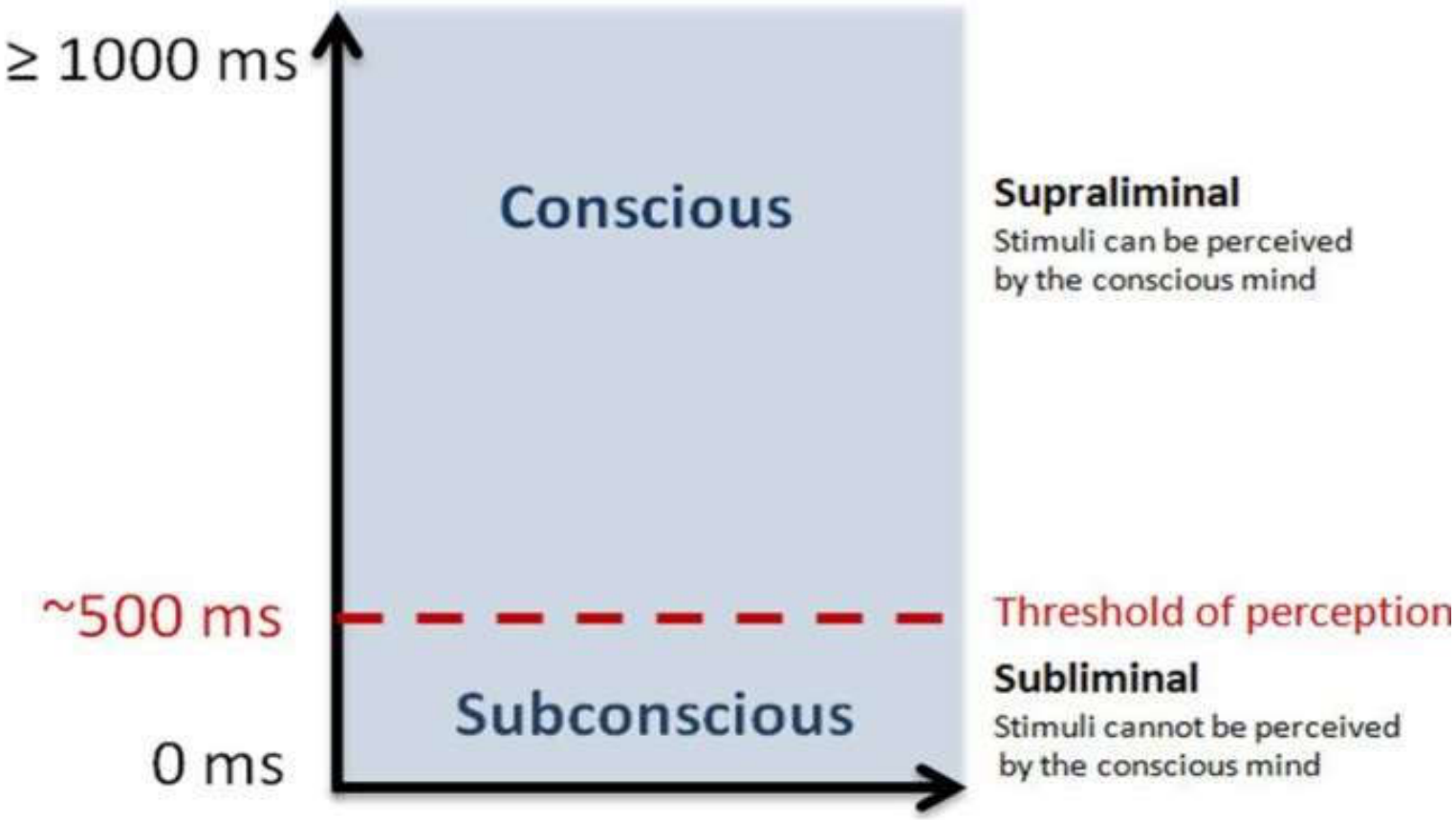
Influen

1.Introduction

Studies employing a masked priming paradigm have obser
stimuli could be processed on a semantic level. Semantic c
consciously perceived stimulus could be facilitated by the p
former stimulus that was not consciously perceived (sublim
usually measured as the reaction time employed to respon
facilitation occurs between congruent pairs of stimuli (from
and does not occur between incongruent pairs (from differ
called congruency priming effect. Two principal factors mo
priming effect, the semantic similarity between stimuli and
similarity refers to the similarity in meaning or overlap of fe
words. The greater the similarity, the bigger the facilitation
modulates priming effect is the interval between the onset
and the onset of the second stimulus of the par (SOA: stim
asynchrony), showing that the bigger the SOA, the lower p
Despite the fact that these two phenomena have been exte

not been studied the influence of semantic strength has nc
together with SOA duration.



1.1 Research Questi

The goal of this study was to observe if semantic related
weakly related pairs) could modulate congruency priming
evaluate this, both semantic relatedness (strong and we
manipulated in a subliminal semantic priming task.

2. Methods

- RT (response time) [ms]
- Relation ['nr', 'WR', 'SR']
- Answer [0:1]
- Num.Trial [1:256]
- ID

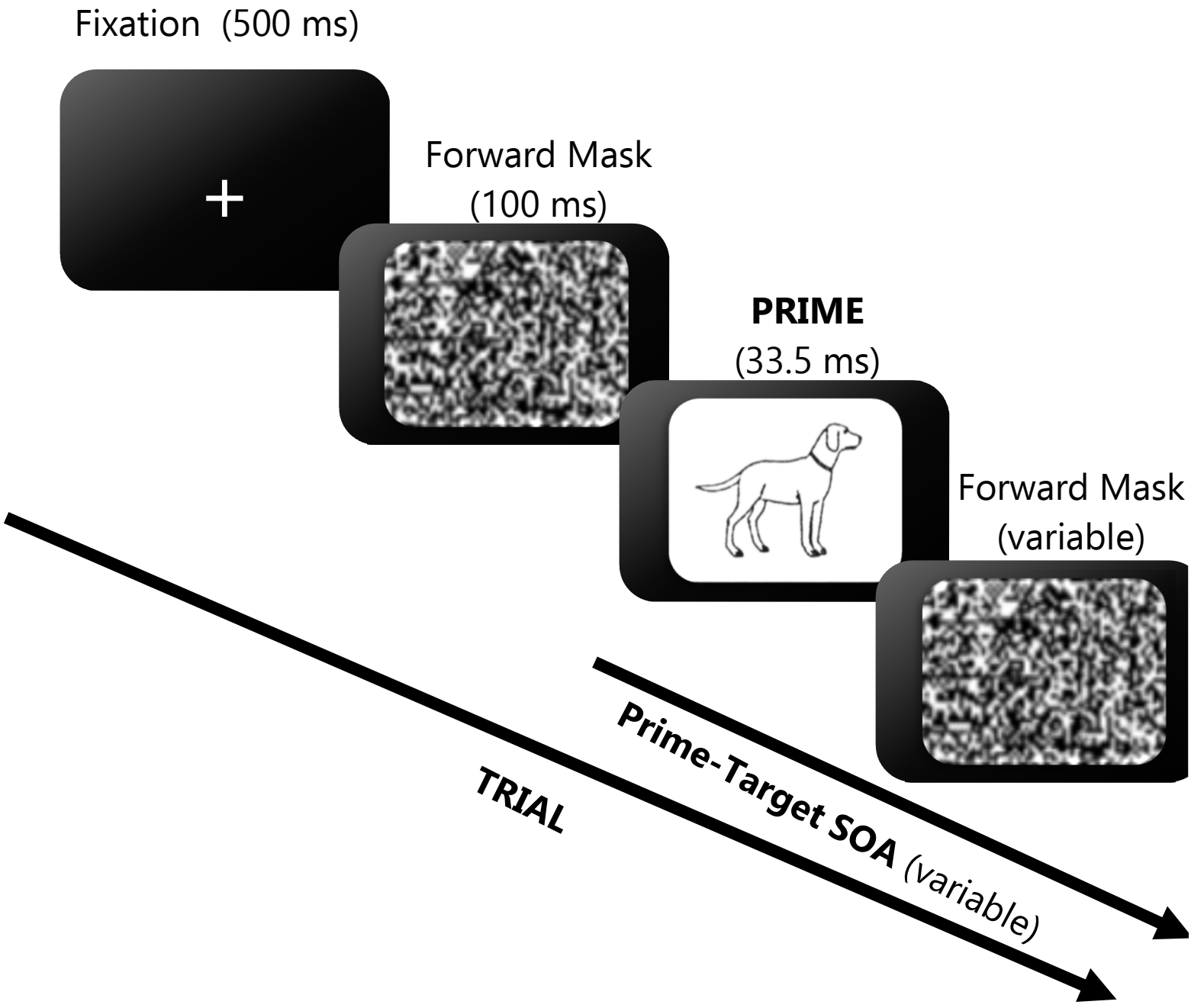
- Prelikert [1:7]
- ID

- Hit Rate [0:1]
- FA Rate [0:1]
- Dprime (Sensitivity index
- ID

- Similarity [1:7]
- ID

relatedness survey

2.1 Experimental Ta



Ortells, J. J., Kiefer, M., Castillo, A., Megías, M., & Morillas, A. (2016). The semantic

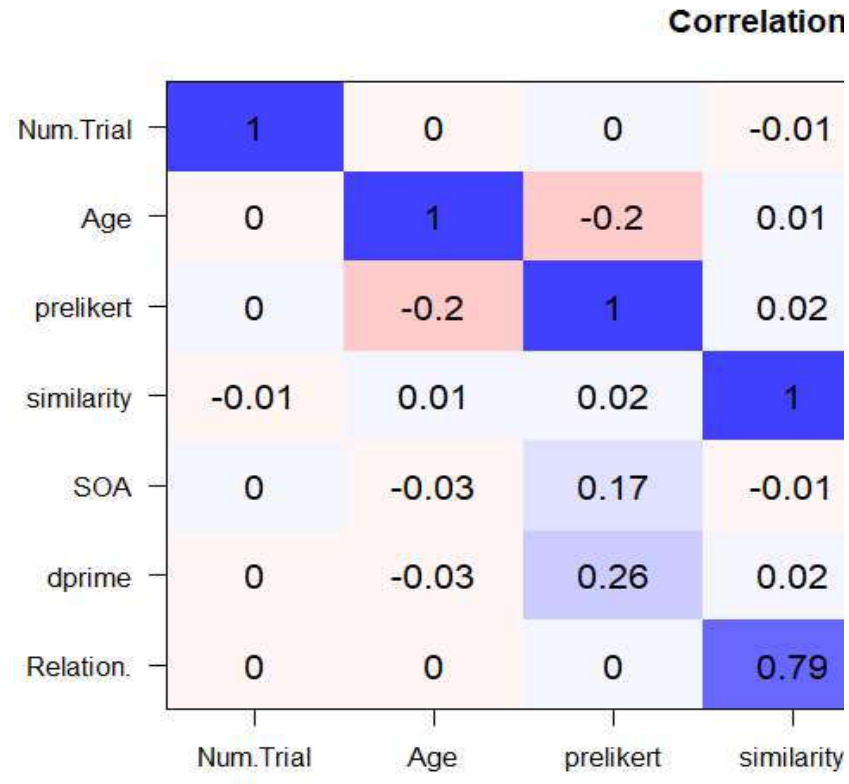
Bruno, N., Díaz Rivera, M., Embon, I., Iorio, A. (2016). Procesamiento Subliminal Se

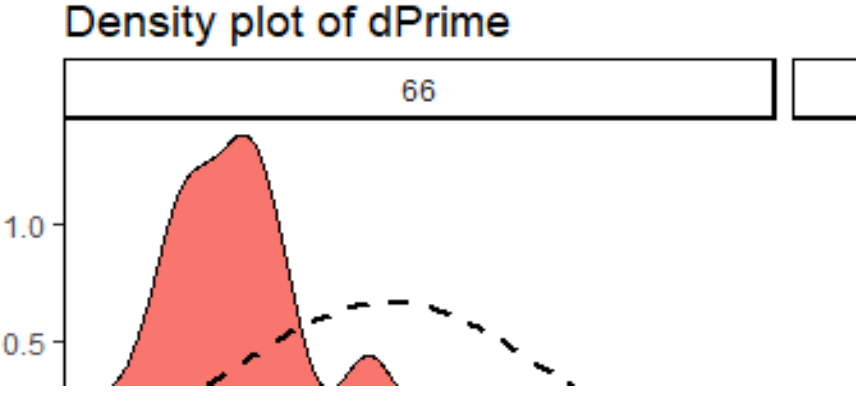
nce of Semantic Similarity and

Course

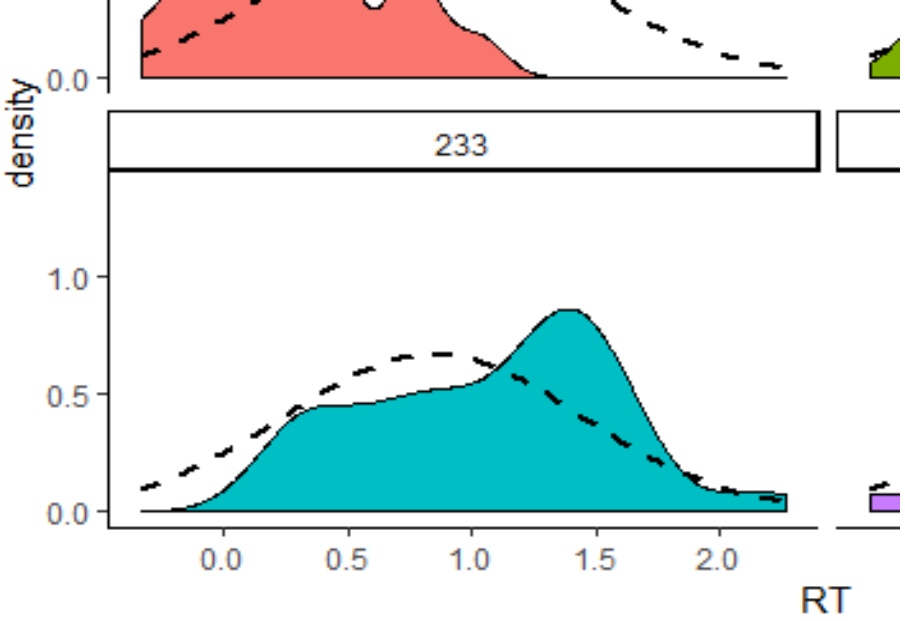
Aut

rved that subliminal
ategorization of a
presentation of a
inal). This facilitation is
d to a task. When this
n the same category)
rent categories) is
dulate the subliminal
the SOA. Semantic
eatures between two
. Another factor that
of the first stimulus
ulus onset
riming effect.
ensively studied, it has

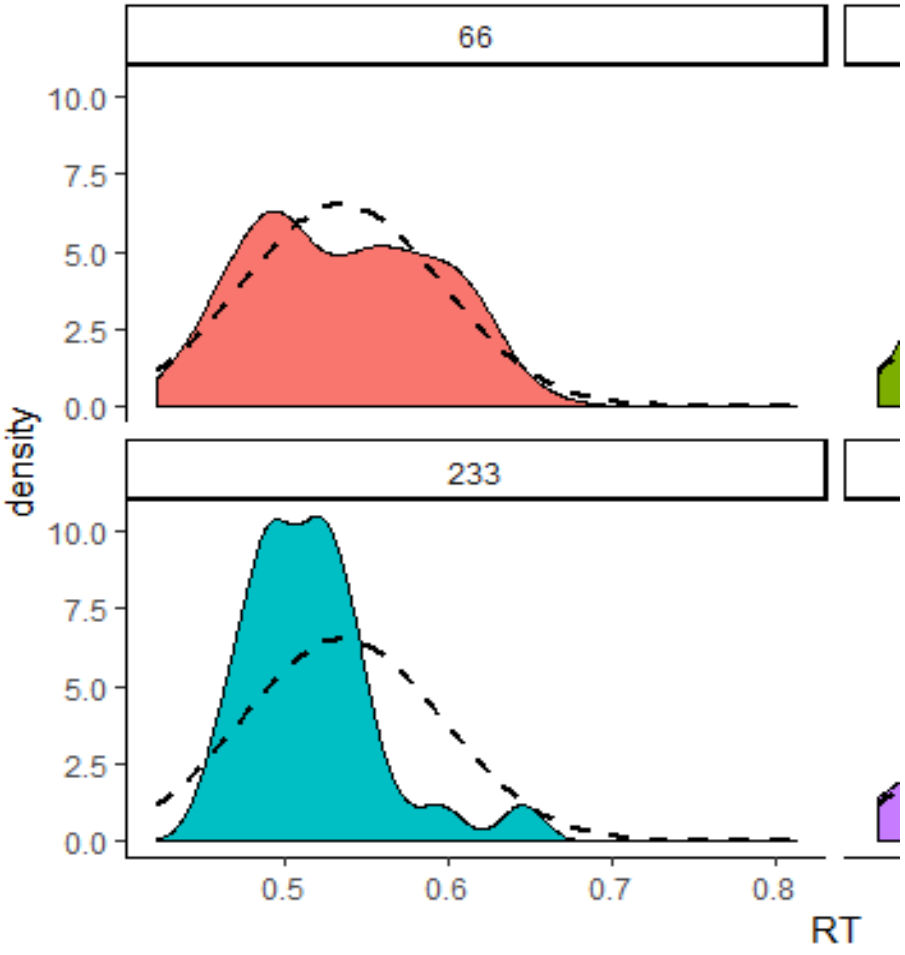




ɔt been studied



Density plot of RT (untransformed)



on

lness (strongly and
effect duration. To
ak) and SOA were

We performed a Kruskall Wallis t
groups. The test did not show a
sum test shows that there is no
no evidence of difference among
We performed a One-Way ANO

We performed a One-Way ANO
groups. There is statistical evider
F(3,96)=22.29 p < .001. The bigg
The RT distribution between gro
distribution. Logarithmic and inv
data. The original intention of th
4x3 where:

IV between: SOA
IV within: Relation
DV: RT

We performed individual Friedm
the different types of semantic re

Given the mentioned limitations
applied. This model allowed to w
was not necessary to average the
procedure on this type of experi

<) [d']

$$Yij = \alpha j[i] + \beta 1$$

$$RT \sim Relation * SOA$$

Ranc

Groups	
ID	
Residual	

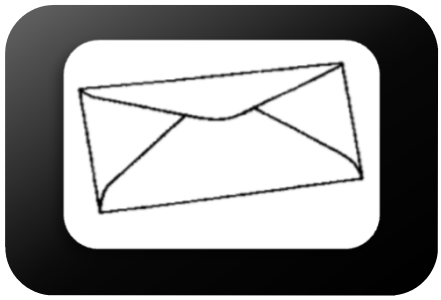
Number of obs: 25073, groups: ID,

Fix

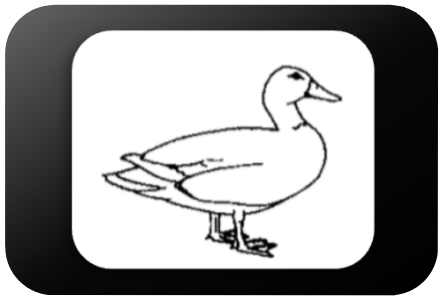
	Estimate	Std. Error
(Intercept)	-0.6148	0.02223
RelationWR	-0.01923	0.00619
RelationSR	-0.01762	0.0062
SOA 150	0.01245	0.03144
SOA 233	-0.03833	0.03056
SOA 317	0.02276	0.03113
c.Num.Trial	7.1E-05	1.7E-05

sk

TARGET



Unrelated



Weekly Related

Strongly Related

In summary, the four experimen
reduction on the RT for every gr
Group effect. Different SOA valu
A possible limitation to generali
the bigger the SOA, the bigger t
SOA presented an influence on
has a differential effect over the
Given the fact that the attention

Related

on the processing of the target

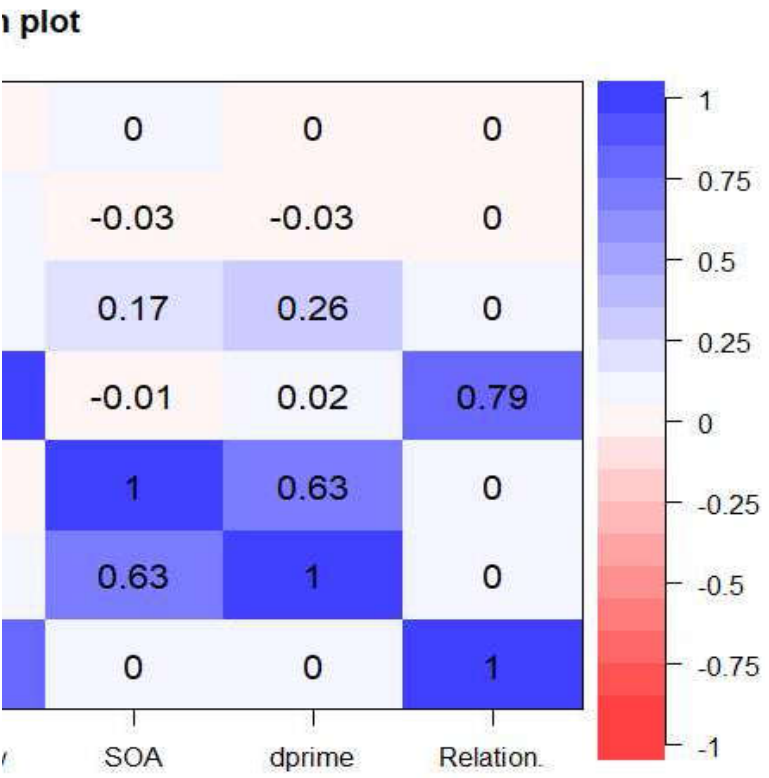
origin of unconscious priming: Behavioral and event-related potential evidence durin

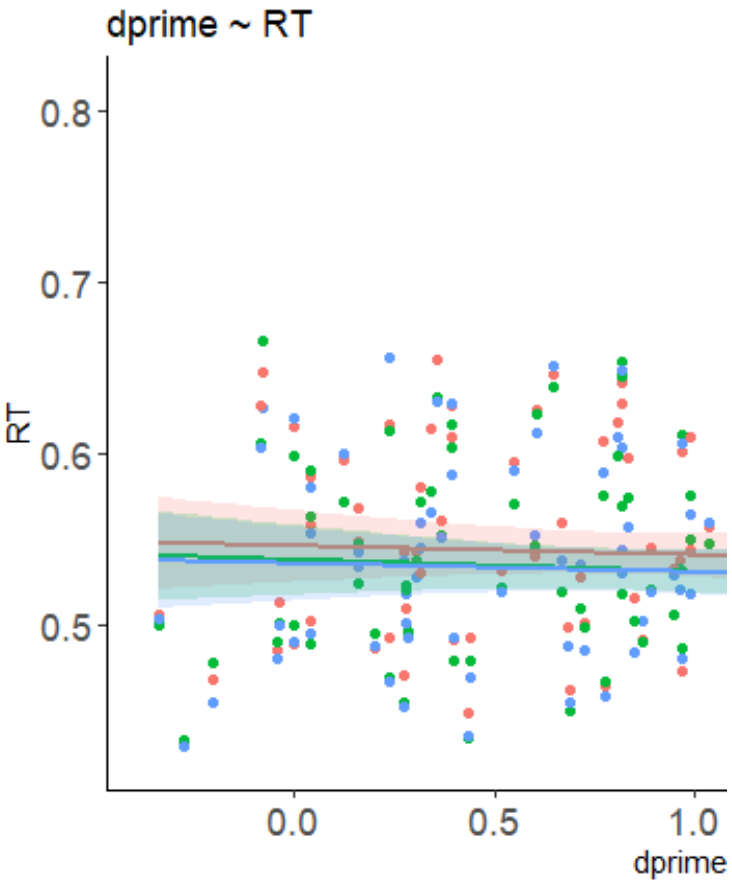
egún El Grado De Relación Semántica. VIII Congreso Internacional de Investigación y P

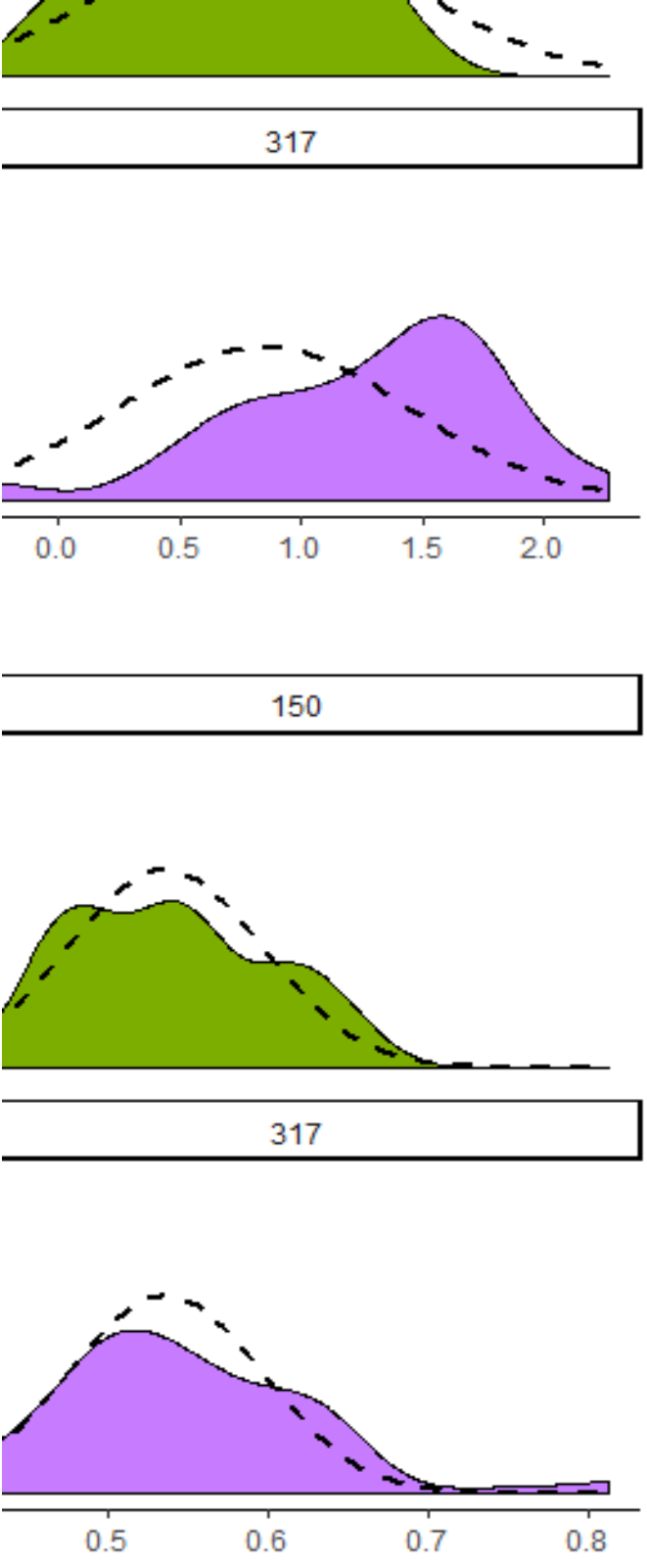
Stimulus Onset Asynchrony c
Processing

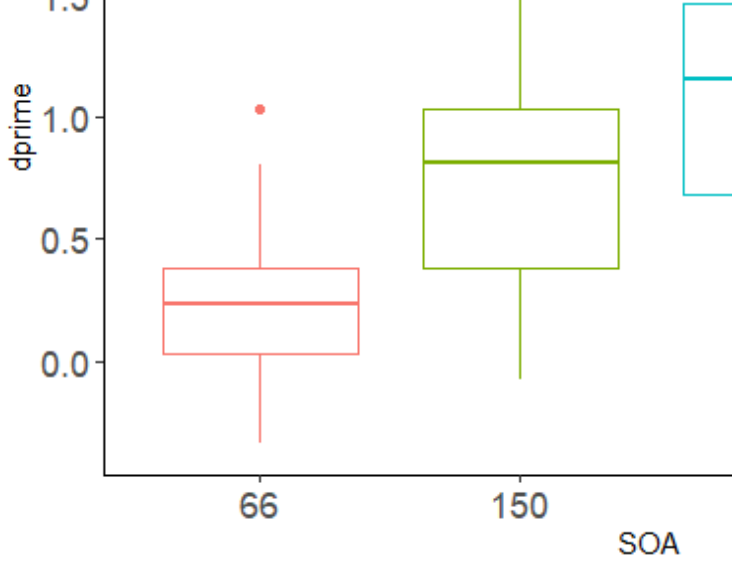
: IDS 702: Modeling and Representation of Data
Professor: Jerome Ritter
thor: Joaquin Menendez (*jm622@duke.edu*)

Exploratory A









dpri

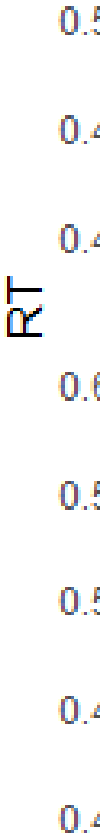
Group	n	mean	s
66	24	0.25	0.
150	24	0.72	0.
233	27	1.07	0
317	25	1.27	0.

aov(formula = dprime ~ SC

	Df	Sum Sq	Mea
SOA	3	14.69	4.8
Residuals	96	21.09	0.

:est to compare the means of prelikert scores between
statistical trend (X2= 6.575, p = .079). The Wilcoxon rank
difference between groups. We could claim that there is
g groups for prelikert values.
/A to compare the mean of dprime scores between

VA to compare the mean of dprime scores between
nce of a difference between dprime per group
er the SOA, the bigger the dprime.
ups was not homogeneous and did not present a normal
erse transformation were not able to homogenize the
e experimental design was to realize a Mixed ANOVA

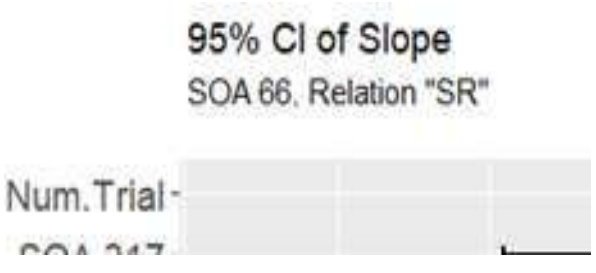


an Test for each group in order to compare the RT over
elatedness (Relation).

a multilevel model using ID as a grouping factor was
ork with normally distributed data given the fact that it
e RT of each subject per condition (the standard
ments) allowing to work with all the trials of each subject.

4. Result

$$1i * \beta 2j[i] + \beta 3i + \epsilon i$$
$$+ \ c.Num.Trail \ + \ (1|ID)$$



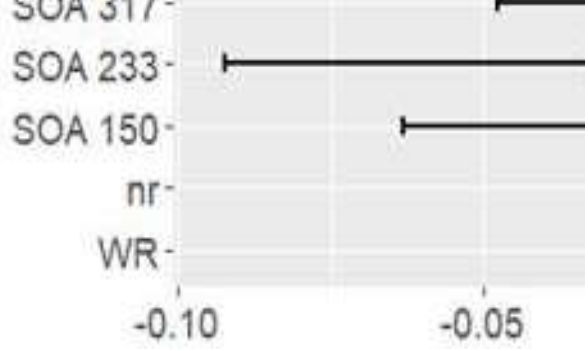
dom effects

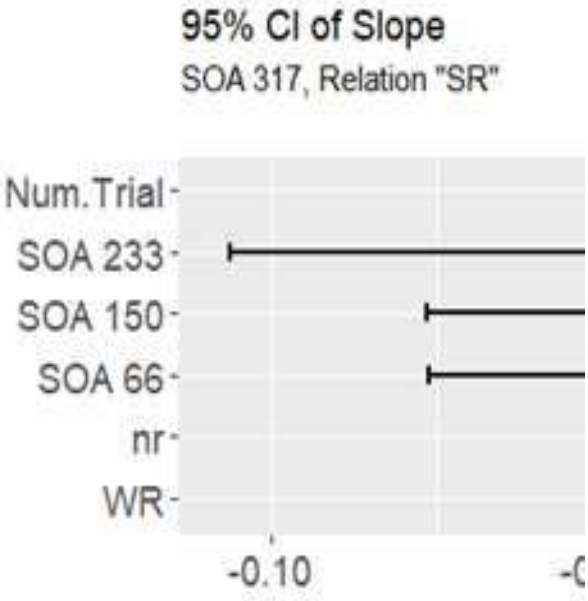
	Name	Variance	Std.Dev.
	(Intercept)	0.01155	0.1075
		0.03878	0.1969

, 100

ed effects

df	t value	Pr(>|t|)	
98.54	-27.654	< 2e-16	***
24960	-3.107	0.00189	**
24960	-2.844	0.00446	**
98.58	0.396	0.69306	
98.56	-1.254	0.21273	
98.53	0.731	0.4664	
24960	4.225	2.39E-05	***





5. Conclusion and

ıtal groups shown statistical differences depending on the sem
roup when the pair of stimuli were Weak or Strong related in c
ues did not reduce nor increase RT for any Relation level.
ze these results is the fact that subject performed above-chanc
the dprime score. Nevertheless, Ortells et. al (2016) also report
the RT, and If we take in count the lack of difference on the su
conscious processing of the prime stimuli only during the obj
ı has a crucial role on conscious processing, it could be that the

stimuli would be interfering on the processing of the prime sti

References

g category congruency priming from strongly and weakly related masked words. Cogı
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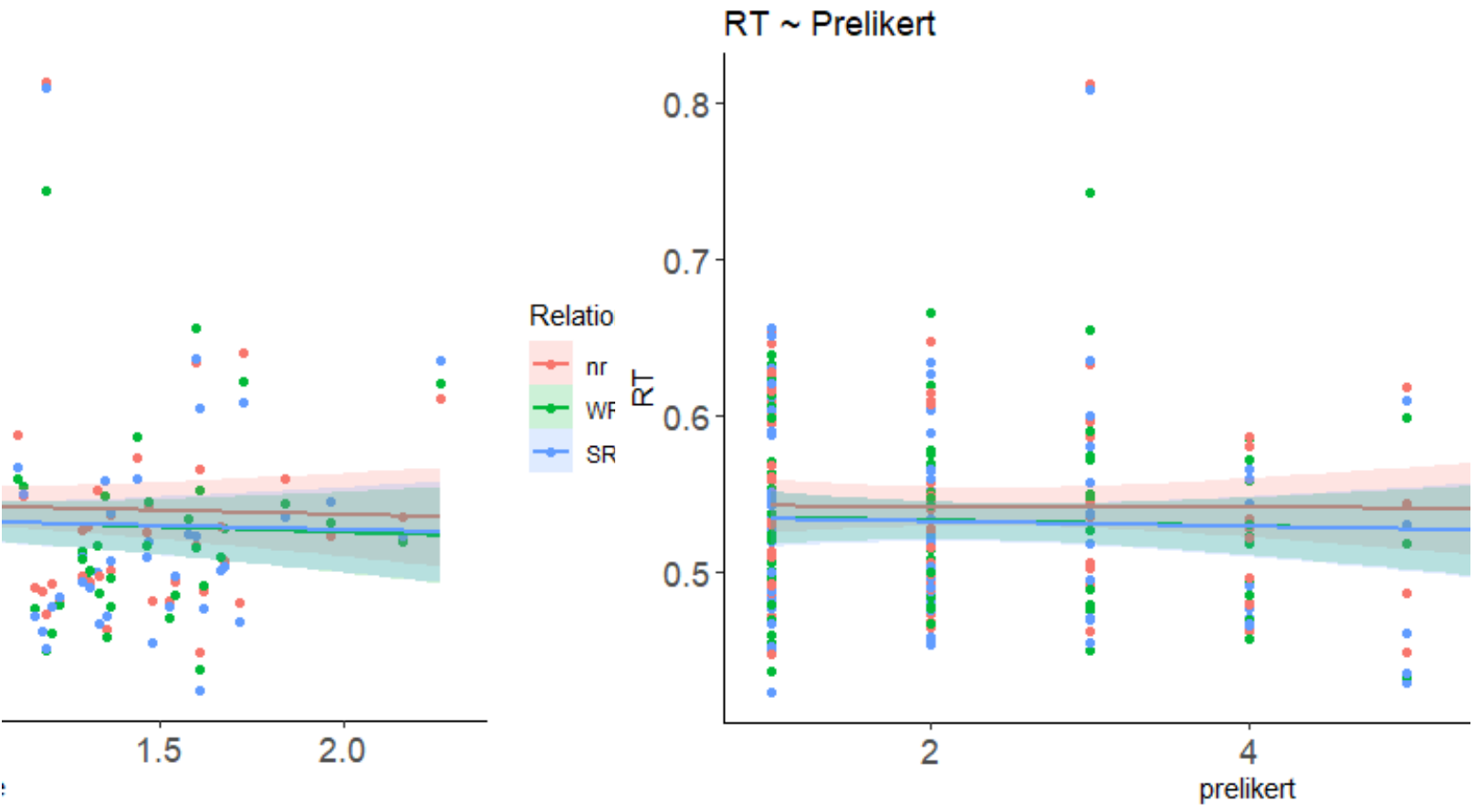
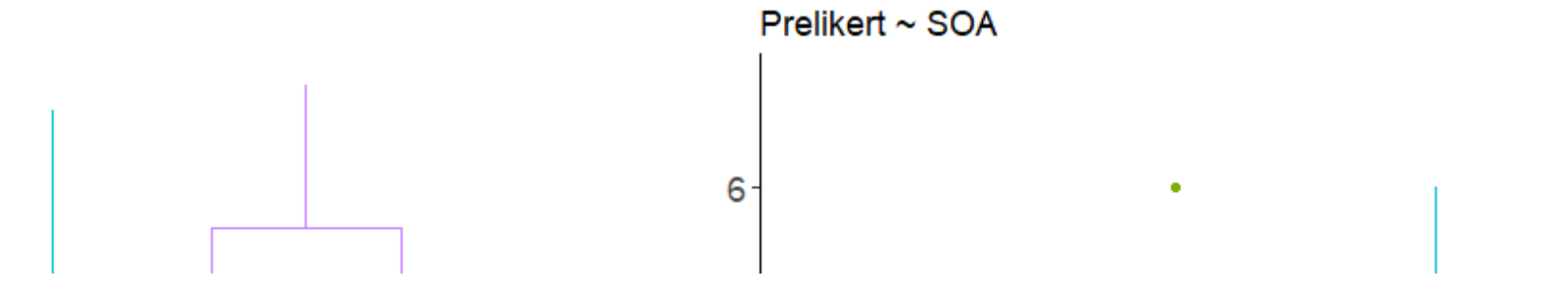
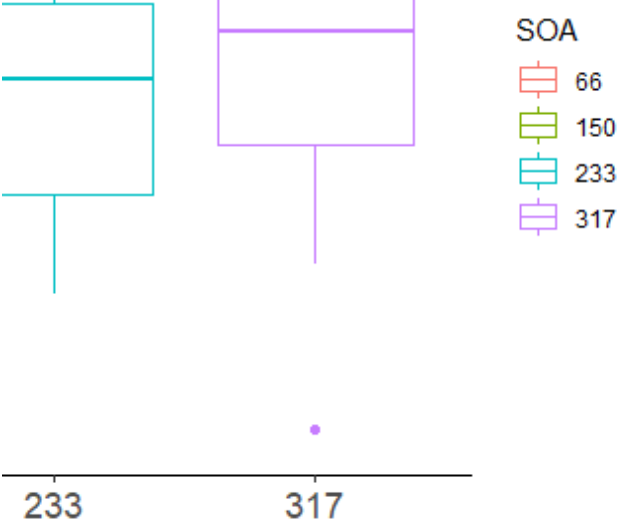
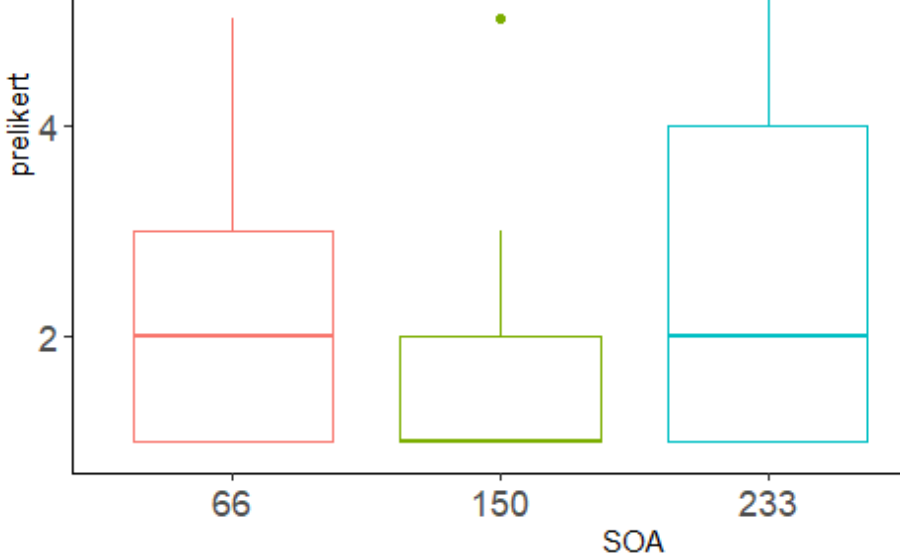
on Semantic Subliminal

nalysis









me

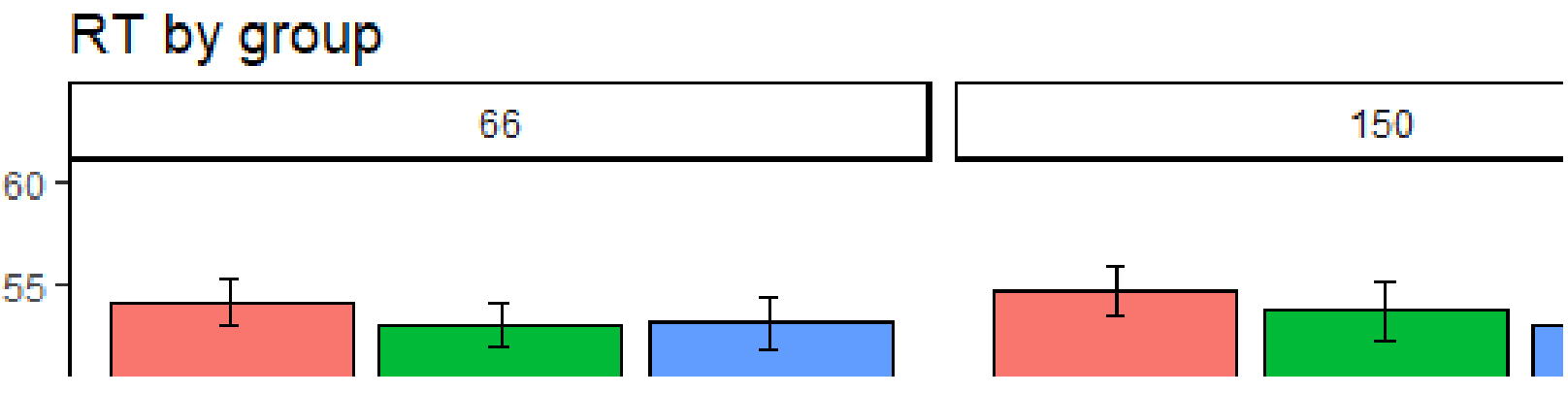
sd	media n	trimme d	max
.33	0.24	0.24	1.03
.45	0.82	0.73	1.48
).5	1.16	1.07	2.16
.56	1.35	1.31	2.26

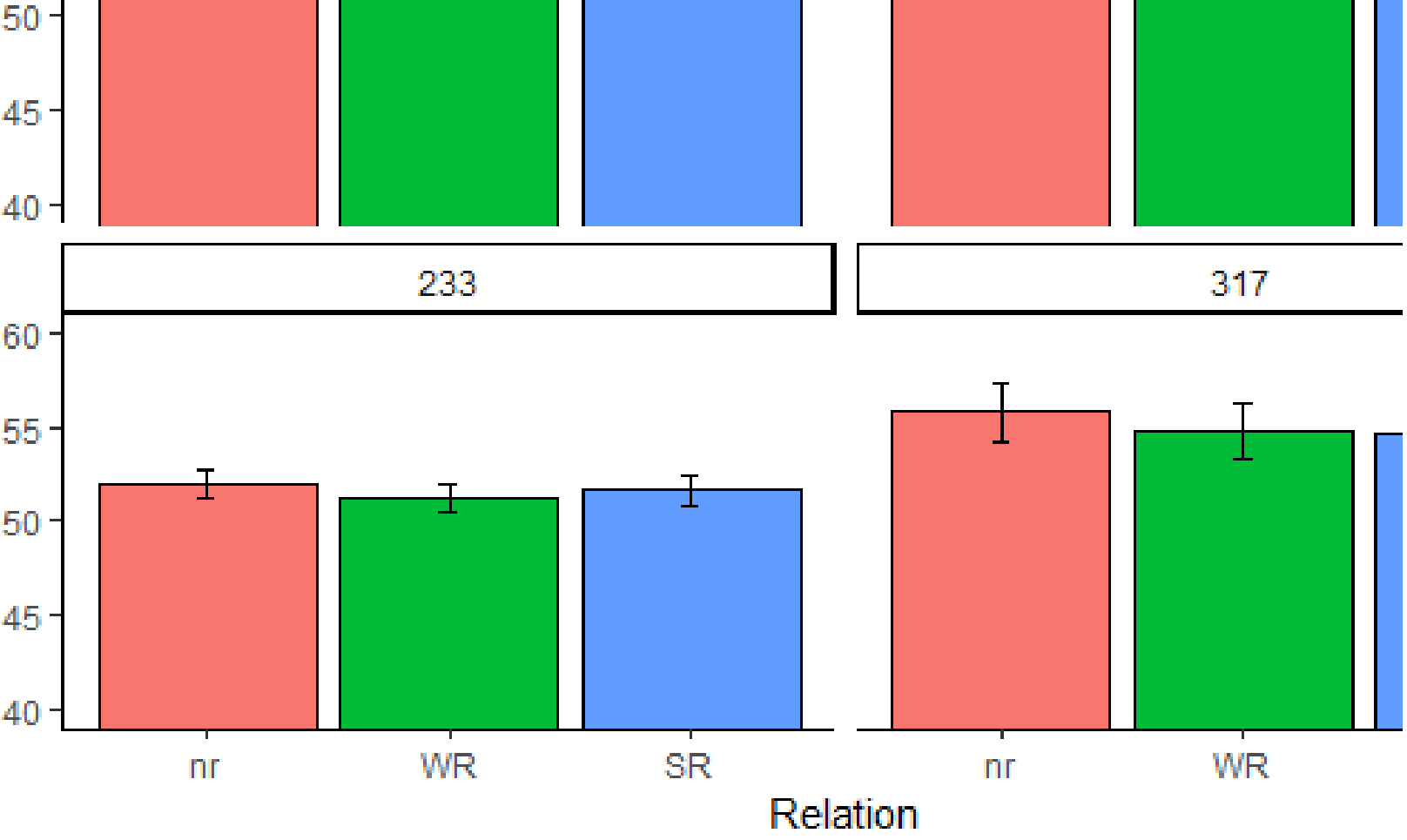
DA, data = multiple_data)

an Sq	F value	Pr(>F)
398	22.29	4.88e-11 ***
22		

	prelikert			
group	n	mean	sd	median
66	24	2.21	1.22	2
150	24	1.96	1.46	1
233	27	2.52	1.45	2
317	25	2.72	1.43	2

Kruskal-Wallis rank sum test		
X2	df	p-value
6.759	3	0.0799

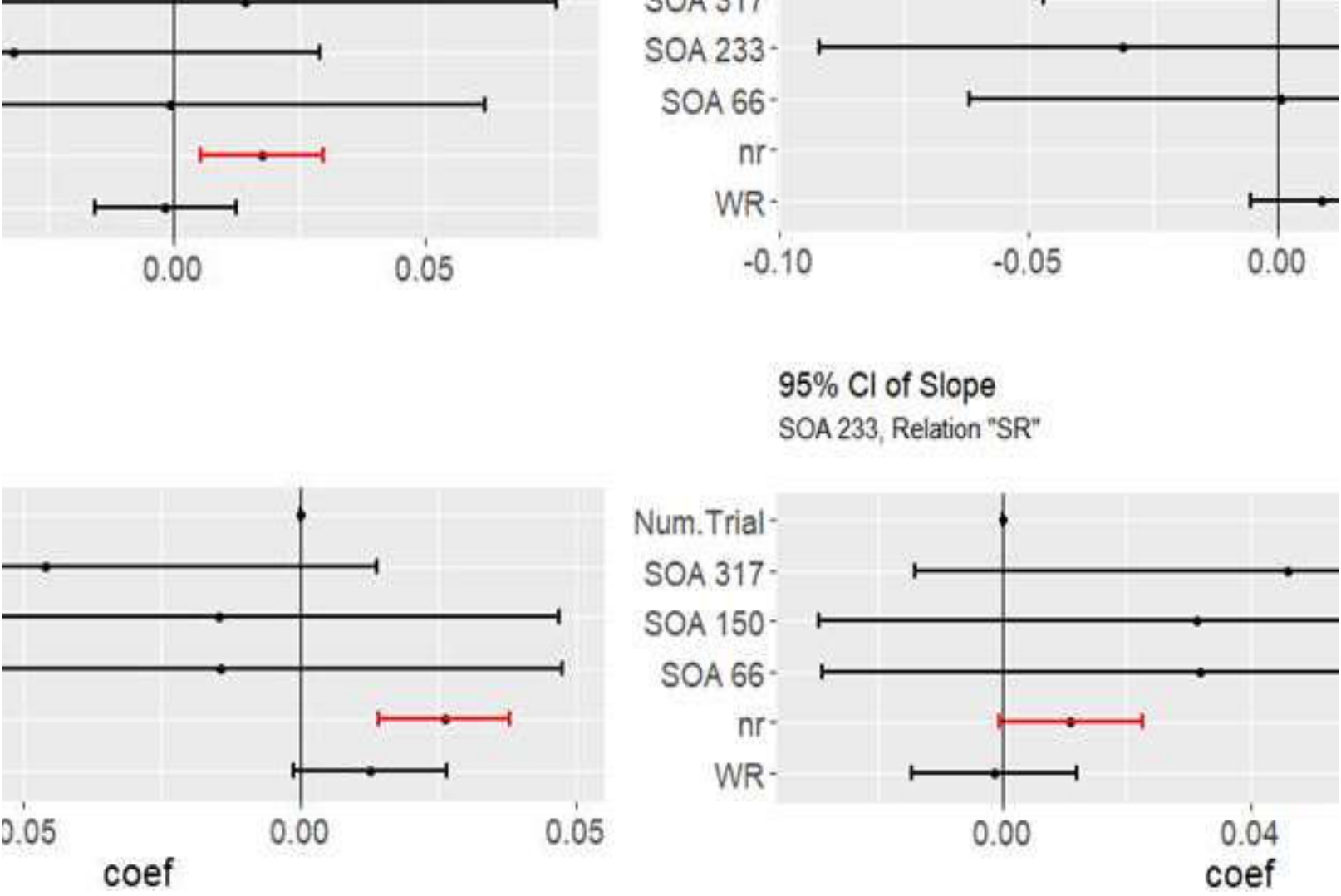




Friedman rank sum test

Groups	Stats
SOA 66	Friedman chi-squared = 12.333, df = 2, p-value = 0.002098
SOA 150	Friedman chi-squared = 7, df = 2, p-value = 0.0302
SOA 233	Friedman chi-squared = 2.7407, df = 2, p-value = 0.254
SOA 317	Friedman chi-squared = 6.72, df = 2, p-value = 0.03474

ts



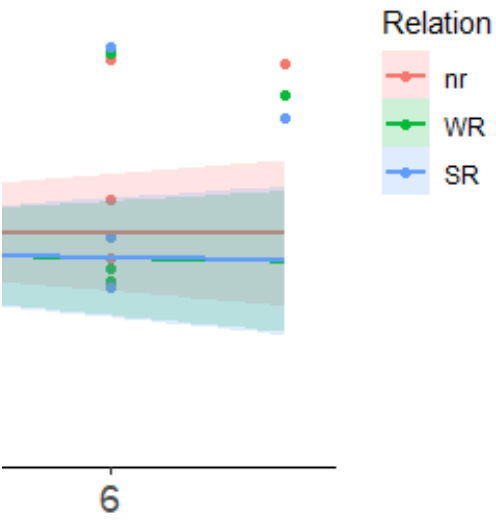
Limitations

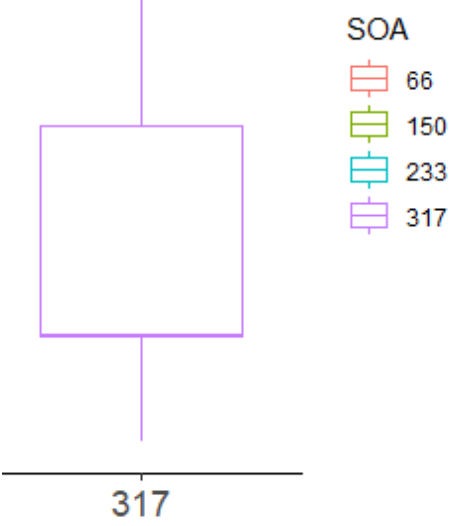
antic relatedness between the prime and the target stimulus.
omparison to not being related. However, we did not find evic

ce on the visibility test. Also, we found a group effect on the d'
ted differences among groups on the dprime. Given the fact th
ubjective report (Prelikert), we could suggest that the different
ective visibility test but no effect during the experimental task
e short period of time between stimulus combined with an atte

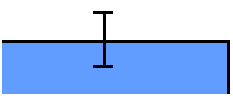
muli.

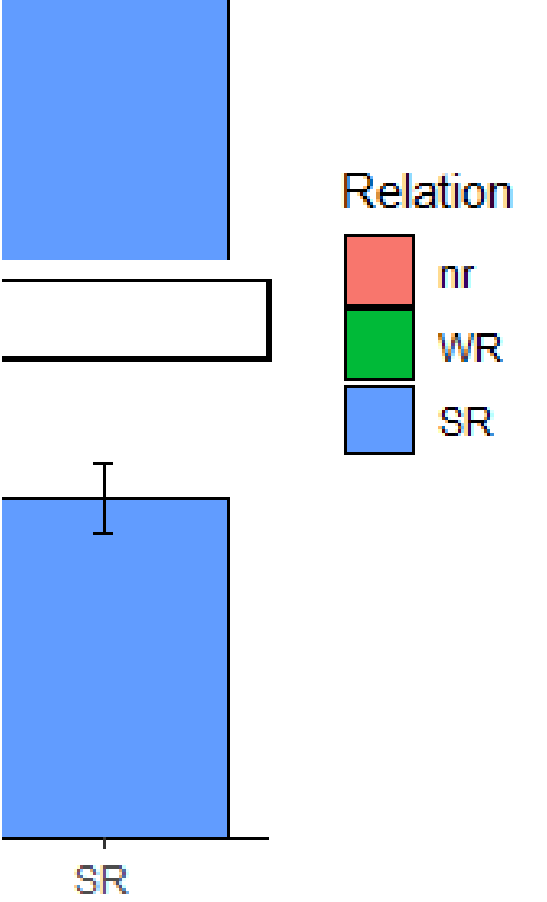
nition, 146, 143–157. https://doi.org/10.1016/j.cognition.2015.09.012
s, Buenos Aires.

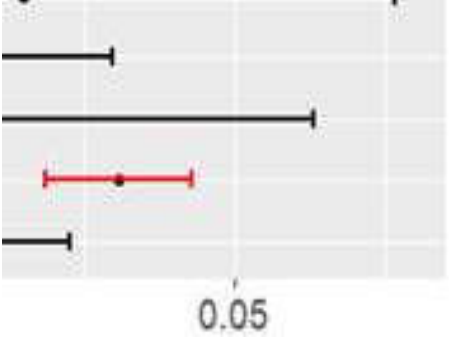

Relation
nr
WR
SR
6

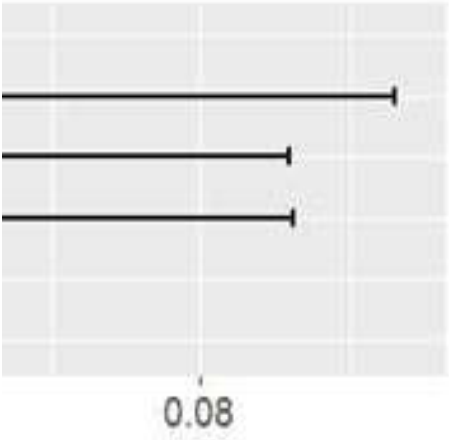


min	max
1	5
1	6
1	6
1	7




Relation
nr
WR
SR
SR





There was a
dence of a

prime score,
nat dprime nor
SOA interval
(priming task).
entional focus