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Exploring the Limits of Direct Mental Influence: Two Studies Comparing "Blocking" and "Co-operating" Strategies[1]

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Abstract — Two studies are reported, with the aim to explore the limits of remote mental influence[2] effects. An "influencer" attempts to affect the electrodermal activity (EDA) of a distant "influencee". The influencee is asked to adopt two contrasting mental strategies: for one half of the session, they co-operate with the influence attempt; for the other half they block the influence attempt. Study one, with 32 participants and three experimenter/influencers, found no difference in remote influence effect on EDA between co-operating and blocking conditions ($t = -.202$), and no overall evidence of a remote mental influence effect ($t = -.031$). Study two, with 50 participants and two experimenter/influencers, also found no difference for remote influence between co-operating and blocking conditions ($t = -.595$), but evidence was found of an overall remote influence effect ($t = 1.806$). Combining the data of the two studies gave an effect size of $r = +.13$ ($t = 1.176$). We also report on participant strategies, an exploratory variance measure of remote influence, sex[3] effects, experimenter effects, and influencer/influencee sex pairings. It is concluded that we have found no evidence that influencee's mental strategy affects remote mental influence attempts. Thus there is as yet no indication as to the limiting conditions of direct mental influence on living systems.

Keywords: parapsychology — psychophysiology — mental strategies — remote influence

Introduction

In three surveys of concerns over *strongly* functioning psi, Tart found that professional parapsychologists (Tart, 1979), Californian students and townspeople (Tart & Labore, 1986), and trainee psychics (Tart, 1986), all expressed fears about possible harmful effects of psi. With a few exceptions, most parapsychologists have given a low profile to considerations of possible harmful effects of psi. Perhaps this is because the sometimes small and inconsistent effect sizes we see in laboratory studies seem quite innocuous. In a recent review

[1]The first study was previously reported at the 1997 Annual Convention of the Parapsychological Association (Watt *et al.*, 1997).

[2]We use the term 'influence' without adopting a particular explanatory framework. Rather, the terminology is chosen to reflect how the task is presented to the participant.

[3]Although it is considered politically correct to use the term "gender" in preference to "sex," the former is only appropriate where participants' gender was actually measured. Our participants were asked to indicate their sex from two categories — male or female — therefore this is a measure of sex not gender.

and meta-analysis of 30 healing analog experiments in which individuals attempted to influence autonomic nervous system activity in a distant person, however, the average effect size was $r = +.25$ (Schlitz & Braud, 1997). This effect is not trivial, in fact it is approaching a moderate magnitude (Cohen, 1977) that compares favorably with findings from the more orthodox behavioral sciences.

Most of these remote influence studies have been framed in a positive or neutral light — for example Schlitz and Braud's (1997) review paper is entitled "Distant Intentionality and *Healing*" (italics added). However, if experimental evidence is provided to show that one person can remotely influence the physiology of another in a positive or neutral way, there is no *a priori* reason why a negative or harmful influence might not also be possible. That is, it is a logical implication of studies of direct mental influence with living systems that any remote influence effect could potentially be used in a way beneficial *or* harmful to the organism. Certainly, anecdotal accounts are available to suggest malignant applications of distant intentionality in real life settings (*e.g.* Dossey, 1994; Halifax-Grof, 1974), and laboratory evidence has been reported of distant intentional retardation of bacterial growth (Nash, 1982).

It is incumbent on parapsychologists to give more systematic consideration to the question of possible harmful psi, for at least two reasons. First, members of the public often approach parapsychology laboratories with concerns that they may be distantly influenced against their will by another person. These people want advice and information. However, insufficient research has been done on this question to enable parapsychologists to give an informed response. Second, if the body of evidence supporting the hypothesis that thoughts are potent continues to mount, it is only a matter of time before the logical implications of this (that thoughts could have harmful as well as beneficial effects) trickle through to the media and public consciousness. When this happens, parapsychologists will need to have reliable information available to respond to possible concerns.

Due to ethical considerations, it is difficult to examine the question of harmful psi in a realistic way when conducting laboratory research with volunteer participants. We may approach this question from a different angle, however, to ask *whether a person may be able to block or resist an unwelcome mental influence attempt.* The emphasis here is not on demonstrating the possibility of harmful psi, but on discovering the limiting conditions, if any, of remote influence effects. This brings us to a third reason for conducting such research. Theoretically, if psi is to be anything more than a vaguely-defined concept, then we must know something of its limiting conditions (Schlitz & LaBerge, 1997; Braud, 1985).

Lore exists suggesting how to practice psychic self defense (*e.g.* Hope, 1983), but this question has received very little systematic attention. Perhaps mindful of the implications of their successful remote influence studies, Braud and Schlitz conducted a preliminary study in which sixteen volunteers attempted to prevent a remote mental influence by a distant observer upon their own electrodermal activity. A second, independent group of sixteen cooperated with the remote influence attempt. The influencers were to attempt to increase the EDA of the target person. They were situated in separate rooms remote from the target person, but received real-time feedback about the target person's EDA through a visual display. The influencers were of course unaware whether the target person was blocking or co-operating. In the blocking condition, participants used imagery of various psi-proof screens, shields and barriers, and intended that no remote mental influence would occur. Overall, there was no evidence of successful blocking of remote mental influence, though significant blocking was found *post hoc* for one of the two influencers (Braud, 1985; Braud *et al.,* 1985). A number of studies have looked at conceptually related questions of psi-mediated helping (Dalton, 1994) and attempted facilitation or inhibition of performance at forced-choice ESP tasks (Schmeidler, 1958; 1961) and clairvoyance tasks (Braud, 1985). However, there seems to have been no follow-up to research on direct remote physiological influences.

Note that, in such physiological blocking studies, the influence attempt is defined as unwelcome only in terms of the volition of the potential influencee: the influence attempt is not itself intended to be harmful, but it is the intention of the influencee to resist such influence nevertheless. This paradigm enables an indirect approach to the question of harmful psi, and it also allows us to explore more theoretical questions as to the limits of remote mental influence. We conducted two studies that were conceptual replications and extensions of Braud and Schlitz's psi-blocking study. The two studies had very similar methodologies to one another, so a detailed description of the method for Study 1 will be given and we will highlight the differences between the studies when we introduce Study 2.

Study One Method

The general procedure followed the standard direct mental influence with living systems (DMILS) method as outlined by Braud and Schlitz (1991). The influencee (participant) was sensorially isolated from the influencer (experimenter). The influencer monitored the influencee's EDA in real time via a computer display, meanwhile following a random influence schedule given by the computer. The schedule told the influencer when to activate, calm, or have no influence (rest) on the influencee's physiology. The influencee was blind to the instructions for the influence schedule. The influencer was blind to the influencee's instructions. We also administered a vividness of mental imagery questionnaire and recorded qualitative information on participants' mental strategies, to gain some insight into the psychological aspects of resisting a remote influence attempt.

Design

We used a within-subjects design (whereas Braud and Schlitz used a between-subjects design, with different groups of volunteers blocking or co-operating). The independent variable was the influencee's strategy (blocking *vs.* co-operating) while the influencer attempted either to calm, activate, or have no influence over the influencee's physiology. The dependent variable was the influencee's physiology, EDA being the principal measure, but skin temperature and finger pulse volume being recorded for exploratory purposes (we do not report these exploratory measures in this paper). Our primary aim was to determine whether there was a smaller remote influence effect when the influencee was blocking compared to when they were co-operating with the influence attempt. Our secondary aim was to ascertain whether there was any evidence of an overall remote influence effect.

Influence Schedule

The influence schedule that was followed by the influencer was composed of blocks of four epochs — either Rest-Activate-Rest-Calm (RARC) or Rest-Calm-Rest-Activate (RCRA). The ordering of each of these blocks of four was randomly determined by the computer as the session proceeded, so that in total there was an equal number of activate and calm epochs. Note that the random sequence also serves to counter-balance the activate/calm conditions across the duration of the study. Each epoch was 20 seconds in duration. The experimental session was thus split into two runs of equal length, each having 33 recording epochs, *i.e.,* eight blocks of four (RARC or RCRA), plus an extra rest at the end of each run. There was a total of 66 recording epochs over the entire session. Between the two runs there was a 150 second rest period during which the influencee and the influencer remained in their rooms.

The duration of each epoch and the total number of epochs were chosen in order to maximize the trade-off between gathering sufficient data, and keeping the duration of the session (2 runs of 10 min) at a comfortable length for participants. Additionally, we felt that 20 second epochs would be sufficient to enable any stimulus-response effect to manifest in EDA. A liberal strategy (that used by Radin *et al.,* 1995) was adopted to specify the criteria for including data if a session was aborted due to technical faults with the psychophysiology apparatus: data was included from any session that had at least one calm and one activate period (*i.e.*, a total of four recording epochs).

Data Treatment

Braud's Percentage Score Index (PSI; as described in Braud & Schlitz, 1991) per session was the unit of analysis used in this study. PSI is a conservative summary of the results of an entire session and is calculated by dividing the sum of EDA activity over all Activate epochs by the sum of all calm and activate EDA [$PSI = \Sigma A/(\Sigma C+\Sigma A)$]. The rest epochs were not used in this analysis. Their function was primarily to separate the calm and activate epochs from one another and to separate any lingering influence that may have been left at the end of the influencer's calm or activate epochs. In the absence of any remote influence effect, PSI equals 50%. A PSI of greater than 50% represents a remote influence effect in the predicted direction *(i.e.*, calming when that was the influencer's intention; activating when that was the influencer's intention). A PSI of less than 50% represents a remote influence effect in the direction opposite to that predicted. For the present study, we calculated PSI separately for each participant's blocking and co-operating condition, plus we calculated an overall PSI score for each participant.

Participants

The influencees were volunteer participants, drawn from the authors' contacts in the Department of Psychology at Edinburgh University, and including undergraduate psychology students recruited by e-mail and by word of mouth. There were three experimenters/influencers overall (Watt, Ravenscroft, and McDermott), but in each testing session there were only two individuals — the volunteer influencee and the influencer. Each experimenter also took part as influencer in one session.

Written Materials

Each volunteer was given a one page information sheet. Once they had read this, they were given a 34-item participant information form (PIF) and a 16-item Vividness of Visual Imagery Questionnaire (Marks, 1973). After discussing the procedure with the influencer, each participant was asked to sign a consent form that assured confidentiality and noted their right to withdraw from the study at any time. Following completion of the DMILS procedure, influencee and influencer both completed one-page qualitative post-session questionnaires in which they were invited to describe the kinds of strategies that they used during the testing session, and to give their subjective impressions of the session. A letter of thanks and a brief overview of the results were given to participants at the end of the study.

Technical Apparatus

Two rooms were used for the testing sessions. The influencee's room was sound-attenuated with double-doors and was located approximately 20 meters away from the influencer's room, down a short flight of stairs. The DMILS apparatus (an I-410 multichannel physiological monitoring unit from J & J Systems with source code from Physiodata) was set up between these two rooms and was run on two time-synchronized Pentium computers. In the influencee's room, a monitor displayed written instructions and a mildly engaging visual display (a screen saver, shown during the actual data collection epochs) to the influencee. This room also contained speakers that gave auditory instructions ("hey, block now;" "hey, co-operate now;" and "session over, thank you") to the influencee just prior to each of the two 10-minute runs, duplicating the written instructions that appeared on the computer monitor. The physiology sensors that were attached to the influencee's fingers were located in the influencee's room. The signals from the sensors were relayed along a cable and processed by a computer located in the influencer's room. Therefore, the computer in the influencee's room was merely used to provide instructions and a visual display to the influencee. The computer in the influencer's room controlled the DMILS software and processes and stored the psychophysiology data.

Procedure

The influencer and participant initially sat down in the reception room in the parapsychology suite for a further description of procedure, and returned their completed PIF/imagery questionnaire to the influenceer who went over it with the participant. Any questions that were raised by the participant prior to testing were answered here. (This question-and-answer session usually lasted fifteen minutes). The participant then gave their informed consent to the study. The influencer also suggested various mental approaches the participant might adopt for the blocking and co-operating conditions (some examples were given in the information sheet). These suggestions included both visual imagery (*e.g.* visualizing a shielding cocoon in the blocking condition) and cognitive strategies (*e.g.* adopting a stubborn and uncooperative frame of mind in the blocking condition). Participants were informed that different strategies might suit different people, and they were to do whatever felt natural for them. The influencer then took the participant to the testing room and demonstrated the auditory instructions so that the participant would not be startled by these when they occurred during the session itself. The participant was also taken to see where the influencer was sitting and the influencer described what they would be doing when they were attempting to activate or calm the participant.

Once the preliminaries were finished the influencee was seated in a partially reclined chair in front of the computer monitor and the physiology sensors were attached to their fingers by the influencer. The room was softly illuminated by a desk lamp with an orange/red filter. At this stage the influencer checked that the physiology signals were being transmitted to the computer in their room. Returning to the influencee the influencer set a start time on the influencee's computer. This was on average two to three minutes later. The influencer then returned to their room, closing all doors, and waited for the start of the session.

Physiology Data Collection. As the session began, the influencee was instructed visually and auditorially either to "hey, block now" or "hey, co-operate now." The influencee's monitor then displayed a colorful and dynamic screen-saver that was intended to be engaging without being particularly arousing or relaxing. At the same time, the influencer was following the influence schedule as instructed by the computer, observing the real-time feedback display of the participant's EDA when desired. At the end of the first run which lasted approximately ten minutes, the influencer saw a 150 second count down on the computer, before the second run began. At the same time, the influencee saw a message about the strategy to adopt for the forthcoming second run (*i.e.*, to block or to co-operate, whichever strategy was not used for the first run). At the beginning of the second run, the influencee was also instructed auditorially either to "hey, block now" or "hey, co-operate now." The dynamic visual display resumed, while the influencer followed a random influence schedule for approximately ten minutes. The entire session took about 25 minutes to complete. At the end of the session, the influencee was auditorially and visually informed "session over, thank you," and waited until the influencer returned to the influencee's room.

Post-Testing Procedures. The influencee's physiology sensors were removed by the influencer, and both returned to the reception room to complete the post-session questionnaires. Then, the influencee was taken to the influencer's room to see feedback on the results of their testing session. There was an option for some final discussion about the session, after which the volunteer was thanked for their participation and left. Once all the data was collected, feedback on the results of the study as a whole was sent to participants.

Planned Hypotheses and Analyses

Our main aim was to examine whether there was any evidence for blocking of a remote mental influence on physiology. [EDA is the principal physiology measure here, with per-session PSI scores representing the measure of the DMILS effect on EDA]. H1 therefore predicted significantly greater PSI scores in the co-operating condition than in the blocking condition (using a related *t*-test, one-tailed). Our second question was whether there was any overall evidence of remote mental influence on EDA. This analysis would be conducted on the data of blocking and co-operating runs combined, if no significant difference was found between these two conditions (as tested by H1). If H1 was supported, H2 would be tested on the data of co-operating runs only, predicting PSI scores significantly greater than chance expectation (using a single-mean *t*-test of the PSI score *vs*. MCE, one-tailed).

Planned alpha level was .05. There was no correction for multiple analysis. This was dealt with by restricting the number of formal hypotheses (with one-tailed significance tests) to two in each study. All other analyses were regarded as exploratory, and two-tailed significance tests were used.

Exploratory Measures

Variance

DMILS researchers do not yet appear to have identified what might be the most appropriate indicator of a remote influence effect. Therefore, in addition to the PSI score we looked at the *amount of variance* that was shown in blocking and co-operating scores. The variance measure was calculated as follows. Mean values for activate periods and calm periods were calculated separately for block and co-operate conditions. Mean values were taken from each individual score in that condition and squared and summed: Σ[mean value for condition − individual score]^2. This gave a summation of variability around the mean for each activate, calm, and rest period for block and cooperate conditions. It was used in conjunction with the mean level of EDA activity, giving an indication of the motion of the wave (*i.e.*, the variability of the EDA activity) rather than the overall level.

VVIQ

Anecdotally the use of appropriate imagery (*e.g.* visualize being surrounded by a shielding white halo of white light) is suggested to be an effective blocking technique (*e.g.* Hope, 1983). We therefore wished to see if participants who reported experiencing vivid imagery with ease are perhaps more effective blockers than those who do not report clear mental imagery. Descriptive data was gathered to explore any trends in PSI scores for blocking/co-operating for those participants with VVIQ scores ranging from low (*i.e.*, reporting vivid mental imagery) to high (*i.e.*, reporting little or no mental imagery).

Qualitative Reports

We also wanted to report data illustrating what kind of different strategies participants used when they were blocking and co-operating. These qualitative reports were gathered in the form of the participants' written responses to open-ended questions on a post-session questionnaire. Watt and Ravenscroft independently coded these written responses into categories and cross-checked to ensure coding agreement.

Sex and Experimenter Effects

We also examined the data for sex effects and experimenter effects because these variables could confound the interpretation of any overall effects. Finally, a *post hoc* analysis was conducted on influencee/influencer sex pairings. In a study on the unconscious detection of remote staring, Schlitz and LaBerge (1997) found the greatest effect for opposite-sex observer-subject pairs.

Study One Results and Discussion

Participants

Thirty-two individuals took part as influencees (12 females, 20 males); their ages ranged from 19 to 63 years (mean age 28.5 years).

Incomplete Data

One participant declined to give their age on the PIF form, so the descriptive statistics on age do not include this participant (so $N = 31$). Also, due to a technical hitch, the exploratory variance scores were lost for one participant, so $N = 31$ for this measure. There were no drop-outs from this study.

Remote Influence Measure

Table 1 presents a summary of the remote influence data, in the form of mean Percentage Score Index for co-operating and blocking conditions. There was no significant difference between PSI for co-operating and blocking conditions ($t = -.202$, $df = 31$). Therefore, Hypothesis 1 (predicting significantly greater PSI scores for co-operating condition compared to blocking condition) was not supported by these results. As planned, the PSI scores for co-operating and blocking runs were combined to examine Hypothesis 2 (of an overall remote mental influence effect in line with the calming and activating intentions of the influencee). Mean PSI scores were exactly at chance expectation ($t = -.031$, $df = 31$), therefore there was no support for Hypothesis 2.

Exploratory Questions

Variance Measure

Table 2 presents summary data for the exploratory measure of the amount of variance shown in each condition (< 50 represents reduced variance; > 50 represents increased variance). There was no significant difference between variance scores for co-operating and blocking conditions ($t = .835$, $df = 30$), and when the conditions were combined, variance did not depart from chance expectation ($t = -.244$, $df = 30$). It is interesting to note, however, that the variance measure gives a much wider range of scores than the PSI measure,

TABLE 1
Summary Data: Mean PSI Scores
($N = 32$; MCE = 50; range in brackets)

Co-operate PSI	Block PSI	Combined PSI
49.96 (46.92–52.15)	50.03 (46.53–54.04)	50.00 (48.53–53.09)

TABLE 2
Summary Data: Mean Variance Scores
($N = 31$; MCE = 50; range in brackets)

Co-operate Variance	Block Variance	Combined Variance
50.89 (26.48–70.12)	48.64 (24.92–64.84)	49.77 (41.16–62.97)

suggesting that the variance measure may potentially be a more sensitive indicator of remote influence effect than PSI.

Vividness of Mental Imagery

Low VVIQ scores represent participants reporting highly vivid imagery and high VVIQ scores represent those reporting little or no imagery. The mean score was 42.75 (range from 21 to 80). Using a Pearson correlation we found that there was no evidence to suggest that those participants with low VVIQ scores (high imagery) were better blockers than those with high scores (VVIQ vs. PSI blocking $r = -.113$). We also found that there was no evidence of a correlation between vividness of imagery and overall remote influence effects using the combined Percentage Score Index measure (VVIQ *vs.* PSI overall $r = -.077$).

Influencees' Blocking and Co-operating Strategies

Influencees completed a questionnaire (after the session was over), asking them to describe what strategies they used for blocking and co-operating. Categorizing these responses, we found a difference in the kinds of strategies used when blocking compared to co-operating, as shown in Table 3. In the *blocking* condition, the majority of participants (46.9%) used visual imagery strategies. Fewer (28.1%) participants used a combination of imagery and cognitive strategies (such as repeating words related to blocking), while 25% reported using purely cognitive strategies for blocking (such as adopting a resistant and uncooperative attitude, or thinking of irrelevancies). In the *co-operating* condition, fewer participants used visual imagery alone (33.3%). The majority of participants (42.4%) reported that their strategies for co-operating included adopting a feeling of passiveness, openness, or relaxation, whereas no participants adopted this kind of strategy for the blocking condition. 12.1% of participants used cognitive strategies alone (such as adopting a co-operative attitude), and the same proportion used a combination of visual imagery and cognitive strategies.

Therefore, there was a tendency for participants to use visual imagery for blocking and relaxation/passivity or visual imagery for co-operating. This was despite the fact that we asked participants to attempt to adopt similar levels of activation for both co-operating and blocking strategies. There was also a tendency, not surprisingly, for those participants with low VVIQ scores (*i.e.*, vivid

TABLE 3
Influencees' Mental Strategies (%)

	Vis Im	Cognitive	Vis/Cog	Open/Relax
Blocking	46.9	25.0	28.1	0.0
Co-operating	33.3	12.1	12.1	42.4

imagers) to use visual imagery strategies. Those who had high VVIQ scores also used visual imagery, but more often used this in combination with other tactics.

Other Qualitative Reports from Participants. According to their post-session questionnaire responses, participants generally felt comfortable about the attempt to be influenced ($N = 24$). Three participants said they felt apprehensive or uncomfortable with the idea of being influenced. Interestingly, of these three, two were actively involved with parapsychology and were aware of the harmful psi implications discussed at the beginning of this report. The third was a psychology student who had attended a lecture given by Watt in which the possibilities of harmful psi were discussed. Another group of three participants said they would be uncomfortable with the idea of being influenced, if they believed such influence was possible.

Seven participants said they found it was difficult to sustain concentration for the 10 minutes that comprised each condition. Five participants found the screensaver distracting or disturbing. Two participants specifically mentioned that they found blocking a more taxing task than co-operating.

Sex Effects

There were more males ($N = 20$) than females ($N = 12$) in this study, however there was no significant difference in PSI scores for remote physiology influence between males and females. (male PSI *vs.* female PSI $t = 1.085$; male PSI = 49.87, female PSI = 50.21).

Experimenter Effects

We studied whether there was any difference in PSI scores obtained by the three experimenters. The results are shown in Table 4. There seems to be no sign of experimenter effects in study one.

Influencee/Influencer Sex Pairings

Table 5 gives the mean PSI scores for different influencee/influencer pairings. Taking the combined PSI scores, it can be seen that the highest remote influence effect is for F/M pairs, followed by M/F pairs, followed by F/F pairs, and the lowest scoring is for M/M pairs. *Post hoc,* it was found that the mixed sex pairings showed significantly higher remote influence scores than the same

TABLE 4
Remote Influence Results by Experimenter

Experimenter	N sessions	Coop PSI	Block PSI	Combined PSI
CW	12	49.83	50.11	49.97
ZMcD	10	50.15	49.98	50.06
JR	10	49.94	49.99	49.96

TABLE 5
Mean PSI Scores for Different Influencee/Influencer Sex Pairings

Pairing	*N*	Coop PSI	Block PSI	Combined PSI
M-F	6	49.32	50.69	50.01
F-M	6	50.43	50.34	50.48
F-F	6	50.22	49.52	49.93
M-M	14	49.88	49.75	49.81

sex pairings ($t = -2.016$, $df = 30$, $p = .053$, 2–t). This replicates the effect found by Schlitz and LaBerge (1997).

Study One Conclusions

In Study 1 we developed a methodology to examine intentional resistance to a remote mental influence attempt (Watt *et al.,* 1997). We contrasted influencees' physiological activity when they were mentally co-operating with a remote attempt to influence their physiology, with physiological activity when influencees were mentally blocking the influence attempt. We found no evidence for any remote influence effect overall, and no difference between blocking and co-operating conditions. Our qualitative measures yielded some interesting information about participants' mental strategies and reactions during the remote influence session. We found no difference between experimenters in remote influence scores, but we did find that mixed sex influencee/influencer pairings scored more highly than same sex pairings.

Study Two Method

Study 2 was planned to explore in more depth the nature of the relationship between aspects of personality and cognition, and psi performance. Participants took part in three testing sessions approximately one week apart. The first consisted of various psychological measures, the second consisted of a forced choice ESP task, and the third consisted of a replication of the blocking-co-operating study (Study 1) described above. The psychological measures were not scored until after completion of the remote influence session. Participants received feedback about their forced choice ESP performance at the conclusion of the second session. For ease of interpretation, the present paper is restricted to a description of the third testing session which was essentially a replication of study one with fewer influencers and greater statistical power.

We introduced some slight changes to the methodology of Study 2, based on our experiences with Study 1. At the start of each of the two runs in Study 1, the participant was given auditory instructions either to "block now" or "co-operate now." We observed that the auditory instructions appeared to affect the participant's EDA as if they were startled. As planned, the first recording epoch in each run was not used in analysis, to give the participant's EDA time to settle down. However, in order to remove any remaining potential artifactual effects on EDA, in Study 2 only visual instructions were given.

Another difference in methodology concerned the screensaver viewed by the participants during the experimental session. In Study 1, some participants reported that the series of patterns produced by the computer were being displayed at too fast a rate, such that some participants found it distracting or disturbing. Again we felt that this may have an artifactual effect on EDA so we decided for study two to reduce the speed of the screensaver.

Thirdly, in Study 2 we did not give participants detailed information about their remote influence performance until the feedback letters that were distributed at the conclusion of the entire study. The reason for this change was merely to streamline the procedure on what was already a time-consuming experiment. Finally, in another streamlining change, we did not take VVIQ measures in Study 2.

Planned Hypotheses and Analyses

These were the same as with Study 1. That is, hypothesis 1 predicted higher PSI scores for the co-operating condition than for the blocking condition (measured with a related *t*-test, one-tailed). If no significant difference was found between blocking PSI and co-operating PSI scores, the two would be combined to look at overall remote influence effect (hypothesis 2, single-mean *t*-test, one-tailed). If a significant difference was found with hypothesis 1, the analysis for hypothesis 2 would be conducted with the data for co-operating sessions only.

Exploratory Questions

As with study one, we took an exploratory variance measure of remote EDA influence. We also gathered qualitative descriptions of the mental strategies participants adopted whilst blocking and co-operating. We also looked at sex effects, experimenter effects, and, post hoc, influencee/influencer sex pairings.

Participants

Study 2 had two experimenter/influencers (Watt & Ravenscroft). After a participant was recruited (usually by Ravenscroft), they were assigned to one of the two experimenters for all three testing sessions. This assignment was done unsystematically, according to the preferences and availability of the experimenters. As planned 50 volunteer participants were drawn from the general participant pool at the Koestler Parapsychology Unit, and by word of mouth. All participants completed the Participant Information Form and a Consent form prior to the study. The participants consisted of 33 females and 17 males. Average age was 41 years, range from 22 years to 76 years of age. In order to increase the study's relevance to the general population, undergraduate psychology students were not recruited as participants. The main criterion for participation was that the participants were interested in and open-minded about parapsychology. Again, there were no drop-outs from this study. All participants received a detailed personal feedback letter at the conclusion of the study.

Study Two Results and Discussion

Remote Influence Measure

PSI scores are summarized in Table 6, which shows that the mean PSI score when co-operating was nonsignificantly lower than mean PSI score when blocking ($t = -.595$, $df = 49$). Hypothesis 1 was therefore not supported. As planned, in the absence of any significant difference between blocking and co-operating PSI scores, the two conditions were combined to test hypothesis 2, which predicted overall significant remote mental influence performance. The combined PSI score was significantly greater than mean chance expectation of 50 ($t = 1.806$, $df = 49$, $p = .038$, 1–t). Therefore hypothesis 2 was supported, giving evidence of an overall remote influence effect upon psychophysiology in the prespecified direction.

The failure to support hypothesis 1 confirms what we found in Study 1: that there was no significant difference between blocking and co-operating conditions on remote influence scores. Indeed, both studies found a slight effect in the opposite direction to that predicted, that is slightly higher PSI scores when blocking was the influencee's intention, than when co-operating was their intention. It was encouraging to find significant support for a remote influence effect in the predicted direction for blocking and co-operating conditions combined. No such trend was found in the previous study though with a smaller number of participants ($N = 32$), the earlier study had lower statistical power than the present study.

Exploratory Questions

Variance Measure

Table 7 shows the results for the exploratory measure of EDA variance; < 50 represents reduced variance, > 50 represents increased variance. We found no difference between variance scores for cooperate versus block conditions ($t = .150$, $df = 49$). When these are combined, the resulting figure does not deviate from chance expectation ($t = .440$, $df = 49$). Thus, as in Study 1, it seems

TABLE 6
Summary Data: Mean PSI Scores
($N = 50$; MCE = 50; range in brackets)

Co-operate PSI	Block PSI	Combined PSI
50.08 (48.21–52.21)	50.19 (48.07–55.57)	50.16 (49.00–52.96)

TABLE 7
Summary Data: Mean Variance Scores
(N = 50; MCE = 50; range in brackets)

Co-operate Variance	Block Variance	Combined Variance
50.76 (31.64–72.79)	50.54 (35.72–68.13)	50.34 (37.49–66.71)

that the exploratory variance measure does not reveal any additional indication of the operation of a remote mental influence in this study. However, the wider range of variance scoring continues to suggest that this measure may have greater potential sensitivity than the summary PSI score.

Influencees' Blocking and Co-operating Strategies

We were interested in learning more about what particular strategies participants chose to adopt when blocking and co-operating. As in Study 1, a post-session questionnaire was used to gather this information. Table 8 shows the percentage of participants who adopted each kind of strategy.

The table shows a very similar pattern to that found in Study 1. The main point of interest is that almost no participants took a passive approach to blocking (*i.e.*, adopting an open/relaxing strategy). A much higher proportion preferred to adopt this approach when co-operating. The preferred mode for both conditions was to use some form of visual imagery, such as imagining a shield or a screen when blocking, and imagining an open channel such as a river when co-operating.

The majority of participants reported no concerns over the possibility of having their physiology remotely influenced by another person, as found in study one.

Sex Effects

As in study one, the sexes were not equally represented among participants. Whereas Study 1 had an excess of male participants, in Study 2 twice as many females (N = 33) as males (N = 17) participated. It was therefore important to look for sex differences since any such differences could confound the interpretation of overall trends. We found no difference between sexes when co-operating (female mean PSI score = 50.08; male mean PSI score = 50.06, t = .107, df = 48). There was a nonsignificant trend for females to have higher

TABLE 8
Influencees' Mental Strategies (%)

	Visual Imagery	Cognitive	Vis/Cog	Open/Relax
Blocking	64	26	6	2
Co-operating	60	8	12	20

PSI scores than males when blocking (mean PSI scores 50.30 and 49.98 respectively, $t = .992$, $df = 48$). Combining blocking and co-operating conditions, there was no overall difference between the sexes (mean PSI scores 50.20 for females, 50.08 for males, $t = .665$, $df = 48$).

Experimenter Effects

Study 2 found a statistically significant overall remote influence effect (combined PSI = 50.155, $t = 1.806$). Table 9 shows the breakdown of remote influence scores for the two experimenters, CW and JR. Looking at the overall data for the two experimenters, we see that CW's sessions were associated with most of the remote influence effect. However, due to the smaller *N*, CW's sessions are not independently significant ($t = 1.632$) and there is not a significant difference between CW and JR's overall PSI scores ($t = .678$). *Post hoc,* we calculated effect size *r* according to the formula $r = [t^2/(t^2+df)]^{1/2}$ for the two experimenters. For JR ($t = .817$, $df = 22$) we found a small effect size $r = +.17$. For CW ($t = 1.632$, $df = 26$), the effect size was moderate, $r = +.30$. This may be some post hoc indication of an experimenter effect in Study 2.

Influencee/Influencer Sex Pairings

As can be seen from Table 10, Study 2 found exactly the opposite trend to that found in Study 1. On a *post hoc* test, same sex pairings scored significantly higher on the remote influence PSI measure than mixed sex pairings ($t = -2.034$, $df = 48$, $p = .048$, 2–*t*). This contradicts Schlitz and LaBerge's (1997) finding of greater autonomic detection of remote staring for mixed sex pairs.

TABLE 9
Remote Influence Results by Experimenter

Experimenter	*N* sessions	Coop PSI	Block PSI	Combined PSI
CW	27	50.11	50.26	50.21
JR	23	50.03	50.10	50.09

TABLE 10
Mean PSI Scores for Different Influencee/Influencer Sex Pairings

Pairing	*N*	Coop PSI	Block PSI	Combined PSI
M/F	11	49.77	50.09	49.97
F/M	17	49.83	50.21	50.03
F/F	16	50.35	50.38	50.38
M/M	6	50.60	49.78	50.27

General Summary and Conclusions

We have described the findings of two studies exploring the limits of remote mental influence effects. We wished to see whether the mental strategies adopted by the influencee would affect remote influence scores. In particular, could an influencee block or resist a remote influence attempt? We recorded influencees' electrodermal activity while the influencer attempted to calm, to activate, or to have no influence over the influencees' physiology. In each study, there were two conditions reflecting the influencees' designated mental strategies in response to the remote influence attempt: blocking and co-operating.

There were only two formal hypotheses: 1) that remote influence scores would be significantly higher during the co-operating condition than during the blocking condition; and 2) that overall there would be significant evidence of remote mental influence on physiology in the designated direction (*i.e.,* calming when calming was the influencer's intention, activating when activating was the influencer's intention). Contrary to prediction, Study 1 found that remote influence effects were higher in the block condition than in the co-operate condition (but not to a significant extent). Also, overall remote influence performance was at chance level. This study therefore found no support for either of the formal hypotheses. Study 2 consisted of a replication of Study 1, with a few minor adjustments plus additional measures that were not reported in this paper. Again contrary to prediction, remote influence scores were non-significantly higher in the block condition than in the co-operate condition. This replicates the trend found in Study 1, failing to support hypothesis one. These results suggest that the mental strategy adopted by the influencee in the face of a remote influence attempt has no effect on remote influence performance. Referring back to the questions posed in the introduction, then, we have not found any evidence to suggest that it is possible to resist a remote influence effect and there is as yet no indication of the possible limiting conditions for remote mental influence.

Unlike Study 1, Study 2 found statistically significant evidence of an overall remote influence effect in the prespecified direction (*i.e.,* calming of EDA when that was the influencer's intention, activation of EDA when that was the influencer's intention). In order to facilitate comparison with a recent meta-analytic review of remote influence studies, we calculated the effect size (r) according to the formula $r = [t^2/(t^2+df)]^{1/2}$. For their review of 19 EDA influence studies, Schlitz and Braud (1997) found an average effect size of $r = +.25$. Our Study 1, with overall $t = -.031$, $df = 31$, gives a negligible effect size of $r = -.006$. Study 2, with overall $t = 1.806$, $df = 49$, gives $r = +.25$. Study 2 therefore replicates the mean effect size found in EDA studies conducted by other researchers in other parapsychology laboratories. *Post hoc,* we can combine the data of the two studies for greater statistical power. Overall, $t = 1.176$, $df = 81$, giving a small effect size of $r = +.13$.

We can find no clear reason why Study 2 found an EDA influence effect while Study 1 did not. A number of factors are worth considering. 1) The significant result could be due to chance or undetected artifact. 2) Study 2 implemented what we considered to be minor methodological improvements that might have removed some artifactual fluctuations from the EDA data that we observed in study one. 3) Each experimenter in Study 2 conducted three testing sessions with their participant. By the third session, in which the remote influence measure was taken, experimenters were on quite friendly terms with their participants, perhaps more so than in Study 1, where each participant came in for only one testing session. 4) The participants in Study 2 were more representative of the general population, we felt, than those in Study 1. Study 1 involved more undergraduate psychology students and associates of the experimenters. 5) The experimenters in study one were less experienced with the remote influence protocol than when they conducted Study 2.

In addition to the formal hypotheses, we reported a number of exploratory measures. Study 1 found that influencees' self-reported vividness of visual imagery appeared to be unrelated to the remote influence performance. In both studies, influencees' qualitative descriptions of the actual mental strategies they employed when blocking and co-operating revealed a tendency for different strategies to be preferred for the different conditions. The use of visual imagery was popular for both blocking (*e.g.* visualizing being surrounded by a protective cocoon) and co-operating (*e.g.* visualizing a river flowing between influencer and influencee). However, a considerable proportion of participants reported adopting an open or relaxed frame of mind when co-operating, whilst almost no participants chose this strategy when blocking. This was despite the fact that prior to each session we encouraged participants to adopt comparable strategies for blocking and co-operating.

It was interesting, and perhaps surprising, to note that in both studies, the majority of participants reported no feelings of concern or discomfort at the possibility of having their physiology remotely influenced. Those who were concerned tended to be those who knew more about parapsychology and the possible harmful applications of remote influence. A small proportion of participants was unconcerned because they did not believe such an influence was possible in the first place.

Both studies employed an exploratory variance measure of EDA influence. This measure showed a greater range of scoring overall, thus perhaps greater potential sensitivity to a remote influence effect. However, the variance measure showed no indication of a remote influence effect. To date, researchers have employed a variety of indicators of remote influence; as the literature grows, progress may be made on identifying which is the most appropriate indicator.

Neither study found significant sex differences in remote influence effects, though in both studies female influencees tended to have higher remote influence scores than male influencees.

In terms of their overall remote influence effects, there appeared to be no difference between experimenter/influencers in Study 1 ($r = +.06$, $-.05$ and

−.06). In Study 2, effect size measures indicated that the experimenters differed in remote influence effect sizes ($r = +.17$ and $+.30$). Due to the smaller N, this difference was not found to be statistically significant. *Post hoc,* combining Studies 1 and 2 for experimenters JW and CW (ZMcD was not an experimenter in Study 2), the effect sizes are $r = +.08$ and $r = +.20$, respectively.

We conducted a *post hoc* analysis of the effects of influencee/influencer sex pairings on remote influence scores. Our two studies came up with contradictory findings, each statistically significant. Study one found that mixed sex pairings had significantly higher remote influence scores than same sex pairings. This replicated the *post hoc* finding of Schlitz and LaBerge (1997) in connection with the autonomic detection of remote observation. Study 2 found that same sex pairings had significantly higher remote influence scores than mixed sex pairings. Our contradictory findings do not help to clarify the picture on the importance or otherwise of sex pairings. It is quite possible that sex is not the most salient aspect of the dynamic between pairs. Age, personality, and familiarity are likely to be important variables moderating the relationship between influencer and influencee.

There are many more variables that we could look at, but as the number of analyses multiplies, so does the opportunity for spurious significant results. For this reason, we have named only two formal hypotheses for each experiment. All other analyses are regarded as exploratory and any trends that we have highlighted above would require replication.

In conclusion, these two studies have found no evidence of a difference in remote influence effects when influencees are asked to adopt cooperative mental strategies compared to when they are asked to adopt blocking mental strategies. In fact, contrary to expectation, both studies found slightly higher remote influence effects for the blocking condition compared to the co-operating condition. On this basis, we have found no indication of limiting conditions for remote influence effects. Therefore, while anecdotal advice exists on how to defend oneself against a remote physiological influence attempt in the real world, laboratory evidence to date has provided no support for this advice.

Given the importance of this question, both in practical terms and in theoretical terms, we argue that this line of research deserves continued investigation. If a way could be found to conduct research with a more realistic scenario — where the remote influence was not just neutrally and abstractly defined as unwelcome — then our research might have more meaningful things to say about the parameters of remote influence. It is interesting and perhaps surprising to note that, when Watt has lectured on this topic to informed lay audiences, the feedback has often been that researchers must use more potentially harmful or disruptive remote influence (of course with the informed consent of the participants). While there are clear ethical inhibitions when considering possible physiological influence, perhaps research using higher level influence would be more acceptable. For example, one could attempt to disrupt or enhance the concentration of chess players who were aware of the influence attempt and who were concurrently blocking or co-operating with the influence attempt. Research already exists to suggest that remote influence does not just operate at physiological levels. Attention focusing, for example, can be facilitated by a remote helper (Brady & Morris, 1997; Braud *et al.,* 1995). Future research in this area must therefore expand beyond physiological influences.

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