# Scientific Report: Testing ESP using Signal Detection Theory

## Objective:

The objective of this experiment is to test for the presence of extrasensory perception (ESP) in individuals using signal detection theory. Participants were asked to determine, without visual cues, whether my hand was open or closed behind their back. The sequence of open (1) and closed (0) hand positions was generated randomly, with participants instructed to identify each trial's status based solely on ESP.

## Experimental Setup:

1. A sequence of 30 trials was generated, with '1' denoting an open hand and '0' a closed hand. The sequence was:  
 101011010010101001011000110001  
2. Three participants attempted to determine the hand's position based solely on ESP. Each participant's responses were recorded as follows:  
 - Response 1: 011001011110100010000011100110  
 - Response 2: 011000111010101100100100010101  
 - Response 3: 000111001111000011010010010001  
  
3. Each response sequence was analyzed using signal detection theory, with a focus on calculating hit rate and false alarm rate.

## Signal Detection Theory Analysis:

In signal detection theory, two key measures are:  
- Hit Rate: The proportion of correct detections of the open hand (i.e., '1' correctly identified as '1').  
- False Alarm Rate: The proportion of times the hand was incorrectly identified as open (i.e., '0' identified as '1').  
  
These metrics help evaluate whether participants exhibit ESP or if their responses are consistent with random guessing.

## Results:

### Participant 1:

- True Positives (TP): 6  
 - False Negatives (FN): 8  
 - False Positives (FP): 8  
 - True Negatives (TN): 8  
 - Hit Rate: 0.43  
 - False Alarm Rate: 0.5

### Participant 2:

- True Positives (TP): 7  
 - False Negatives (FN): 7  
 - False Positives (FP): 7  
 - True Negatives (TN): 9  
 - Hit Rate: 0.5  
 - False Alarm Rate: 0.44

### Participant 3:

- True Positives (TP): 7  
 - False Negatives (FN): 7  
 - False Positives (FP): 6  
 - True Negatives (TN): 10  
 - Hit Rate: 0.5  
 - False Alarm Rate: 0.38

## Interpretation:

In signal detection theory, a high hit rate combined with a low false alarm rate might suggest that a participant has the ability to correctly detect signals—in this case, ESP. However, the participants' hit rates are close to chance levels (around 0.5), and the false alarm rates are relatively high. This pattern suggests that participants may not possess ESP, as their performance does not deviate significantly from random guessing.

## Conclusion:

The experimental results do not provide scientific proof of ESP capabilities in the tested individuals. The hit and false alarm rates across all three participants align closely with chance, supporting the conclusion that their responses are likely the result of guessing rather than any extrasensory perception. Future studies could explore additional controls or larger sample sizes to further investigate the possibility of ESP.