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An Automated Online Telepathy Test

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Abstract—This paper describes an automated online telepathy test in which each receiver had four senders. In a series of 10 trials the computer picked one of the senders at random and asked her to write a short message to the receiver. At the end of the one-minute trial period, the receiver was asked to guess which sender had written a message, and she received the message only after this guess had been recorded by the computer. The receivers chose their own senders when they registered for the test. If they chose only two or three, the computer supplied virtual senders so that there were four senders altogether. In a total of 1,980 trials there were 581 hits (29.3%), significantly above the chance expectation of 25% ($p = 0.000006$). In tests with two real and two virtual senders, there were significantly more hits with real than virtual senders. Receivers had significantly higher hit rates with family members than with non-family members. Cheating seems unlikely, but it could not be ruled out, and for evidential purposes the hit rates can be regarded as suggestive only. Telepathy could provide one possible explanation for the above-chance results, but other forms of ESP could not be eliminated.

Keywords: telepathy—ESP—online test—automated experiment

Introduction

Many people claim to have had telepathic experiences in connection with telephone calls, thinking of someone for no apparent reason soon before they receive a call from that person (Sheldrake, 2003). For many years this phenomenon has been skeptically dismissed as no more than coincidence combined with selective memory: people remember when someone rings soon after being thought about, creating an illusion of telepathy, but forget when their thoughts about others are not followed by a call.

Until recently, there was no experimental evidence to support or refute the coincidence and selective memory hypothesis, but it was recently put to the test. The experimental procedure involved four potential callers, people with whom the receiver was familiar. For each trial, one of the callers was selected at random and asked by the experimenter to call the receiver. The details of all trials were recorded, so there was no possibility of selective memory. The

randomly selected caller then telephoned the receiver, who had to guess, before answering the phone, who was calling. The guess was either right or wrong, and the chance of being right by pure guessing was 1 in 4.

The results of hundreds of telephone tests of this kind have shown positive, statistically significant hit rates (Lobach & Bierman, 2004; Sheldrake & Smart, 2003a,b; Sheldrake et al., 2005). In the initial tests, it would have been possible to cheat: for example, by using cell phone or instant messaging systems. But in filmed experiments, where participants were videotaped continuously to detect such forms of cheating, the average hit was 45%, compared with the 25% expected by chance ($p < 1 \times 10^{-11}$) (Sheldrake & Smart, 2003b).

In similar tests with emails, the hit rates were again very significantly above chance. In filmed experiments, the hit rate was 47%, compared with 25% by chance ($p < 1 \times 10^{-7}$) (Sheldrake & Smart, 2005).

The present experiment involves an automated internet-based telepathy test resembling the telephone and email telepathy tests in that the receiver had to guess which one of four potential senders was sending him or her a message. This test was designed to be quick and easy to do, with the aim of encouraging widespread participation.

Methods

Programming

The test was programmed by Michael Lambert and involved a series of 10 trials in which the computer selected one of four potential senders. All four senders could be real people nominated by the receiver, or the receiver could nominate only three or two real senders, in which case the computer supplied one or two virtual senders to make up the total of four.

In order to carry out the test, the receiver and the senders had to be logged on to the experiment at the same time. They did this through the web site of Rupert Sheldrake (R.S.), www.sheldrake.org, using a group name and password that had been registered in advance.

In a series of 10 trials, each lasting one minute, one of the four senders was selected at random and asked by the computer to compose a message for the receiver in a special message box. At the end of the trial period, the sender sent this message to the computer. The receiver was then asked which of the four senders she thought the message was from. All four names were presented and she indicated her guess by clicking beside one of these names. After she had made her guess, the message was delivered, and hence the receiver received immediate feedback as to whether the guess was a hit or not. Another trial then began. When all 10 trials had been completed, all the participants received a message giving the number of hits.

The coding was carried out in PHP version 4.3.10-18. PHP stands for Hypertext Preprocessor Protocol, an HTML-embedded scripting language

widely used on the internet for generating web pages dynamically, often using a database for the source data. Randomization for the experiment was provided by PHP's built-in pseudorandom number generator function "rand()". The randomisation procedure is seeded using an algorithm involving the system clock and the process identifier of the server side PHP module. PHP is open source so the source code for the random number generator used is freely available from the PHP web site (http://uk.php.net/downloads.php). During the experiment the data were stored on a MySQL database, version 4.0, which could be accessed online by the experimenter with the use of a password.

Participants were given the following instructions prior to registering or logging on:

> Some people say they know who is about to email them just before they receive an email from that person, or else that they think about someone they haven't thought of for a while, who then emails. Many people have had similar experiences with telephone calls. We want to find out if this is just a matter of coincidence, or whether telepathy is involved.
>
> This experiment involves a receiver and four other people who send emails. If you are the receiver, you know that you will get an email at a fixed time, and you know it will be from one of these four people. The emailer is picked at random. Just before the email is due to be sent to you, you will be asked to guess who it is going to be from. That's the test: you simply guess who's about to email you.
>
> The four people who can email you should be family members or good friends, ideally people who you think you are likely to respond to telepathically. If you cannot think of four such people, then you can pick two or three. The other one or two will then be "virtual people" generated by our computer. You pick a time for a session, which lasts under 20 minutes, and make sure beforehand that your chosen emailers are available at the same time. During that session, you sit by your computer, trying to remain fairly relaxed. During the session there will be 10 trials at one-minute intervals. Before each trial, one of the four people will be selected at random by the computer and will be asked to email you. Just before this email is sent, you will guess who it is going to be from. Your guess will be right or wrong. By chance you would be right about 25% of the time. Scores significantly higher than this would suggest telepathy is involved. And of course you might be more telepathic with some people than others. We are interested in the effects of distance on telepathy, so if some of your emailers live far away, all the better.
>
> Before you can run an experiment you must first register an experimental group. During this process you will be asked to enter your details and the details of your senders.
>
> After you have registered a group you can set the date and time for your experiment in advance. The experiment will consist of 10 trials. Each trial takes about one minute. Your friends will be emailed automatically to invite them to participate. You and they should then log on at the chosen date and time.
>
> Or you can run the experiment right now if the other participants are ready.
>
> [Here there are a series of links, as follows:
>
> Register an experimental group
>
> Schedule a future experiment
>
> Run experiment now, if the other participants are ready]
>
> Please ensure your sound system is activated.

Troubleshooting

If the hosting server is busy, the experiment may "time out" during one of the 10 runs. You may be able to recover by pressing the back button on your browser then carrying on as usual. If this fails just log-on again and you will be given the option to rejoin the experiment.

When registering, receivers gave their own name, sex, age, city and country of residence and email address. They also provided the name, sex, age (within a prespecified age range, such as 10–14, 15–19, 20–29, 30–39 years, etc.) and email address of each sender, also giving each sender's relationship to them (e.g. friend, mother, colleague) and the approximate distance between them and the sender. They also gave their estimate of which sender they were most likely to be telepathic with, and which they were second–most likely to be telepathic with.

A summary of the results of all tests, both complete and incomplete, was displayed in tabular form and was accessible online to the experimenter, with the use of a password. As soon as a test was terminated, the data were added to the tabular display. This display showed the total number of trials in each test (10 in a complete test), the total number of hits, and the numbers of hits with real and with virtual senders. The detailed data for each test could also be accessed from this summary display, including a trial-by-trial table showing which sender had been picked and what the receiver's guess was. Search functions for this database were programmed by Dr. Ashwin Beeharee, enabling, for example, all the data for complete tests, or all the data for incomplete tests, or data for trials with two real senders, or three real senders, or four real senders, to be displayed.

Recruitment of Participants

This test was first announced at the Society for Psychical Research (SPR) Annual Conference in Manchester in September 2003, and some of the first participants were SPR members. Further receivers were recruited by R.S. through his web site, by encouraging people who attended his lectures and seminars to take part and by offering an incentive of £10 per test to teenage students in North London, who were contacted through secondary schools. Some participants were also recruited by Dr. Stefan Schmidt and his colleagues in Freiburg, Germany. All participants were instructed to do the test with the receiver in a separate room from any of the senders. However, three groups of participants recruited by a teacher in a German school did the test during school hours and had to use the same computer room. The teacher informed me that the participants were not separated. Because the receivers could have received clues from the senders, all three tests were disqualified and eliminated from the analysis below. (Their hit rates were 2, 3, and 9 out of 10). Otherwise, all data are included.

Between October 2003 and January 2006 a total of 195 receivers completed at least one test each. A few did more than one test, giving a total of 201 completed

10-trial tests. Of these 201 tests, three were eliminated, as described above, leaving 198, or 1,980 trials. During this same period, 133 receivers registered to do the test but either did not start or did not complete their tests. The total number of trials in these incomplete tests was 156.

In August 2005, a new, improved online telepathy test was developed by Ashwin Beeharee and installed on R.S.'s web site, and from then on R.S. recruited receivers to do the new test rather than the one described in this paper. However, Stefan Schmidt and his colleagues continued to recruit receivers for the present test until January 2006.

Statistical Analysis

The data were analysed by the exact binomial test, with the expected probability of a hit by chance as 0.25. One-sided tests were used. The comparison of data from different groups (e.g. male and female receivers) was carried out using the Fisher exact test.

Results

The 198 completed tests of 10 trials each gave a total of 1,980 trials. In these trials, there were 581 hits (29.3%), significantly above the chance expectation of 25% ($p = 0.000006$). The 95% confidence interval of this hit rate is from 27% to 31%. The one-sided 95% confidence interval has a lower bound of 28% (and, by definition, an upper bound of 100%).

In the incomplete tests, there were 156 trials altogether, with 60 hits (38.5%), significantly above the 25% chance level ($p = 0.0001$).

In the following analysis of results, only data from complete trials were included.

Sex of Receivers

There were 1,000 trials by male receivers, with 296 hits (29.6%), and 980 trials by female receivers, with 285 hits (29.1%). The difference in hit rates between males and females was not significant statistically.

Age of Receivers

Receivers' ages ranged from 10 to 69 years. The number of trials and hit rates with the different age groups are shown in Table 1. These age groups were prespecified. The hit rates were significantly above chance in two age groups, 15–19 and 20–29 years, but not significantly different from chance with younger and older receivers.

Real and Virtual Senders

Some receivers nominated all four senders; some nominated only three, and others only two. The computer created virtual senders to bring the total up to four.

TABLE 1
Hit Rates with Receivers of Different Ages in the Online Telepathy Test

Age (years)	# Trials	Hits	Hits %	p
10–14	190	49	25.8	0.43
15–19	520	173	33.3	0.00001
20–29	690	221	32.0	0.00002
30–49	370	90	24.3	0.63
50–69	210	48	22.8	0.79

With four real senders, there were 620 trials and 174 hits (28.0%; $p = 0.04$); with three real senders, 520 trials and 138 hits (26.5%, not significant); and with two real senders, 870 trials and 283 hits (32.5%; $p = 2 \times 10^{-6}$).

With two real and two virtual senders, the hit rate was higher with real than with virtual senders: 41.9%, as opposed to 23.7%. This difference was highly significant statistically ($p < 1 \times 10^{-6}$) (Table 2).

However, there was a striking response bias, whereby receivers guessed the names of real senders more often than those of virtual senders. Although there were roughly equal numbers of trials with real and virtual senders, there was a total of 518 guesses for real senders and of only 352 for virtual senders. A simple way of correcting for this response bias is to express the hit rates on the basis of guesses rather than trials, resulting in hit rates of 34.2% for real and 30.1% for virtual senders. This difference was not statistically significant (Table 2).

With three real and one virtual sender, the overall hit rate of 26.5% was not significantly different from the chance level. There was only a small response bias in favour of real senders (Table 2), and the hit rates with the real senders and the virtual senders were not significantly different from each other, nor were they significantly above chance.

Relationships between Senders and Receivers

The results of trials with different sender-receiver relationships are shown in Table 3. Hit rates are expressed both as a percentage of trials and as a percentage

TABLE 2
Tests with Four, Three, and Two Real Senders, Showing Total Numbers of Trials and Hits and Also the Number of Trials, Guesses and Hits with Real and Virtual Senders. The "%" Rows Show the Hits as a Percentage of Trials and of Guesses

# Real senders	Real: trials	Real: guesses	Real: hits	Virtual: trials	Virtual: guesses	Virtual: hits	Total: trials	Total: hits	Total: p
4	620	620	174				620	174	0.04
4 (%)	28.0	28.0					28.0		
3	368	381	96	120	109	28	488	124	0.43
3 (%)	26.1	25.2		23.3	25.7		26.5		
2	422	518	177	448	352	106	870	283	2×10^{-6}
2 (%)	41.9	34.2		23.7	30.1		32.5		

TABLE 3
Effects of the Relationship between Senders and Receivers on Hit Rates in the Online Telepathy Test

Sender	Trials	Hits: % of trials	Hits: % of guesses
Father	23	26.1	26.1
Mother	50	36.0	38.3
Brother	39	51.3	44.4
Sister	32	31.3	33.3
Son	20	30.0	19.4
Daughter	20	35.0	33.3
Spouse	34	29.1	30.3
Other family	116	28.9	27.4
Friend	973	29.4	26.5
Colleague	67	43.3	41.4
Other	34	17.6	40.0
All family	336	33.0	31.4
All non-family	1,074	30.0	27.5

of the guesses made. In some cases (e.g. fathers) there was no response bias, and so these percentages are the same; in some cases (e.g. mothers), there were fewer guesses than trials, so the percent hit rate on the basis of guesses is higher than on the basis of trials; in other cases (e.g. brothers), there were more guesses than trials, so the hit rate is lower on the basis of guesses.

Overall the hit rate with family members was 31.4%, higher than with non-family members, 27.5% (on the basis of guesses, $p = 0.02$).

Among family members, the highest hit rates were with mothers and brothers as senders. There were higher hit rates with mothers as senders than with fathers as senders, but this difference was not significant, nor was the higher hit rate with brothers than with sisters significant. The lack of statistical significance for these relatively large differences is not surprising because the number of trials for these subgroups was small, and thus, the test had low statistical power.

Among non-family members, there was a much higher hit rate with colleagues than with friends: 43.3% as opposed to 26.5% on the basis of guesses ($p = 0.003$), but there were far fewer trials with colleagues than with friends (Table 3).

Effects of Distance

The effects of the distance between sender and receiver are shown in Table 4. There was a tendency for the hit rate to increase with distance, with the highest hit rates occurring at the greatest distance.

In all cases the hit rates on the basis of guesses were lower than on the basis of trials, because of the general response bias in favour of real, as opposed to virtual, senders.

Combining the data for all trials with distances below and above 10 miles, the

TABLE 4
Effects of Distance between Sender and Receiver on Hit Rates in the Online Telepathy Test

Distance (miles)	Trials	Hits: % of trials	Hits: % of guesses
<1	933	30.5	28.6
1–9	219	32.0	27.2
10–99	151	31.7	30.0
100–999	136	40.4	39.8
>1,000	39	51.3	46.5

hit rates on the basis of guesses were 28.2% below 10 miles and 36.0% above 10 miles, and this difference was statistically significant ($p = 0.001$).

Receivers' Predictions of Success

When registering for the test, receivers indicated which sender they thought they were most likely and second–most likely to be telepathic with. When their hits were expressed on the basis of trials, they were indeed more successful with those they ranked as most likely, with a hit rate of 40.9%, as opposed to 33.5% ($p = 0.004$). But they also showed a stronger response bias toward the "most likely" senders, and when the hit rates were expressed on the basis of the number of guesses, they were the same (Table 5).

Discussion

The overall hit rate of 29.3% was significantly above the chance level of 25% ($p = 0.000006$). This positive result was not an artefact arising from "optional stopping", whereby people who were not scoring above chance stopped doing the test. The hit rate in the incomplete tests was higher, not lower, than in completed tests: 38.5% as opposed to 29.3%. Thus, optional stopping cannot explain the positive results here. Nor can the "file drawer effect," whereby only positive data are published; in this paper we are describing all the results of this online test.

The positive, statistically significant results of this test immediately raise three major questions. First, does this evidence favour an explanation in terms of telepathy, or can it be explained by conventional forms of communication?

TABLE 5
Hit Rates with Senders Who Receivers Predicted They Would Be Most- (First) and Second–Most (Second) Telepathic with

Prediction	Trials	Hits: % of trials	Hits: % of guesses
First	418	40.9	29.3
Second	465	33.5	29.4

Second, if the results are indeed due to telepathy, why is the effect relatively small, compared with that of telephone and email telepathy tests, in many of which the hit rates were over 40%, compared with 25% by chance? And third, could the positive results be explained in terms of other kinds of ESP instead of, or as well as, telepathy?

In these tests the receivers and their senders were usually in different buildings, and often a mile or more apart; some were separated by more than 1,000 miles. The hit rates were actually higher when these individuals were further apart than when they were closer together (Table 4). Hence, it is impossible to account for the significantly above-chance hit rate in terms of normal sensory communication, unaided by technology. But what if some of the receivers were cheating?

The Possibility of Cheating

Cheating could have been possible in several ways. First, by telephone: the receivers and one or more of the senders could have been in continuous telephone contact, and the sender could have told the receiver when he had been selected. Second, by email: one or more senders could have emailed the receiver to say they had been selected. But since each trial lasted only one minute, email transmissions may well have been too slow, since emails often take more than a minute to reach the receiver. Third, by instant messaging: if one or more of the senders and the receiver were in contact via instant messaging systems (such as MSN Messenger), the senders could have alerted the receiver to the fact that he had been chosen. The fact that the highest scores were obtained by the 15–19-year and 20–29-year age groups (Table 1) might be taken to support the instant messaging hypothesis, since this system is mainly used by younger people. But many 10–14-year-olds are also users of instant messaging systems, and yet in this age group, the hit rates were not significantly above chance.

In these unsupervised tests, the possibility of cheating cannot be ruled out, and so the present data cannot be taken as persuasive evidence for telepathy. Tests of this kind can, however, be used in more closely supervised conditions, in which the receivers are filmed in such a way that the use of instant messaging systems and emails can be detected, as can telephone calls. Any tests in which these possible sources of information could have been used would be disqualified. The purposes of the present paper are to describe an automated method of testing for telepathy and to explore what the results of preliminary tests look like. If these unsupervised tests had yielded results at the chance level, there would have been no point in doing further tests under more rigorous conditions.

However, although cheating would have been possible in these experiments, most participants did the test only once and were interested in finding out how telepathic they were. We think it unlikely that cheating can explain the above-chance results we obtained.

Relatively Low Hit Rates

The overall 29% hit rate in this test was lower than in tests on telephone telepathy (Sheldrake & Smart, 2003a,b) and email telepathy (Sheldrake & Smart, 2005), where hit rates were 40% or more, compared with the 25% expected by chance. Why should this have been so?

If cheating were prevalent in this online test, hit rates should have been higher than in the videotaped telephone and email tests, which were carried out under conditions designed to eliminate the possibility of cheating. But in this online test the hit rates were lower, not higher, than in the more rigorous experiments.

There were several differences between this online test and previous experiments with telephone and email telepathy. First, for this online test, receivers were recruited regardless of previous experience with telepathy, whereas in the telephone and email tests, receivers were people who said they had already had telepathic experiences in connection with telephone calls or emails. Hence, participants in this online test may have been less sensitive.

Second, in the telephone and email tests, the trials were less frequent, usually with 10-minute intervals between them, so that both receivers and callers could occupy themselves with other activities between trials. In this online test, all participants had to stay beside their computers and the trials followed each other in rapid succession, just over one minute apart. It may be that the receivers' ability to feel who was calling them may not have worked well under such artificial and accelerated conditions.

Third, it is possible that the senders were unable to stop thinking about the receivers during the trials in which they had not been selected, and hence the receivers may have received influences from more than one sender at a time, causing confusion. In these trials, senders were being asked to "switch on" thinking about the receiver for one minute, when selected at random to do so, and to "switch off" again when not selected, while remaining at their computers for the duration of the experiment. Many may have found this difficult to do.

Telepathy or Other Kinds of ESP?

At first sight, the data showing differences in hit rate with different sender-receiver relationships seem to support the telepathy hypothesis, since telepathy generally seems to depend on close social and emotional bonds (Sheldrake, 2003), and there were generally higher hit rates with family members than with non-family members (Table 3).

Possibly the strength of bonds might also help to explain the surprising finding that hit rates were higher with senders who were further away (Table 4). People would only be likely to recruit senders in distant places if they knew these people well, as close friends or family members, whereas senders nearer home might have included more casual acquaintances. Telepathy seems to

depend on closeness of social or emotional bonds rather than on physical proximity (Sheldrake & Smart, 2003b).

The data from tests with two real and two virtual senders might also at first sight appear to support the telepathy hypothesis, with a 41.9% hit rate with real senders and a hit rate of 23.7%, just below the chance level, with virtual senders. Telepathy would not be possible in trials with virtual senders, although clairvoyance and precognition might be.

However, when the response bias in favour of real senders was taken into account (by expressing the hit rate as a percentage of the guesses involving real and virtual senders), the difference was much smaller and not statistically significant: the hit rate with real senders was 34.2%, as opposed to 30.1% with virtual senders (Table 2). This corrected hit rate with virtual senders was significantly above chance ($p = 0.02$). So does this show that clairvoyance or precognition, rather than telepathy, were at work in the trials with virtual senders? Not necessarily.

Imagine a situation in which a receiver had perfect telepathic sensitivity with her two real senders. She would always be right with them. She would also know, through the lack of a telepathic signal, when a virtual sender had been selected. But she could not know which one, and hence would have to guess. Thus, with real senders there would be hits in all the trials, and with virtual senders there would be hits in half the trials. This 50% hit rate with virtual senders would be twice the chance level not because of clairvoyance or precognition, but because the absence of a real sender was detected telepathically.

In this experiment it is therefore impossible to tease apart the effects of telepathy from possible precognitive or clairvoyant effects. However, by modifying the programming of such an automated test, these different possibilities could indeed be distinguished. If there were no real senders at all, but only virtual senders, then above-chance results would imply clairvoyance and/or precognition. If receivers were asked to guess who was about to send them a message before the sender has been chosen at random, above-chance results would imply precognition.

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