
48		2:30	2	10	48
48		3:00	1	9	49
50		3:30	1	10	50
	<i>Day 6: July</i>				
51	22	8:30	6	7	51
52		9:00	6	8	52
53		10:00*	6	9	53
54		10:30	6	10	54
55		11:00	4	8	55
56		11:30	4	9	56
57		12:30 *	5	8	57
58		1:00	4	10	58
59		1:30	5	9	59
60		2:00	5	10	60

Appendix 2: Schedule 2006

Schedule							
HRV DMILS Study 2, June, 2006							
Run #	Day	Time	Helper	Helper run #	Helper Name	Helpee	Distractions
1	Day 1:	9:30	1	1		1	
2	25-Jun	10:00	1	2		2	
3		11:00 *	1	3		3	
4		11:30	1	4		4	
5		1:00 *	2	1		5	
6		1:30	2	2		6	
7		2:00	3	1		7	
8		2:30	2	3		8	
9		3:00	3	2		9	
10		3:30	3	3		10	
11	Day 2:	9:00	4	1		11	
12	26-Jun	9:30	4	2		12	
13		10:30*	4	3		13	
14		11:00	4	4		14	
15		11:30	5	1		15	
16		1:30	5	2		16	
17		2:00	6	1		17	
18		2:30	5	3		18	
19		3:00	6	2		19	
20		3:30	5	4		20	
21		4:00	6	3		21	
22		4:30	6	4		22	
23	Day 3:	9:00	2	4		23	
24	27-Jun	9:30	2	5		24	
25		10:30*	2	6		25	
26		11:00	2	7		26	
27		11:30	1	5		27	
28		1:30	1	6		28	
29		2:00	3	4		29	
30		2:30	1	7		30	
31		3:00	3	5		31	
32		3:30	1	8		32	
33		4:00	3	6		33	
34		4:30	3	7		34	

Run #	Day	Time	Helper	run #	Name	Distractions
				Helper		
35	Day 4:	9:30	5	5		35
36	28-Jun	10:00	5	6		36
37		11:00 *	5	7		37
38		11:30	5	8		38
39		1:00 *	6	5		39
40		1:30	6	6		40
41		2:00	4	5		41
42		2:30	6	7		42
43		3:00	4	6		43
44		3:30	6	8		44
45	Day 5:	9:30	3	8		45
46	29-Jun	10:00	3	9		46
47		11:00 *	3	10		47
48		11:30	2	8		48
49		1:00 *	2	9		49
50		1:30	2	10		50
51		2:00	1	9		51
52		2:30	1	10		52
53		3:00	6	9		53
54		3:30	6	10		54
55	Day 6:	9:30	5	9		55
56	30-Jun	10:00	4	7		56
57		11:00 *	4	8		57
58		11:30	5	10		58
59		1:00 *	4	9		59
60		1:30	4	10		60

Appendix 3: Instructions for Helpees

To the Helpee

The purpose of this session is to look at the effects of joint meditation on your attention focusing abilities. Some people are able to focus their attention readily on one thing while others tend to scan over a number of things. Of course, we all do both of these, focusing and scanning, to some degree but generally a preferred mode develops. In this experiment, I am going to rely on your report of the extent to which you were or were not able to keep your attention focused. I am going to ask you to focus your attention on a candle, a lighted red candle on a black metal stand two meters in front of you. By focusing I do not mean analyzing the different parts of the candle, or thinking a series of thoughts about the candle, or associating ideas to the candle, but rather trying to see the candle as it exists in itself, without any connection to other things. Try to exclude all other thoughts or feelings or sounds or bodily sensations. Do not let them distract you but keep them out so that you can focus all your attention, all your awareness on the candle. Try to let the perception of the candle fill your entire mind.

Most people find it fairly difficult to keep their mind empty of thoughts and it is expected that you will experience the intrusion of random thought. I'd like you to signal each time an intrusion occurs by pressing a small hand held button-presser. Some extremely fleeting thought or perception may cross your mind and not be counted as an intrusion so long as you do not get caught up in a stream of thought about it. An intrusion is counted whenever you find that you have got caught up in some thought or other and, by force of will, have to bring yourself back to the task of just focusing on the candle. It is as if you have momentarily forgotten the task or had a slight lapse of consciousness and then suddenly remembered what you were supposed to be doing. It is very important that you report the intrusions as honestly as you can, by pressing a button, without trying to get caught up in trying to look good to me.

Appendix 4: Interview Questions 2006
Interview Questions Helpees 25-30 June 2006

A. Could you tell me what you knew about the experiment before you came to the hotel today?

B. What was your reason for participating today?

One: Questions about the button press (same as last year).

1. Could you explain the function of the button press?
2. Do you remember how often you pressed the button?
3. Do you remember under which circumstances you pressed the button?
(distractions from thoughts/ outside)
4. What happened after you pressed the button?
5. How long did it take you to be able to focus again?

Two: Questions about the meditation practice.

6. What does it mean for you to meditate?
7. Is it easy for you to know whether you are focused or whether you are not focused?
What is the difference?
(If not mentioned could bring up: movement of candle light; perception of time;
perception of body; surroundings; breathing)
8. How did you feel before you entered the room?
And how do you feel now? (because of meditation/ study is over?)
9. Could you describe the process that went on while you were meditating?
10. What are the strategies you use to get into focus?
11. Have you done candle mediation before? (Many times? Duration of meditation?)
Have you done any other form of meditation before? (Many times? Duration of meditation?)
12. Do you think there are similarities between praying and meditation?
- Would you consider praying as meditation?
13. Was it easy or difficult for you to meditate? Why was that?
(duration of 16 min; hotel, artificial, unfamiliar setting).

Three: Questions about their ideas behind the experiment.

14. Do you believe it is possible that other people can influence you when you are meditating?

15. Could you give examples of what you experienced today in the sense of:

- Did you feel any help? Could you describe that?
(If not: would you wish to be able to receive help?)
- Did you know someone was trying to help you today?
- Did you meet the helper beforehand?

Ending

16. Any suggestion for us to make the experiment more comfortable for you?