

## **Dream Clairvoyance Study II Using Dynamic Video-Clips: Investigation of Consensus Voting Judging Procedures and Target Emotionality**

**Simon J. Sherwood,<sup>1,2</sup> Kathy Dalton,<sup>1</sup> Fiona Steinkamp,<sup>1</sup> and Caroline Watt<sup>1</sup>**

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*This partial replication study investigated whether individual versus small group consensus target judging procedures, and/or the emotionality of dynamic target video clips, would affect the frequency of correct identification of the target in a free-response dream ESP study. Two people located in Edinburgh (Scotland) and a third person located in Derby (England) acted both as experimenters and as participants and slept at their respective homes. On each of the 28 trial nights, a randomly-selected video clip was shown repeatedly between 3.00–4.30 am. The following morning the participants viewed four video clips (i.e., 3 decoys plus the target) and then judged the correspondences between the clips and records of their dream mentation. The Edinburgh participants obtained a greater number of direct hits using consensus as opposed to individual judgements. A discussion consensus procedure was marginally more successful than a more objective consensus procedure (12 hits,  $p = .0294$ ,  $ES(h) = 0.38$  vs. 11 hits,  $p = .0679$ ,  $ES(h) = 0.30$ ). Participants, both as a group and as individuals, obtained a greater proportion of direct hits when the target was emotionally negative than when it was either positive or neutral.*

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**KEY WORDS:** extrasensory perception; parapsychology; emotionality; consensus voting.

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### **INTRODUCTION**

According to a recent definition, “*Parapsychology* is the scientific study of experiences which, if they are as they seem to be, are in principle outside the realm of human capabilities as presently conceived by conventional scientists” (Irwin, 1999, p. 1). Parapsychologists typically study three broad domains of experiences: extrasensory perception (ESP), psychokinesis (PK), and phenomena that relate to the question of survival of bodily death. The generic term ‘psi phenomena’, introduced by Wiesner, (cited by Irwin, 1999, p. 8) is sometimes used to refer to ESP and PK phenomena.

This study was concerned with an investigation of evidence for ESP (more specifically, clairvoyance) during dreams. What do we mean by ESP? As defined by Irwin (1999,

<sup>1</sup>Department of Psychology, The University of Edinburgh, Scotland, UK.

<sup>2</sup>Correspondence should be directed to Simon Sherwood, Division of Psychology, University College Northampton, Park Campus, Boughton Green Road, Northampton NN2 7AL, UK; e-mail: simon.sherwood@northampton.ac.uk.

p. 6), “An *extrasensory experience* is one in which it appears that the experient’s mind has acquired information directly, that is, seemingly without either the mediation of the recognized human senses or the processes of logical inference.” ESP can be further classified according to the source or the temporal reference of the information: telepathy (information obtained from another person), clairvoyance (information about events or objects obtained from the environment), precognition (information about future events), and retrocognition (information about past events).

A large proportion, estimated to be 33–65% (Van de Castle, 1977), of spontaneous cases of extrasensory perception (ESP) have been reported during dreams (e.g., Gurney, Myers, & Podmore, 1886). As it is difficult to predict and to have control over when spontaneous ESP experiences are going to occur and to whom, parapsychologists have tried to develop experimental conditions that will facilitate the operation of ESP and help to rule out normal methods of communication.

Some experimental research has found that dreams (e.g., Braud, 1977; Child, Kanthamani, & Sweeney, 1977; Dalton, Steinkamp, & Sherwood, in press; Kanthamani, Khilji, & Rustomji-Kerns, 1989; Kanthamani & Khilji, 1990; Kanthamani & Broughton, 1992; Ullman, Krippner, with Vaughan, 1989; Van de Castle, 1971) and hypnagogic/hypnopompic imagery (Braud, 1977; Gertz, 1983; White, Krippner, Ullman, & Honorton, 1971) seem to be conducive to ESP.

The Maimonides dream studies (Ullman et al., 1989), which mainly investigated dream telepathy, are undoubtedly the most well known and most successful (Child, 1985). A recent meta-analysis of 450 Maimonides dream telepathy sessions found the overall hit rate to be 63% (mean chance expectation (MCE) = 50%) with odds against chance of 75 million to one (Radin, 1997). Attempted replications of the Maimonides dream studies have not been so successful, though the conditions surrounding these attempts may not have been particularly conducive (see Van de Castle, 1977).

### **Dynamic Targets**

The dream ESP studies represented a move away from the early forced-choice methods, pioneered by the Rhines, towards free-response methods. With forced-choice methods, each response by the participant is confined to a fixed and limited number of alternatives (e.g., one of five different Zener card symbols); with free-response methods, the participant is free to give more detailed responses in as many different ways as they wish (see Milton & Wiseman, 1997, Palmer, 1986a). Most dream ESP studies have used static target materials, such as art prints or slides, though some studies have used more dynamic target materials such as projector slides with an accompanying soundtrack, a person performing mimes, or films/videos. Other free-response ESP research has suggested that dynamic and multi-sensory targets might be more conducive to ESP than static targets (Dalton & Utts, 1995; Delanoy, 1989; Honorton, Berger, Varvogliss, Quant, Derr, Schecter, & Ferrari, 1990). Both this, and also our previous dream study, used dynamic video clips with accompanying soundtracks as targets.

### **Emotionality of Targets**

Spontaneous cases of dream ESP often feature information about close relatives or friends and/or depict negative life events (Ullman et al., 1989; Van de Castle, 1977). However, although some literature and anecdotal observations suggest that emotional targets

are believed to be better than non-emotional targets (e.g., Cavanna, & Servadio, 1964 cited by Delanoy, 1988; Dalton, 1997a; Ullman et al., 1989; Van de Castle, 1977; Watt, 1989), the experimental findings are equivocal (Delanoy, 1988, 1989).

Evidence from some experimental studies of ESP suggests that emotional target materials are more conducive than neutral materials (Bierman, 1995, 1997; Moss & Gengerelli, 1968 cited by Gelade & Harvie, 1975; Johnson, 1971; Radin, 1997; Williams & Duke, 1979); other studies suggest that neutral targets may be more conducive than emotional (Sondow, Braud, & Barker, 1981).

Moreover, it is not clear whether positive or negative emotional targets are more psi-conducive as studies that have compared these target qualities have also produced conflicting results (Delanoy, 1989). Some studies have discovered that positive materials seem to have a larger effect than negative materials (Dalton, 1997b; Johnson, 1971; Johnson & Nordbeck cited by Johnson, 1971; Radin, 1997; Williams & Duke, 1979); others have found the opposite (Dalton, personal communication, November 18, 1998; Dalton et al., in press; Krippner & Zeichner, 1974); or no significant difference (Eisenberg & Donderi, 1979 cited by Delanoy, 1988; Sondow et al., 1981). The studies cited here, which found that negative targets were superior to positive, were all dream, as opposed to waking or ganzfeld, ESP studies. Thus, it seems that, with dream ESP, negative targets might be particularly likely to be identified correctly.

In both this and our previous study, all of the video clips in the target pool had been rated by independent judges and classified as being either positive, negative or neutral in terms of their emotional content. This study attempted to address the emotionality question by comparing the direct hit rate (i.e., the number of times the target clip was correctly identified) for positive, negative and emotionally neutral target video clips. More specifically, it was hypothesized that the group would score significantly higher than the mean chance expectation (i.e., the number of times we would expect the target clip to be correctly identified simply by chance) when the targets were negative. This was in keeping with the finding of a similar study carried out at Edinburgh that involved testing for dream clairvoyance using dynamic video targets and a consensus judging procedure (Dalton et al., in press).

### **Small Group Participation and Consensus Judgement Procedures**

Some studies have used majority-vote or pooled rating/ranking procedures in order to try to maximise ESP performance (Fiske & West, 1956, 1957; Kennedy, 1979; Ryzl, 1966; Taetzsch, 1962; Thouless, 1960—cited by Carpenter, 1991; Braud, 1977; Kanthamani et al., 1989; Kanthamani & Khilji, 1990). With these consensus judgement procedures, the responses from a number of individuals are combined to give a single judgement as to the identity of the target on a given trial.

Carpenter (1995) has been using group consensus judgements of the contents of regular quasi-psychotherapeutic group meetings as a method of facilitating ESP. Ullman (1989) has also been conducting exploratory research with small groups to see if their dreams are conducive to ESP. Our previous dream ESP study, using a consensus vote judging procedure that involved three participants, found that this method yielded a higher number of direct hits than individual judgements (Dalton et al., in press).<sup>3</sup> In our previous study, the consensus

<sup>3</sup>Dalton (personal communication, November 18, 1998) reported an attempted replication of this first study by students at the University of California-Davis (Dalton, Novotny, Sickafoose, Burrone, & Phillips, in preparation). At the end of the 16 trials, the group (4 participants) scored significantly higher than chance using an objective consensus judging method; as individuals their scores were non-significant.

rankings were based upon the sum of the individual rankings for each trial. In this study, our aim was to expand upon our original finding and to explore whether a consensus judgement based upon a subjective discussion of each individual's judgements would be more or less successful than determining the consensus purely on the basis of a more objective summing of individual rankings.

To summarize, this study was a replication and extension of our previous study (Dalton et al., in press). This study was slightly different to the previous one in that there were two consensus judging methods (involving the judgements of two rather than three participants); the third participant was situated in a remote location; there were slightly fewer trials (28 vs. 32); there was a smaller target pool (72 vs. 100 clips); the timing schedule for the judging sessions was more variable.

The aim was to investigate whether dream (and also hypnagogic/hypnopompic imagery) clairvoyance might be possible. Further aims were to investigate whether individual versus small group consensus judging procedures and/or the emotionality of the dynamic target video clips would influence task performance.

### Hypotheses for the Present Study

- H<sub>1</sub> The direct hit rate for the discussion consensus judging method would be significantly higher than the mean chance expectation.
- H<sub>2</sub> The direct hit rate for the negative emotion targets would be significantly higher than the mean chance expectation.
- H<sub>3</sub> The direct hit rate for judgements attributed to hypnagogic or hypnopompic imagery would be significantly higher than the mean chance expectation.<sup>4</sup>

We also planned to explore whether (1) there would be a difference between the direct hit rates for two consensus judging procedures, i.e., discussion consensus and objective consensus; (2) the consensus direct hit rates would be higher than the individual's hit rates; (3) the direct hit rates would differ according to the emotionality of the target; (4) a participant who had obtained a significant direct hit rate in a previous dream ESP study (Dalton et al., in press) would be able to obtain similar results from a remote location.

## METHOD

### Design

This study used a clairvoyance design (i.e., no sender) although possible precognition could not be ruled out. Twenty-eight trials were prespecified as part of a repeated measures design. There was one pilot trial on the 4th September 1997. Two trials during the course of the study had to be aborted.<sup>5</sup> The pilot and the aborted trials were not included in the analysis. The experimental trials were carried out between 14th September and 13th December 1997.

<sup>4</sup>Note that in the end this hypothesis could not be tested due to the lack of hypnagogic/hypnopompic data collected.

<sup>5</sup>On the first occasion, the experimenter discovered that the computer program had not been able to complete its task of showing the target clip because both VCR's had been switched off. On the second occasion, an experimenter error meant that the computer program moved onto the judging sequence before the four possible video clips had been shown.

Typically, there were 2–3 trials per week, depending on the availability of the laboratory space and the participants.

The independent variables were (1) the judging procedure used (discussion consensus, objective consensus, individual) and (2) the emotionality of the target clips (positive, negative, neutral). There were two different participant locations, approximately 220 miles apart: Edinburgh, Scotland (SS, FS); Derby, England (KD).

The dependent variables were (1) the accuracy classification per trial (a direct hit or a miss), and (2) the dream-mentation-video-clip correspondence ranking (1–4) per trial.

### Experimenters and Participants

Three of the authors (SS, KD, FS) acted both as experimenters and as participants. The fourth author (CW) collated and stored the remote participant's (KD) dream mentation and judgements and a copy of the computer printout for each trial. CW also checked the raw data and the statistical analyses.

All three participants typically report that they experience more than one dream per night on a regular basis. Typically, the participants reported 2–4 different dreams per night on trial nights.

### Apparatus

The computer-controlled free-response testing system within the Koestler Parapsychology Unit (KPU) can be used under a variety of experimental designs. For more details of the equipment, the laboratory, and security measures, see, for example, Dalton et al. (in press), Dalton (1997b) or Dalton, Morris, Delanoy, Radin, Taylor, & Wiseman (1994).

#### *Pseudo-Random Number Generator*

Following recommendations for the reporting of randomisation methods (Milton & Wiseman, 1997), the target pool and the target clip within the selected pool for each trial were determined using a pseudo-random number generator (pseudo-RNG). The pseudo-RNG was a computer algorithm. The program used the RANDOMIZE TIMER command to generate a seed number for the random number function, RND. Initially, the computer program generated a random number to determine which of the 18 pools of clips would be used for the forthcoming trial; a second random number determined which of the four clips within the selected target pool would be the target clip. The computer program also utilised this procedure to determine the order of presentation of the video clips for the judging process.

Global tests of the randomness of the pseudo-RNG output generated by this method on the same equipment have been carried out in the past at periodic intervals and have not revealed any significant deviations from the expected distribution (Dalton, 1997b). Global tests of the random number output for selection of the target pool (1–18) and the target clip (1–4) were also carried out after the data for this study had been collected. A chi-square goodness of fit test (carried out on Microsoft Excel for Windows 95 version 7.0 using the CHITEST function) found that neither of these series deviated from the expected distribution to a significant extent.

### *Target Materials*

This study used 18 separate target pools each containing four video clips taken from films, TV programmes, and cartoons. Thus, the target clip on any given trial was one out of a possible 72 video clips. Each video clip was one minute in duration and had an accompanying soundtrack. This set of target clips has been used in a previous sender/no sender ganzfeld study (Morris, Dalton, Delaney, & Watt, 1995). The remote participant had a duplicate set of video clips that were viewed on her home VCR and television set.

One of the authors (KD) had previously had the 72 video clips viewed and categorised in terms of its emotionality (i.e. positive, negative, neutral) by three independent judges (see Dalton, 1997b). There were 24 positive, 26 negative, and 22 neutral video clips according to these three judges.

### **Procedure**

#### *Selection and Displaying of the Target Video Clip*

Prior to each trial, the dream study computer program was set up by one of the Edinburgh experimenters; this required a password (known only to SS, FS or KD). The experimenters set up 14 trials each on a mostly alternate basis.

The computer created a file on the hard disk in which the details of the trial would be recorded. Note that this file could not be accessed by the experimenter without disrupting the experimental set-up. The experimenter was therefore blind as to which pool of target clips and which target clip had been selected for the forthcoming trial.

The randomly-selected target clip was later shown a total of 20 times between approximately 3.00–4.30 am on a television monitor and stereo headphones in a locked room.

#### *Recording of Dream Mentation*

During each trial night the participants slept at their respective homes and wrote down the contents of any dreams or hypnagogic or hypnopompic imagery that they could recall, either throughout the night or the following morning.

#### *Judging Procedures*

*Edinburgh Participants.* The following morning, the two participants (SS, FS) came into the KPU experimental suite with their hand-written dream mentation reports.

The name of each video clip in the selected target pool appeared on the computer monitor in turn and each clip was then displayed on the TV monitor.<sup>6</sup> Once the names and order of the four video clips were known, the experimenter telephoned the remote participant

<sup>6</sup>From trial 3 inclusive onwards, the television monitor remained switched off until after the order of the video clips in the target pool had been communicated to the remote participant. In trials 1 and 2, the TV monitor was switched on at the beginning which meant that the participants viewed each of the four clips before the order of clips had been communicated to the remote participant. The experimenters recognised the possibility that they might inadvertently communicate cues about the correspondence between clip contents and their own dream mentation during the telephone conversation with the remote participant and thus changed the procedure accordingly.

and communicated this information to her. The Edinburgh participants then watched each of the video clips in the computer-designated order while reviewing their dream mentation. Participants were allowed to view any or all of the clips again.

**INDIVIDUAL JUDGING PROCEDURE.** Each individual then gave a rating of 1–99 to each clip ('99' indicating a perfect correspondence) to indicate how closely each clip corresponded with their dream mentation. The clips were then placed in rank order, based on these ratings, with a rank of "1" being given to the clip with the highest correspondence to the dream mentation, "2" to the next highest correspondence and so on. Thus, the lower the rank assigned to the clip, the higher the correspondence with the dream mentation and the higher the expectation that it was the actual target. The participants then swapped their dream reports with each other (without having discussed or having mentioned their own dream mentation) and performed a similar rating and ranking procedure on each other's mentation. Note that participants' judgements of their own mentation were recorded separately so that they were blind as to the other participant's judgements at this stage. Participants were not permitted to go back and alter their own judgements.

**DISCUSSION CONSENSUS JUDGING PROCEDURE.** Having read and judged the correspondence between each other's dream mentation and the four video clips, the Edinburgh participants then discussed their mentations until they had reached a consensus regarding which clip they considered to be the target. This was known as the "discussion consensus" judging procedure.

**OBJECTIVE CONSENSUS JUDGING PROCEDURE.** Each individual's correspondence ratings and rankings were then collated and entered onto a record sheet (by SS) and checked by FS. The total sum of the ranks given to each individual clip (based on both participants' judgements of their own and each other's mentation) was calculated. The lowest sum of ranks was given a rank of "1", the next lowest a rank of "2" and so on. This was known as the "objective consensus" judging procedure. If there were any ties to the sums of ranks, the sum of the ratings was calculated for each tie and the highest sum of ratings was allocated the lower rank. If the sums of ratings tied, the range of ratings was calculated and the smaller range was given the lower rank. The objective consensus rankings were then entered into the computer. The individual ratings and rankings, the discussion consensus and the objective consensus rankings were recorded by hand on the record sheet.

*Remote Participant.* In the morning, the remote participant typed her dream mentation into an e-mail message which was sent to CW; this was carried out before KD was informed of the names of the clips for the trial. Once she had been informed of the names and the order of the video clips by the experimenter, the remote participant viewed each one in the designated order. The remote participant was free to watch each clip more than once if she wished to do so. She then followed the same individual rating and ranking procedure as the Edinburgh participants. Once the judging procedure had been completed, the remote participant entered her ratings and rankings into an e-mail that was then sent to CW. Thus, the remote participant kept a hand-written and a hard disk copy of her mentation, ratings and rankings.

Once the Edinburgh participants' objective consensus rankings had been entered into the computer, the experimenter telephoned the remote participant and checked that she had completed her judging and had e-mailed a copy of her mentation and judgements to CW.<sup>7</sup>

<sup>7</sup>Although the remote participant also verbally informed the experimenter of her rankings of the four clips prior to the target being revealed, this was not actually recorded by the experimenter.

The experimenter then instructed the computer to show which of the video clips had been the target, while on the phone to the remote participant, so that all three participants obtained feedback regarding their performance simultaneously.

Once the trial was completed, the experimenter instructed the computer to save the trial data to a floppy disk and also to print out three hard copies of the trial datafile that were stored in different locations. The remote participant's dream mentation and judgements were kept in the form of e-mail messages that were stored in CW's e-mail account. These e-mail messages were printed out as they came in.

### Statistical Analysis

A table of raw data for the individual and consensus judging methods was produced from the experimental record sheets and the printouts of the remote participant's judgements by the first author (SS). SS also noted which experimenter had set up each trial, the name of the target clip and the emotionality of the target clip. This raw data table was checked against a similar table produced by KD. The trial by trial raw data records from the remote and the Edinburgh participants, the exact binomial probabilities, effect size calculations, sum of ranks analyses and global tests of randomness for the pseudo-RNG were double-checked by CW.

We have seen already how holistic judgements regarding which of the possible target alternatives most closely resembles a participant's mentation can involve interval (i.e., ratings), ordinal (ranking), or nominal (direct hit or miss) scoring (see Palmer, 1986b). Our study planned to analyse the direct hit rates, although, as noted later, we made a post hoc decision to also analyse the ordinal scoring.

#### *Pre-planned Analyses*

The critical ratio (CR) test, which is usually used to calculate the probability of gaining at least a given number of direct hits (assuming the null hypothesis is true), was not used as it is not recommended if  $np$  (number of trials  $\times$  probability of a direct hit—where  $p = .25$ ) is less than 10 (Palmer, 1986b, p. 148). Instead, the exact binomial probabilities for obtaining at least a given number of direct hits were calculated using the BINOMIST function of Microsoft Excel for Windows 95 version 7.0.

In terms of calculating the effect size, previous studies, including our own, have used Cohen's  $h$  (Cohen, 1977) to index the difference between two proportions (or hit rates). Calculations of Cohen's  $h$  and its 95% confidence limits were carried out by hand (by SS) using the formulae given by Rosenthal and Rosnow (1991, p. 449).

#### *Post-hoc Analyses*

A sum of ranks analysis might be a more sensitive measure of ESP performance than direct hits because it uses more information per trial (Milton, 1997). An inconclusive review of ganzfeld studies found that sums of ranks did outperform direct hits measures in terms of deviations from chance and effect sizes but not to a significant degree (Milton, 1997). A sum of ranks analysis was also carried out (Palmer, 1986b) in this study because it may facilitate further consideration of this issue.

The authors also decided to investigate a possible relationship between dream ESP performance and the earth’s geomagnetic field (GMF) as they had done in a previous study (Dalton et al., in press). The reason for this analysis was that a number of recent studies have found that ESP (e.g., Berger & Persinger, 1991; Persinger, 1985) and dream ESP (Persinger & Krippner, 1989) seem to be more likely when the earth’s geomagnetic field (GMF) is relatively low. Our previous study had found a small but non-significant relationship in the predicted direction ( $r_s = 0.224$ ).

The daily average antipodal (Aa) index, which is the average change in global GMF from midnight to midnight on the day in question, was selected as the GMF index. A Spearman’s rho correlation coefficient was calculated for the relationship between the GMF index and each of the objective-consensus and individual target rankings.

## RESULTS

### Group Versus Individual Judging Procedures

Table I shows that using the discussion consensus judging procedure, the Edinburgh participants scored 12 direct hits during the 28 trials (direct hit rate = .43 or 43% whereas mean chance expectation (MCE) = .25 or 25%). This is significantly higher than the mean chance expectation (exact binomial  $p = .0294$  for  $\geq 12$  direct hits,  $ES(h) = 0.38$ , 95% C.I.( $h$ ) = 0.00–0.75). The objective consensus judging procedure yielded 11 direct hits during the 28 trials (direct hit rate = .39 or 39%) which is approaching a significant deviation from the mean chance expectation (exact binomial  $p = .0679$  for  $\geq 11$  direct hits,  $ES(h) = 0.30$ , 95% C.I.( $h$ ) = –0.10–0.66). Thus, our hypothesis  $H_1$  that the group would perform significantly better than the mean chance expectation using the discussion consensus judging procedure, was supported.

Table I also shows that the two Edinburgh participants both scored 7 direct hits during the 28 trials (direct hit rate = .25 or 25%, MCE = .25 or 25%) which is clearly not higher than chance expectations (exact binomial  $p = .5721$  for  $\geq 7$  direct hits,  $ES(h) = 0.00$ , 95% C.I.( $h$ ) = –0.44–0.34). The remote participant scored higher than the Edinburgh participants and obtained 9 direct hits during the 28 trials (direct hit rate = .32 or 32%) which is also non-significant (exact binomial  $p = .2499$  for  $\geq 9$  direct hits,  $ES(h) = 0.16$ , 95% C.I.( $h$ ) = –0.25–0.50).

The Edinburgh participants obtained a greater number of direct hits by using their group judgements than by using their own individual judgements. The discussion consensus

**Table I.** Number of Direct Hits and Distribution of Ranks Assigned to the Target Clips by the Edinburgh Participants (Both as a Group and as Individuals) and by the Remote Participant

	Correspondence rankings				Row total (sum of ranks)
	1	2	3	4	
Expected	7	7	7	7	28 (70)
Discussion consensus	12	—	—	—	—
Objective consensus	11	5	8	4	28 (61)
Edin. (SS)	7	13	4	4	28 (61)
Edin. (FS)	7	8	8	5	28 (67)
Remote	9	7	3	9	28 (68)

Note. A rank of 1 = a direct hit.

**Table II.** Number and Proportion of Direct Hits by Emotionality of the Target Clips and Individual Versus Consensus Judging Procedures

	Emotionality of the target clips			Row total
	Positive	Negative	Neutral	
Discussion consensus	6 (37.5%)	5 (62.5%)	1 (25.0%)	12
Objective consensus	5 (31.3%)	5 (62.5%)	1 (25.0%)	11
Edinburgh (SS)	4 (25.0%)	3 (37.5%)	0 (—)	7
Edinburgh (FS)	2 (12.5%)	5 (62.5%)	0 (—)	7
Remote (KD)	4 (25.0%)	4 (50.0%)	1 (25.0%)	9

procedure also yielded a marginally greater number of direct hits than the objective consensus procedure.

Post hoc sum of ranks analyses (Palmer, 1986b, p. 148) gave the following results: objective consensus ( $CR(z) = 1.44$ ,  $p = .0749$ , one-tailed); Edinburgh participant (SS) ( $CR(z) = 1.44$ ,  $p = .0749$ , one-tailed); Edinburgh participant (FS) ( $CR(z) = 0.42$ ,  $p = .3372$ , one-tailed); remote participant (KD) ( $CR(z) = 0.25$ ,  $p = .4013$ , one-tailed). These results show that, as with the nominal hit/miss scoring method, the objective consensus procedure yielded a result that was approaching a significant deviation from the chance expectation. Using the sum of ranks analysis, the Edinburgh participants' performance appeared to be slightly better than it did using the nominal scoring method; however, the remote participant's performance appeared to be slightly worse using the nominal scoring method. All individual performances were still non-significant using the sum of ranks analysis method.

### Emotionality of the Target Clips

The majority of the target clips in the study were emotional, either positive (57.1%) or negative (28.6%). Table II shows that, both as a group and as individuals, participants obtained a greater proportion of direct hits when the target was negative than when it was either positive or neutral.<sup>8</sup> The direct hit rate for negative emotion targets was significantly higher than the mean chance expectation for both group judging methods and for one of the individuals (FS) (exact binomial  $p = .0273$  for  $\geq 5$  direct hits,  $ES(h) = 0.79$ , 95% C.I.( $h$ ) = 0.09–1.69) which partially supports  $H_2$ . The direct hit-rates for the positive emotion targets were all non-significant.

### Relationship with the Earth's Geomagnetic Field

The results of the post hoc analysis were non-significant and indicated that the correlations between the global Aa index and target rankings were as follows (all two-tailed): group objective consensus  $r_s = -.327$ ,  $p = .090$ ; Edinburgh participant (SS)  $r_s = -.163$ ,  $p = .407$ ; Edinburgh participant (FS)  $r_s = -.013$ ,  $p = .947$ ; remote participant (KD)  $r_s = .075$ ,  $p = .706$ . Thus, the Edinburgh participants, both as a group and as individuals,

<sup>8</sup>We did not plan to test for significant differences between the hit rates for the positive, negative and neutral targets; it would not have been wise to do so given that the random selection process meant that the total number of each target type selected could not be guaranteed to be the same.

demonstrated a negative relationship between GMF and dream-ESP target rankings, i.e., as the Earth's geomagnetic field increased the dream-ESP performance increased. The remote participant demonstrated a small positive relationship. The relationships were all non-significant, although the relationship for the objective-consensus judging method was approaching significance.

## DISCUSSION

Contrary to our previous study (Dalton et al., in press), the results of this dream ESP study found that only the group consensus judging procedures yielded a performance, in terms of number of direct hits, that was greater than chance expectations to a significant (discussion consensus,  $p = .0294$ ,  $ES(h) = 0.38$ ), or approaching significant (objective consensus,  $p = .0679$ ,  $ES(h) = 0.30$ ), extent. If ESP was operating in this study, the effect size was small; a value of  $h = 0.20$  is considered to be a small effect,  $h = 0.50$ , a medium effect size (Rosenthal & Rosnow, 1991). The effect sizes for the group consensus judging methods were slightly smaller in this study (discussion  $ES(h) = .38$ , objective  $ES(h) = .30$ ) than in the previous study ( $ES(h) = .46$ ). However, this may in part be due to the fact that in this study the consensus judging procedure involved only two as opposed to three participants.

Further exploration of the data revealed that, as individuals, neither the Edinburgh participants nor the remote participant scored significantly higher than chance expectations in terms of the number of direct hits. In the previous study two of the participants scored significantly better than chance expectations ( $p = .038$ ). The group consensus judgements obtained a greater number of direct hits than the individual judgements which is a replication of our previous findings (Dalton et al., in press). The discussion consensus judging procedure also obtained a marginally greater number of direct hits than the objective consensus judging procedure.

Both the individual and the consensus judgements obtained a greater number of direct hits when the targets were emotional as opposed to neutral; more specifically, performance was best when the targets were negative. Our previous study also found that the group performance was best when the targets were negative (Dalton et al., in press).

A post hoc sum of ranks analysis also found that the objective consensus and individual scores did not reach significance, although the probabilities of the Edinburgh participant scores were much closer to the criterion level for significance using this technique. This provides some support for previous research that has suggested that a sum of ranks analysis may be more sensitive and may yield greater deviations from chance and larger effect sizes (Milton, 1997).

### Group Versus Individual Judging Procedures

This study provides some limited support for the occurrence of ESP during dreams but it seems that information received by more than one person was required in order to make judgements that were more accurate than chance expectations. However, in our previous study, two of the participants did score significantly better than chance expectations ( $p = .038$ ,  $ES(h) = 0.33$ ). The fact that we obtained a smaller effect size in this study using consensus judging methods with two rather than three participants may suggest that judging

accuracy may increase as a function of the number of contributing judgements. Further exploration of this issue is warranted. Our finding that consensus judging procedures might be conducive to ESP, perhaps more so than individual procedures, supports previous findings for both dream ESP (e.g., Braud, 1977; Dalton et al., in press; Kanthamani et al., 1989; Kanthamani & Khilji, 1990) and waking ESP (e.g., Fiske & West, 1956, 1957; Kennedy, 1979).

As we had obtained significant results using a consensus judging procedure in our previous study, we had decided to compare two different consensus judging methods as part of this study. There did not appear to be much advantage to be gained by discussing possible target-mentation correspondences in order to reach a consensus as opposed to determining the consensus simply by pooling the independent individual judgements. While an objective consensus procedure could easily be used for either hit/miss or rank ordering scoring methods, the discussion consensus procedure takes much longer and is much more difficult.

So, why might group judgements be more successful than individual judgements? If ESP has a relatively weak effect then a combination of extrasensorially perceived information relating to the same target from more than one person may be required in order to boost the accuracy of target judgements to a significant level. However, looking at the success of a judging procedure that involves a single overall consensus call per trial, based on several individuals, is different from looking at the number of hits per trial based on the individual calls of several individuals per trial. In the latter case, the overall score may be partially due to a stacking effect. If more than one call is made per trial then the likelihood of a hit is increased because there is more than one chance of getting it correct. It must be recognised that our overall results may also have been partially biased by the stacking effect because we reported both individual and group performance, which are not independent.

### **Emotionality of the Target Clips**

Participants tended to perform more successfully with emotional as opposed to neutral targets which supports some previous research (e.g., Bierman, 1995, 1997; Dalton et al., in press; Moss & Gingerelli, 1968; Radin, 1997; Williams & Duke, 1979) but not all. Other studies have suggested that neutral targets may be more conducive than emotional (Sondow et al., 1981).

The fact that participants tended to perform better with negative as opposed to positive targets supports our previous dream ESP study (Dalton et al., in press) but is in contrast to other findings from ganzfeld, presentiment and other ESP studies (Dalton, 1997b; Johnson, 1971; Radin, 1997; Williams & Duke, 1979). However, our findings regarding the emotionality of the target material should be treated with caution for the following reasons: (1) the comparison is based on a small number of trials, (2) the different types of target emotionality were not expected or observed to appear an equal number of times throughout the study because they were not counterbalanced across the target pools, (3) the emotionality categorizations were determined by a small number of independent judges—it is not known whether the participants' categorizations would have been in agreement,<sup>9</sup> (4) perhaps there

<sup>9</sup>There is some evidence that judges can agree on ratings of target content. As part of an exploration of the characteristics of free-response ESP target video clips, Delaney and Solfvin (1996) found a high degree of inter-rater agreement on Pleasant–Unpleasant and Distressing–Relaxing dimensions. This was based on the ratings of 10 judges.

was a participant response bias towards selecting negative clips as being the target. As Delaney (1988, p. 238) points out, there are likely to be some individual differences in what is considered to be positive, negative or neutral in terms of emotionality.

So, why might sleep, and also emotional target material, be conducive to dream ESP? In evolutionary terms, some organisms are likely to be at risk while they are asleep. It has been suggested that the periodical appearance of REM sleep and dreams provides a vigilance mechanism, which is oriented to the present and the future, and also an anticipatory arousal mechanism which counteracts these risks (Tolaas, 1986; Ullman, 1990). The dream vigilance mechanism would come into operation during each sleep cycle and would result in awakening, (if a potential threat was identified and was considered to be of sufficient importance) or a continuation of the sleep cycle and a return to non-REM sleep. There might be an ESP component within this mechanism which monitors information which is distant in terms of space and time (Ullman, 1986). It has further been suggested that, as society has developed, the dream vigilance mechanism has become focused on potential psychological rather than physical dangers and, in particular, to events which might disrupt connections with significant others (Ullman, 1986). Dreams might also attempt to address "areas of unresolved conflict" (Ullman et al., 1989, p. 175); more specifically, dream ESP might serve particular psychodynamic needs (Eisenbud, 1963a, cited by Rush, 1986, p. 64). The idea is that, by reviewing earlier (and possibly distant or future) events as part of a dream, the dreamer may identify events or information that were somehow related to the development of the conflict(s) or that might offer possible resolutions (Ullman et al., 1989). Evidence for this suggested explanation comes from the fact that a number of spontaneous cases of ESP, often involving dreams, have been reported by clients undergoing some form of psychotherapy (e.g., Ehrenwald, 1977a; Eisenbud, 1970; Ullman, 1959, 1975, all cited by Rush, 1986).

If these suggested explanations are correct, it would explain why many spontaneous cases of dream ESP feature emotionally-close persons and negative life events. It would also explain why negative target materials may be more conducive to dream ESP in the laboratory than positive or neutral materials.

### **Relationship With the Earth's Geomagnetic Field**

The negative relationship between the GMF index and the group's objective-consensus target rankings ( $r_s = -.353$ ) was in the opposite direction to the relationship obtained in a previous Edinburgh dream-ESP study ( $r_s = .224$ ). The finding in this study is also contrary to previous research which has found that dream ESP is more likely when the Earth's geomagnetic field is lower (e.g., Persinger & Krippner, 1989).

However, recent research suggests that the relationship between GMF and free-response ESP performance may depend on the Local Sidereal Time (LST) at the time of the trials (Spottiswoode, 1997). As Spottiswoode (1997, p. 3) describes it, LST is "the longitudinal-like astronomical coordinate for the portion of the celestial sphere that is directly overhead at the time of the viewing." Spottiswoode (1997) found a large increase in the magnitude of the correlation between a GMF index and the anomalous cognition effect at approximately 13 hours LST. The correlation was found to be effectively zero outside of the 11.2–14.8 hours LST range. This LST factor may explain the discrepancy between this and our previous study. However, further analysis was not carried out because of the difficulty of determining the "psi window" i.e., the period during which the ESP was believed

to be taking place. If ESP was operating, we do not know whether information about the identity of the target was obtained from the computer file or from the VCR or from the TV monitor that was showing the video clips; nor do we know exactly when any ESP might have been operating. It was felt that this imprecision and ambiguity would not allow any accurate or meaningful conclusions to be drawn from further analysis involving LST.

Another difficulty faced by parapsychologists is that of trying to establish the source of psi. Although the assumption is that any effect is caused by the participants, it is possible that any psi might be, to some extent, due to others, such as an experimenter effect (e.g., Kennedy & Taddonio, 1976; Palmer, 1997; Schmeidler, 1997, all cited by Irwin, 1999, p. 85).

### Conclusion

This study was a fairly successful replication of our previous dream ESP study (Dalton et al., in press); consensus judging procedures and emotional (particularly negative) target video clips were associated with greater success in an ESP task. However, the effect sizes for the small group judging were slightly lower in this study (discussion  $ES(h) = .38$ , objective  $ES(h) = .30$ ) than in the previous study ( $ES(h) = .46$ ). While effect sizes for individual judgements were also much lower in this study, the group direct hit rates per emotional target type were of a similar magnitude. Possible reasons for these differences, apart from the procedural differences and the use of a different target pool, may be that in this study the schedule for the judging periods was more variable and involved earlier morning meetings (sometimes around 7 am) due to increased demands on the laboratory facilities. Another contributing feature may have been a lack of novelty or a change in the group dynamics. However, one of the positive aspects of this study, from the group participants' perspective at least, was that it maintained a relaxed and fairly informal atmosphere, features which have been found to be conducive in other small group dream ESP research (Ullman, 1989). It seems that home-based dream ESP research may continue to be a fruitful endeavour, particularly if it utilises emotional dynamic target material and consensus judging procedures.

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