in— title: "UNM05" output: pdf_document date: "2023-07-03" —

Design

This was a pilot experiment in which we aimed to find the most appropriate memory test to be used after 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. Two tests where used, one followed by the other in all cases. Test 1 consisted in presenting one of the cues saw in the training phase and a dis tractor cue that was similar to this cue. The similarity of the distractor was manipulated between-subjects, with 3 possible conditions: very subtle (only one pair of balls swapped colors), subtle (two pairs of balls swapped colors) and no subtle (the distractor is a palette-swap of the target). In test 2, the target is presented with the distractors similar to the rest of the targets, one per trial.

Training	Test1	Test2
AX - O1	A vs a	A vs b
		A vs x
		A vs y
AY - O1	B vs b	B vs a
		B vs x
		B vs y
BX - 02	X vs x	X vs a
		X vs b
		X vs y
BY - O2	Y vs y	Y vs a
		Y vs b
		Y vs x

All Data

Test2
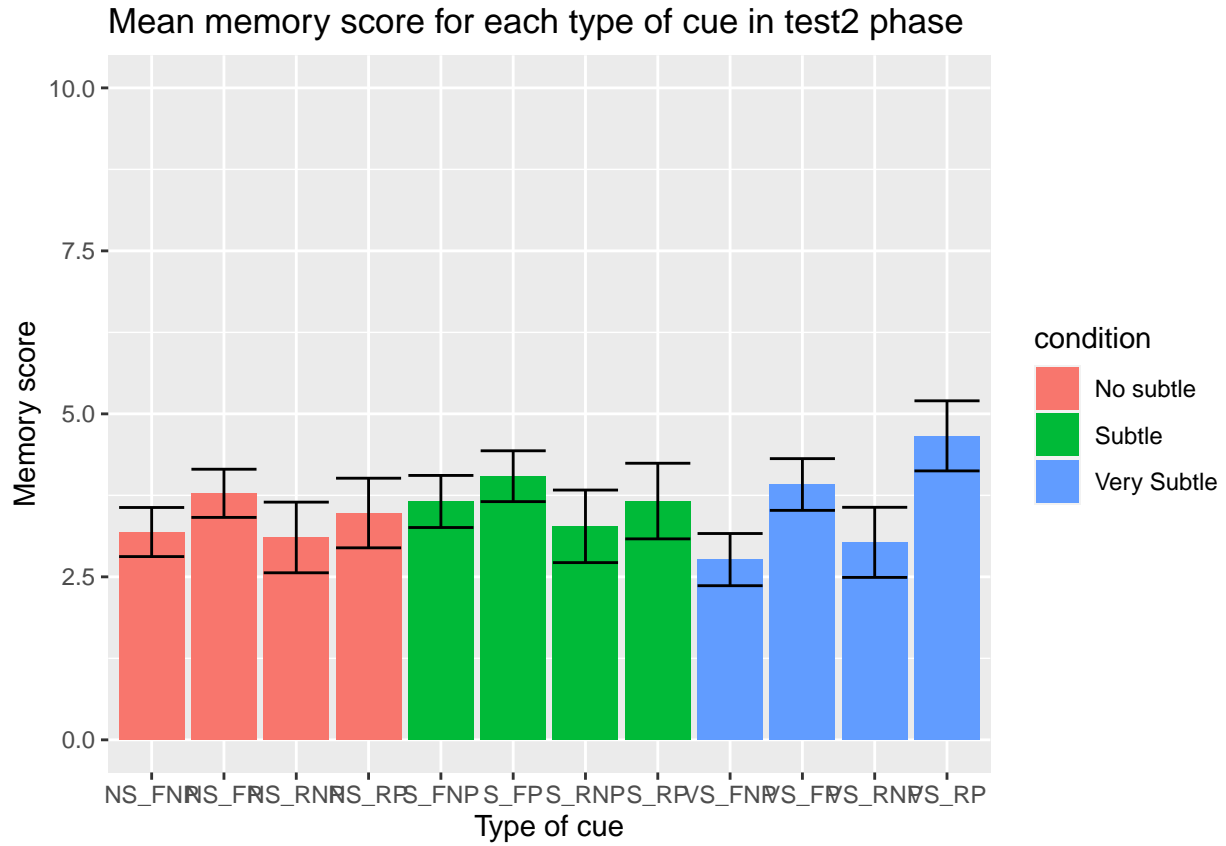
Accuracy

## Mean accuracy for each type of cue in test2 phase
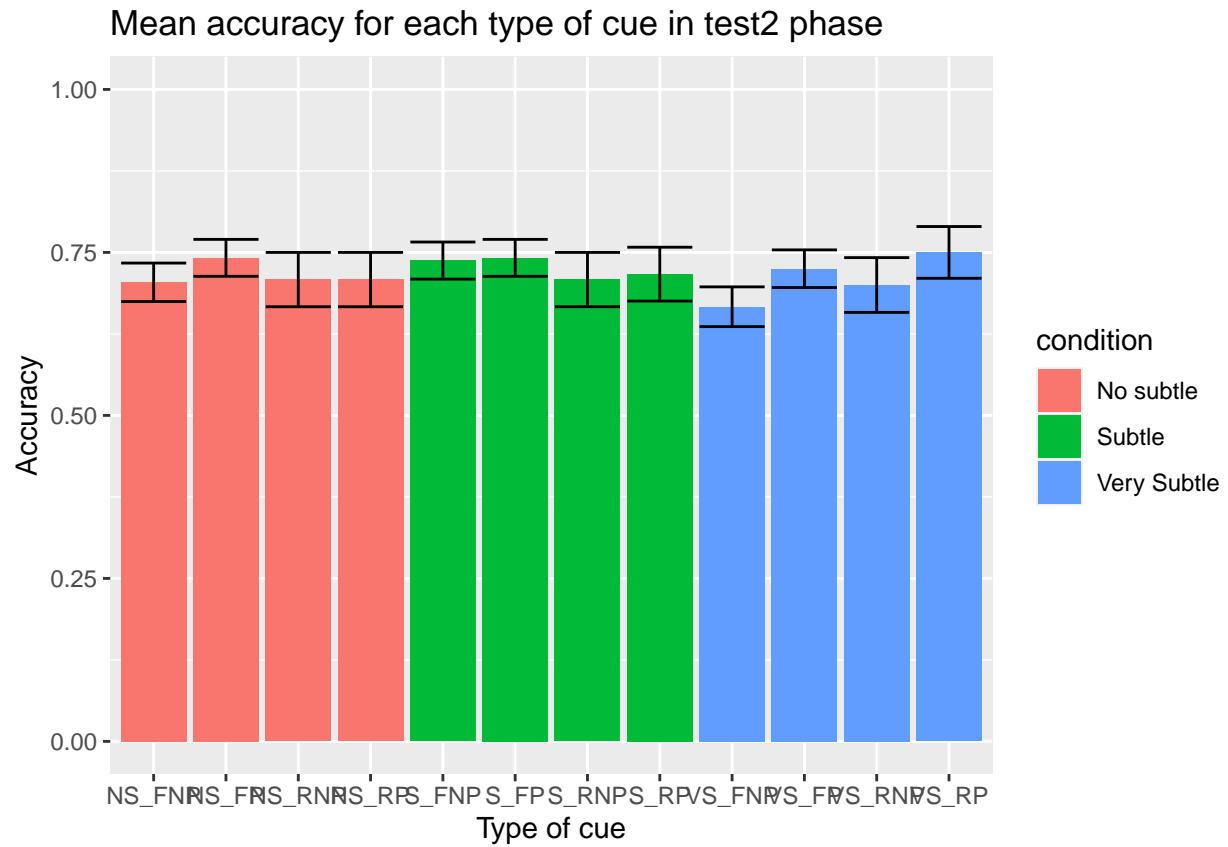
There are no differences in accuracy in Test 2, confirmed by the ANOVA (Similarity: $F(2, 87) = 0.05$, $p = .949$, $\eta_p^2 < .01$, Trial Type: $F(2.50, 217.14) = 0.53$, $p = .628$, $\eta_p^2 < .01$, interaction; $F(4.99, 217.14) = 0.37$, $p = .866$, $\eta_p^2 < .01$). Bayesian eveidence was strong for the null hypothesis for Similarity, very strong for the Type Trial, and very strong for the interaction (BF$_{10}$ = 9.2x10^{-2} ± 0.44%, BF$_{10}$ = 2.4x10^{-2} ± 0.56%, BF$_{10}$ = 1.5x10^{-2} ± 1.26%, respectively).

Memory Score

# Mean memory score for each type of cue in test2 phase

In test two, the memory score is always lower for the non-predictive targets, and the difference is bigger the more difficult the test is. However, there was not a significant effect of the Similarity ($(F(2, 87) = 0.06$, $p = .941$, $\eta_p^2 < .01$, $BF_{10} = 1.2x10^{-1} \pm 3.22\%$), the Trial type ($F(2.28, 198.14) = 2.18$, $p = .108$, $\eta_p^2 = .02$, $BF_{10} = 2.1x10^{-1} \pm 0.63\%$), nor the interaction ($(F(4.55, 198.14) = 0.71$, $p = .604$, $\eta_p^2 = .02$, $BF_{10} = 3.2x10^{-2} \pm 15.78\%$). Moderate null bayesian evidence was found for Similarity and Trial type, and very strong null evidence for the interaction.

###Corrected memory score (hits x1, errors x0)

Mean corrected memory score for each type of cue in test2 phase
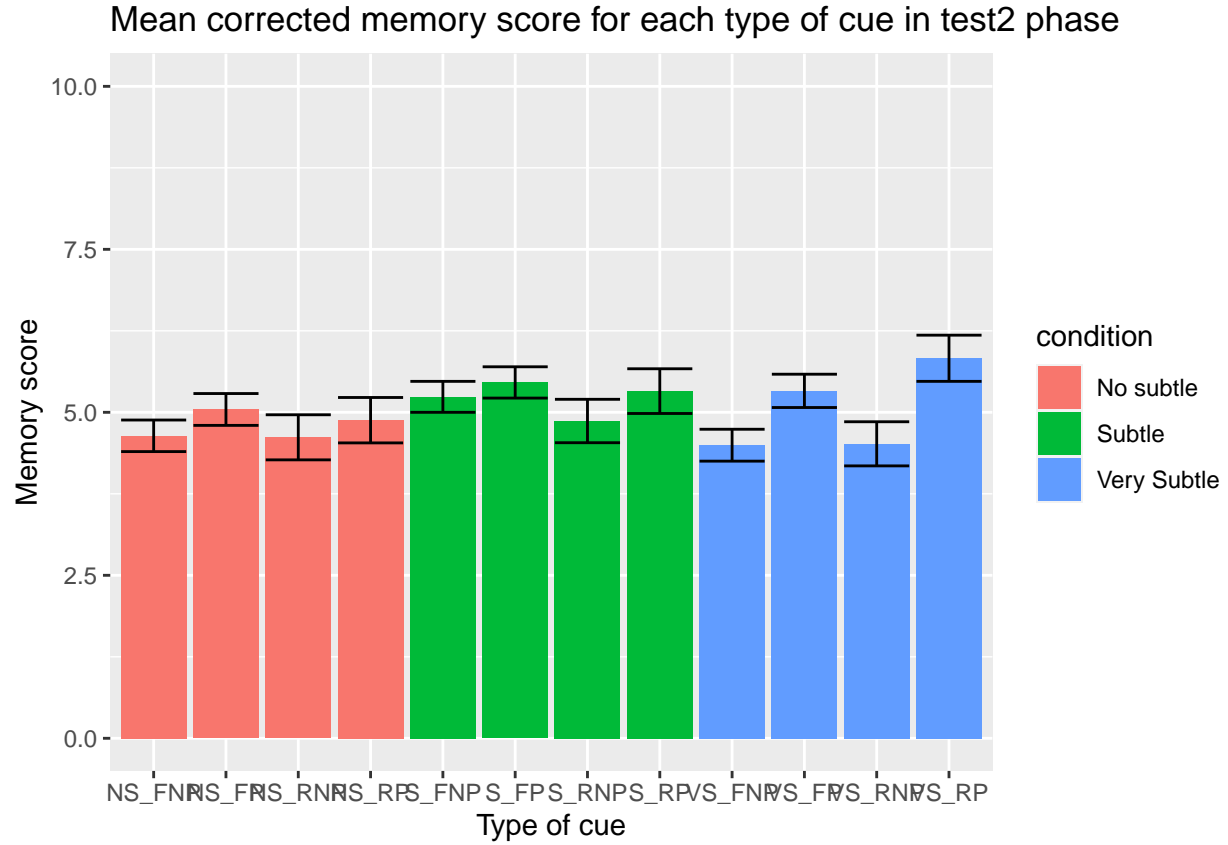
The analyses indicate that there is a significant effect of the Trial type, although bayesian evidence is anecdotal in favor of the alternative hypothesis ($F(2.14, 186.14) = 3.74$, $p = .023$, $\eta_p^2 = .04$, $\text{BF}_{10} = 1.6\text{x}10^0 \pm 0.58\%$). However, there was not a significant effect of the Similarity nor the interaction, both with moderate bayesian evidence in favor of the null hypothesis ($F(2, 87) = 0.26$, $p = .774$, $\eta_p^2 < .01$, $\text{BF}_{10} = 1.8\text{x}10^{-1} \pm 3.34\%$; $F(4.28, 186.14) = 0.98$, $p = .423$, $\eta_p^2 = .02$, $\text{BF}_{10} = 3.6\text{x}10^{-2} \pm 13.59\%$; respectively).

Corrected memory score (errors out)

## Mean corrected memory score for each type of cue in test2 phase
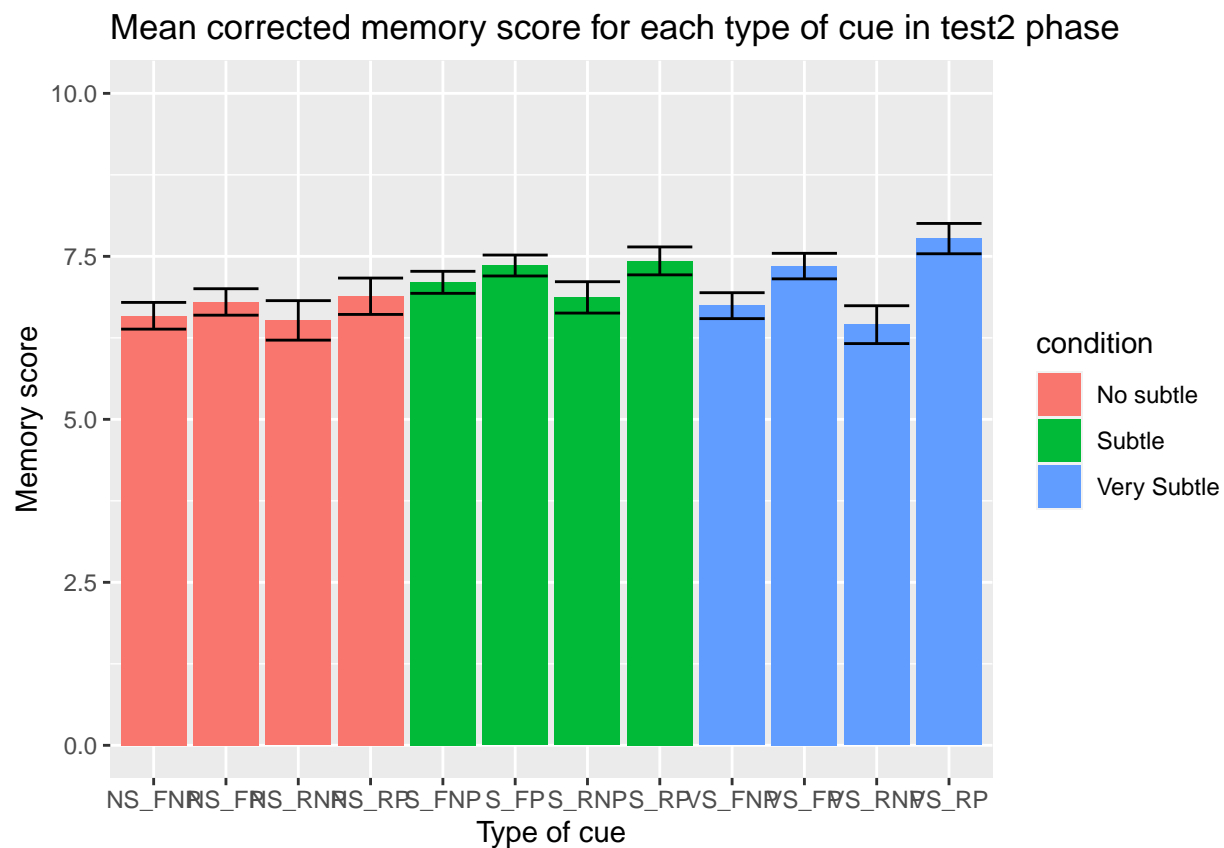
In this case, there´s a clear effect of the Trial type, being the corrected memory score always lower in the non-predicitve targets ($F(2.22, 181.84) = 10.14$, $p < .001$, $\eta_p^2 = .11$, $BF_{10} = 6.2 \times 10^3 \pm 1.5\%$). Again, nor the Similarity nor the interaction were significant ($F(2, 82) = 0.50$, $p = .606$, $\eta_p^2 = .01$, $BF_{10} = 2.8 \times 10^{-1} \pm 3.36\%$; $F(4.44, 181.84) = 1.04$, $p = .391$, $\eta_p^2 = .02$, $BF_{10} = 7.7 \times 10^{-2} \pm 10.47\%$). Bayesian evidence was extreme in favor of the alternative hypothesis for the Trial type, but moderate null for the Similarity and strong null for the interaction.

Very subtle test

Test2

Accuracy

Mean accuracy in test2 phase for very subtle test
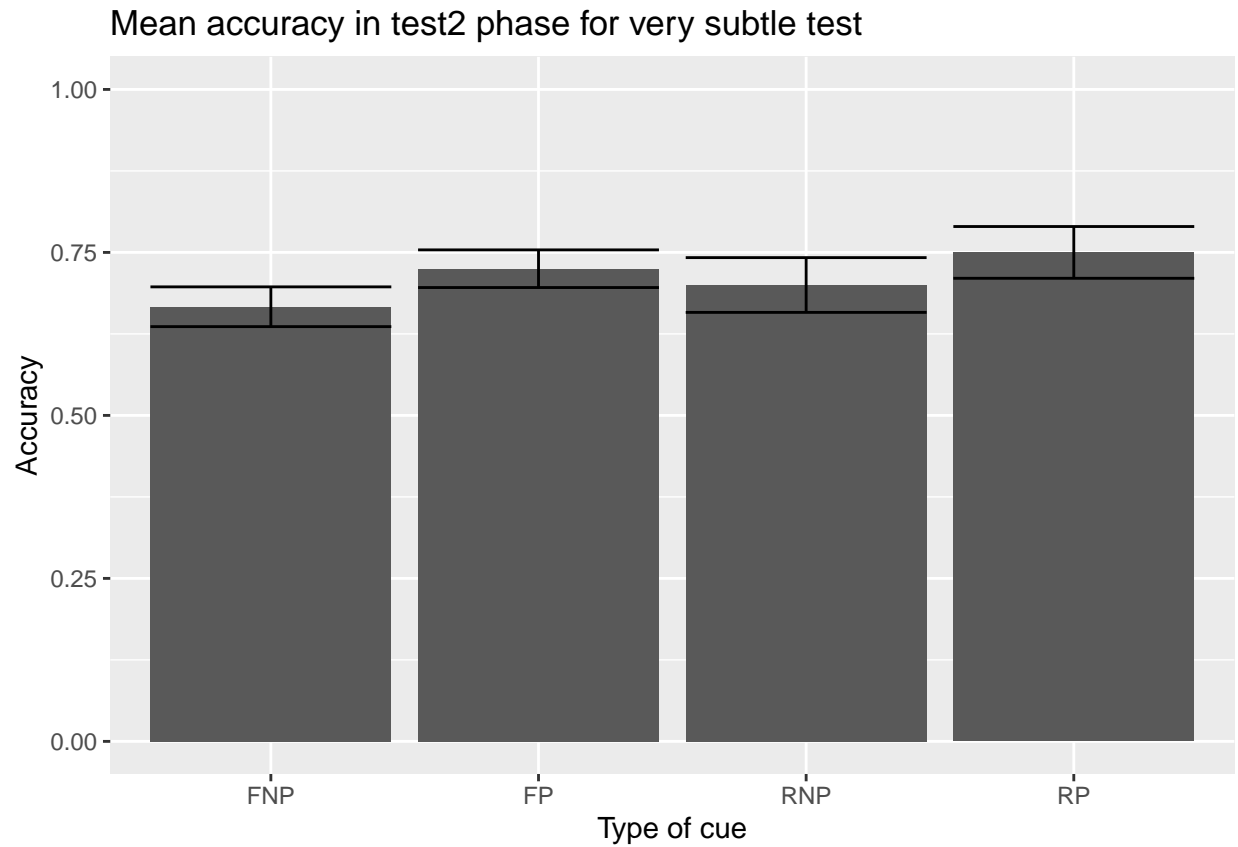
There was not a significant effect of the predictiveness ($F(1, 29) = 2.02$, $p = .166$, $\eta_p^2 = .07$, $BF_{10} = 6.4\text{x}10^{-1}$ $\pm$ 1.05%), with anecdotal bayesian evidence in favor of the null hypothesis: nor of congruence ($F(1, 29) = 1.19$, $p = .285$, $\eta_p^2 = .04$, $BF_{10} = 2.8\text{x}10^{-1} \pm 1.91\%$) neither of the interaction (, $BF_{10} = 2.5\text{x}10^{-1} \pm 4.89\%$), both showing moderate bayesian evidence in favor of the null hypothesis.

Memory score

Mean memory score in test2 phase for very subtle test

There was a significant effect of the predictiveness ($F(1, 29) = 5.73$, $p = .023$, $\eta_p^2 = .17$, $\text{BF}_{10} = 1.2\text{x}10^1 \pm 3.56\%$), with strong bayesian evidence in favor of the alternative hypothesis. However, there was not and effect of congruence ($F(1, 29) = 2.36$, $p = .136$, $\eta_p^2 = .08$, $\text{BF}_{10} = 3.5\text{x}10^{-1} \pm 8.84\%$) neither of the interaction (, $\text{BF}_{10} = 2.9\text{x}10^{-1} \pm 2.4\%$), both showing moderate bayesian evidence in favor of the null hypothesis.

Corrected memory score (hits x1, erros x0)

Mean corrected memory score in test2 phase for very subtle test
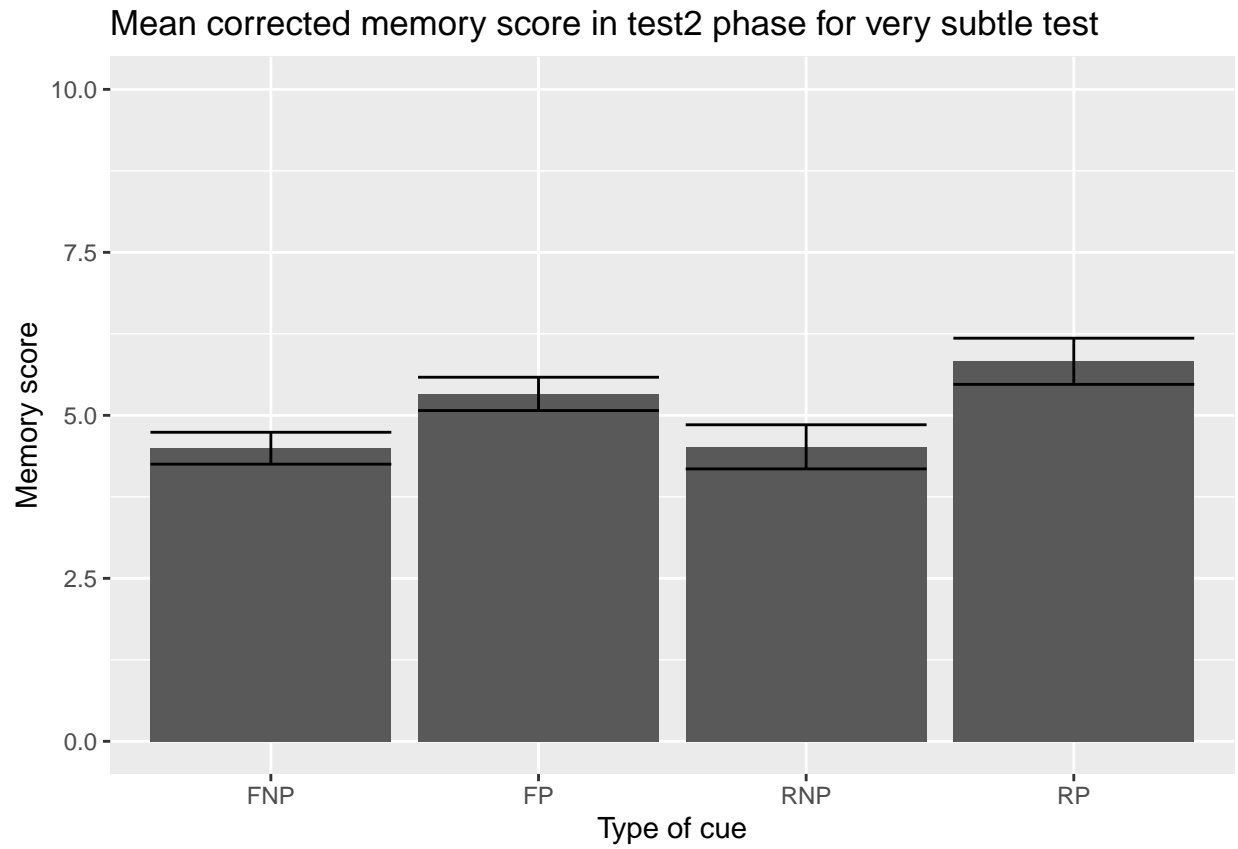
There was a significant effect of the predictiveness ($F(1, 29) = 8.45$, $p = .007$, $\eta_p^2 = .23$, $BF_{10} = 1.3\mathrm{x}10^2 \pm 0.78\%$), with extreme bayesian evidence in favor of the alternative hypothesis. However, there was not and effect of congruence ($F(1, 29) = 1.64$, $p = .210$, $\eta_p^2 = .05$, $BF_{10} = 2.7\mathrm{x}10^{-1} \pm 1.36\%$) neither of the interaction (, $BF_{10} = 3.5\mathrm{x}10^{-1} \pm 3.7\%$), congruence showing moderate bayesian evidence in favor of the null hypothesis and the interaction showing anecdotal null evidence.

Corrected memory score (errors out)

Mean corrected memory score in test2 phase for very subtle test
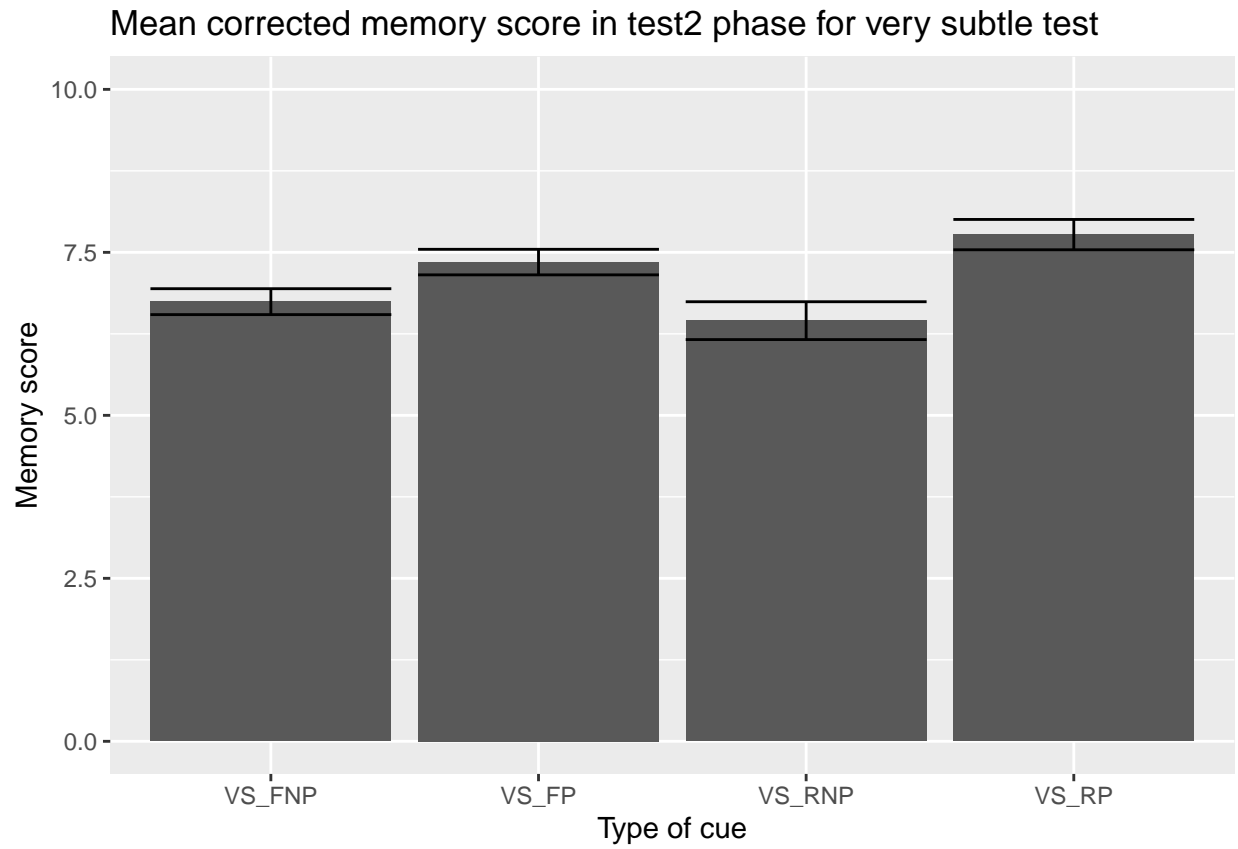
There was a significant effect of the predictiveness ($F(1, 28) = 18.32$, $p < .001$, $\eta_p^2 = .40$, $\text{BF}_{10} = 2.3 \text{x} 10^4 \pm$ 0.84%), with extreme bayesian evidence in favor of the alternative hypothesis. However, there was not and effect of congruence ($F(1, 28) = 0.44$, $p = .513$, $\eta_p^2 = .02$, $\text{BF}_{10} = 2.2 \text{x} 10^{-1} \pm 1.29\%$) neither of the interaction (, $\text{BF}_{10} = 9.5 \text{x} 10^{-1} \pm 3.31\%$), congruence showing moderate bayesian evidence in favor of the null hypothesis and the interaction showing anecdotal null evidence.

Subtle test

Test2

Accuracy

Mean accuracy in test2 phase for subtle test
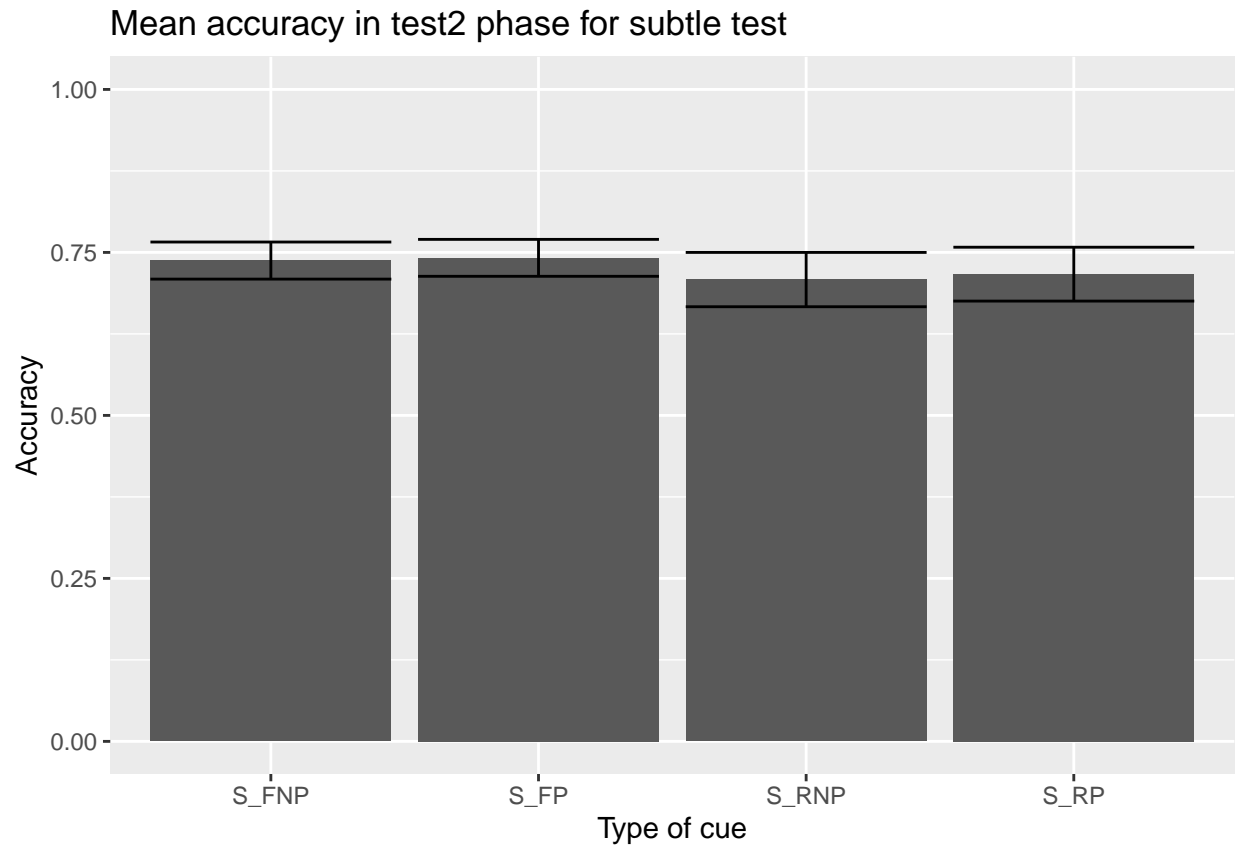
There was not a significant effect of the predictiveness ($F(1, 29) = 0.02$, $p = .898$, $\eta_p^2 < .01$, $BF_{10} = 1.9\text{x}10^{-1}$ $\pm$ 1.52%), nor of congruence ($F(1, 29) = 1.42$, $p = .244$, $\eta_p^2 = .05$, $BF_{10} = 2.5\text{x}10^{-1} \pm 2\%$) neither of the interaction (, $BF_{10} = 2.8\text{x}10^{-1} \pm 3.32\%$), all showing moderate bayesian evidence in favor of the null hypothesis.

Memory score

Mean memory score in test2 phase for subtle test

There was not significant effect of the predictiveness ($F(1, 29) = 0.30$, $p = .586$, $\eta_p^2 = .01$, $BF_{10} = 2.5x10^{-1}$ $\pm$ 1.14%), nor of congruence ($F(1, 29) = 2.04$, $p = .164$, $\eta_p^2 = .07$, $BF_{10} = 2.5x10^{-1} \pm 1.09\%$) neither of the interaction (, $BF_{10} = 2.8x10^{-1} \pm 8.57\%$), all showing moderate bayesian evidence in favor of the null hypothesis.

Corrected memory score (hits x1, erros x0)

Mean corrected memory score in test2 phase for subtle test
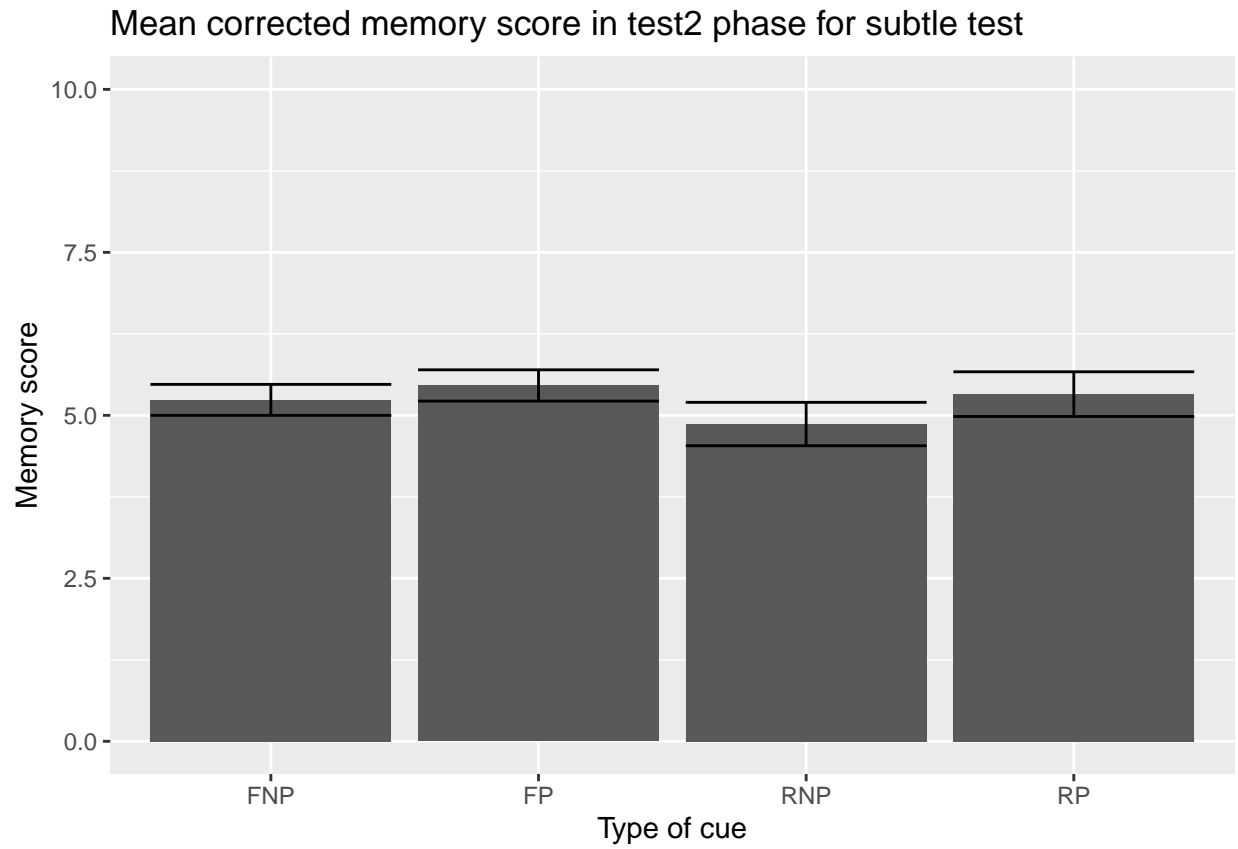
There was not a significant effect of the predictiveness ($F(1, 29) = 0.74$, $p = .398$, $\eta_p^2 = .02$, $BF_{10} = 3.8\text{x}10^{-1}$ $\pm$ 4.36%), nor of congruence ($F(1, 29) = 2.80$, $p = .105$, $\eta_p^2 = .09$, $BF_{10} = 2.7\text{x}10^{-1} \pm 0.97\%$) neither of the interaction (, $BF_{10} = 2.7\text{x}10^{-1} \pm 3.78\%$). Predictiveness showed anecdotal bayesian evidence in favor of the null hypothesis, whereas congruence and interaction showed moderate.

Corrected memory score (errors out)

Mean corrected memory score in test2 phase for subtle test
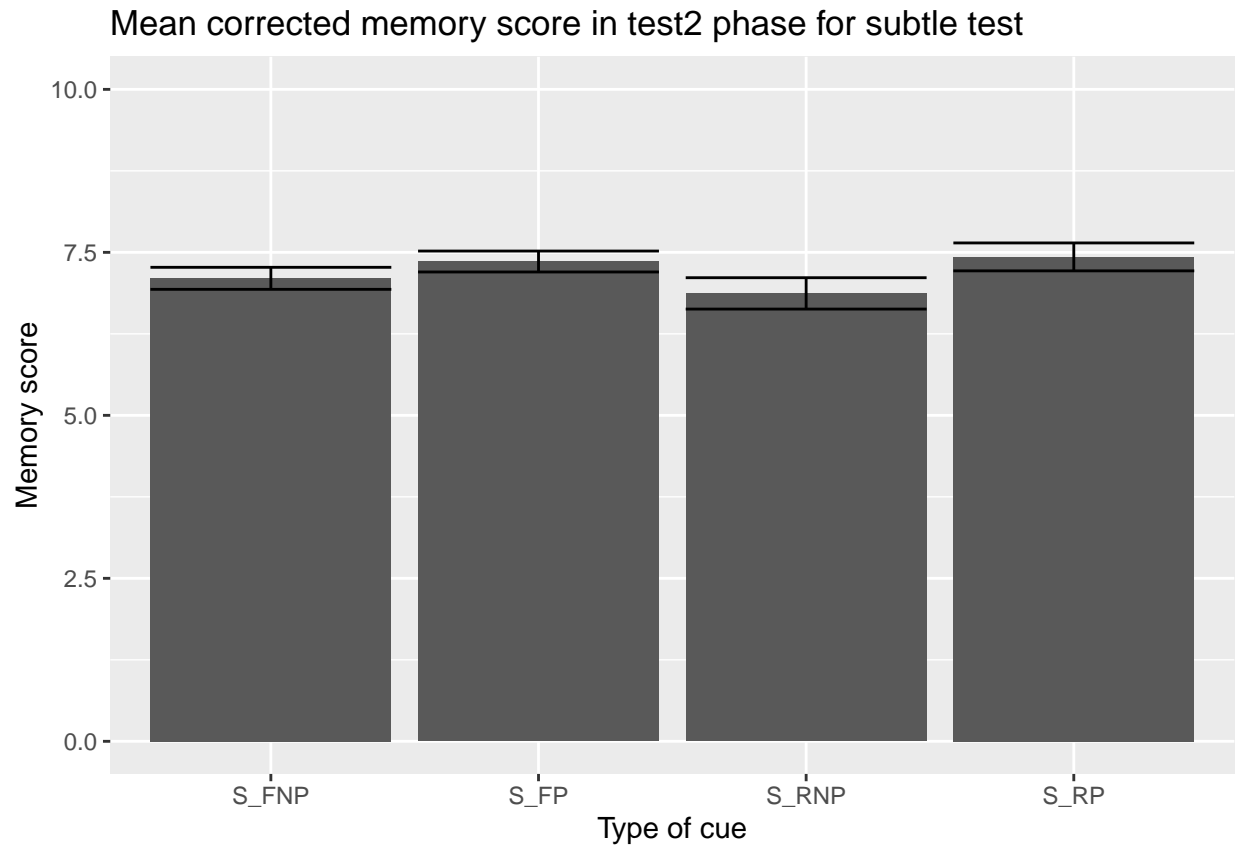
There was not a significant effect of the predictiveness ($F(1, 27) = 3.42$, $p = .075$, $\eta_p^2 = .11$, $BF_{10} = 1.4\text{x}10^0$ $\pm 0.76\%$), with anecdotal bayesian evidence in favor of the alternative hypothesis; nor of congruence ($F(1, 27) = 0.61$, $p = .443$, $\eta_p^2 = .02$, $BF_{10} = 2.2\text{x}10^{-1} \pm 0.95\%$), showing moderate null bayesian evidence; neither of the interaction (, $BF_{10} = 3.8\text{x}10^{-1} \pm 4.62\%$) showing anecdotal null evidence.

No subtle test

Test2

Accuracy

### Mean accuracy in test2 phase for subtle test
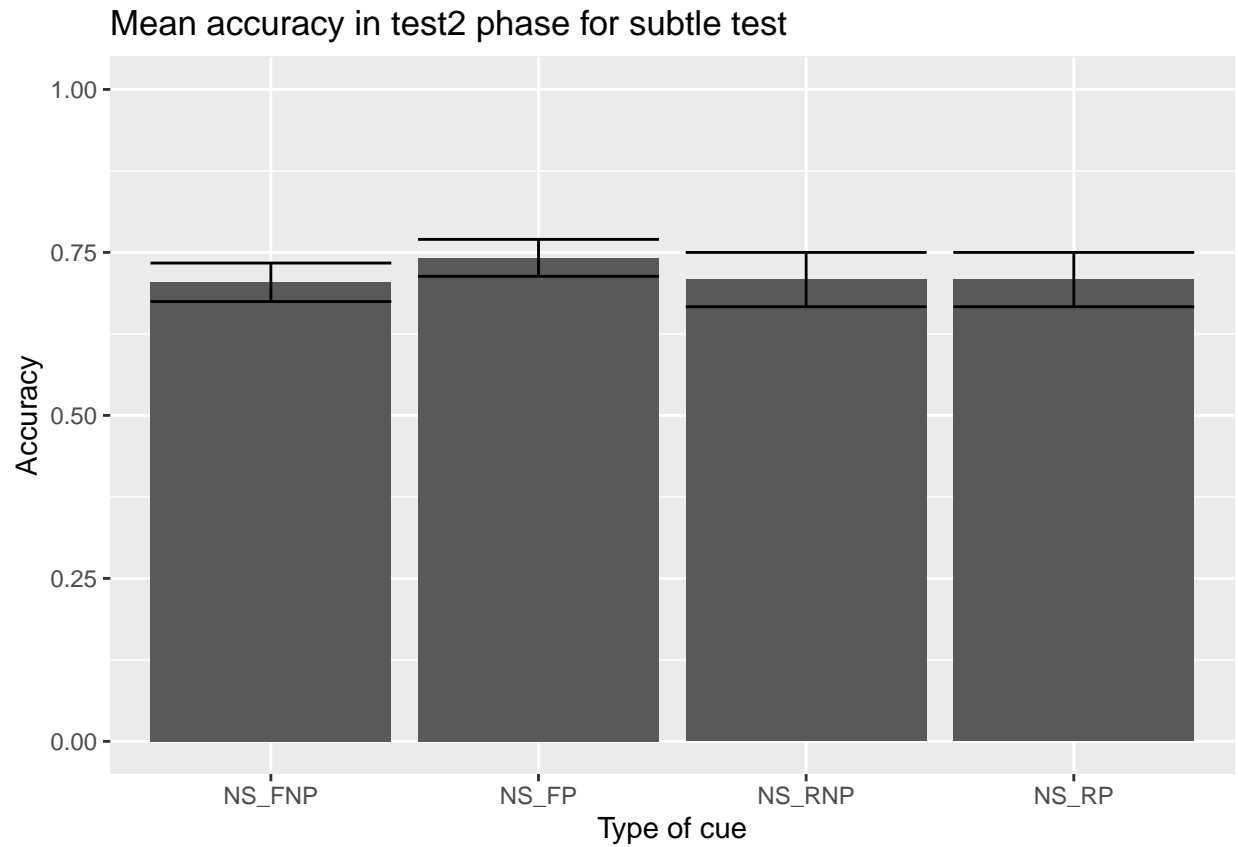
There was not a significant effect of the predictiveness ($F(1, 29) = 0.15$, $p = .699$, $\eta_p^2 < .01$, $BF_{10} = 2.1\text{x}10^{-1}$ $\pm$ 1.6%), nor of congruence ($F(1, 29) = 0.24$, $p = .630$, $\eta_p^2 < .01$, $BF_{10} = 2.1\text{x}10^{-1} \pm 5.03\%$) neither of the interaction (, $BF_{10} = 2.8\text{x}10^{-1} \pm 2.69\%$), all showing moderate bayesian evidence in favor of the null hypothesis.

Memory score

Mean memory score in test2 phase for subtle test

There was not significant effect of the predictiveness ($F(1, 29) = 0.53$, $p = .473$, $\eta_p^2 = .02$, $BF_{10} = 2.7x10^{-1}$ $\pm$ 1.48%), nor of congruence ($F(1, 29) = 0.30$, $p = .588$, $\eta_p^2 = .01$, $BF_{10} = 2x10^{-1} \pm 1.07\%$) neither of the interaction (, $BF_{10} = 2.5x10^{-1} \pm 5.71\%$), all showing moderate bayesian evidence in favor of the null hypothesis.

Corrected memory score (hits x1, erros x0)

Mean corrected memory score in test2 phase for subtle test
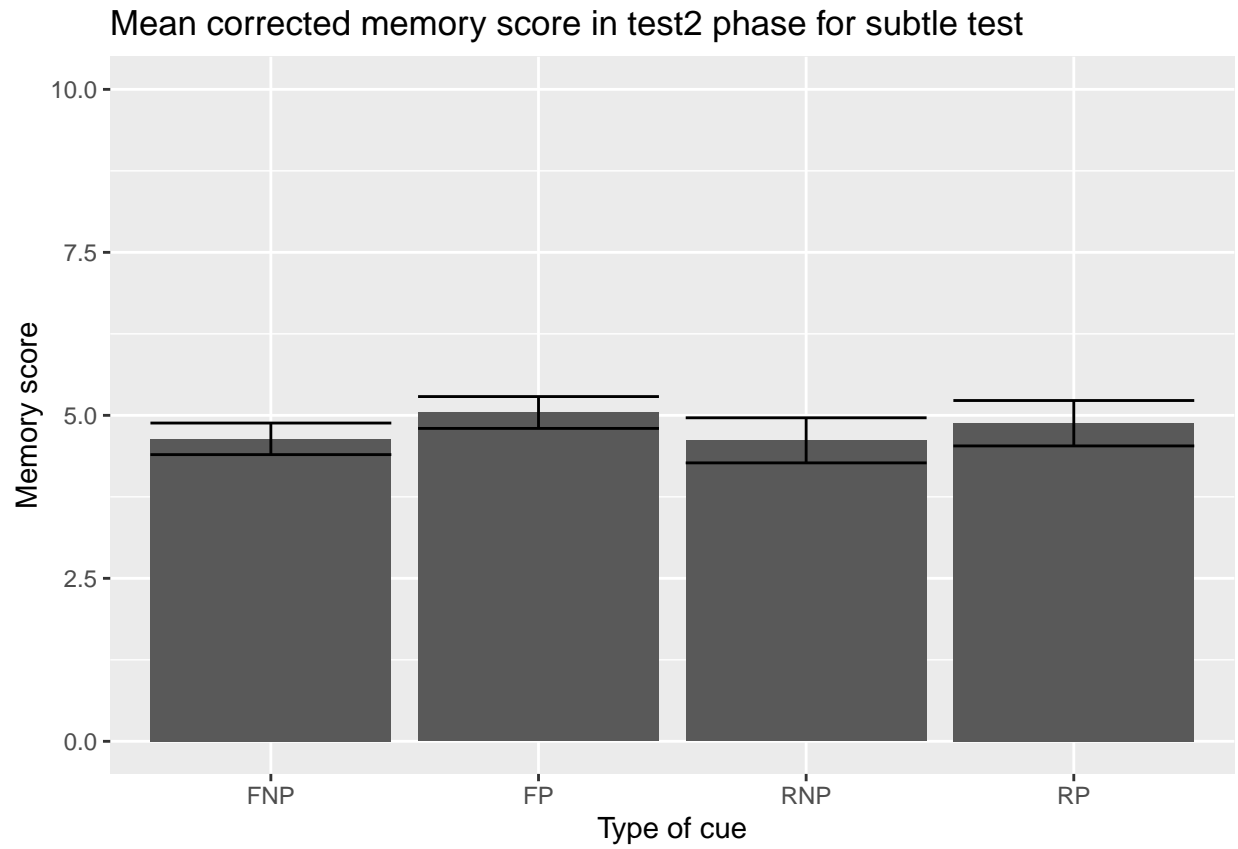
There was not a significant effect of the predictiveness ($F(1, 29) = 0.58$, $p = .454$, $\eta_p^2 = .02$, $BF_{10} = 2.9 \times 10^{-1}$ $\pm$ 0.88%), nor of congruence ($F(1, 29) = 0.22$, $p = .646$, $\eta_p^2 < .01$, $BF_{10} = 2 \times 10^{-1} \pm 1.19\%$) neither of the interaction (, $BF_{10} = 2.8 \times 10^{-1} \pm 4.79\%$). All effects showed moderate bayesian evidence in favor of the null hypothesis.

Corrected memory score (errors out)

Mean corrected memory score in test2 phase for subtle test
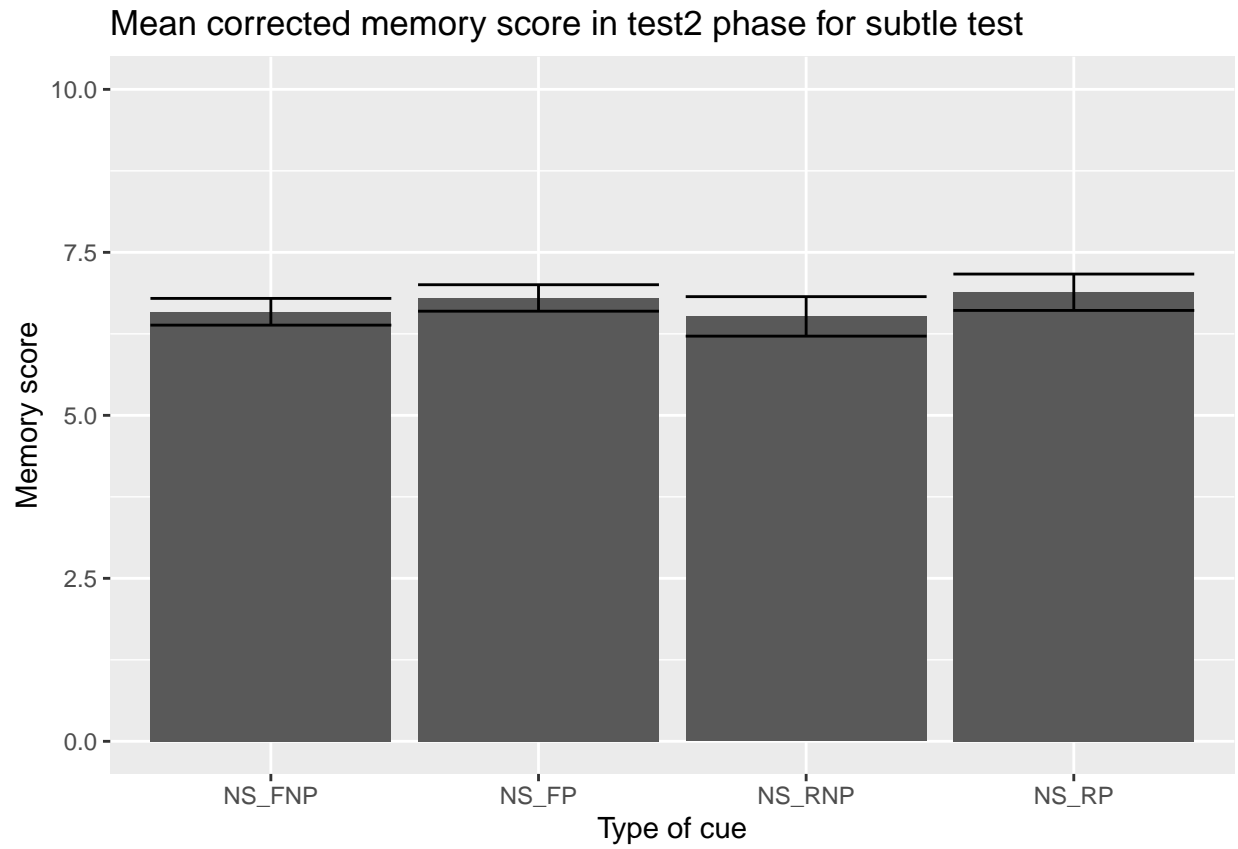
There was not a significant effect of the predictiveness ($F(1, 27) = 2.55$, $p = .122$, $\eta_p^2 = .09$, $\text{BF}_{10} = 1.3\text{x}10^0$ ± 0.92%), with anecdotal bayesian evidence in favor of the alternative hypothesis; nor of congruence ($F(1, 27) = 0.67$, $p = .420$, $\eta_p^2 = .02$, $\text{BF}_{10} = 2.1\text{x}10^{-1}$ ± 3.15%), showing moderate null bayesian evidence; neither of the interaction (, $\text{BF}_{10} = 2.6\text{x}10^{-1}$ ± 5.16%) showing moderate null evidence.