

# UNM06

2023-09-14

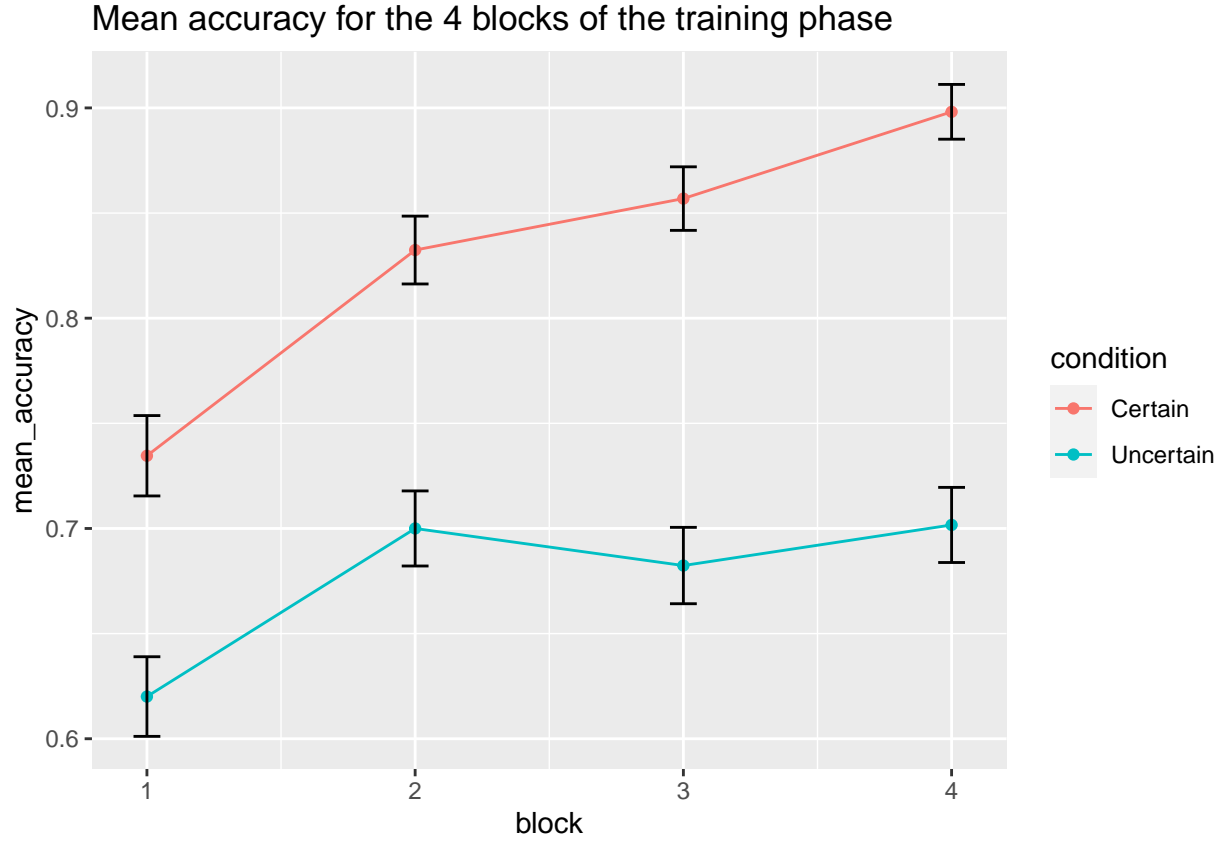
## Design

In this experiment, the differences in recognition memory of predictive and non-predictive cues was examined under both a certain and an uncertain training. Both groups received a training in which two cues are presented in each trial followed by an outcome. Only one of the cues is predictive of the outcome, whereas the other appears the same amount of times with each of the two possible outcomes. In one of this groups, the contingency between the predictive cues and their respective outcomes is of 1, so in each trial that the predictive cue is presented its corresponding outcome follows. For the other group, this contingency is of 0.8, so the predictive cue is followed by the outcome on 80% of the trials. After the training phase, all subjects were presented two cues on each trial, one that was presented on training and one that wasn't, but that was similar to the other cues presented on the training phase (a pair of balls swapped colours in the fouls). Subjects had to choose which one they had seen before and rate how confident they were of their choice.

Group	Training	Test2
Certain	AX - O1	A vs <i>b</i>
		A vs <i>x</i>
		A vs <i>y</i>
	AY - O1	B vs <i>a</i>
		B vs <i>x</i>
		B vs <i>y</i>
	BX - O2	X vs <i>a</i>
		X vs <i>b</i>
		X vs <i>y</i>
	BY - O2	Y vs <i>a</i>
		Y vs <i>b</i>
		Y vs <i>x</i>
Uncertain	0.8 AX - O1 / 0.2 AX - O2	A vs <i>b</i>
		A vs <i>x</i>
		A vs <i>y</i>
	0.8 AY - O1 / 0.2 AY - O2	B vs <i>a</i>
		B vs <i>x</i>
		B vs <i>y</i>
	0.8 BX - O1 / 0.2 BX - O2	X vs <i>a</i>
		X vs <i>b</i>
		X vs <i>y</i>
	0.8 BY - O1 / 0.2 BY - O2	Y vs <i>a</i>
		Y vs <i>b</i>
		Y vs <i>x</i>

## Results

### Training

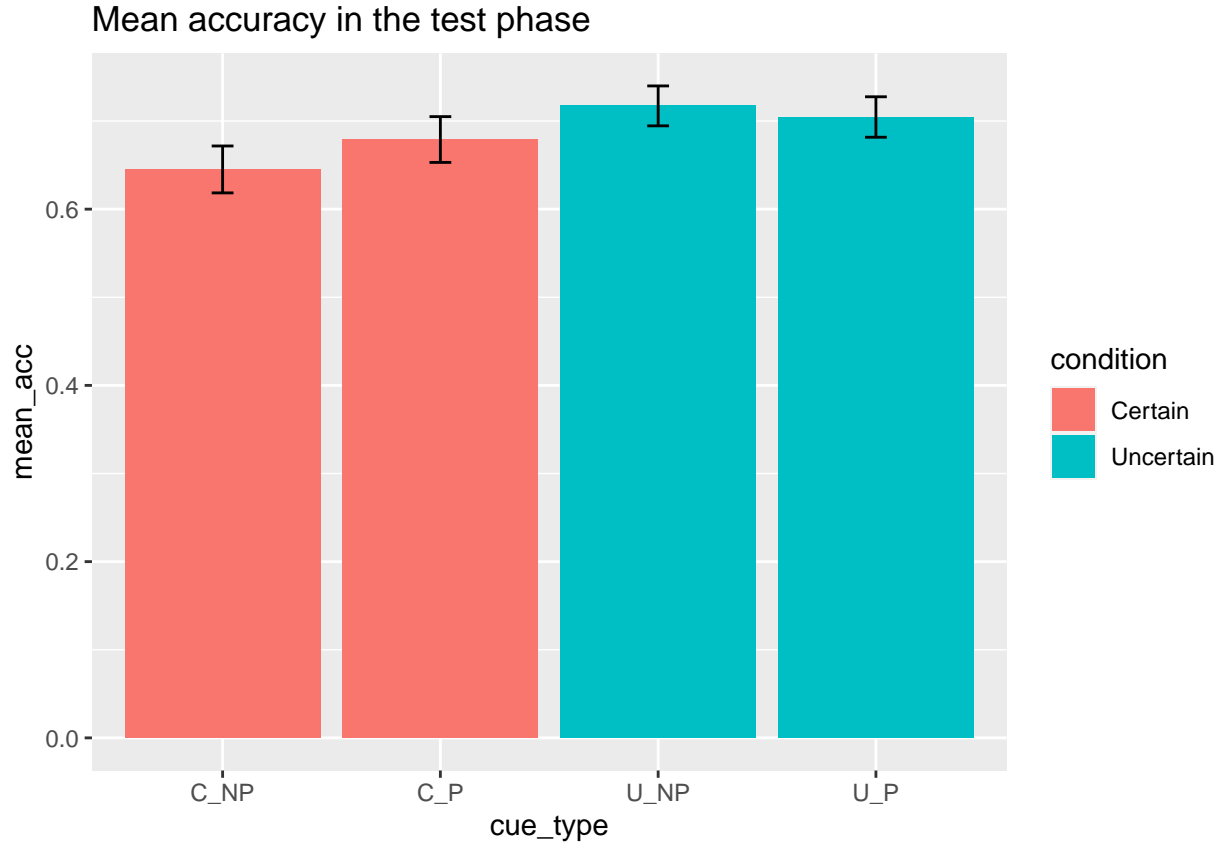


One-sample t-test indicates that mean responding of the certain group in the training phase was significantly higher than 0.5, that is, chance level ( $t(53) = 6.12$ ,  $p < .001$ ,  $d = 0.83$ ,  $BF_{10} = 7.6 \times 10^7 \pm 0\%$ ). Same was true for the uncertain group ( $t(65) = 6.08$ ,  $p < .001$ ,  $d = 0.75$ ,  $BF_{10} = 1.7 \times 10^6 \pm 0\%$ ).

Subjects in the certain group showed higher accuracy through training than the uncertain group, also showing a consistent increase as block progressed, reaching an accuracy of around 0.9 in block 4. However, the uncertain group showed an increase from block 1 to 2, but kept stable after, with an accuracy of around 0.7 in block 4. A mixed methods ANOVA confirmed that both the effect of the Block and the Condition was significant, but not the interaction between them. ( respectively,  $F(3, 174) = 11.29$ ,  $p < .001$ ,  $\eta_p^2 = .16$ ;  $F(1, 58) = 16.22$ ,  $p < .001$ ,  $\eta_p^2 = .22$ ; ). Bayesian evidence was very strong in favour of the main effects, but anecdotal null for the interaction (respectively,  $BF_{10} = 8.4 \times 10^3 \pm 0.54\%$ ;  $BF_{10} = 1.5 \times 10^2 \pm 2.55\%$ ;  $BF_{10} = 2.1 \times 10^{-1} \pm 4.71\%$ ).

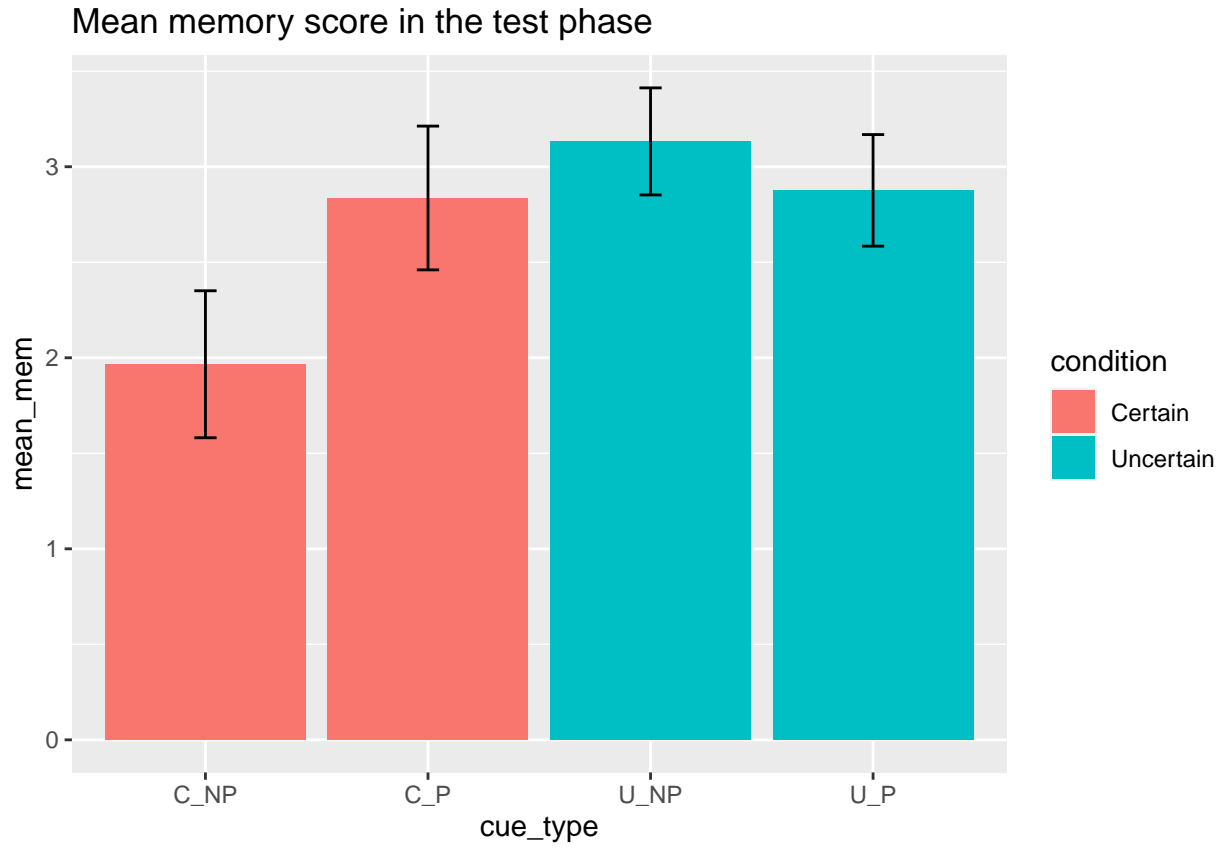
Test

Accuracy



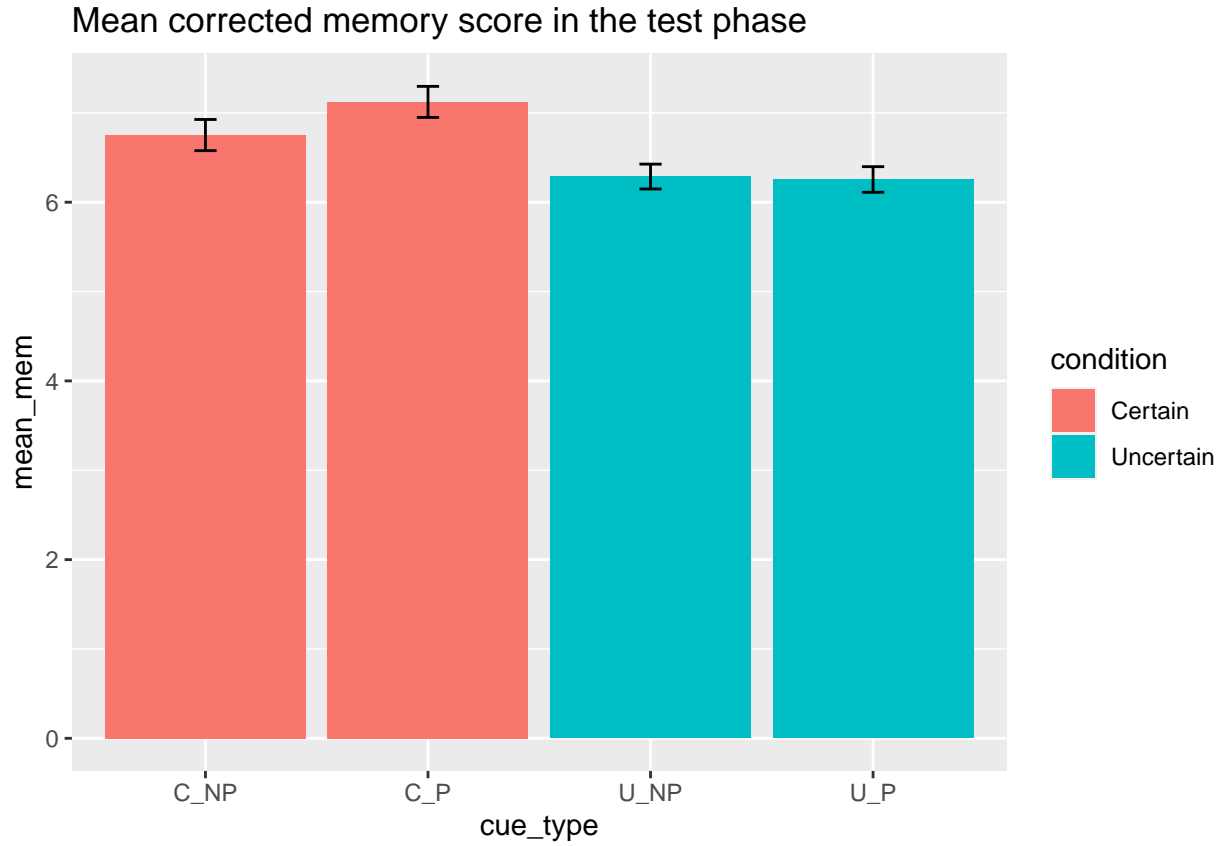
There are no differences in accuracy due to the condition, the predictiveness or the interaction of them, and the bayesian analysis indicates anecdotal evidence for the null hypothesis in all cases (respectively,  $F(1, 58) = 1.01$ ,  $p = .319$ ,  $\eta_p^2 = .02$ ,  $BF_{10} = 4.4 \times 10^{-1} \pm 9.99\%$ ;  $F(1, 58) = 0.09$ ,  $p = .762$ ,  $\eta_p^2 < .01$ ,  $BF_{10} = 2 \times 10^{-1} \pm 0.91\%$ ;  $F(1, 58) = 0.44$ ,  $p = .509$ ,  $\eta_p^2 < .01$ ,  $BF_{10} = 3.1 \times 10^{-1} \pm 3.03\%$ ).

## Memory score



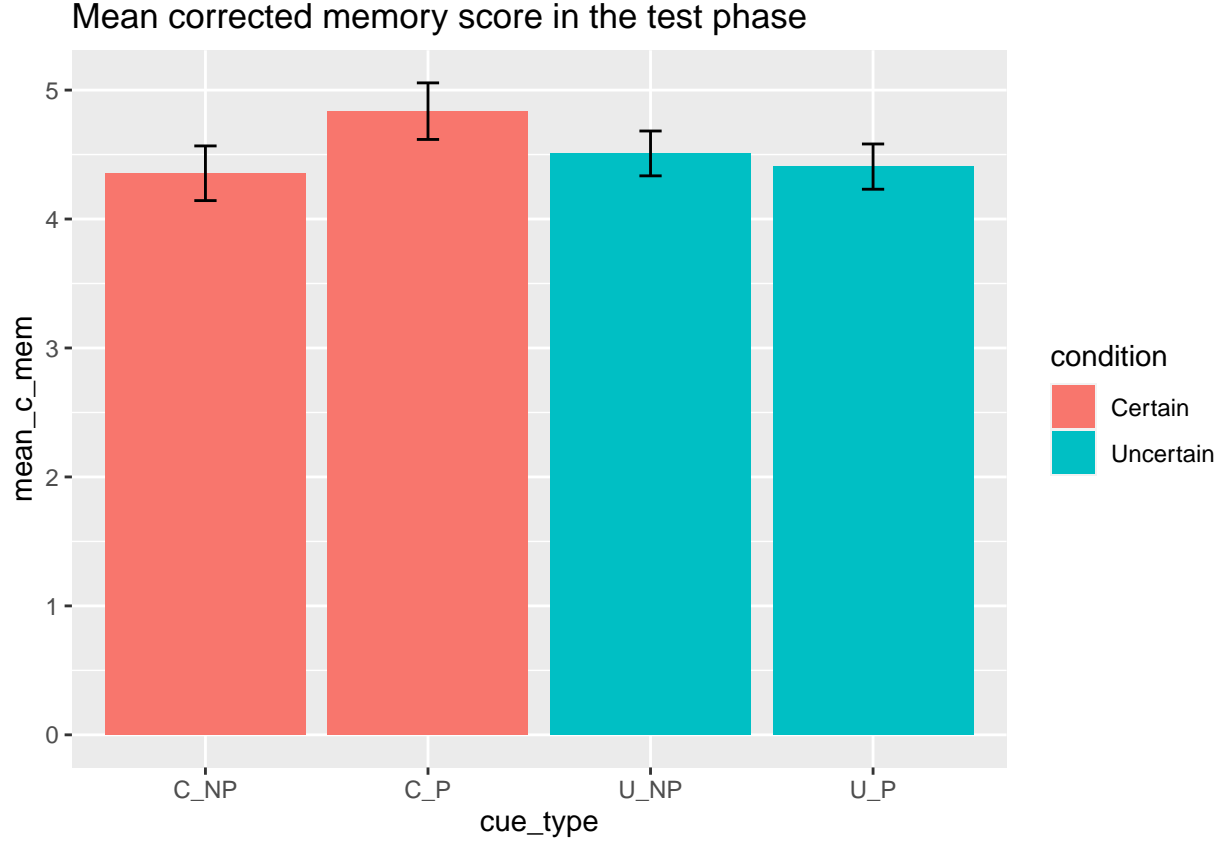
There are no significant differences in memory due to the condition, the predictiveness or the interaction of them, and the bayesian analysis indicates anecdotal evidence for the null hypothesis in all cases (respectively,  $F(1, 58) = 0.82$ ,  $p = .370$ ,  $\eta_p^2 = .01$ ,  $BF_{10} = 3.8 \times 10^{-1} \pm 4.9\%$ ;  $F(1, 58) = 0.38$ ,  $p = .540$ ,  $\eta_p^2 < .01$ ,  $BF_{10} = 2.1 \times 10^{-1} \pm 0.74\%$ ;  $F(1, 58) = 1.28$ ,  $p = .263$ ,  $\eta_p^2 = .02$ ,  $BF_{10} = 4.5 \times 10^{-1} \pm 5.04\%$ ).

Corrected memory score (with errors out)



There are no significant differences in memory due to the condition, the predictiveness or the interaction of them, and the bayesian analysis indicates anecdotal evidence for the null hypothesis in all cases (respectively,  $F(1, 58) = 2.30$ ,  $p = .134$ ,  $\eta_p^2 = .04$ ,  $BF_{10} = 9.3 \times 10^{-1} \pm 7.35\%$ ;  $F(1, 58) = 0.97$ ,  $p = .330$ ,  $\eta_p^2 = .02$ ,  $BF_{10} = 2.7 \times 10^{-1} \pm 1.36\%$ ;  $F(1, 58) = 1.47$ ,  $p = .230$ ,  $\eta_p^2 = .02$ ,  $BF_{10} = 6.2 \times 10^{-1} \pm 19.39\%$ ).

### Other corrected memory score



There are no significant differences in memory due to the condition, the predictiveness or the interaction of them, and the bayesian analysis indicates anecdotal evidence for the null hypothesis in all cases (respectively,  $F(1, 58) = 0.09$ ,  $p = .770$ ,  $\eta_p^2 < .01$ ,  $BF_{10} = 3 \times 10^{-1} \pm 1.04\%$ ;  $F(1, 58) = 0.42$ ,  $p = .522$ ,  $\eta_p^2 < .01$ ,  $BF_{10} = 2.1 \times 10^{-1} \pm 0.91\%$ ;  $F(1, 58) = 0.98$ ,  $p = .325$ ,  $\eta_p^2 = .02$ ,  $BF_{10} = 3.9 \times 10^{-1} \pm 2.34\%$ ).

### Certain only results

#### Accuracy

There are no differences in accuracy due to predictiveness, and the bayesian analysis indicates anecdotal evidence for the null hypothesis ( $t(26) = -0.56$ ,  $p = .578$ ,  $d = -0.11$ ,  $BF_{10} = 2.4 \times 10^{-1} \pm 0.03\%$ ).

#### Memory score

There are no significant differences in memory due to predictiveness and the bayesian analysis indicates anecdotal evidence for the null hypothesis ( $t(26) = -1.03$ ,  $p = .311$ ,  $d = -0.20$ ,  $BF_{10} = 3.3 \times 10^{-1} \pm 0.03\%$ ).

#### Corrected memory score (with errors out)

There are no significant differences in memory due to predictiveness and the bayesian analysis indicates anecdotal evidence for the null hypothesis ( $t(26) = -1.29$ ,  $p = .209$ ,  $d = -0.25$ ,  $BF_{10} = 4.3 \times 10^{-1} \pm 0.03\%$ ).

### Other corrected memory score

There are no significant differences in memory due to predictiveness and the bayesian analysis indicates anecdotal evidence for the null hypothesis ( $t(26) = -0.95$ ,  $p = .351$ ,  $d = -0.18$ ,  $BF_{10} = 3.1 \times 10^{-1} \pm 0.03\%$ ).