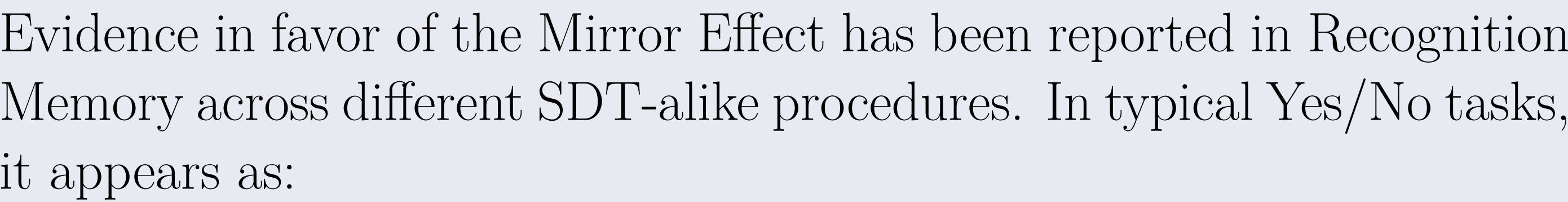




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Signal Detection Theory has been applied to Recognition Memory studies to describe subjects' ability to discriminate between stimuli that have been presented before from a new set of stimuli. When comparing subjects' performance between two classes of stimuli, one being more easily recognized (A) than the other (B), the response patterns obtained show that the difference in their discriminability is reflected in the identification of both target and lure stimuli, a phenomenon now known as the Mirror Effect (Glanzer et al., 1993).



In Confidence Rating procedures, it has been found that:

However, the Mirror Effect has only been studied within Recognition Memory and so, most theories and models proposed to explain it tend to do it in terms of high-level processes engaged in the study phase. The main goal of the present study was to explore the existence of the Mirror Effect in a decision task that only involves perception.

Ebbinghaus illusion: Two levels of perceptual discriminability (Massaro & Anderson 1971).

- 1 Detection Task:** Are the central circles the same size?



- Experiment 1: Just the right circle was an Ebbinghaus illusion.
- Experiment 2: Both circles were constructed as Ebbinghaus illusions.

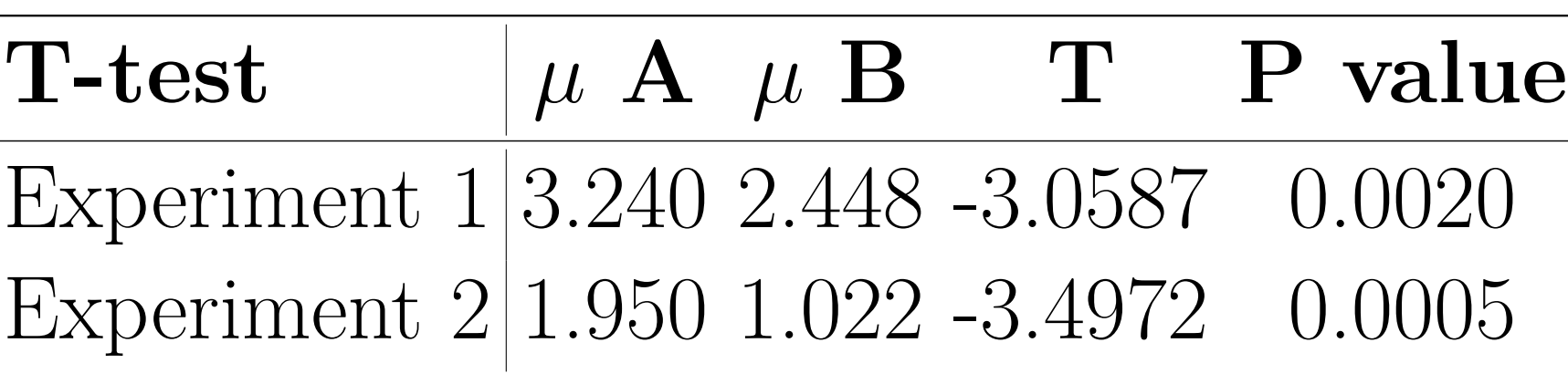
- 640 trials (total)
- 1.5 s exposure

We had 20 and 21 participants on Experiments 1 and 2 respectively. In both cases, we found evidence for the Mirror Effect in at least 85% of the participants. In Experiment 1, we had 17 cases showing the Mirror Effect pattern within the hit and false alarm rates and 18 in terms of Confidence Ratings. In Experiment 2 we had 19 participants showing the Mirror Effect in both patterns of response. All these proportions were statistically significant when we apply a simple Binomial Test ($p=0.0025$ and $p=0.0004$, for Experiment 1, and $p=0.0002$ for Experiment 2).

- Are there changes in participants' performance across time?



① D' differences: Are conditions actually different?



② Differences across Hit and False Alarm Rates

T-test		μ A	μ B	T	P value
Exp 1	Hits	0.922	0.860	-2.4348	0.0098
Exp 1	FA	0.08	0.143	1.917	0.0314
Exp 2	Hits	0.853	0.678	-3.4757	0.0006
Exp 2	FA	0.268	0.336	1.769	0.0425

③ Mean Confidence Rating per class of stimuli

T-test		μ A	μ B	T	P value
Exp 1	Signal	5.445	5.212	-1.7778,	0.0418
Exp 1	Noise	1.542	1.883	-1.7208	0.0472
Exp 2	Signal	5.183	4.342	-3.6752,	0.0004
Exp 2	Noise	2.386	2.752	-1.809	0.0391

Glanzer & Adams, (1990)

The present study is the first to show evidence of the Mirror Effect patterns of response on a SD task that does not involve recognition memory.

The perceptual task here presented lacked a pre-experimental phase where participants had the chance to manipulate how powerful were the illusions elicited in each condition. This suggests that there might be a much more basic principle regulating the Mirror Effect pattern of responses.

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- Massaro, D., Anderson, N. (1971). Judgmental model of the Ebbinghaus Illusion. *Journal of Experimental Psychology*, 89, 147 - 151.