

**Student:** Aida Isteliyeva

**Assignment:** Statistical results and graphs

**Code**

```
library(lme4)
library(readxl)
#input of data into r
color <- read_excel("C:/Users/1/Downloads/Color.xlsx", sheet = "for r")

colornofil <- read_excel("C:/Users/1/Downloads/Color.xlsx", sheet = "for r wout fil")

#creating boxplots to show the data
boxplot(time ~ side, data = color, xlab = "Location of the color",
        ylab = "Response time")
boxplot(time ~ side, data = colornofil, xlab = "Location of the color",
        ylab = "Response time")

boxplot(time ~ names, data = color, xlab = "Use of color terms",
        ylab = "Response time")
boxplot(time ~ names, data = colornofil, xlab = "Use of color terms",
        ylab = "Response time")

boxplot(time ~ names*side, data = color, xlab = "Use of color terms and Location of the color",
        ylab = "Response time")
boxplot(time ~ names*side, data = colornofil, xlab = "Use of color terms and Location of the color",
        ylab = "Response time")

boxplot(time ~ creativity, data = color, xlab = "creative hobby or work",
        ylab = "Response time")
boxplot(time ~ creativity, data = colornofil, xlab = "creative hobby or work",
        ylab = "Response time")

boxplot(time ~ gen, data = color, xlab = "Gender",
        ylab = "Response time")
boxplot(time ~ gen, data = colornofil, xlab = "Gender",
        ylab = "Response time")

boxplot(time ~ creativity*side, data = color, xlab = "Creativity and location of the color",
        ylab = "Response time")
boxplot(time ~ creativity*side, data = colornofil, xlab = "Creativity and location of the color",
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ylab = "Response time")

boxplot(time ~ other, data = color, xlab = "Filler colors",
        ylab = "Response time")
boxplot(time ~ other, data = colornofil, xlab = "Filler colors",
        ylab = "Response time")

boxplot(time ~ side*names*creativity, data = colornofil, xlab = "Location of the color, color
terms, creativity",
        ylab = "Response time")

#calculating the significance of factors

color.all = lmer (time ~ gen + creativity + names + side + other + (1|part), data = colornofil)
color.side = lmer (time ~ gen + creativity + names + other + (1|part), data = colornofil)
anova(color.side,color.all)

color.all = lmer (time ~ gen + creativity + names + side + other + (1|part), data = colornofil)
color.names = lmer (time ~ gen + creativity + side + other + (1|part), data = colornofil)
anova(color.names,color.all)

color.all = lmer (time ~ gen + creativity + names + side + other + (1|part), data = colornofil)
color.namesxside = lmer (time ~ gen + creativity + other + (1|part), data = colornofil)
anova(color.namesxside,color.all)

color.all = lmer (time ~ gen + creativity + names + side + other + (1|part), data = colornofil)
color.creatxside = lmer (time ~ gen + names + other + (1|part), data = colornofil)
anova(color.creatxside,color.all)

color.all = lmer (time ~ gen + creativity + names + side + other + (1|part), data = colornofil)
color.other = lmer (time ~ gen + creativity + names + side + (1|part), data = colornofil)
anova(color.other,color.all)

```

## Statistical significance

Whether the side of the stimuli color affects RT

```

color.side: time ~ gen + creativity + names + other + (1 | part)
color.all: time ~ gen + creativity + names + side + other + (1 | part)
      npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
color.side    8 280.90 314.27 -132.45   264.90

```

color.all	9	280.81	318.36	-131.41	262.81	2.0859	1	0.1487
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### Whether the use of derived names affects RT

color.names: time ~ gen + creativity + side + other + (1   part)								
color.all: time ~ gen + creativity + names + side + other + (1   part)								
	npar	AIC	BIC	logLik	deviance	Chisq	Df	Pr(>Chisq)
color.names	8	279.11	312.49	-131.56	263.11			
color.all	9	280.81	318.36	-131.41	262.81	0.2975	1	0.5855

### Whether the use of derived names and the side of the stimuli affects RT

color.namesxside: time ~ gen + creativity + other + (1   part)								
color.all: time ~ gen + creativity + names + side + other + (1   part)								
	npar	AIC	BIC	logLik	deviance	Chisq	Df	Pr(>Chisq)
color.namesxside	7	279.20	308.40	-132.60	265.20			
color.all	9	280.81	318.36	-131.41	262.81	2.3826	2	0.3038

### Whether creativity and side of the stimuli color affect RT

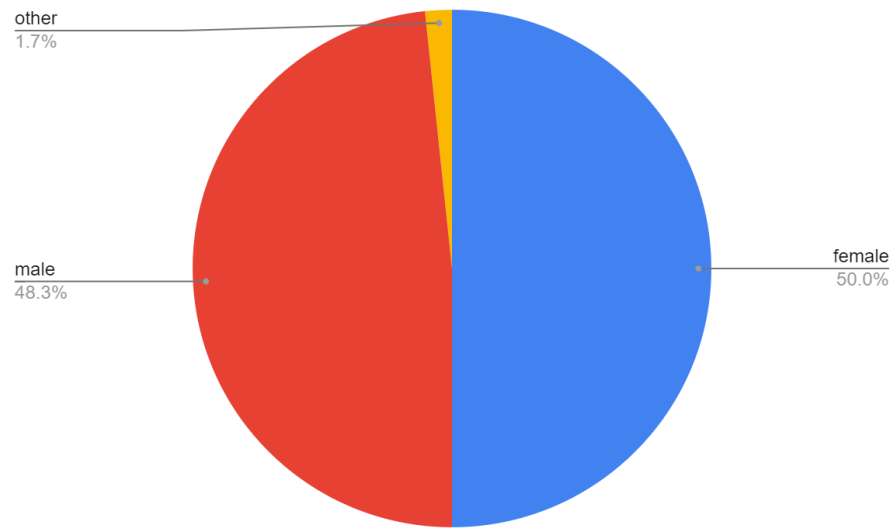
color.creatxside: time ~ gen + names + other + (1   part)								
color.all: time ~ gen + creativity + names + side + other + (1   part)								
	npar	AIC	BIC	logLik	deviance	Chisq	Df	Pr(>Chisq)
color.creatxside	7	279.86	309.07	-132.93	265.86			
color.all	9	280.81	318.36	-131.41	262.81	3.049	2	0.2177

### Whether the difference degree of difference between colors affects RT

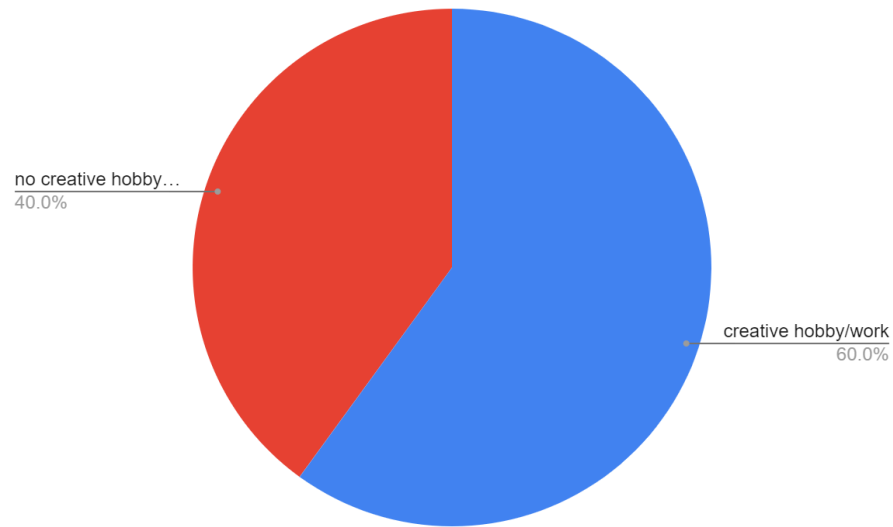
color.other: time ~ gen + creativity + names + side + (1   part)								
color.all: time ~ gen + creativity + names + side + other + (1   part)								
	npar	AIC	BIC	logLik	deviance	Chisq	Df	Pr(>Chisq)
color.other	8	295.91	329.28	-139.95	279.91			
color.all	9	280.81	318.36	-131.41	262.81	17.091	1	3.562e-05 ***

## Graphs

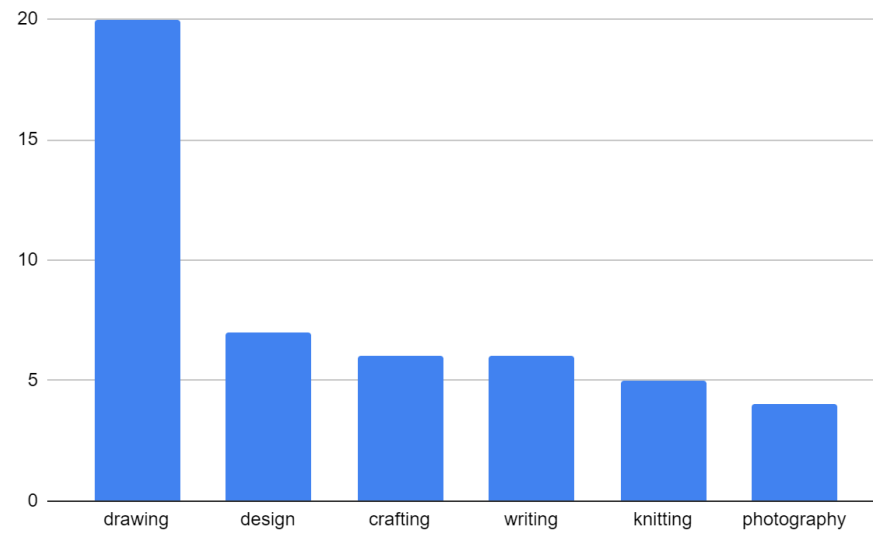
*Figure 1. Gender distribution of participants*



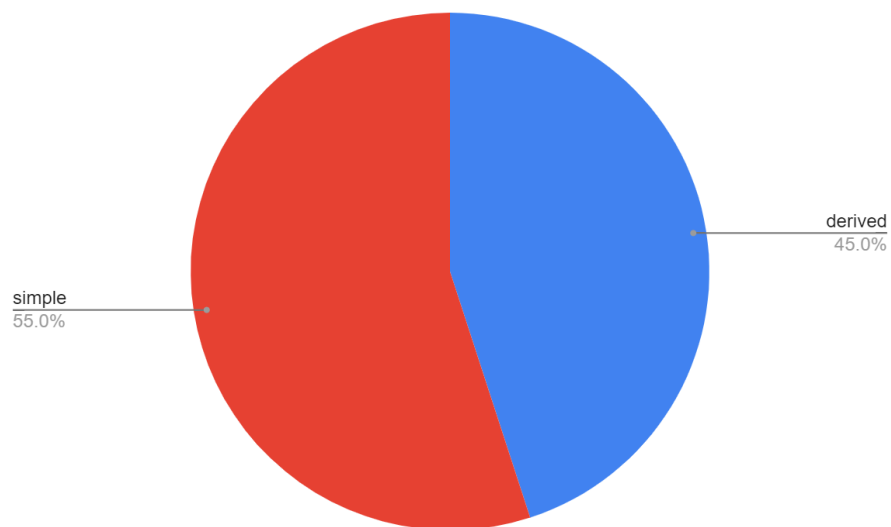
*Figure 2. Creativity of participants*



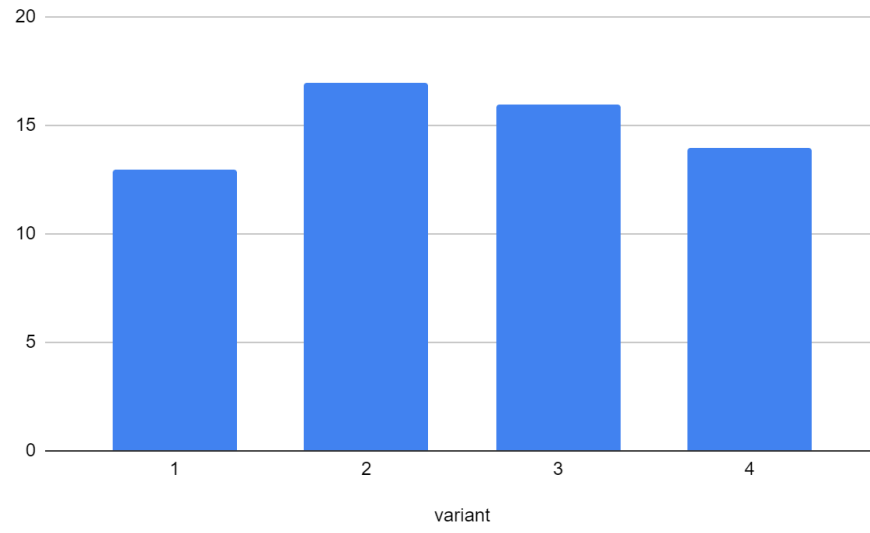
*Figure 3. Types of creative hobbies*



*Figure 4. Use of simple/derived color names*



*Figure 5. Participants distribution across variants of stimuli*



*Figure 6. Example of how qualtrics shows accuracy*

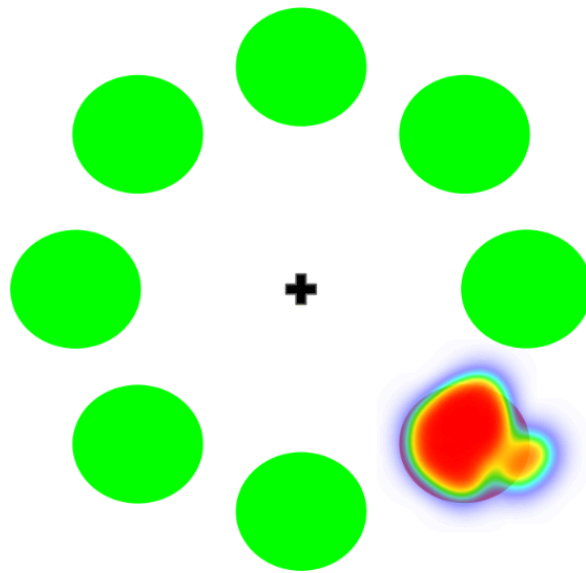


Figure 7. RT across genders

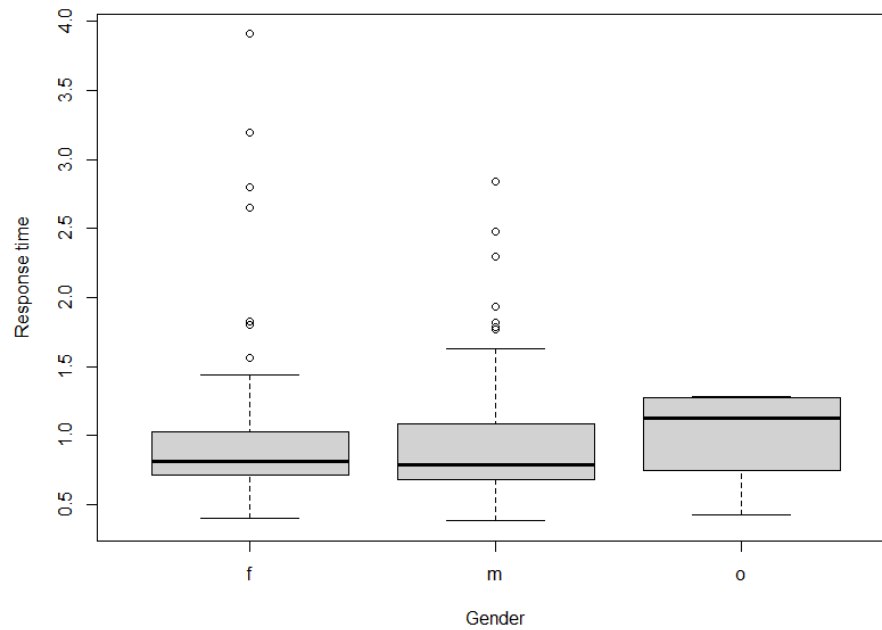


Figure 8. RT depending on whether participants have a creative hobby/work

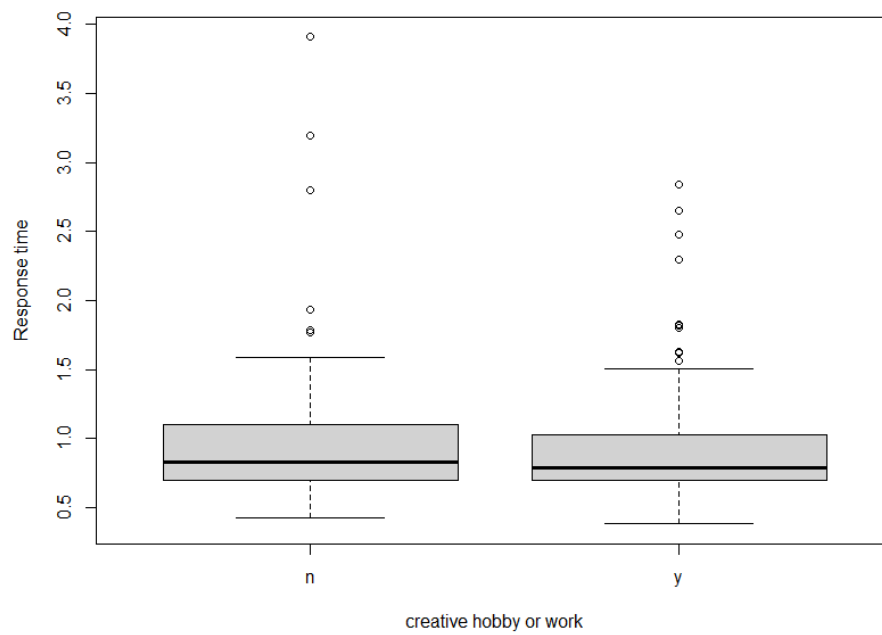


Figure 9. RT depending on what color terms participants use

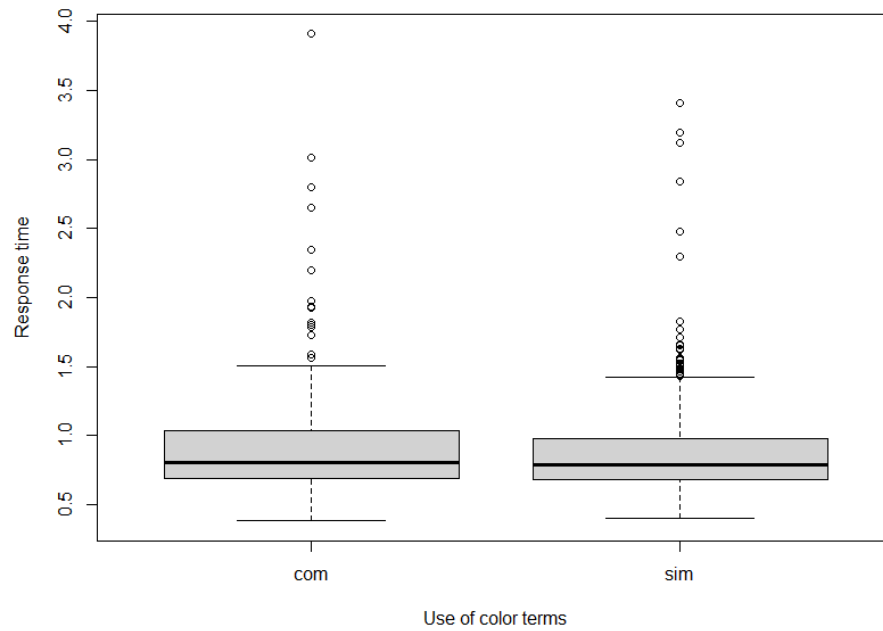


Figure 10. RT depending on the location of the color

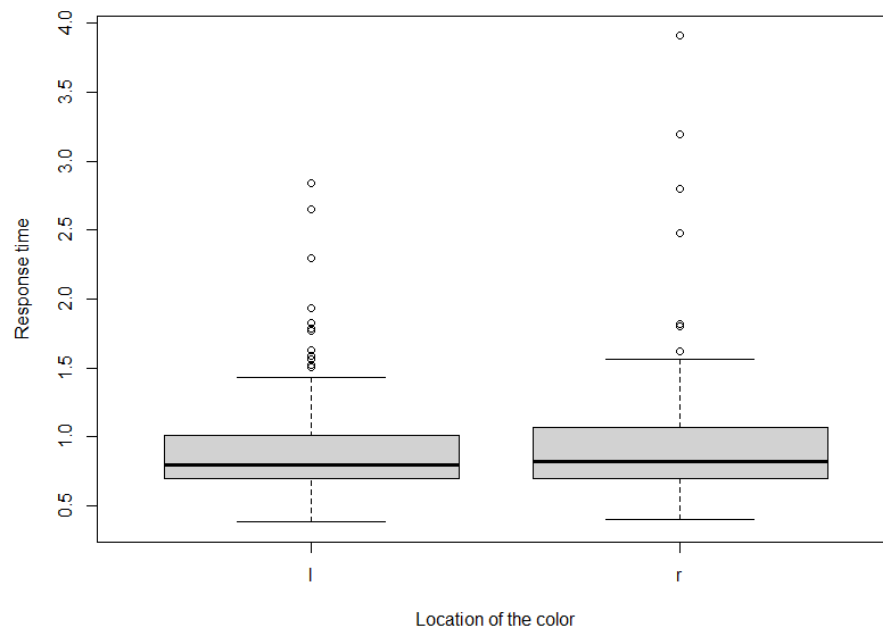




Figure 11. RT depending on whether filler color was similar or different

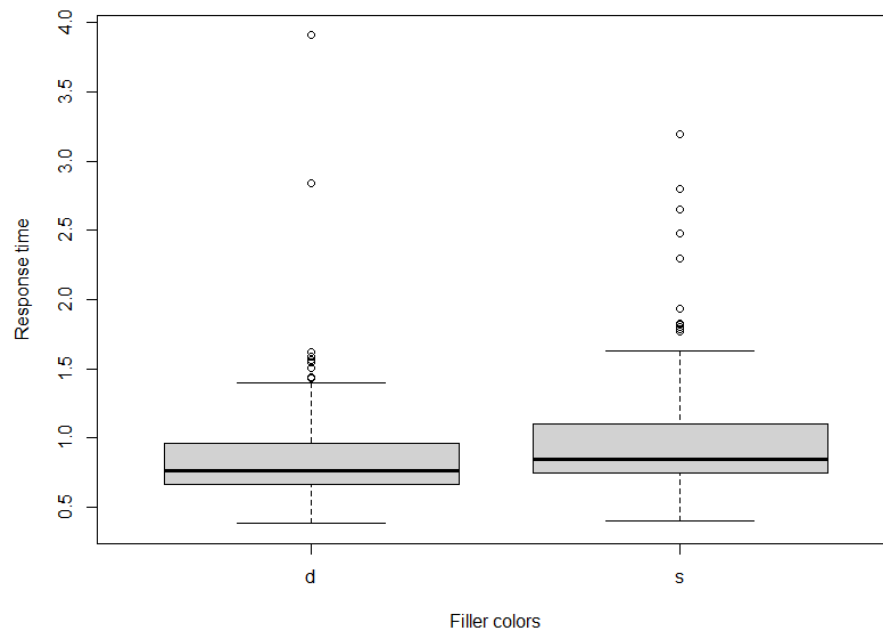


Figure 12. RT depending on the creativity of the participant and the location of color

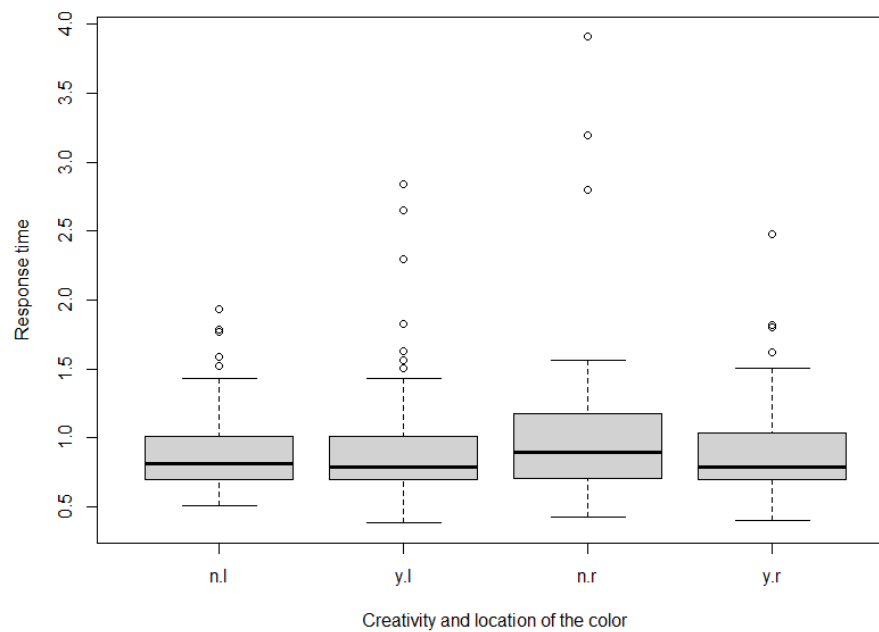


Figure 13. RT depending on the color terms used by the participants and the location of the color.

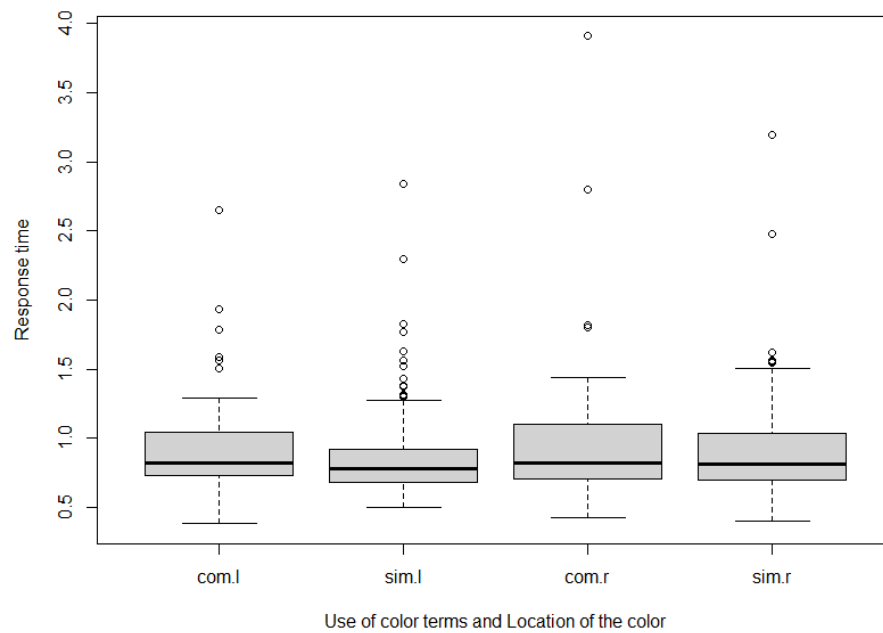


Figure 14. RT depending on the side of the color, creativity of the participant and the used color terms

