The "Sense of Being Stared At" Confirmed by Simple Experiments

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1. THE FEELING OF BEING STARED AT.

In folklore all over the world, it is supposed that an influence can be transmitted through the eyes, capable of affecting that which is looked upon. In India people will travel hundreds of kilometres for the *darshan*, the look, of a holy man or woman because this look is believed to confer blessings. Conversely, looks of anger or envy are widely feared. There are world-wide beliefs in the Evil Eye, as shown by the protective measures taken against it, in charms, talismans and amulets (Elsworthy [1895]; Heaton [1978]).

Probably the prevalence of such beliefs and their classification as superstitions have contributed to a taboo against investigating the possible reality of the power of looks, including the well-known "sense of being stared at". Even parapsychologists have until recently neglected this phenomenon, with fewer than a dozen papers published on the subject in the last 100 years (Sheldrake [1997]).

In spite of this neglect by scientifically-minded researchers, most people have had direct experience of this phenomenon. According to recent surveys, between 70 and 97% of the population in Europe and North America claim to have experienced reactions to being looked at from behind (Braud, Shafer and Andrews [1990]; Sheldrake [1994]; Cottrell, Winer and Smith [1996]).

Scientific research on this subject was probably set back for decades by two American sceptics, Tichener [1898] and Coover [1913], who claimed to have shown the phenomenon to be illusory. Tichener carried out experiments with himself as the looker. His subjects were students of his who claimed they could sometimes tell when they were being looked at. He published no quantitative data, nor gave details of his experimental methods. He merely announced that his results confirmed his negative expectations.

By contrast, Coover described an elegantly simple experiment, and published quantitative data. Like Tichener, he was himself the looker, and his subjects were his own students. He claimed that there was no significant effect of his looking, and concluded that popular belief in the sense of being stared at was "groundless". (Coover [1911]).

Apparently, 48 years elapsed before the next report in the scientific literature. Poortman [1959] described

some trials he carried out with himself as the subject and a woman friend as the looker, following a similar procedure to Coover. She was a City Councillor in The Hague, Holland and was accustomed to attracting the attention of other council members by the power of her gaze. Poortman was right significantly more often than wrong in guessing when she looked at him (Sheldrake [1994]).

The experimental design with subject-looker pairs used by Coover and Poortman has remained the basis of most subsequent research on the subject, including the experiments described in this paper. In the basic Coover-Poortman procedure, the subject is looked at from behind in a series of trials, randomly interspersed with an equal number of control periods when the subject is not looked at. At the end of each test period, the subject guesses whether or not he or she was being looked at. The response is scored right or wrong and written down, and the next trial begins.

In the 30 years following Poortman's paper, until around 1990, apparently the only advances in research on this subject were achieved in two unpublished student projects. The first, by Peterson [1978], at the University of Edinburgh, involved experiments in which the looker and the subject were separated by a one-way mirror. The looker was invisible to the subject, and sat in a closed booth. The results were positive and statistically significant.

Williams [1983], a student at the University of Adelaide, Australia, found a statistically significant effect when the subject was looked at through closed-circuit TV, and the looker was in a different room.

In the 1990s, there has been an increasing interest in this field of research among parapsychologists. Practically all recent laboratory research has followed Williams in using closed circuit TV with the subjects and lookers in separate rooms. But in these new studies, the subjects were not asked to guess whether or not they were being looked at. Instead they could relax, even read a magazine, while their galvanic skin response was recorded automatically, as in lie-detector tests. Does looking at such subjects at random intervals through closed-circuit TV significantly affect the subjects' electrodermal responses?

In most investigations these experiments have given significant positive results (Braud, Shafer and Andrews [1990, 1993a, 1993b]; Schlitz and LaBerge [1994, 1997]). Wiseman and Smith [1994] also found a significant positive effect, but they speculated that it might be an artifact. Only Wiseman et al. [1995] obtained overall non-significant results.

In a recent closed-circuit TV experiment conducted in the laboratory of Wiseman, at the University of Hertfordshire, England, Schlitz obtained her usual positive results with herself as the experimenter and looker. Meanwhile, Wiseman, a sceptic, obtained non-significant results with himself as the experimenter and looker, under otherwise identical conditions (Wiseman and Schlitz [1997]). Thus there was a striking experimenter effect, with the sceptic seemingly inhibiting the manifestation of this effect when he himself was the looker.

This kind of laboratory research has an important role to play. But I believe it is worth taking further the simple procedures pioneered by Coover and Poortman, since these open up research on this topic to much wider participation, and are far easier and cheaper to do (Sheldrake [1994]).

In this paper I describe the results of experiments carried out by myself, by participants in seminars and lectures I have given, by teachers and pupils in schools in Connecticut, USA, and by volunteer investigators all around the world, recruited through the *New Scientist* magazine, Discovery Channel television and the world wide web. Elsewhere, I have summarized experiments carried out by teachers and their pupils in other schools in the United States and Germany (Sheldrake [1997]). The overall conclusion is that there is a highly significant tendency for people to know when they are being looked at.
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2. THE LOOKER SITS BEHIND THE SUBJECT

People worked in pairs, one (the subject) sitting with his or her back towards the other (the looker). The distance between them was 1 metre or more. They sat in places where there were no reflective surfaces (such as mirrors or windows) that could have enabled the subject to see the looker. In a series of trials, in a random sequence, the looker either looked at the back of the subject or looked away, and was instructed to think of something else.

The looker indicated to the subject when a trial was beginning by a tap or click, and the subject then guessed whether he or she was being looked at or not.

The looker recorded the result on a score sheet with two columns, the first headed "Looking (heads)", the second "Not looking (tails)", entering a tick or a cross in the appropriate column, depending on whether the guess was right or wrong. (For specimen score sheets, see Sheldrake [1994]).

My own experiments:

In the experiments I conducted myself, the random sequence was decided by tossing a coin before each trial: heads meant "Look" and tails "Don't look". The looker then told the subject whether the answer was correct or not. In the first set of experiments, the looker signalled to the subject that the test period was beginning by a tap, hitting a table, chair or book with a pen or pencil. This method left open the possibility that information might be communicated consciously or unconsciously by the intensity of the tap, so in the second set of experiments mechanical clickers were used instead, to give a standard clicking sound. These clickers were plastic clips, used for holding garments on to coat hangers by Marks and Spencers, a British clothing and food store.

Usually subjects indicated their guess within 10 seconds, but if they had not done so already were asked to do so after 20 seconds. The procedure was therefore quite fast, and most pairs could easily complete 10-20 trials within 10 minutes. They then exchanged roles and carried out a new series of trials.

The first set of data in Table 1 came from experiments I conducted myself with members of my family and friends, with myself as a looker or subject. The other experiments were carried out with sets of looker-subject pairs at workshops I gave in Stockholm, Sweden; in Bremen, Hamburg, Stuttgart and Todtmoos Germany; during courses in Assisi, Italy for St Thomas University, Florida, and at Schumacher College, Dartington, Devon; at lectures to the Association for the Scientific Study of Anomalous Phenomena (ASSAP) in London; at the 1994 Annual Conference of the British Scientific and Medical Network held at Stow, Buckinghamshire; at the Fifth Annual Conference of the Institute of Noetic Sciences in Boca Raton, Florida, USA; and at Eton College, Berkshire.

Experiments in schools in Connecticut:

As part of their course work for a Master's degree in Science Education at South Connecticut State University, in a programme called LEARNScience, teachers were required to carry out this experiment in their schools. (An earlier version of this experiment was carried out by teachers in a previous LEARNScience course in 1996, and the results are described in Sheldrake [1998]). This experiment was coordinated by James Trifone and Dr Harris Stone, and all the teachers were sent instructions writtten by myself together with a set of 24 differently randomized score sheets, each of which was for 20 trials. Their students worked in pairs following the procedures described above, but the subjects were not told after each trial whether their guess was right or wrong. In some schools, instead of the looker giving the signal for the beginning of each trial by a click or bleep, the teacher gave a signal for the whole class by ringing a

bell. All pairs in the class then did the trials at the same time. After each pair had completed the 20 trials in the random sequence set out on their score sheet, they changed places and did another set of 20 trials using a differently-randomized score sheet. Most of the children who took part in these experiments were aged between 7 and 15. The experiments were carried out in May-June 1997.

All the teachers were required to send in their results, and all the score sheets were sent to me for analysis.

Experiments carried out in other schools and by amateur researchers:

In an article about my research on the feeling of being stared at in the popular science magazine *New Scientist* (Webb [1997]) readers were invited to try the experiment for themselves and were sent instruction sheets on request, or else they were able to download them from the *New Scientist* world wide web site. I subsequently established a world wide web site of my, own giving these instructions together with a full set of randomized score sheets (www.sheldrake.org). Those who carried out the experiment were asked to send in their results to me, together with the full set of score sheets. In this paper I summarize the results that have been submitted in this way, up to December 1998. Most of these experiments were carried out in schools by the following teachers: W. Gribben (St Helen's College, St Helens, UK); W. Cotton (John Port School, Derby, UK); Susan Kemp (St James School, Twickenham, UK); J. Goddard (Ewell Castle School, Ewell, UK); T. Wilson (International School of Helsinki); D.Mitchell (Ueda Nishi High School, Nagano, Japan). Some experiments were done by groups of adults: the Warman family of Clitheroe, UK; the City Adult Learning Centre (CALC), Toronto, Canada (coordinator: W. Chappell); and the Psychic Study Group (PSG) in Chesterfield, UK (coordinator: W. Eyre). In addition, experiments was carried out by viewers of the science news programme on the Discovery TV channel broadcast from Toronto, Canada (coordinator: Jagg Griffiths) following a programme on October 16 1997 in which I described the experiment. Detailed instructions were made available to interested viewers via the world wide web, and results were sent in by email.

Analysis of results:

The numbers of right and wrong guesses from each series carried out by each looker-subject pair were tabulated in three columns; "Looking", "Not looking" and "Total", enabling the total number of right and wrong guesses in each column to be obtained. For each series of trials by each looker-subject pair, in each column, the data were also scored as follows:

+ if there were more right than wrong guesses

- if there were more wrong than right guesses

= if the number of right and wrong guesses was the same.

The number of + and - scores in the "total" columns in the tables are not the sum or the average of those in the "looking" and "not looking" columns, because for each subject on each column these scores were evaluated separately. Thus, for example, if a subject was right in 7 out of 10 trials when being looked at (+), and in 4 out of 10 trials when not looked at (-), the total score would be 11 correct guesses out of 20 (+).

Statistical analysis was carried out in two ways. First, the total number of right and wrong guesses for each set of subjects was compared using the the paired-sample t-test, with the numbers of right and wrong guesses for each set of subjects as the paired sample.

Second, the chi-squared test was used to compare the total number of + and - scores. The = scores were disregarded. The null hypothesis was that by chance alone the number of + and - scores would be equal.

For the comparison of two sets of scores 2 x 2 contingency tables were used (Campbell [1989]). The significance was assessed by the chi-squared test, with the null hypothesis that the proportions of right and wrong guesses in both sets were equal.

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3. SUBJECTS GUESS BETTER WHEN STARED AT THAN IN CONTROL TRIALS

The most striking and consistent feature of the data was the tendency for subjects to make more correct guesses when they were being looked at than when they were not (Tables 1 and 2). Overall, 58.5% of the guesses were correct when they were being looked at, compared with 48.2% in the control periods.

However, the total numbers of right and wrong guesses do not provide the most reliable way of evaluating the data. Some looker-subject pairs carried out more trials than others, and therefore had a disproportionate influence on the totals. Also some subjects had far more or less success than others in guessing correctly, and again had an exaggerated effect on the totals.

Table 1

Staring Experiments in which the looker signalled the beginning of each trial by means of a tapping noise.
Numbers of right and wrong guesses (above) and numbers of looker-subject pairs (below) with more right than wrong guesses (+), more wrong than right guesses (−), (For the totals, the percentage of right guesses is shown in parentheses).

Location and date	Looking right	wrong	Not looking right	wrong	Total right	wrong
London	204	114	138	191	342	305
1987-90	12+	1- 0=	5+	8- 0=	10+	3- 0=
Stockholm	66	47	58	68	124	115
7/4/89	5+	4- 1=	5+	5- 0=	5+	3- 2=
ASSAP, London	198	128	148	153	346	281
25/4/90	15+	4- 0=	8+	9- 2=	13+	4- 2=
Stuttgart	111	95	96	92	207	187
14/3/91	8+	5- 1=	6+	5- 3=	7+	6- 1=
Hamburg	126	91	97	110	223	201
13/11/94	16+	4- 2=	8+	11- 3=	11+	6- 5=
Bremen	117	109	107	131	224	240
16/11/94	12+	11- 2=	8+	15- 2=	11+	10- 4=
Boca Raton	281	202	247	214	528	416
18/7/96	37+	15- 8=	31+	21- 8=	37+	18- 5=
TOTALS	1103 (58.4%)	786	891 (48.2%)	959	1994 (53.3%)	1745
	105+	44- 14=	71+	74- 18=	94+	50- 19=
Statistical comparison of + and - :						
chi squared=	24.97		0.06		13.44	
p=	6×10^{-7}		NS		2×10^{-4}	

A more reliable way of evaluating the data was to give equal weight to each subject. This was done by scoring each subject positive, negative or equal, depending on whether he or she made more correct guesses than incorrect (+), more incorrect than correct (-) or equal numbers of both (=). By chance alone, there should be approximately equal numbers of positive and negative scores.

Under looking conditions, the predominance of positive scores (159+ and 63-) was extremely significant statistically ($p = 1 \times 10^{-10}$). By contrast, under not-looking conditions, the difference between the positive and negative scores (101+ and 117-) was not significant statistically .

The pattern of results under looking and not-looking conditions was also compared using 2 x 2 contingency-table chi-squared tests (Campbell [1989]). The significance of the difference between looking and not-looking conditions was very high ($p = 5 \times 10^{-5}$ for experiments with taps; $p = 4 \times 10^{-5}$ for experiments with clicks; and $p = 2 \times 10^{-8}$ for the overall results).

Table 2
Staring experiments in which the looker signalled the beginning of each trial by means of a click.
(Layout of data as in Table 1)

Location and date	Looking right	Looking wrong	Not looking right	Not looking wrong	Total right	Total wrong
Dartington 8/5/91	199	149	180	204	379	353
	20+	6- 1=	7+	19- 1=	13+	9- 5=
Assisi 26/6/92	33	23	24	20	57	43
	3+	1- 0=	2+	2- 0=	4+	0- 0=
Stow 8/7/94	218	154	158	175	376	329
	24+	12- 2=	17+	18- 5=	22+	11- 7=
Eton 13/3/96	63	35	57	52	120	87
	7+	0- 1=	4+	4- 0=	8+	0- 0=
TOTALS	513 (58.7%)	361	419 (48.2%)	451	932 (53.4%)	812
	54+	19- 6=	30+	43- 6=	47+	20- 12=
Statistical comparison of + and - :						
chi squared=	16.78		2.31		10.88	
p=	4×10^{-5}		NS		1×10^{-3}	

Overall results: When the results from the looking and not-looking trials were added together, there were more correct than incorrect guesses (Tables 1 and 2). Overall, the percentage of correct guesses was 53.4 %, compared with 50% expected by chance. This is not a large effect, but it showed up quite consistently. In only one out of the 10 sets of data (from Bremen, Table1) was the number of wrong guesses greater than the number of correct guesses.

Looking at the overall results in terms of +, - and = scores, it is clear that more subjects scored positively than negatively, or in other words more people were right more often than they were wrong (Tables 1 and 2). This pattern was apparent is all sets of data, including those from Bremen. Both in the experiments where the beginnings of trials were signalled by taps and in those signalled by clicks, the greater number of positive than negative scores was highly significant statistically ($p = 0.0002$ and $p = 0.001$ respectively). Taken together (Table 5) the total number of positive scores was 141, compared with 70 negative scores. In other words, 141 subjects were more often right than wrong and 70 more often wrong than right. This difference was very significant ($p = 1 \times 10^{-6}$).

No significant difference between tapping and clicking signals:

If tapping had permitted the conscious or unconscious transfer of information from looker to subject, then the proportion of positive scores (Table 1) should have been higher than with standard mechanical clicks (Table 2). But this was not the case. There was no significant statistical difference between the two sets of data.

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4. CONFIRMATION FROM EXPERIMENTS IN SCHOOLS IN CONNECTICUT

Eight teachers submitted results from properly-conducted experiments, summarized in Table 3. The overall percentage of correct guesses was 55.3, somewhat higher than in my own experiments. In all eight sets of data, there were more correct than incorrect guesses. In total, 149 subjects were more often right than wrong, compared with 74 who were more often wrong than right. This difference was very significant ($p=5x10^{-7}$).

Table 3
Experiments carried out by schoolteachers in Connecticut
(Layout of data as in Table 1)

Experimenter	Looking right wrong	Not looking right wrong	Total right wrong
Kathy de Stefano	70 57 9+ 2- 1=	63 50 9+ 2- 1=	133 107 9+ 2- 1=
April Silva	70 39 9+ 1- 0=	54 37 7+ 2- 1=	124 76 9+ 1- 0=
Carrianne Diaz	99 81 10+ 2- 6=	86 94 6+ 9- 3=	185 175 8+ 5- 5=
Joe Spatola	88 66 11+ 4- 1=	102 64 11+ 4- 1=	190 130 11+ 4- 1=
Shona Pyalt	130 104 14+ 5- 3=	98 108 10+ 10- 2=	228 212 13+ 7- 2=
B. Peck	43 27 5+ 1- 1=	40 30 5+ 2- 0=	83 57 6+ 0- 1=
Karen Toth	52 39 5+ 1- 3=	45 44 3+ 4- 2=	97 83 4+ 3- 2=
Sam Brown	970 727 90+ 49- 26=	857 746 77+ 59- 29=	1827 1473 89+ 52- 24=
TOTALS	1522 1140 (57.2%) 153+ 65- 41=	1345 1173 (53.4%) 128+ 92- 39=	2867 2313 (55.3%) 149+ 74- 36=
Statistical comparison of total + and - scores:			
chi squared:	35.52	5.89	25.22
p=	$2x10^{-7}$	0.02	$5x10^{-7}$

As in my own experiments, in the looking trials there was a highly significant tendency for subjects to guess correctly, whereas in the non-looking trials the scores were much closer to chance levels, although they were significantly positive.

Five other teachers misunderstood my instructions and used score sheets with the same randomization for all looker-subject pairs. Since this could have enabled subjects to obtain clues from other pairs in the classroom, or memorize part of the random sequence, the data from these teachers were excluded from the summary in Table 3. However, their results showed a very similar pattern, with 56.8 per cent correct guesses overall, and with 30 subjects right more often than they were wrong and 10 wrong more often than right ($p = 0.002$). There was the usual difference between the looking and not-looking trials, but it was even more pronounced than in the data in Table 3, with 61.6% correct guesses in the looking trials and 51.9% in the not-looking trials.

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5. CONFIRMATION FROM EXPERIMENTS CARRIED OUT BY VOLUNTEERS

Altogether I received 10 complete sets of data from volunteer experimenters, mostly recruited through the *New Scientist* magazine and Discovery Channel television. (I also received several other reports that were incomplete, containing only the total scores rather than the detailed results, and hence these could not be included in this analysis.) The results are summarized in Table 4. In all cases there were more correct than incorrect guesses. Overall, 53.2% of the guesses were correct, and 121 subjects were right more often than they were wrong, compared with 60 who were wrong more often than right. This difference was highly significant statistically ($p=6 \times 10^{-6}$).

Table 4
Experiments carried out by volunteer experimenters
(Layout of data as in Table 1)

Location	Looking right	Looking wrong	Not looking right	Not looking wrong	Totals right	Totals wrong
Ewell Castle School, UK	115 9+ 5- 0=	95	107 7+ 7- 0=	103	222 9+ 5- 0=	198
International School, Helsinki, Finland	43 5+ 3- 1=	37	38 3+ 3- 2=	42	81 4+ 3- 1=	79
Port School, Derby, UK	240 19+ 8- 11=	183	157 10+ 19- 9=	180	397 15+ 12- 11=	363
St Helens College, UK	79 7+ 5- 1=	60	74 7+ 5- 1=	54	153 8+ 2- 3=	114
St James School, Twickenham, UK	84 11+ 2- 1=	61	64 4+ 8- 2=	71	148 6+ 4- 4=	132
CALC, Toronto, Canada	58 6+ 3- 1=	44	56 6+ 1- 3=	42	114 7+ 2- 1=	86
Chesterfield PSG, UK	74 6+ 0- 0=	54	55 1+ 2- 3=	58	129 4+ 1- 1=	111
Warman group, Clitheroe, UK	96 11= 3- 2=	64	82 7+ 5- 4=	78	178 8+ 2- 6=	142
Discovery Channel TV, Canada	93 9+ 5- 2=	80	75 6+ 4- 6=	64	168 10+ 3- 3=	144
Ueda Nishi High School, Nagamo, Japan	528 53+ 36- 9=	480	515 50+ 38- 10=	436	1043 50+ 26- 22=	916
TOTALS	1410 (54.9%) 136+ 70- 27=	1158	1223 (52.0%) 101+ 92- 40=	1128	2633 (53.2%) 121+ 60- 52=	2286
Statistical comparison of + and - :						
chi squared:	21.14		0.41		20.55	
p=	5×10^{-6}		NS		6×10^{-6}	

Once again, the positive scores in the looking trials were highly significant, while in the not-looking trials the differences were not significant.

When these results are inspected more closely, it turns out that in three locations (Port School, Chesterfield PSG and Ueda Nishi High School) there were more more looking than not-looking trials, whereas there should have been more or less the same number of both. This reveals the existence of an error in the randomization procedure or a bias in the reporting of results. The results were therefore recalculated omitting the data from these three locations. The general pattern remained the same, with a very significant excess of positive over negative scores in the looking trials (58+ 26-; p=0.0004); no significant difference in the not-looking trials, and a very significant overall result (52+ 21-; p = 0.0003).
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6. THE REPEATABILITY OF THE RESULTS

Essentially the same pattern of results has appeared in four different series of experiments: in an initial series of experiments in schools in Germany and the United States (Sheldrake [1988]); in my own experiments (Tables 1 and 2); the Connecticut school experiments (Table 3); and the experiments by volunteers (Table 4). In all these sets of data, subjects scored very significantly above chance levels in the looking trials, whereas in the control trials their results were close to the 50% expected by chance.

In some of the experiments (Sheldrake [1988] and Tables 1 and 2), the randomization was done by the lookers tossing a coin trial by trial, the number of trials each looker-subject pair carried out varied, and the subjects were given feedback after each trial as to whether their guess was correct or not. In the other experiments (Tables 3 and 4), the randomization was done in advance, each looker-subject pair was asked to carry out a fixed number of trials, according to the score sheet they were supplied with, and there was no feedback. These differences in procedure had little or no effect on the overall pattern.

A criticism often levelled by sceptics against data that seem to show surprising or controversial effects is that researchers tend to publish only positive results while leaving negative data unpublished in their file drawers. This "file-drawer effect" can lead to a bias in the published data in the direction of the researchers' beliefs and expectations. This criticism is no doubt of general validity, and probably applies to much of the scientific literature, even in uncontroversial areas. But does it apply to the data reported in this paper?

I have included all the experiments I performed myself, and all the experiments that did not involve procedural errors in the Connecticut schools. (As described above, the excluded data from Connecticut showed the same pattern too, so even if these had been included they would not have changed the overall results.) So the file-drawer effect cannot explain the data in Tables 1, 2 and 3. In Table 4, I have included all the data I received from volunteer experimenters except for sets of data that were unusable because they were incomplete. But it is possible that some volunteers who carried out the experiment and failed to find any evidence for the feeling of being looked at did not bother to send in their results. Hence there could have been a kind of file-drawer effect owing to the selective reporting of results. I doubt if this could have had much effect because the overall pattern agrees with that in the other series of experiments. Nevertheless, because of this possible effect, I omit this series of experiments from the summary in Table 5.

Table 5
Summary of experimental results
(Layout of data as in Table 1)

Series	Looking right wrong	Not looking right wrong	Totals right wrong
Own experiments (Tables 1 and 2)	1616 1147	1310 1410	2926 2557
	159+ 63- 20=	101+ 117- 23=	141+ 70- 31=
Connecticut (Table 3)	1522 1140	1345 1173	2867 2313
	153+ 65- 41=	128+ 92- 39=	149+ 74- 36=
Schools in Germany and USA (Sheldrake[1998])	1009 594	834 803	1843 1397
	115+ 29- 16=	67+ 75- 18=	97+ 42- 21=
GRAND TOTALS	4147 2881 (59.0%)	3489 3386 (50.7%)	7636 6267 (54.9%)
	427+ 157- 77=	296+ 284- 80=	387+ 186- 88=
Statistical comparison of + and - :			
chi squared	124.83	0.24	70.50
p=	$< 1 \times 10^{-25}$	NS	$< 1 \times 10^{-15}$

The cumulative pattern of results in Table 5 is very clear. There was a highly significant overall effect, whereby 55% of the subjects' guesses were correct as opposed to 50% expected by chance. A total of 387 subjects were more often right than wrong, as opposed to 186 who were more often wrong than right, with the probability of this being a chance result less than 1×10^{-15}.

The most remarkable feature of the results is the way that the positive scores in looking trials were staggeringly significant, while there was no significant difference in the not-looking trials (Table 5). In the looking trials, 427 people were more right than wrong, as opposed to 157 who were more wrong than right. In the not-looking trials there was practically no difference (296+ 284-). This pattern can be seen at a glance in Figure 1.

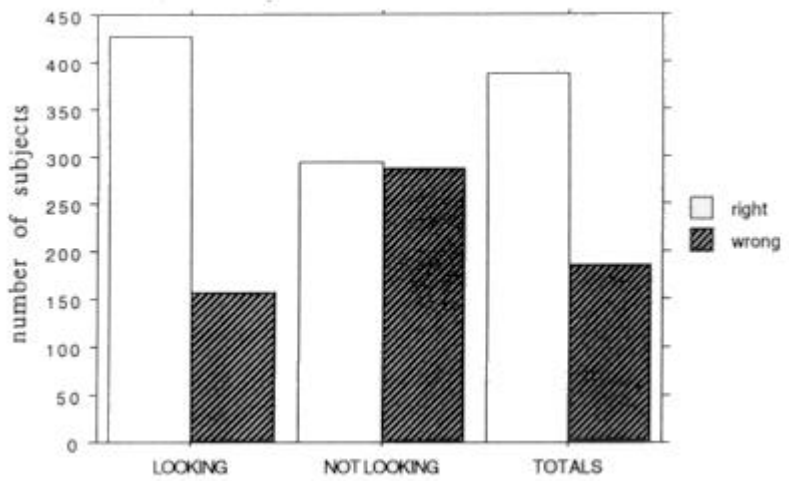

Fig. 1 - Total number of subjects who were more often right than wrong or more often wrong than right in staring experiments. (Da
in Table 5).

The superior performance of subjects in looking trials did not depend on a minority of particularly sensitive subjects, but rather represented a general tendency for subjects to score better when they were being looked at than when they were not. This is clearly shown by the distribution curves in Figure 2, based on data from the experiments in Connecticut schools. The other sets of data gave very similar distribution curves. In the control trials, the distribution curve centred on a score of 5 out of 10, the level expected by chance. In the looking trials, the entire curve was shifted to the right, with its peak at a score of 6 out of 10.

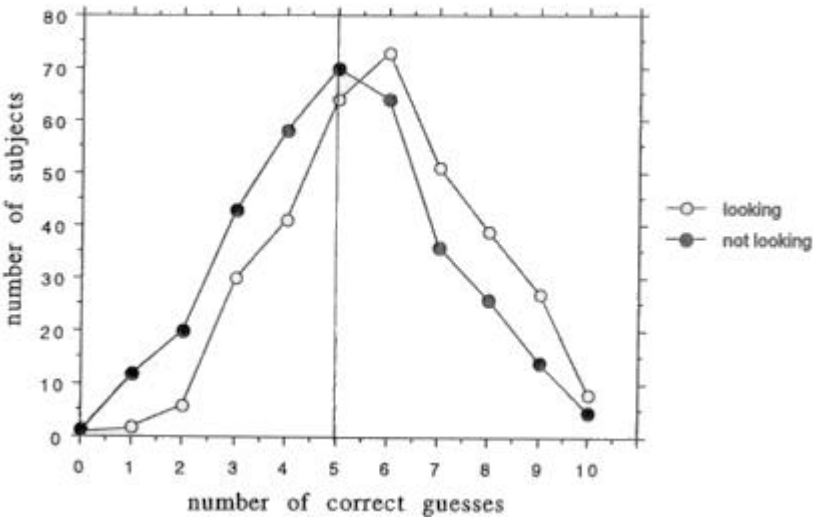

Fig. 2 - Distribution of scores in looking and not-looking trials at schools in Conneticut. The ordinate represents the number of subjects who had a given score, and the abscissa the number of correct guesses out of ten.

Why should there be such a striking difference between the looking and the not-looking trials?

If there really is a tendency for people to know when they are being looked at, they would indeed tend to be right when they are being looked at. But in the control trials when they are not being looked at, they are being asked to detect the *absence* of an effect, which has no parallel in real-life conditions. And indeed under these conditions, the results were no better than chance; the subjects were just guessing.

Even the supposedly negative results of Coover [1913] show a similar pattern. I have scored his subjects using the same procedure I used here. Not only was his overall result positive (5+ 3- 2=), but that there was also a marked tendency for people to be right when they were actually being looked at (7+ 2- 2=) while they were at the chance level in the not-looking trials (5+ 5- 0=).

If people really can tell when they are being looked at, why is the effect detected in these experiments relatively small? In the trials reported in this paper, only about 55% of the guesses were correct, as opposed to the 50% expected by chance. There could be several reasons.

First, under the artificial conditions of experiments, people are being asked to do consciously what they may usually do unconsciously. Self-consciousness may interfere with their sensitivity.

Second, some of the subjects and lookers may have become bored or distracted during the experimental sessions, reducing the rate of success.

Third, some people are better as lookers or as subjects than others, and the inclusion of ineffective lookers and insensitive subjects in the trials may have diluted the effect. In a series of trials with selected lookers and subjects, up to 90% of the guesses were correct (Sheldrake [1998]).

Interestingly, the highly positive results with selected and experienced subjects show not only that some people are better than others, but that people can improve their scores with practice, both in looking and in not-looking trials. Although naive subjects tend to score best in looking trials, and at chance levels in not-looking trials (Figure 1), those who are tested repeatedly tend to improve in both kinds of trials. It seems possible to learn to detect the difference between being looked at and not being looked at.
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7. CAN THE RESULTS BE EXPLAINED AS ARTIFACTS?

Although these simple experiments gives such repeatable results, do they really show a mysterious effect of the gaze at a distance? Or can they be explained in terms of artifacts or subtle sensory cues?

First, consider the possibility that an artifact could have arisen if subjects tended to say "looking" in most of the trials because of some inherent bias in favor of saying "looking". Such a tendency to say "looking" more often than "not looking" would make subjects seem successful in looking trials. But it would at the same time make them equally unsuccessful in not-looking trials. The results do not bear out this idea. The positive scores in the looking trials were not offset by negative scores in the not-looking trials. Rather, in the not-looking trials, the scores were at chance levels (Tables 1-5; Figures 1 and 2).

Second, there is the possibility that some subjects were picking up unconscious auditory or olfactory cues from the looker, or that they were cheating by peeping to see what the looker was doing, or that some lookers were secretly signalling to the subject whether they were looking or not. Such hypotheses could explain the highly significant success in the looking trials, but they cannot explain why cheating or subtle cues should have failed to let the subjects know when they were *not* being looked at.

The pattern of results argues against these sceptical hypotheses. Nevertheless, these possibilities need to be tested as rigorously as possible, and in a new series of experiments I have modified the procedure to take account of all sceptical hypotheses so far proposed.

To prevent any possible peeping or cues from peripheral vision, the subjects are blindfolded.

To prevent subjects learning how to pick up subtle cues, no feedback is given, so the subjects have no way of knowing during the trial whether their guesses are right or wrong.

To block possible auditory or olfactory cues, the lookers are indoors and look out of closed windows. The blindfolded subjects are outdoors, with their backs to the windows and sitting up to100 metres away.

To prevent any possible signalling by the way in which the looker signals the beginning of a trial, the signalling is done by myself or by others supervising the experiment, and the trials are done simultaneously by several looker-subject pairs, with each looker following a different random sequence of looking and not-looking trials.

In such experiments, the general pattern of results is similar to that described in this paper (Sheldrake, in preparation).
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8. DOES VISION INVOLVE "EXTRAMISSION"?

If further studies confirm the reality of the ability to detect an unseen gaze in a way that cannot be explained in terms of artifacts or sensory information, the implications for our understanding of the nature of the human mind will be very far-reaching (Abraham, McKenna and Sheldrake [1992]; Sheldrake {1994]). Any hypothesis capable of explaining this effect would need to postulate an influence of the mind of the looker on the person being stared at. This would in turn raise the question of the nature of vision.

As every psychology student learns, so-called primitive people and children often believe that vision involves "extramission", a sending out of influences from the eye of the looker. Psychology students are taught that the correct theory is the intromission theory, according to which light comes into the eye but nothing goes out. Nevertheless, recent surveys carried out by Winer and his colleagues at Ohio State University have shown that most children and many adults believe that vision involves both intromission and extramission (Cottrell and Winer [1994]; Winer and Cottrell [1996]). Winer and Cottrell [1996, p.139] confessed that they were shocked by these findings, and dismayed to find that these beliefs were surprisingly resistant to eradication by education: "One of the most interesting findings was that the belief in the ability to feel stares, which occurs at a high level among children as well as adults, seems, if anything, to increase with age, as if irrationality were increasing rather than declining between childhood and adulthood!"

But what if the beliefs of children, so-called primitive people and the majority of our fellow citizens turn out to be correct rather than incorrect, rational rather than irrational?

Profound theoretical questions are at stake. Experiments on the sense of being stared at are simple and inexpensive to carry out. They work well in schools. Many people could participate in further research on these questions, including students in search of interesting projects.

Anecdotal evidence suggests that the feeling of being looked at is not confined to human beings, but that a variety of other species seem to react to the gaze of unseen humans. Cottrell, Winer and Smith [1996] found that over a third of the American children and adults they surveyed said that they could feel the stare of an animal, and over half said that animals could feel their stare.

Animals may also be able to feel when other non-human animals are looking at them. If an animal could feel the look of a hidden predator and escape as a consequence, this would be of selective advantage, and evolution may have favoured the development of this sensitivity in many species. The biological and evolutionary implications of this phenomenon are at present unexplored.
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REFERENCES

Abraham, R., McKenna, T. and Sheldrake, R. [1992], *Trialogues at the Edge of the West*. Bear and Co., Santa Fe.

Braud, W., Shafer, D. and Andrews, S. [1990], Electrodermal correlates of remote attention: Autonomic reactions to an unseen gaze. *Proceedings of Presented Papers, Parapsychology Association 33rd Annual Convention*, Chevy Chase, MD, pp14-28.

Braud, W., Shafer, D. and Andrews, S. [1993a], Reactions to an unseen gaze (remote attention): A review, with new data on autonomic staring detection. *Journal of P arapsychology* **57:** 373-390.

Braud, W., Shafer, D. and Andrews, S. [1993b], Further studies of autonomic detection of remote staring: replications, new control procedures, and personality correlates. *Journal of Parapsychology* **57:** 391-409.

Campbell, R.C. [1989], *Statistics for Biologists.* Cambridge University Press, Cambridge.

Coover, J.E. [1913], The feeling of being stared at. *American Journal of Psychology* **24:** 570-575.

Cottrell, J.E. and Winer, G.A. [1994], Development in the understanding of perception: the decline of extramission perception beliefs. *Developmental Psychology* **30:** 218-228.

Cottrell, J.E. and Winer, G.A. and Smith, M.C. [1996], Beliefs of children and adults about feeling stares of unseen others. *Developmental Psychology* **32:** 50-61.

Elsworthy, F. [1895], *The Evil Eye*. Murray, London.

Heaton, J.M. [1978], *The Eye: Phenomenology and Psychology of Function and Disorder.* Tavistock Press, London.

Howat, S.J., Delanoy, D.L. and Morris, R. [1994], Remote staring detection and personality correlates. *Journal of Scientific Exploration* **8:** 582.

Poortman, J.J. [1959], The feeling of being stared at. *Journal of the Society of Psychical Research* **40:** 4-12.

Schlitz, M. & LaBerge, S. [1994], Autonomic detection of remote observation: two conceptual replications. *Proceedings of Presented Papers, Parapsychology Association 37th Annual Convention*, Amsterdam, pp. 352-60.

Schlitz, M. & LaBerge, S. [1997], Covert observation increases skin conductance in subjects unaware of when they are being observed: a replication. *Journal of Parapsychology* **61:** 185-194.

Sheldrake, R. [1994], *Seven Experiments that Could Change theWorld*, Chapter 4. Fourth Estate, London.

Sheldrake, R. [1998], The sense of being stared at: Experiments in schools. *Journal of the Society of Psychical Research* **62:** 311-323.

Titchener, E.B. [1898], The feeling of being stared at. *Science New Series* **8:** 895-897.

Webb, J. [1997] Are you looking at me? *New Scientist* 26 July, p. 39.

Williams, L. [1983], Minimal cue perception of the regard of others: the feeling of being stared at. Paper presented at the *10th Annual Conference of the Southeastern Regional Parapsychological Association*, Carrolltown, GA, Feb 11-12.

Winer, G.A. and Cottrell, J.E. [1996a], Effects of drawing on directional representations of the process of vision. *Journal of Educational Psychology* **88:** 387-396

Winer, G.A. and Cottrell, J.E. [1996b], Does anything leave the eye when we see? Extramission beliefs of children and adults. *Current Directions in Psychological Science* **5:** 137-142.

Wiseman, R. and Schlitz, M. [1997], Experimenter effects and the remote detection of staring. *Journal of Parapsychology* **61:** 197-207.

Wiseman, R. and Smith, M.D. [1994], A further look at the detection of unseen gaze. *Proceedings of Presented Papers, Parapsychology Association 37th Annual Convention*, Amsterdam, pp. 465-78.

Wiseman, R., Smith, M.D., Freedman, D., Wasserman, T. and Hurst, C. [1995], Examining the remote staring effect: two further experiments. *Proceedings of Presented Papers, Parapsychology Association 38th Annual Convention*, pp. 480-490.