

# IS JOINT ATTENTION DETECTABLE at a DISTANCE? THREE AUTOMATED, INTERNET-BASED TESTS

Rupert Sheldrake, PhD<sup>1#</sup> and Ashweeni Beeharee, PhD<sup>2</sup>

**Context:** Joint attention is the shared focus of two or more individuals on the same object. Sensory cues, such as detecting the direction of another person's gaze, play a major role in establishing joint attention. It may also involve a kind of mental resonance that might be felt by the people involved.

**Objective:** The aim of this study was to find out whether people could feel when another person was looking at the same picture at the same time, even when the participants were many miles apart.

**Method:** Participants registered online with their names and e-mail addresses, and worked in pairs. After they both logged on for the test they were simultaneously shown one of two photographs, with a 0.5 probability of seeing the same picture. After 20 s they were asked if their partner was looking at the same picture or not. After both had registered their guess, the next trial began, with a different pair of pictures. The main outcome measure was the proportion of correct

guesses, compared with the 50% mean chance expectation. This test was symmetrical in that all participants were both “senders” and “receivers.”

**Results:** In the first experiment, with 11,160 trials, the hit rate was 52.8% ( $P < 1 \times 10^{-6}$ ); in the second experiment with 2720 trials, 51.3% ( $P = .09$ ). The third experiment involved music as well as pictures, and with 8860 trials, the hit rate was 51.9% ( $P = .0003$ ). Some partners were more than 1000 miles apart, but there were no significant effect of distance. Participants who received immediate feedback about whether their guess was right or wrong did not score significantly better than those without feedback.

**Key words:** automated test, joint attention, internet experiment, mental resonance

(*Explore* 2016; 12:34-41 © 2016 Elsevier Inc. All rights reserved.)

## INTRODUCTION

Joint attention is the shared focus of two or more individuals on the same object, and is a common feature of social life. The development of the ability to experience joint attention in young children has been studied in detail,<sup>1</sup> as has joint attention in chimpanzees and other mammalian species.<sup>2</sup> However, in humans this ability seems to go beyond what other animals experience, in that it involves more than two or more individuals experiencing the same thing at the same time, it includes *knowing* that they are sharing this experience. In developmental psychology, joint attention is widely seen as fundamental for the development of human culture and collaborative activity.<sup>3</sup>

Joint attention is usually explained in terms of sensory cues, such as detecting the direction of other people's gazes, or looking where they are pointing.<sup>3</sup> However, there is a further possibility—joint attention may also involve a kind of mental resonance when two or more minds are exposed to the same

stimuli. If so, people might be able to feel this resonance and intuitively know whether others' attention is on the same object. One of us (R.S.) has investigated this possibility using a simple procedure in which two people were separated by a wall, for example, near a doorway, in such a way that both could see a particular object, such as an apple, but could not see each other.<sup>4</sup> In a randomized series of trials one of these people either looked or did not look at the object, and the other person guessed whether or not it was being looked at. These guesses were either right or wrong, and by chance the hit rate would have been 50%. In a total of more than 6000 trials, the average hit rate was 52.5% ( $P = .00004$ ).

When joint attention is detectable by people who are physically close to each other, it is possible that they are responding to subtle physical cues rather than to a more mysterious mental resonance. Is joint attention still detectable when people are separated from each other, even by hundreds or thousands of miles? To explore this possibility we developed a series of online tests whereby two participants were either shown the same picture as each other, or were shown different pictures. After seeing the picture, they were both asked if their partner had been seeing the same picture or a different picture, and after giving their answer moved on to the next trial. If participants were just guessing if their partners were seeing the same picture or not, the expected hit

<sup>1</sup> 20 Willow Road, London NW3 1TJ, UK

<sup>2</sup> Department of Computer Science, University College London, Malet Place, London WC1E 6BT, UK

# Corresponding author.

e-mail: rsheldrake@clara.co.uk

rate would be at the chance level of 50%. Unlike telepathy tests in which one participant is a “sender” and the other a “receiver,” these experiments were symmetrical: all participants were both “senders” and “receivers.”

## METHODS

### Procedure

In order to carry out the test, a participant registered the group in advance through Rupert Sheldrake's (R.S.) website ([www.sheldrake.org](http://www.sheldrake.org)) choosing a group name and a password. When registering, participants gave their own name and e-mail address, and the name and e-mail address of their partner. They were also asked, “How well do you know each other?” They chose from the following options:

- very well (close friend, partner or close family member)
- well (friend, colleague, or familiar person)
- slightly (acquaintance or person seen infrequently)
- not at all (never met before)

They were also asked about their distance from each other, with the following options:

- in the same building
- in a different building less than a mile apart
- more than a mile apart but less than 10 miles apart
- more than 10 miles apart but less than 100 miles apart
- more than 100 miles apart but less than 1000 miles apart
- more than 1000 miles apart.

participants were given the following instructions for Experiments 1 and 2:

**Joint attention test.** Can you tell when someone is looking at the same photo as you? This experiment involves two people, and takes about 5 min to complete. You do 20 quick trials and receive the score at the end.

How the experiment works:

This test is symmetrical: both participants are “senders” and “receivers.” One person registers both of you, gives the pair a nickname and a password. Both participants then log on to the experiment at a prearranged time. You can use the same nickname to do this test repeatedly.

In each trial, both people are shown a picture. In a random order you will sometimes see the same picture as your partner, and sometimes a different picture. After 20 s, each of you will be asked to answer the question, “Was your partner looking at the same picture?”

Each participant can choose whether to do the experiment with or without immediate feedback. If you choose to receive feedback, immediately after making each guess, you will be told whether your partner was shown the same picture or a different picture.

After each 20-trial test, you will be told your score; the chance level is 10.

Experiment 3 differed from Experiments 1 and 2 in that there were 10 trials instead of 20, and also some music was played while participants were looking at the pictures. Each picture has a different piece of music associated with it. Thus in each trial, either both participants saw the same picture and heard the same music, or saw different pictures and heard

different music. For Experiment 3, participants were given similar instructions to those for Experiments 1 and 2, but they were modified to include the fact that the participants would hear music as well as seeing a picture, and told that there were 10 trials, with a chance level of 5. There was also an additional feature in the form of a sound test, described as follows: “When you log on, you will be asked to do a sound test to make sure that your computer can play the sound tracks. If it cannot, you can still do the test, but you will be doing it with the pictures only and not the music.” On the database for this experiment, the results for each participant included a record of whether or not sound had been used in the test.

A screenshot showing what a participant saw during one of the trials in experiment 3 is shown in [Figure 1](#).

### Programming

The coding was carried out in HTML, PHP (Hypertext Preprocessor version 5.4.34) and Javascript. Randomization for the experiment was provided by the system-level randomizer supplied with the Linux operating system running on the web server. This randomizer was technically represented by the `/dev/random1` device, and generated random numbers based on an “entropy pool” of random numbers. New randomness was added to this pool when unpredictable events happened, such as the pressing of a key by the user at a particular time. Experiment data and logs were stored in a MySQL database, version 5.0, which could be accessed online by the experimenter with the use of a password for viewing. The database was also used for achieving synchronisation across the two participants during the experiment. Only when both participants had successfully logged in and reached the experiment initialization page, the first run was started synchronously on their respective browsers such that their viewing experience was coordinated. The experiment only

Trial 1 of 10 Countdown to make your guess: 0 Seconds

At the end of the countdown you will be asked to make your guess.



Was your partner looking at the same picture?

Yes No

**Figure 1.** Screenshot of the image on a participant's screen during a trial in Experiment 3.

Download English Version:

<https://daneshyari.com/en/article/2691641>

Download Persian Version:

<https://daneshyari.com/article/2691641>

[Daneshyari.com](https://daneshyari.com)