Faces Experiment

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Introduction

- Face recognition times range from 50ms up to 200ms. (Thorpe, M., Mace, M., and Rousselet, G.)
- We did our experiment on facial recognition and on how occluding certain facial features will affect how well we recognize faces.
- We tested with faces with occluded eyes, occluded mouth, and a control face with all the features.
- Our simplified hypothesis is that the eyes have the biggest effect on facial recognition, therefore it would have the smallest amount of correct identifications.

Methods: Stimuli

Original

Same

Different

- Two different photos of the same person + one photo of a similar person
- Equal amount of photos across race and gender

Methods: The 3 Conditions

Nothing Covered

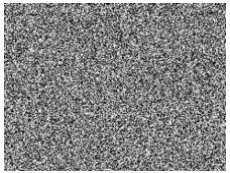
Eyes Covered

Mouth Covered

Methods: The Trials

Original

0.3 seconds



Mask

1 second

IV: Nothing, Eyes, or Mouth Covered

Same

Different

1 second

Forced Choice

Left or Right?

Methods

- 18 participants
  - 6 Male; 12 Female
- Within Subjects
  - 120 trials with two breaks
  - Different random order of faces for each participant
- IV: **Part of face being covered** - Nothing, Eyes, Mouth
- DV: **d' Forced Choice** (Ability to differentiate a previously shown face from a distractor face)

Hypotheses

Null Hypothesis: There is no difference in face recognition when nothing is covered, mouth is covered, or eyes are covered

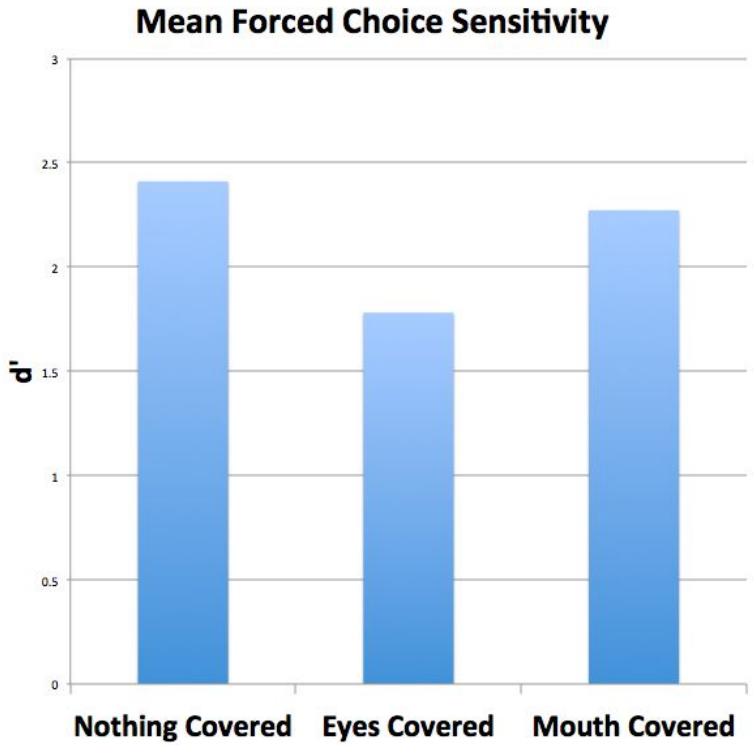
Hypothesis 1: Face recognition is the best when nothing is covered

Hypothesis 2: Face recognition is the worst when eyes are covered

Results: Averages

	Mean	Std. Deviation	N
None	2.410755621	.9222670301	18
Eyes	1.781570192	.6890541728	18
Mouth	2.272637189	.7987021092	18

Increasing sensitivity between signal and noise
- from Eyes Covered to Nothing Covered



Results: One Way ANOVA

Tests of Within-Subjects Effects

Measure: MEASURE_1

p-value is significant

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Covered	Sphericity Assumed	3.937	2	1.968	13.926	.000	.450
	Greenhouse-Geisser	3.937	1.885	2.089	13.926	.000	.450
	Huynh-Feldt	3.937	2.000	1.968	13.926	.000	.450
	Lower-bound	3.937	1.000	3.937	13.926	.002	.450
Error(Covered)	Sphericity Assumed	4.806	34	.141			
	Greenhouse-Geisser	4.806	32.042	.150			
	Huynh-Feldt	4.806	34.000	.141			
	Lower-bound	4.806	17.000	.283			

Reject Null Hypothesis that there is no difference in face recognition between the three conditions

Results: Paired-Samples T-test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	None - Eyes	.6291854281	.5017977838	.1182748719	.3796472609	.8787235953	5.320	17	.000
Pair 2	Eyes - Mouth	-.491066997	.4938100750	.1163921509	-.736632970	-.245501023	-4.219	17	.001
Pair 3	None - Mouth	.1381184316	.5936450452	.1399234790	-.157094304	.4333311674	.987	17	.337

None - Eyes: significant difference in correct selection ability

Eyes - Mouth: significant difference in correct selection ability

None - Mouth: no significant difference in correct selection ability

Results: Bias

14 of 18 subjects showed no position bias

Biases not consistent toward either side

Discussion

None - Eyes: significant difference in correct selection ability

→ Eyes plays a significant role in facial recognition

None - Mouth: no significant difference in correct selection ability

→ Mouth does not play a significant role in facial recognition

Eyes - Mouth: significant difference in correct selection ability

→ Not just the presence/absence of any facial feature that makes a difference in facial detection

Implications + future research

- Insight into how we recognize faces
  - Can’t recognize faces (esp unfamiliar) as well when person is wearing sunglasses
- Future research ideas
  - What if we covered the original picture and then didn’t cover the second flash? (just reversing)
  - Does it make a difference if the second picture of the same person is from a different angle or of a different emotion?
  - Look at eyebrows separately