Through the eyes of the teacher - Multimodal exploration of expertise differences in the perception of classroom disruptions in a laboratory study

Contents

0.1 1. Participants

Table 1: Demographic information & teaching experience

Group	N	Women in percent	M Age in years	SD Age in years	Min Age in years	Max Age in years	M Exp.	SD Exp.	Min Exp.	Max Exp.
Expert	40	60.00	39.10	10.55	26	60	11.55	11.32	1	38
Novice	42	69.05	22.83	1.85	19	27	0.00	0.00	0	0

0.2 2. Measures

0.2.1 2.1 Eye-Tracking Data

0.2.1.1 2.2.2 Letter search

Table 2: N, M, SD, min & max letter search in seconds

Group	N	M	SD	Min	Max
Expert	39	12.97	6.75	2.72	29.24
Novice	40	12.22	8.79	2.28	48.26

0.2.1.2 t-test & effect size "Letter search"

```
Two Sample t-test
```

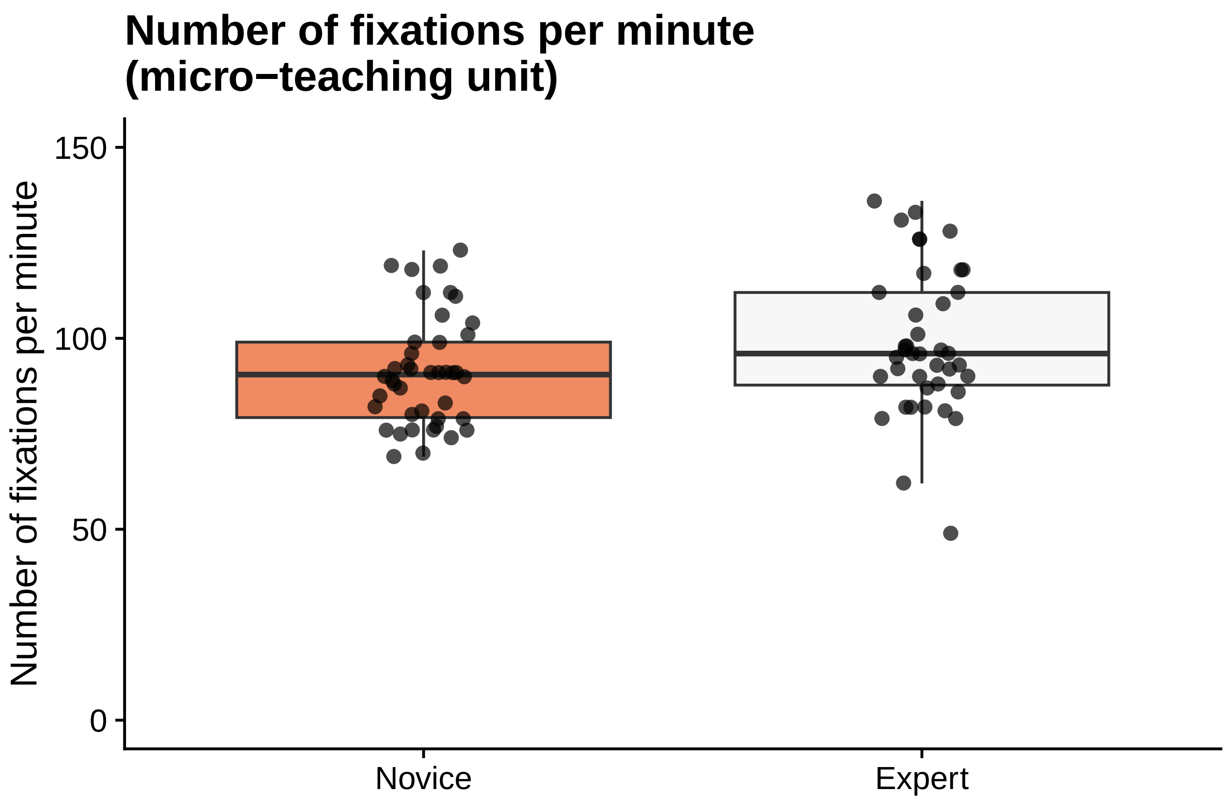
data: df_letter$Duration_o f_i nterval_s ec[df_l etter$Group == "Expert"] and df_letter$Duration_o f_i nterval_s ec[df_l etter$Group == "Novice"] t = 0.42858, df = 77, p-value = 0.6694 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -2.760420 4.274574 sample estimates: mean of x mean of y 12.97308 12.21600

[1] 0.1 attr(,"magnitude") [1] "negligible"

0.2.1.3 2.2.1 Number of fixations per minute (micro-teaching unit)

Table 3: N, M, SD, min & max number of fixation per minute (micro-teaching unit)

Group	N	M	SD	Min	Max
Novice	42	91.26	14.43	69	123
Expert	40	98.58	19.04	49	136



0.2.1.4 t-test & effect size “Number of fixation (micro-teaching unit)”

```
Two Sample t-test
```

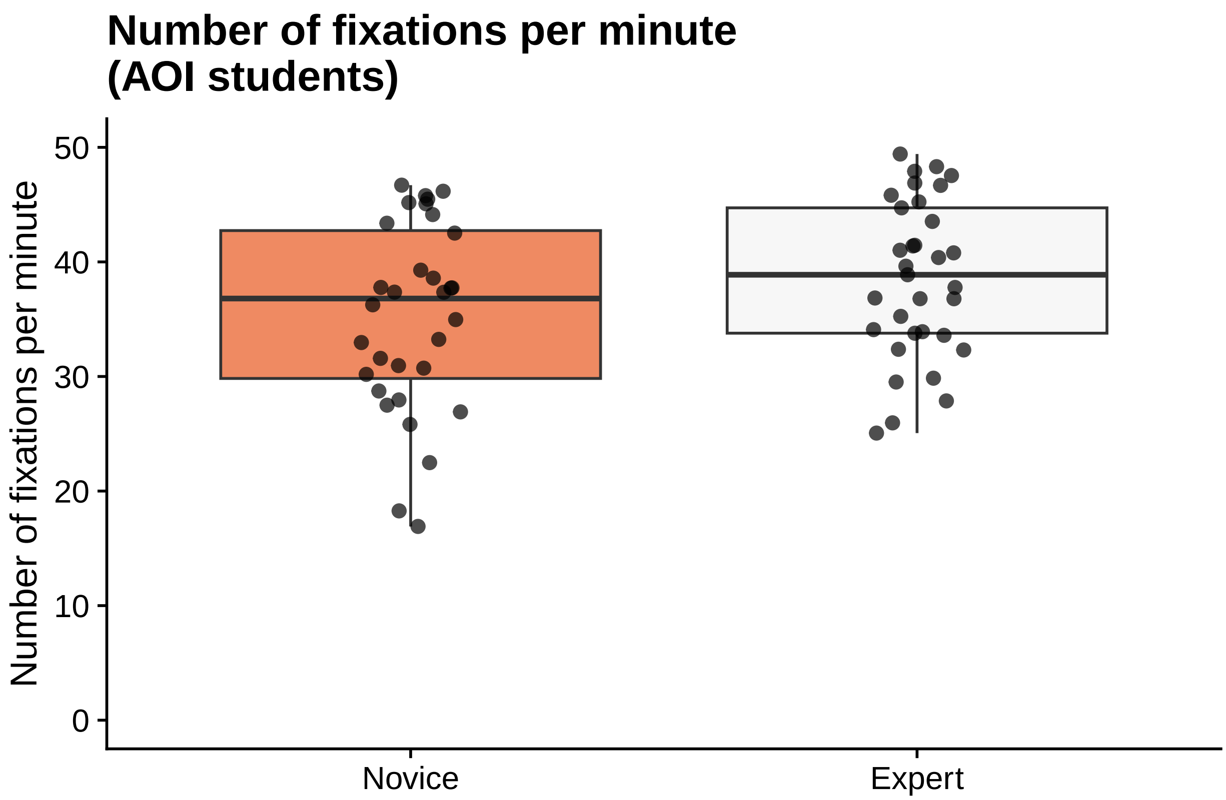
data: df_aoi_sum$Number_{f}ixation_{m}in_{m}tu[df_{a}oi_{s}um$Group == “Expert”] and df_aoi_sum$Number_{f}ixation_{m}in_{m}tu[df_{a}oi_{s}u$
== “Novice”] t = 1.966, df = 80, p-value = 0.05276 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -0.08935625 14.71554673 sample estimates: mean of x mean of y 98.5750 91.2619

[1] 0.43 attr(,“magnitude”) [1] “small”

0.2.1.5 2.2.2 Number of fixations per minute (AOI students)

Table 4: N, M, SD, min & max number of fixations per minute (AOI students)

Group	N	M	SD	Min	Max
Novice	42	40.08	11.58	16.91	61.53
Expert	40	43.26	12.55	25.06	74.31



0.2.1.6 t-test & effect size “Number of fixation” (AOI students)

```
Two Sample t-test
```

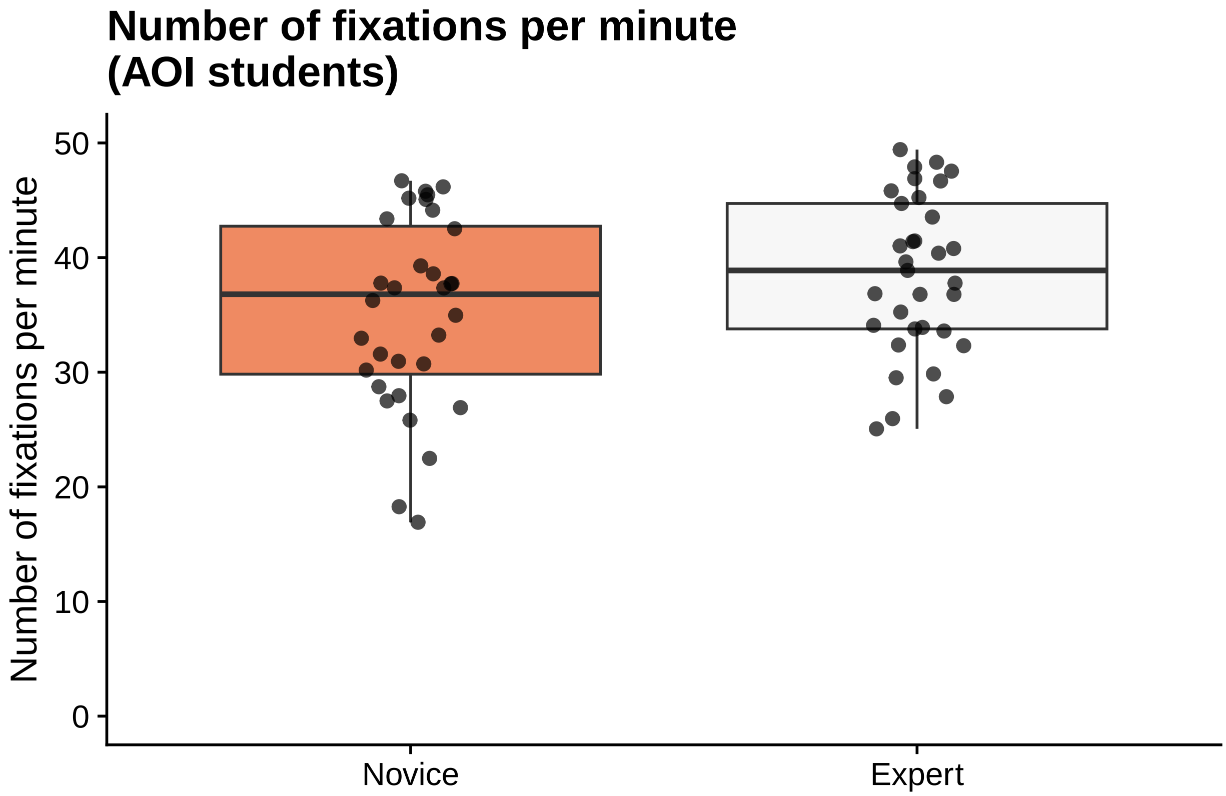
data: df_aoi_stud$Stud_{n}umber_{f}ixation_{m}in[df_{a}oi_{s}tud$Group == “Expert”] and df_aoi_stud$Stud_{n}umber_{f}ixation_{m}in[df_{a}oi_{s}$
== “Novice”] t = 1.1925, df = 80, p-value = 0.2366 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -2.125346 8.480489 sample estimates: mean of x mean of y 43.25900 40.08143

[1] 0.26 attr(,“magnitude”) [1] “small”

0.2.1.7 2.2.2 Number of fixations per minute (AOI others)

Table 5: N, M, SD, min & max number of fixations per minute (AOI others)

Group	N	M	SD	Min	Max
Novice	42	48.51	13.08	29.70	80.89
Expert	40	52.79	15.14	18.85	99.66



0.2.1.8 t-test & effect size “Number of fixation” (AOI others)

```
Two Sample t-test
```

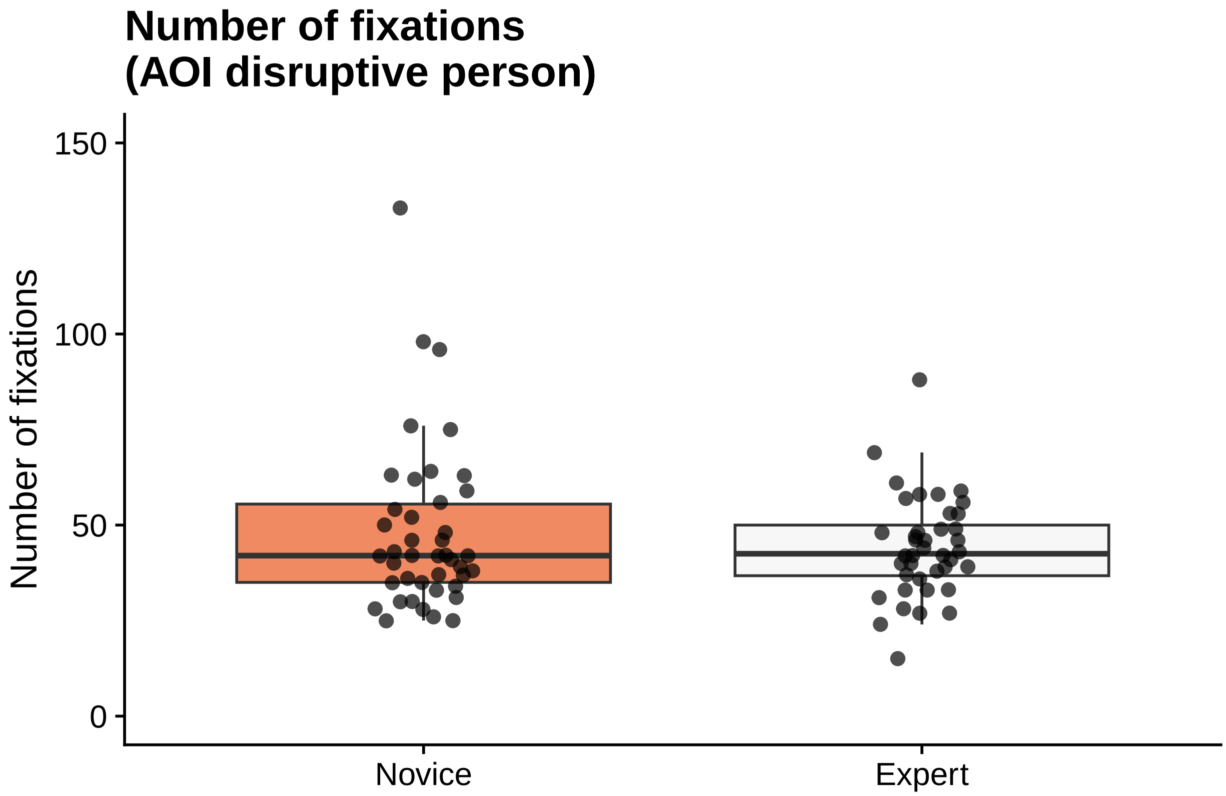
data: df_aoi_others$Others_number_fixation_min[df_aoi_others$Group == “Expert”] and df_aoi_others$Others_number_fixation_n == “Novice”] t = 1.3722, df = 80, p-value = 0.1738 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -1.927317 10.487650 sample estimates: mean of x mean of y 52.79350 48.51333

[1] 0.3 attr(,“magnitude”) [1] “small”

0.2.1.9 2.2.3 Number of fixations (AOI disruptive person)

Table 6: N, M, SD, min & max number of fixation (AOI disruptive person)

Group	N	M	SD	Min	Max
Novice	42	48.14	21.87	25	133
Expert	40	44.12	13.31	15	88



0.2.1.10 t-test & effect size "Number of fixations" (AOI disruptive person)

```
Two Sample t-test
```

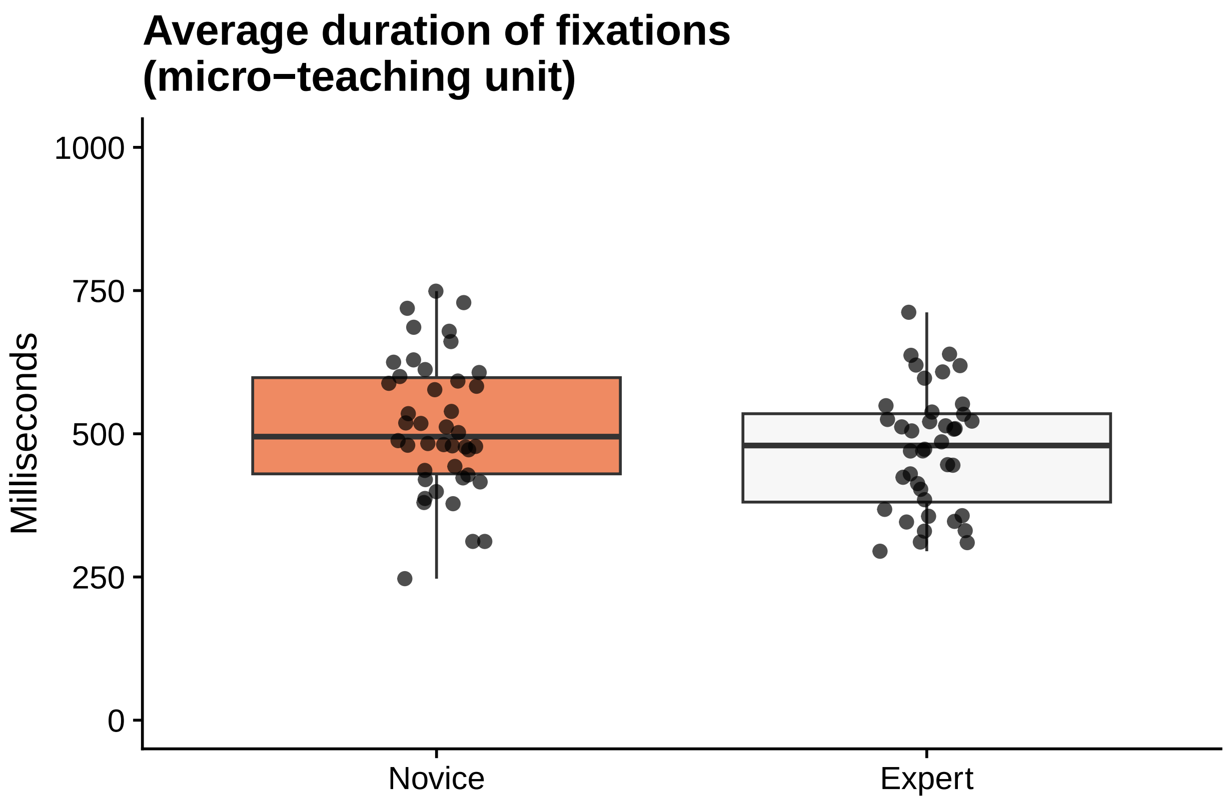
data: df_aoi_disrup$Number_of_fixations.Disruptive_Person[df_aoi_disrup$Group == "Expert"] and df_aoi_disrup$Number_of_fixations.Disruptive_Person[df_aoi_disrup$Group == "Novice"] t = -0.99886, df = 80, p-value = 0.3209 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -12.022778 3.987063 sample estimates: mean of x mean of y 44.12500 48.14286

[1] -0.22 attr(,"magnitude") [1] "small"

0.2.1.11 2.2.4 Average duration of fixations in milliseconds (micro-teaching unit)

Table 7: N, M, SD, min & max duration of fixations in milliseconds (micro-teaching unit)

Group	N	M in ms	SD in ms	Min in ms	Max in ms
Novice	42	513.81	117.71	247	749
Expert	40	472.92	106.18	295	712



0.2.1.12 t-test & effect size "Average duration of fixations" (micro-teaching unit)

```
Two Sample t-test
```

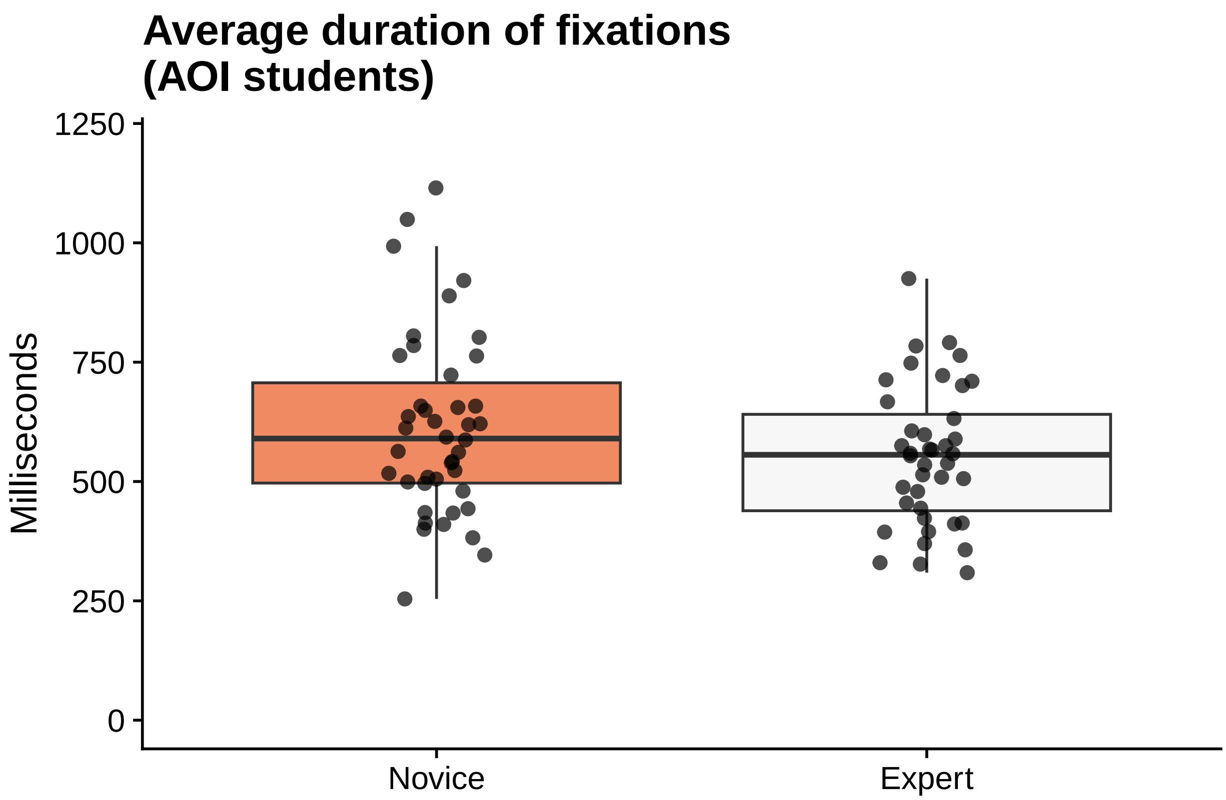
data: df_aoi_sum$Average_{d}uration_{m}tu[df_{a}oi_{s}um$Group == "Expert"] and df_aoi_sum$Average_{d}uration_{m}tu[df_{a}oi_{s}um$Grou == "Novice"] t = -1.6488, df = 80, p-value = 0.1031 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -90.231822 8.462774 sample estimates: mean of x mean of y 472.9250 513.8095

[1] -0.36 attr(,"magnitude") [1] "small"

0.2.1.13 2.2.5 Average duration of fixations (AOI students)

Table 8: N, M, SD, min & max average duration of fixations in milliseconds (AOI students)

Group	N	M in ms	SD in ms	Min in ms	Max in ms
Novice	42	613.67	191.19	254	1115
Expert	40	552.55	146.32	309	925



0.2.1.14 t-test & effect size “Average duration of fixations” (AOI students)

```
Two Sample t-test
```

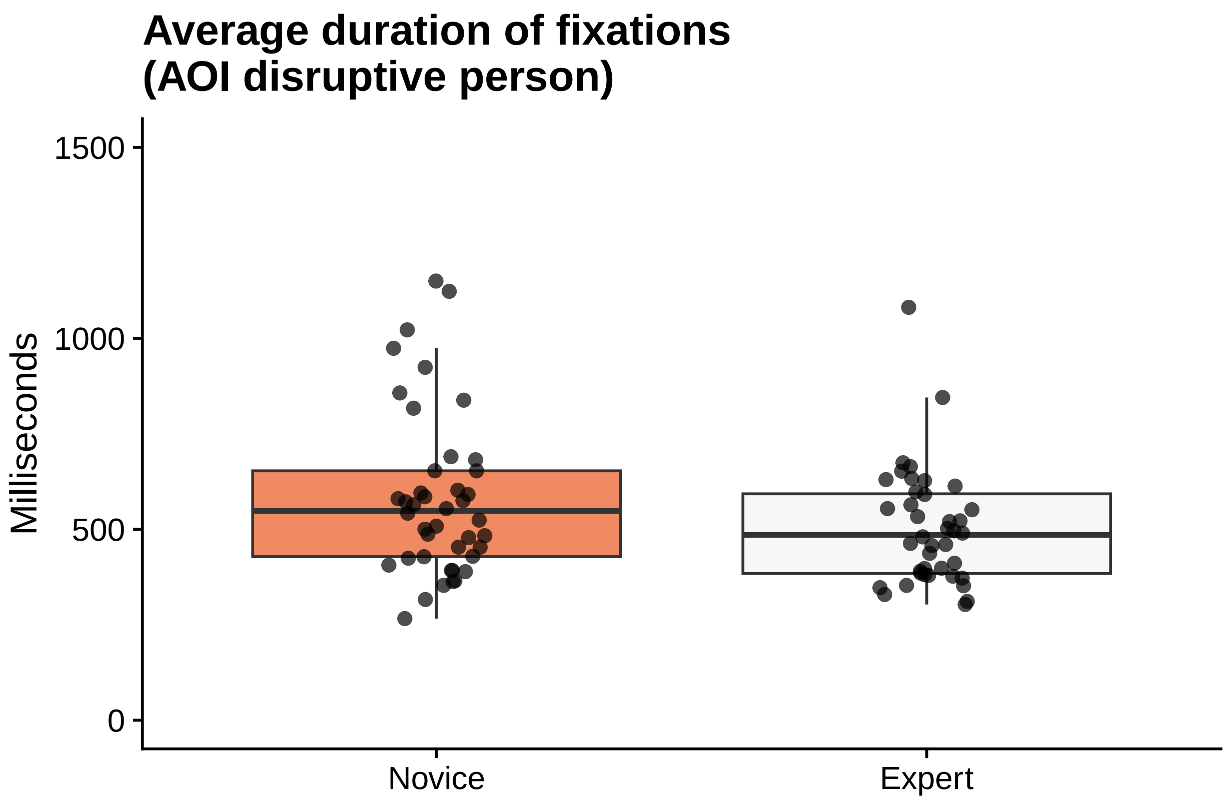
data: df_aoi_stud$Average_duration_stud[df_aoi_stud$Group == “Expert”] and df_aoi_stud$Average_duration_stud[df_aoi_stud$Gro == “Novice”] t = -1.6197, df = 80, p-value = 0.1092 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -136.20902 13.97569 sample estimates: mean of x mean of y 552.5500 613.6667

[1] -0.36 attr(,“magnitude”) [1] “small”

0.2.1.15 2.2.6 Average duration of fixations (AOI disruptive person)

Table 9: N, M, SD, min & max average duration of fixations in milliseconds (AOI disruptive person)

Group	N	M in ms	SD in ms	Min in ms	Max in ms
Novice	42	584.57	216.40	266	1150
Expert	40	503.05	153.92	303	1081



0.2.1.16 t-test & effect size "Average duration of fixations" (AOI disruptive person)

```
Two Sample t-test
```

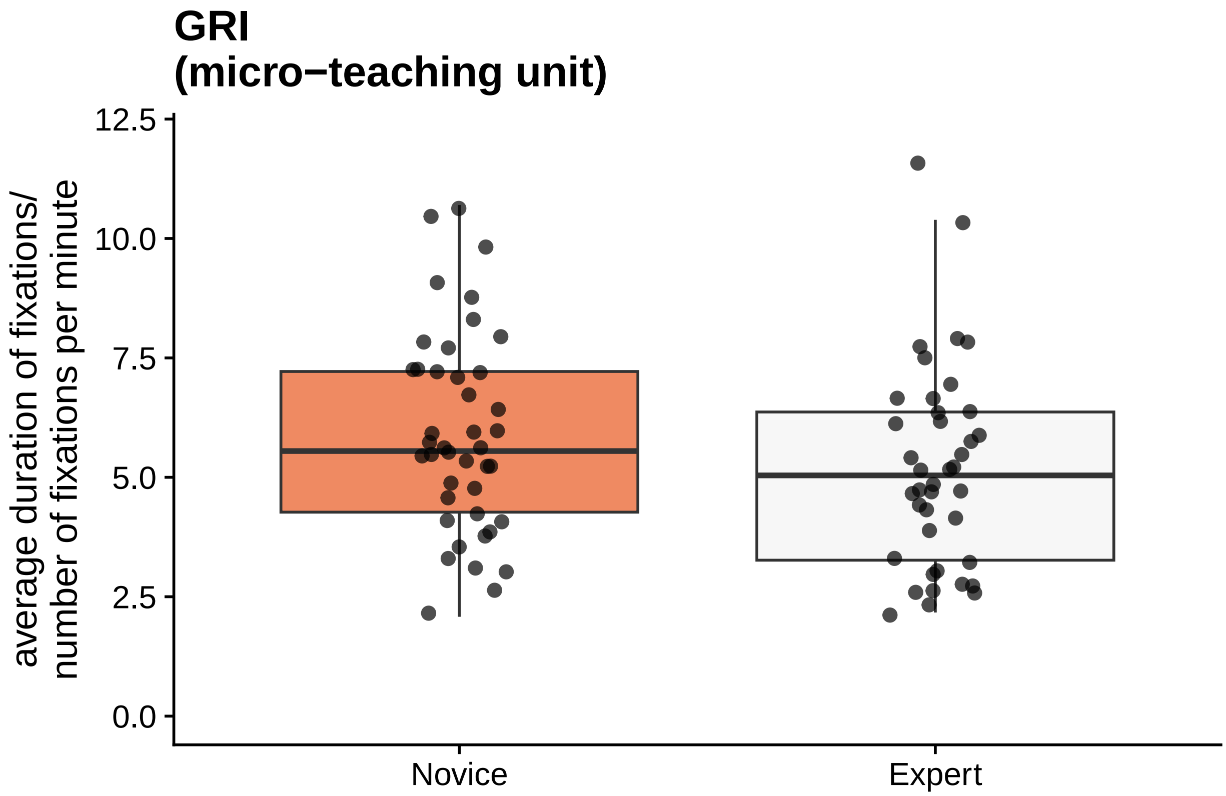
data: df_aoi_disrup$Average_duration_disrup[df_aoi_disrup$Group == "Expert"] and df_aoi_disrup$Average_duration_disrup[df_{a}oi_{d}isrup$ == "Novice"] t = -1.957, df = 80, p-value = 0.05383 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -164.418963 1.376106 sample estimates: mean of x mean of y 503.0500 584.5714

[1] -0.43 attr(,"magnitude") [1] "small"

0.2.1.17 2.2.7 Gaze Relational Index (GRI; micro-teaching unit)

Table 10: N, M, SD, min & max GRI (micro-teaching unit)

Group	N	M	SD	Min	Max
Novice	42	5.93	2.11	2.08	10.70
Expert	40	5.18	2.13	2.17	11.48



0.2.1.18 t-test & effect size "GRI" (micro-teaching unit)

`Two Sample t-test`

data: df_gri$GRI[df_gri$Group == "Expert"] and df_gri$GRI[df_gri$Group == "Novice"] t = -1.5975, df = 80, p-value = 0.1141 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -1.682021 0.184045 sample estimates: mean of x mean of y 5.176250 5.925238

[1] -0.35 attr(,"magnitude") [1] "small"

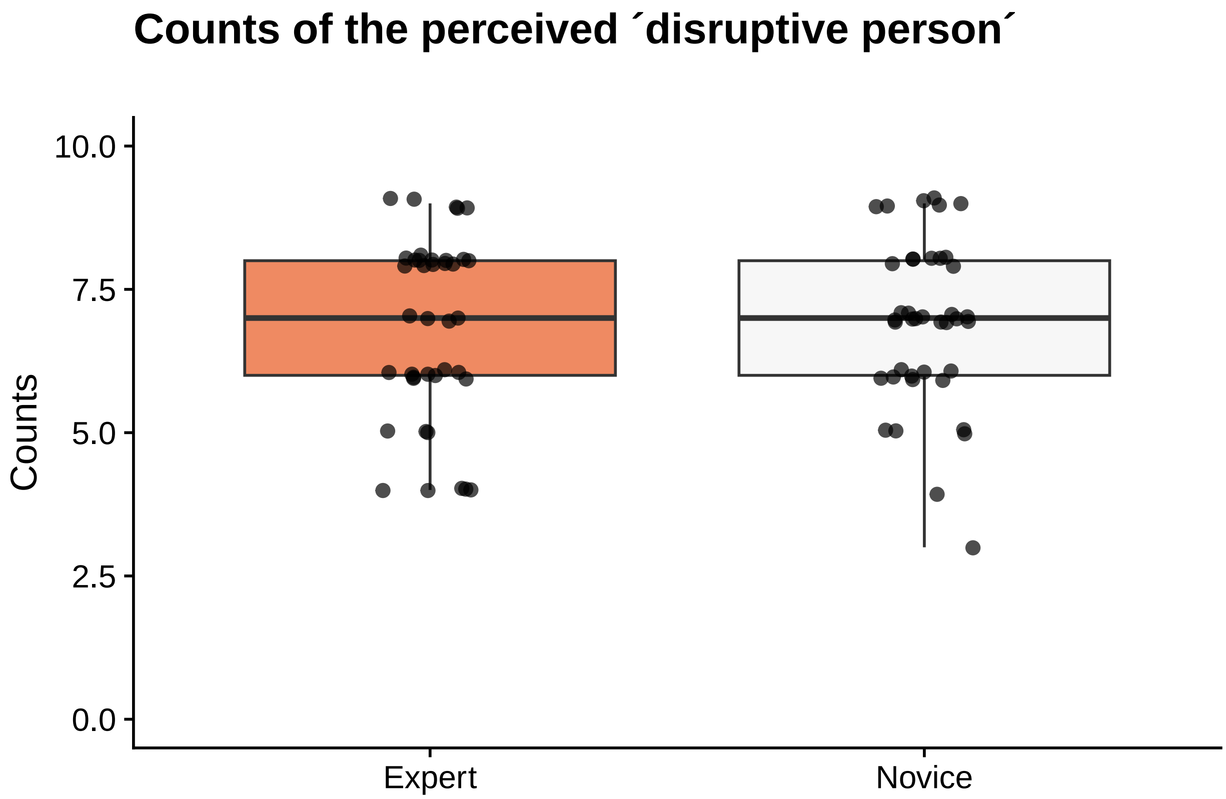
0.2.1.19 2.2.10 Time to first fixation in seconds (AOI disruptive person)

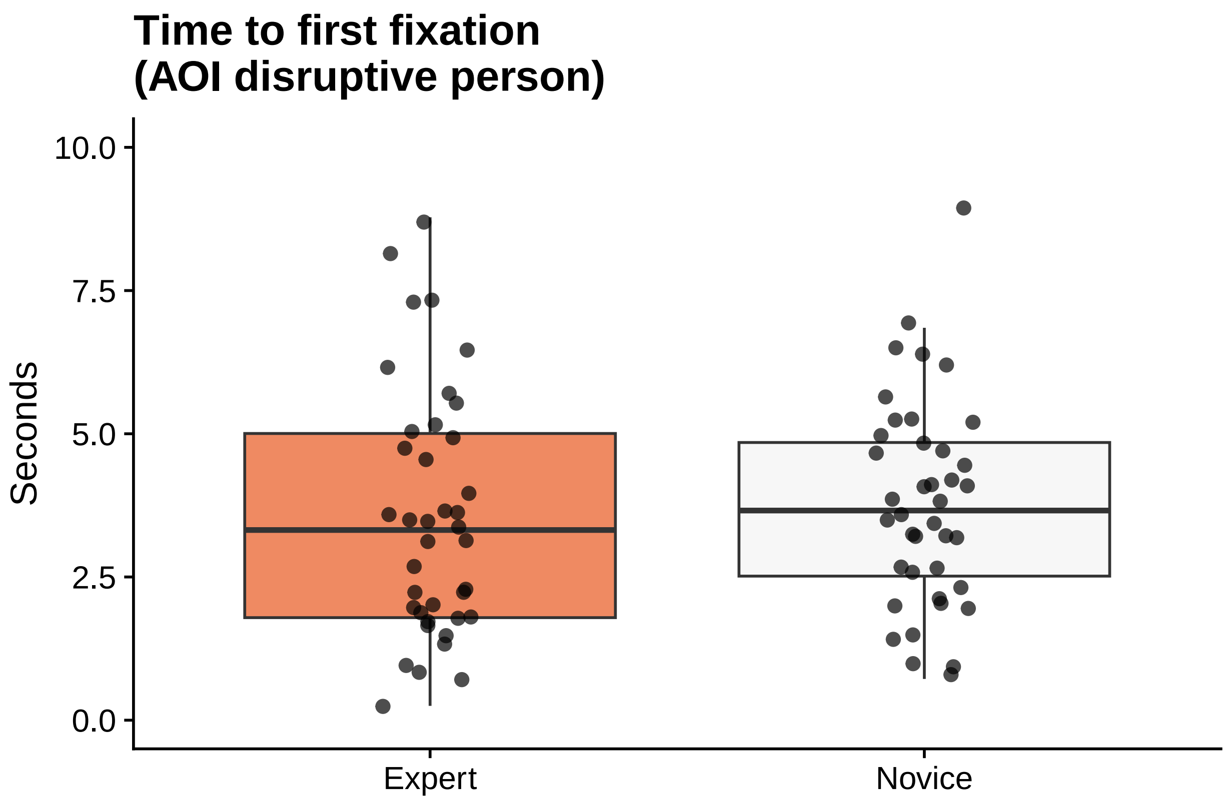
Table 11: N, M, SD, min & max time to first fixation in seconds (AOI disruptive person)

Group	N	M in sec	SD in sec	Min in sec	Max in sec
Expert	39	3.57	2.18	0.25	8.78
Novice	40	3.79	1.80	0.72	8.89

Table 12: N, M, SD, min & max of the perceived ´disruptive person´

Group	Mean	SD	Min	Max
Expert	6.82	1.60	4	9
Novice	6.90	1.43	3	9





0.2.1.20 t-test & effect size "Time to first fixation" (AOI disruptive person)

```
Two Sample t-test
```

data: df_ttff_disrup$Disrup_{t}ime_{f}ixation_{s}ec[df_{t}tff_{d}isrup$Group == "Expert"] and df_ttff_disrup$Disrup_{t}ime_{f}ixation_{s}ec[d$ == "Novice"] t = -0.67144, df = 80, p-value = 0.5039 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -1.4276630 0.7073296 sample estimates: mean of x mean of y 3.766500 4.126667

[1] -0.15 attr(,"magnitude") [1] "negligible"

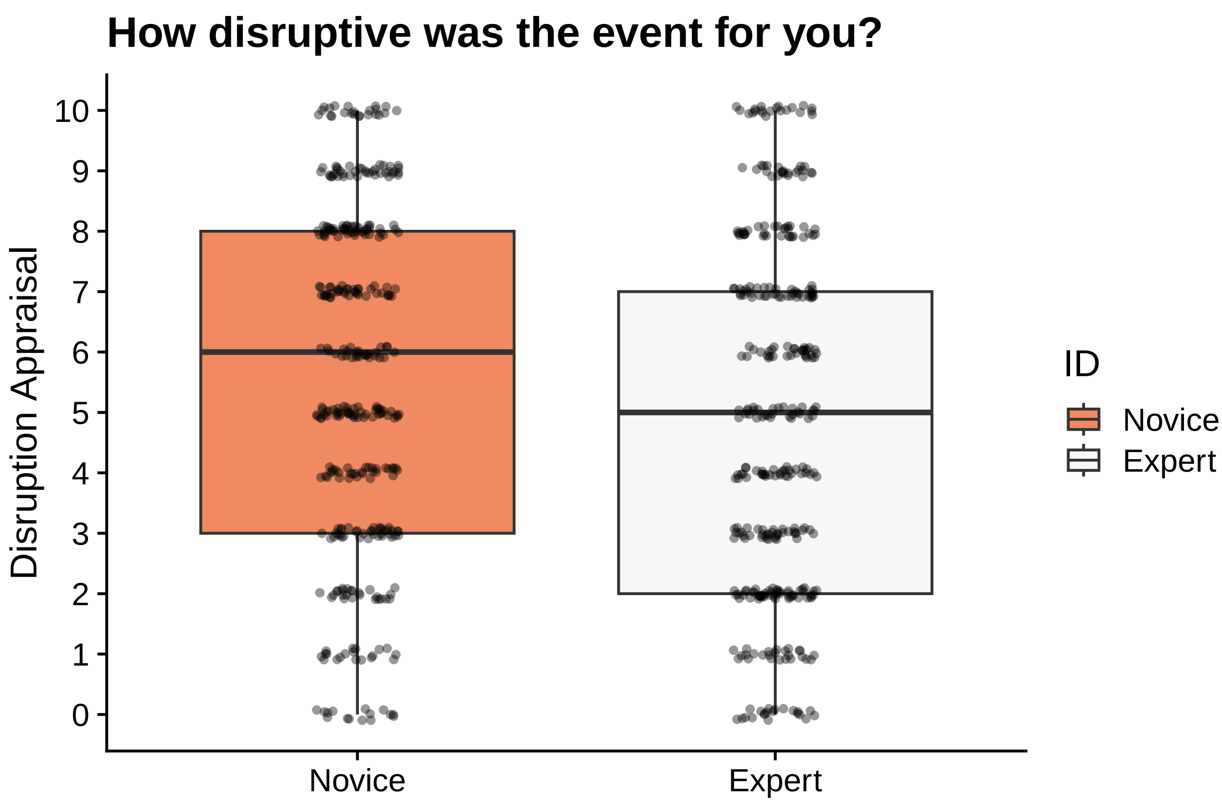
0.2.2 2.2 Rating Scales (Disruption Appraisal, Confidence Appraisal, Prevalence Rating)

Table 13: Disruption Appraisal

ID	N	M	SD	Min	Max
Expert	352	4.84	2.90	0	10
Novice	357	5.55	2.81	0	10

Table 14: Disruption appraisal with event

ID	event	N	M	SD	Min	Max
Expert	chatting	41	6.78	2.53	1	10
Expert	clicking pen	38	5.34	2.60	0	10
Expert	drawing	35	1.80	1.89	0	7
Expert	drumming	39	4.95	2.45	1	10
Expert	head on table	40	4.12	2.56	0	10
Expert	heckling	41	6.29	2.69	2	10
Expert	looking at phone	36	4.94	2.89	0	10
Expert	snipping	41	3.85	3.08	0	10
Expert	whispering	41	5.07	2.46	0	9
Novice	chatting	42	8.12	2.04	0	10
Novice	clicking pen	40	6.28	2.51	0	10
Novice	drawing	35	2.14	1.48	0	5
Novice	drumming	40	6.47	2.08	0	10
Novice	head on table	40	4.15	1.81	1	8
Novice	heckling	41	6.98	2.62	2	10
Novice	looking at phone	35	4.14	2.00	0	8
Novice	snipping	42	4.38	2.92	0	9
Novice	whispering	42	6.55	2.19	1	10



0.2.2.1 t-Test & effect size "Disruption appraisal"

```
Two Sample t-test
```

data: sri$disruption_appraisal[sri$ID == "Expert"] and sri$disruption_appraisal[sri$ID == "Novice"] t = -3.3143, df = 707, p-value = 0.0009655 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -1.1320397 -0.2897835 sample estimates: mean of x mean of y 4.840909 5.551821

[1] -0.25 attr(,"magnitude") [1] "small"

Table 15: Confidence appraisal

ID	M	SD	Min	Max
Expert	8.42	1.70	2	10
Novice	7.18	2.04	0	10

Table 16: Confidence appraisal with event

ID	event	N	M	SD	Min	Max
Expert	chatting	41	8.10	1.76	2	10
Expert	clicking pen	38	8.50	1.25	5	10
Expert	drawing	35	9.23	1.00	5	10
Expert	drumming	39	8.74	1.21	6	10
Expert	head on table	40	8.72	1.22	5	10
Expert	heckling	41	6.78	2.41	2	10
Expert	looking at phone	36	8.75	1.44	4	10
Expert	snipping	41	8.83	1.60	4	10
Expert	whispering	41	8.32	1.71	3	10
Novice	chatting	42	6.69	1.97	0	10
Novice	clicking pen	40	7.40	1.72	3	10
Novice	drawing	35	8.63	1.29	5	10
Novice	drumming	40	7.32	2.12	1	10
Novice	head on table	40	7.03	1.78	3	10
Novice	heckling	41	5.41	2.55	1	10
Novice	looking at phone	35	7.34	1.59	3	10
Novice	snipping	42	8.02	1.63	3	10
Novice	whispering	42	7.05	1.91	2	10

0.2.2.2 t-Test & effect size “Confidence appraisal”

```
Two Sample t-test
```

data: sri$confidence_{a}ppraisal[sri$ID == “Expert”] and sri$confidence_{a}ppraisal[sri$ID == “Novice”] t = 8.766, df = 707, p-value < 2.2e-16 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: 0.9588466 1.5123145 sample estimates: mean of x mean of y 8.420455 7.184874

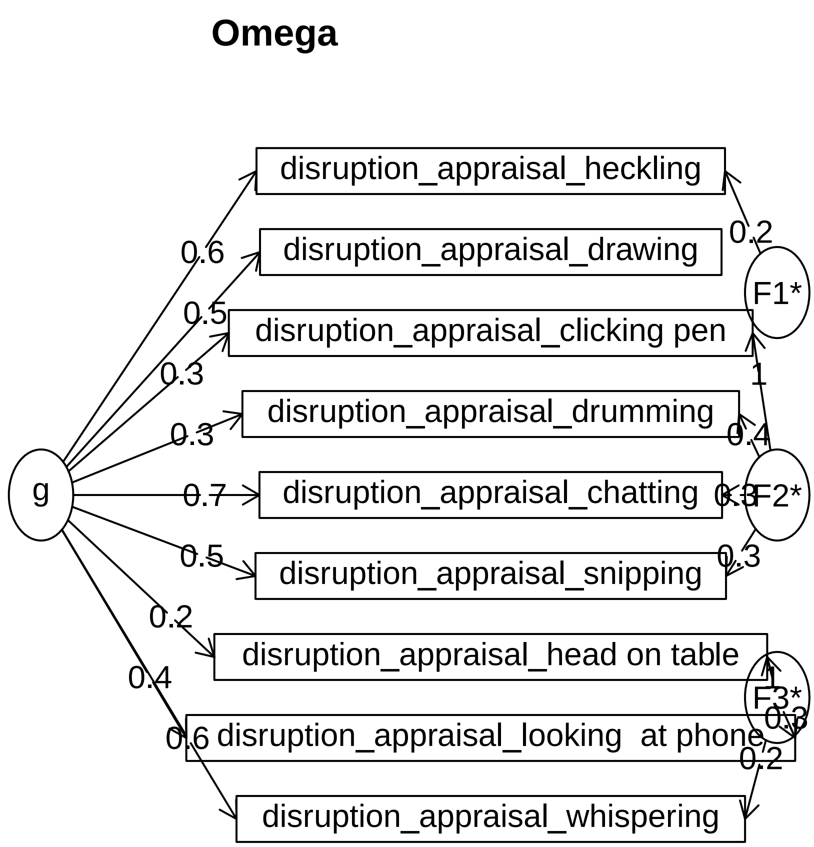
[1] 0.66 attr(,“magnitude”) [1] “medium”

```
{r sri_pr, echo=FALSE, message=FALSE, warning=FALSE, results='asis'}
#  # ############## Prevalence Rating #########################
#  # sri.preva.table <- #   sri %>% #   group_by(ID) %>% #
summarise( #     N = n(), #     "M" = round(mean(prevalence_rating),
digits = 2), #     "SD" = round(sd(prevalence_rating), digits
= 2), #     "Min" = min(prevalence_rating), #     "Max"
= max(prevalence_rating) #   ) #  # # insert a table into
HTML # knitr::kable(sri.preva.table, #              caption
= "Prevalence rating") #  # #### with event  # sri.preva.event.table
<- #   sri %>% #   group_by(ID, event) %>% #   summarise( #
N = n(), #     "M" = round(mean(prevalence_rating), digits
= 2), #     "SD" = round(sd(prevalence_rating), digits =
2), #     "Min" = min(prevalence_rating), #     "Max" =
max(prevalence_rating) #   ) #  # # insert a table into
HTML # knitr::kable(sri.preva.event.table, #              caption
= "Prevalence rating with events") #  # # create a new data
frame with rating # sri_preva <- subset.data.frame(sri,
select = c(ID, event, prevalence_rating)) #  # # plotting
prevalence rating for groups # preva_group_plot <-  #   sri_preva
%>%  #   mutate(ID = factor(ID, #                      levels
= c("Novice", #                                 "Expert" #
) #                      ) #          ) %>%  #   ggplot(mapping
= aes(x = ID, #                        y = prevalence_rating))
+ #   geom_boxplot(mapping = aes(fill = ID), #               outlier
= NA) + #   geom_point(size = 1, #             alpha =
0.4, #              position = position_jitter(seed = 1,
#                                          width = 0.1, #
height = 0.1)) + #   scale_x_discrete(limits = c("Novice",
"Expert")) + #   scale_y_continuous(breaks = seq(from = 0,
to = 10, by = 1)) +  #   labs(x = "", #        y = "Prevalence
Rating") +  #   scale_fill_brewer(palette  = "RdBu") +   #
ggtitle("How widespread is this event in the classroom?") +
#   theme_cowplot() #  # preva_group_plot #  #
```

1.0.0.1 t-Test & effect size "Prevalence rating"

2 {r sri_pr_ttest, echo=FALSE, message=FALSE, warning=FALSE, results='asis'} # # #################### T-TEST & EFFECT SIZE ########### # # # Prevalence Rating # # t-test for expertise differences # t.test(x = sri$prevalence_rating[sri$ID == "Expert"], # y = sri$prevalence_rating[sri$ID == "Novice"], # var.equal = TRUE) # # # Prevalence Rating # # effect size for expertise differences # d_sri_preva <- CohenD(x = sri$prevalence_rating[sri$ID == "Expert"], # y = sri$prevalence_rating[sri$ID == "Novice"], # na.rm = TRUE) # # round(d_sri_preva, 2) #

2.0.1 Internal consistency (Omega) for disruption and confidence appraisal



Omega Call: omegah(m = m, nfactors = nfactors, fm = fm, key = key, flip = flip, digits = digits, title = title, sl = sl, labels = labels, plot = plot, n.obs = n.obs, rotate = rotate, Phi = Phi, option = option, covar = covar) Alpha: 0.76 G.6: 0.81 Omega Hierarchical: 0.62 Omega H asymptotic: 0.73 Omega Total 0.84

Schmid Leiman Factor loadings greater than 0.2 g F1* F2* F3* h2 h2 u2 disruption_appraisal_whispering 0.60 0.22 0.45 0.45 0.55 disruption_appraisal_heckling 0.63 0.24 0.47 0.47 0.53 disruption_appraisal_drawing 0.47 0.27 0.27 0.73 disruption_appraisal_snipping 0.50 0.26 0.35 0.35 0.65 disruption_appraisal_looking at phone 0.38 0.32 0.26 0.26 0.74 disruption_appraisal_head on table 0.22 0.98 1.00 1.00 0.00 disruption__appraisal__clicking pen 0.34 0.95 1.02 1.02 -0.02 disruption__appraisal__drumming 0.34 0.37 0.28 0.28 0.72 disruption__appraisal__chatting 0.67 0.28 0.57 0.57 0.43 p2 com disruption__appraisal__whispering 0.80 1.52 disruption__appraisal__heckling 0.84 1.39 disruption__appraisal__drawing 0.82 1.45 disruption__appraisal__snipping 0.71 1.85 disruption__appraisal__looking at phone 0.57 2.12 disruption__appraisal__head on table 0.05 1.10 disruption__appraisal__clicking pen 0.11 1.25 disruption__appraisal__drumming 0.42 2.35 disruption__appraisal__chatting 0.80 1.52

With Sums of squares of: g F1* F2* F3* h2 2.10 0.19 1.22 1.16 3.13

general/max 0.67 max/min = 16.24 mean percent general = 0.57 with sd = 0.31 and cv of 0.54 Explained Common Variance of the general factor = 0.45

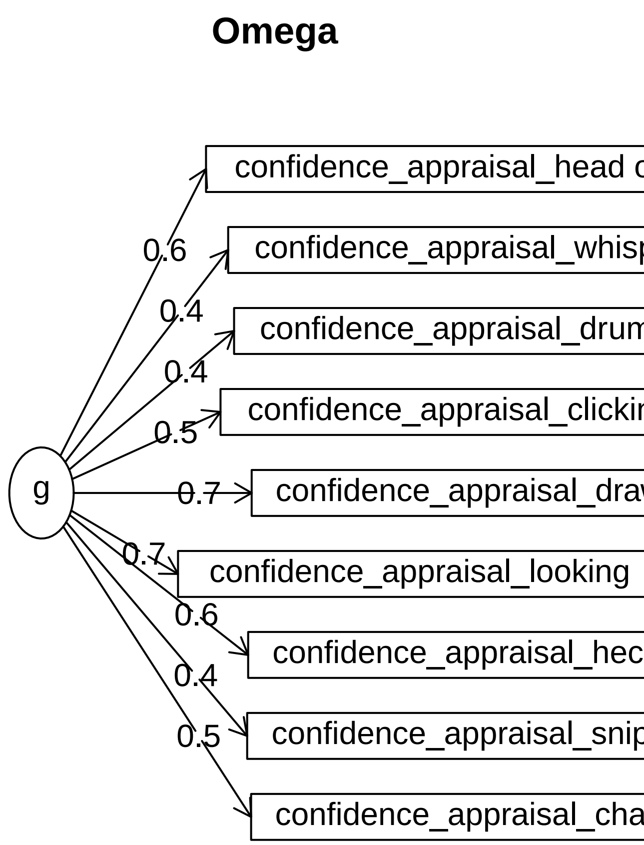
The degrees of freedom are 12 and the fit is 0.35 The number of observations was 53 with Chi Square = 16.18 with prob < 0.18 The root mean square of the residuals is 0.05 The df corrected root mean square of the residuals is 0.09 RMSEA index = 0.079 and the 10 % confidence intervals are 0 0.174 BIC = -31.47

Compare this with the adequacy of just a general factor and no group factors The degrees of freedom for just the general factor are 27 and the fit is 1.18 The number of observations was 53 with Chi Square = 56 with prob < 0.00086 The root mean square of the residuals is 0.13 The df corrected root mean square of the residuals is 0.16

RMSEA index = 0.141 and the 10 % confidence intervals are 0.09 0.197 BIC = -51.2

Measures of factor score adequacy
g F1* F2* F3* Correlation of scores with factors 0.84 0.30 1.01 1.00 Multiple R square of scores with factors 0.70 0.09 1.02 0.99 Minimum correlation of factor score estimates 0.41 -0.82 1.03 0.99

Total, General and Subset omega for each subset g F1* F2* F3* Omega total for total scores and subscales 0.84 0.54 0.79 0.72 Omega general for total scores and subscales 0.62 0.47 0.39 0.28 Omega group for total



scores and subscales 0.21 0.06 0.39 0.44
Omega Call: omegah(m = m, nfactors = nfactors, fm = fm, key = key, flip = flip, digits = digits, title =

title, sl = sl, labels = labels, plot = plot, n.obs = n.obs, rotate = rotate, Phi = Phi, option = option, covar = covar) Alpha: 0.82 G.6: 0.84 Omega Hierarchical: 0.66 Omega H asymptotic: 0.76 Omega Total 0.87

Schmid Leiman Factor loadings greater than 0.2 g F1* F2* F3* h2 h2 u2 confidence_appraisal_whispering 0.39 0.48 0.40 0.40 0.60 confidence_appraisal_heckling 0.59 0.28 0.45 0.45 0.55 confidence_appraisal_drawing 0.70 0.36 0.62 0.62 0.38 confidence_appraisal_snipping 0.41 0.23 0.23 0.31 0.31 0.69 confidence_appraisal_looking at phone 0.66 0.32 0.57 0.57 0.43 confidence_appraisal_head on table 0.56 0.56 0.63 0.63 0.37 confidence_appraisal_clicking pen 0.48 0.20 0.31 0.31 0.69 confidence_appraisal_drumming 0.42 0.42 0.37 0.37 0.63 confidence_appraisal_chatting 0.50 0.87 1.00 1.00 0.00 p2 com confidence_appraisal_whispering 0.38 2.11 confidence_appraisal_heckling 0.76 1.62 confidence_appraisal_drawing 0.79 1.50 confidence_appraisal_snipping 0.55 2.69 confidence_appraisal_looking at phone 0.75 1.67 confidence_appraisal_head on table 0.50 2.03 confidence_appraisal_clicking pen 0.74 1.74 confidence_appraisal_drumming 0.49 2.10 confidence_appraisal_chatting 0.25 1.60

With Sums of squares of: g F1* F2* F3* h2 2.55 0.82 0.39 0.90 2.80

general/max 0.91 max/min = 7.18 mean percent general = 0.58 with sd = 0.19 and cv of 0.33 Explained Common Variance of the general factor = 0.55

The degrees of freedom are 12 and the fit is 0.33 The number of observations was 53 with Chi Square = 15.22 with prob < 0.23 The root mean square of the residuals is 0.05 The df corrected root mean square of the residuals is 0.09 RMSEA index = 0.069 and the 10 % confidence intervals are 0 0.167 BIC = -32.43

Compare this with the adequacy of just a general factor and no group factors The degrees of freedom for just the general factor are 27 and the fit is 0.87 The number of observations was 53 with Chi Square = 41.5 with prob < 0.037 The root mean square of the residuals is 0.12 The df corrected root mean square of the residuals is 0.14

RMSEA index = 0.099 and the 10 % confidence intervals are 0.026 0.16 BIC = -65.7

Measures of factor score adequacy
g F1* F2* F3* Correlation of scores with factors 0.84 0.72 0.48 0.96 Multiple R square of scores with factors 0.70 0.52 0.23 0.92 Minimum correlation of factor score estimates 0.41 0.04 -0.55 0.83

Total, General and Subset omega for each subset g F1* F2* F3* Omega total for total scores and subscales 0.87 0.71 0.77 1.00 Omega general for total scores and subscales 0.66 0.40 0.61 0.25 Omega group for total scores and subscales 0.15 0.32 0.16 0.75

2.0.2 Prevalence Rating as manipulation check

2.0.3 2.3 Situational Jugdement Test

Table 17: N, M and SD for overall value

Group	N	M	SD	Min	Max
Expert	41	0.75	0.08	0.54	0.88
Novice	42	0.72	0.13	0.10	0.91

Table 18: N, M and SD for managing momentum

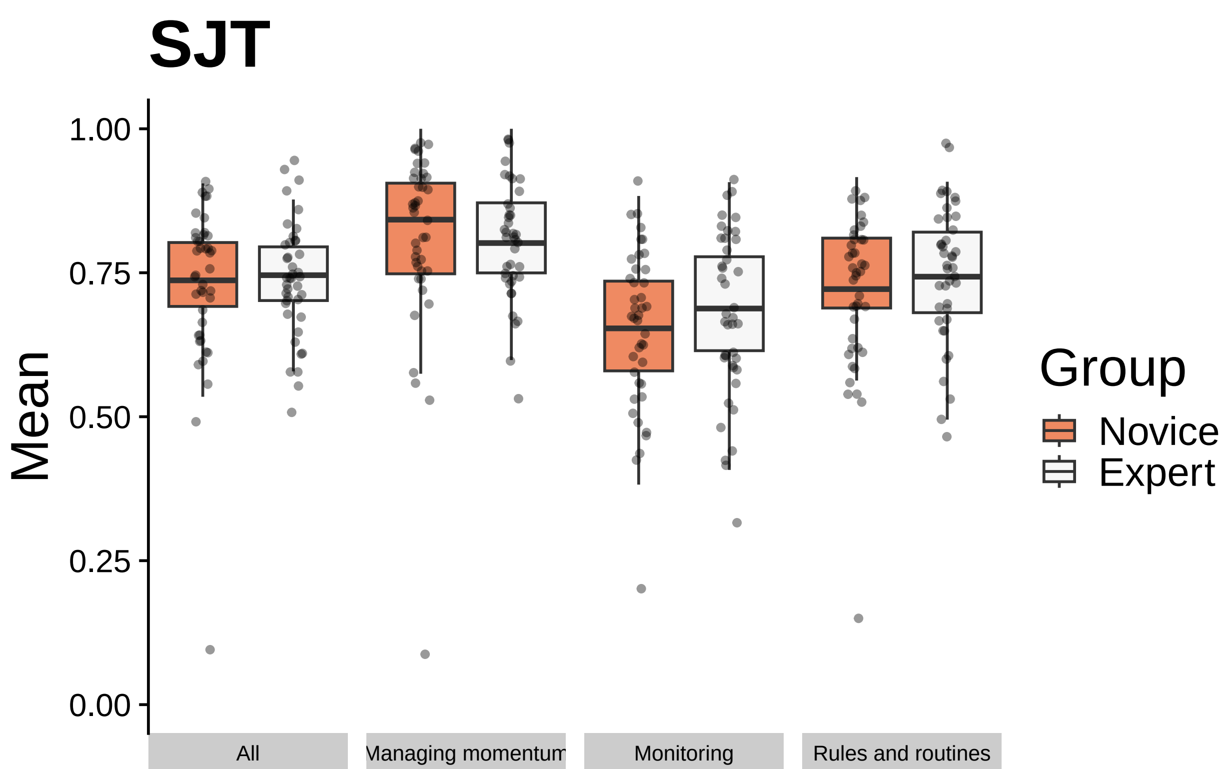
Group	N	M	SD	Min	Max
Expert	41	0.81	0.10	0.60	1
Novice	42	0.80	0.17	0.08	1

Table 19: N, M and SD for monitoring

Group	N	M	SD	Min	Max
Expert	41	0.69	0.13	0.41	0.91
Novice	42	0.64	0.16	0.15	0.99

Table 20: N, M and SD for rules and routines

Group	N	M	SD	Min	Max
Expert	41	0.74	0.10	0.49	0.91
Novice	42	0.72	0.13	0.07	0.92



2.0.3.1 t-test & effect size "STJ - All"

```
Two Sample t-test
```

data: df_sjt$All[df_sjt$Group == “Expert”] and df_sjt$All[df_sjt$Group == “Novice”] t = 0.94245, df = 81, p-value = 0.3488 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -0.02434447 0.06816136 sample estimates: mean of x mean of y 0.7456548 0.7237464

[1] 0.21 attr(,“magnitude”) [1] “small”

2.0.3.2 t-test & effect size “SJT - Managing momentum”

```
Two Sample t-test
```

data: df_sjt`$Managingmomentum$`[df_sjtGroup == “Expert”] and df_sjt`$Managingmomentum$`[df_sjtGroup == “Novice”] t = 0.15193, df = 81, p-value = 0.8796 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -0.05469659 0.06374016 sample estimates: mean of x mean of y 0.8092270 0.8047052

[1] 0.03 attr(,“magnitude”) [1] “negligible”

2.0.3.3 t-test & effect size “SJT - Monitoring”

```
Two Sample t-test
```

data: df_sjt$Monitoring[df_sjt$Group == “Expert”] and df_sjt$Monitoring[df_sjt$Group == “Novice”] t = 1.4415, df = 81, p-value = 0.1533 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -0.01732034 0.10841421 sample estimates: mean of x mean of y 0.6877186 0.6421717

[1] 0.32 attr(,“magnitude”) [1] “small”

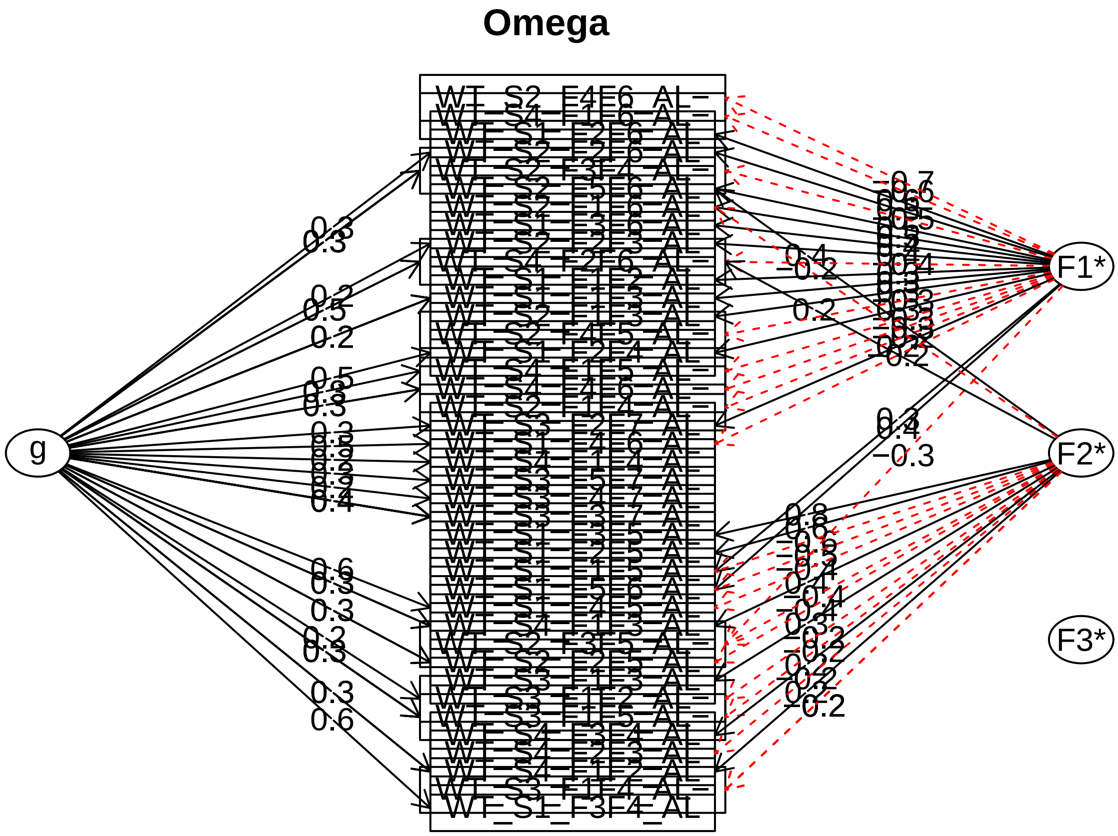
2.0.3.4 t-test & effect size “SJT - Rules & routines”

```
Two Sample t-test
```

data: df_sjt`$Rulesandroutines$`[df_sjtGroup == “Expert”] and df_sjt`$Rulesandroutines$`[df_sjtGroup == “Novice”] t = 0.59927, df = 81, p-value = 0.5507 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -0.03632644 0.06763970 sample estimates: mean of x mean of y 0.7400189 0.7243622

[1] 0.13 attr(,“magnitude”) [1] “negligible”

2.0.4 Internal consistency (Omega) for SJT



Omega Call: omegah(m = m, nfactors = nfactors, fm = fm, key = key, flip = flip, digits = digits, title = title, sl = sl, labels = labels, plot = plot, n.obs = n.obs, rotate = rotate, Phi = Phi, option = option, covar = covar) Alpha: 0.68 G.6: 0.9 Omega Hierarchical: 0.66 Omega H asymptotic: 0.88 Omega Total 0.75

Schmid Leiman Factor loadings greater than 0.2 g F1* F2* F3* h2 h2 u2 p2 com WT_S1_F1F2_AL 0.35 0.15 0.85 0.13 1.47 WT_S1_F1F3_AL 0.25 0.33 0.19 0.81 0.32 2.20 WT_S1_F1F5_AL 0.26 -0.55 0.38 0.38 0.62 0.04 1.54 WT_S1_F2F4_AL 0.49 0.31 0.35 0.35 0.65 0.69 1.81 WT_S1_F2F5_AL 0.63 0.42 0.42 0.58 0.00 1.13 WT_S1_F2F6_AL 0.57 0.35 0.35 0.65 0.01 1.16 WT_S1_F3F4_AL 0.57 0.36 0.36 0.64 0.90 1.21 WT_S1_F3F5_AL 0.78 0.61 0.61 0.39 0.00 1.02 WT_S1_F3F6_AL 0.44 0.23 0.23 0.77 0.05 1.33 WT_S1_F4F5_AL 0.60 -0.39 0.52 0.52 0.48 0.69 1.75 WT_S1_F4F6_AL 0.47 -0.20 0.27 0.27 0.73 0.84 1.38 WT_S1_F5F6_AL 0.42 -0.50 0.45 0.45 0.55 0.07 2.20 WT_S2_F1F3_AL 0.33 0.14 0.86 0.02 1.52 WT_S2_F1F4_AL- -0.24 0.10 0.90 0.07 2.13 WT_S2_F1F6_AL 0.49 -0.24 0.32 0.32 0.68 0.11 1.78 WT_S2_F2F3_AL 0.22 0.44 0.24 0.24 0.76 0.20 1.48 WT_S2_F2F5_AL 0.32 -0.35 0.23 0.23 0.77 0.45 2.06 WT_S2_F2F6_AL 0.26 0.54 0.37 0.37 0.63 0.19 1.48 WT_S2_F3F4_AL- 0.31 -0.52 0.38 0.38 0.62 0.26 1.66 WT_S2_F3F5_AL- -0.33 -0.35 0.26 0.26 0.74 0.09 2.37 WT_S2_F4F5_AL- -0.31 0.15 0.85 0.14 2.13 WT_S2_F4F6_AL- -0.69 0.48 0.48 0.52 0.01 1.01 WT_S2_F5F6_AL 0.51 0.38 0.42 0.42 0.58 0.01 1.89 WT_S3_F1F2_AL- 0.25 -0.24 0.13 0.87 0.50 2.14 WT_S3_F1F3_AL 0.32 0.12 0.88 0.11 1.31 WT_S3_F1F4_AL- -0.20 0.05 0.95 0.04 1.27 WT_S3_F1F5_AL- 0.26 -0.24 0.13 0.87 0.54 2.02 WT_S3_F2F7_AL 0.31 0.21 0.16 0.84 0.57 2.37 WT_S3_F3F7_AL 0.38 0.15 0.85 0.94 1.13 WT_S3_F4F7_AL 0.24 0.06 0.94 0.86 1.33 WT_S3_F5F7_AL 0.34 0.13 0.87 0.89 1.24 WT_S4_F1F2_AL 0.29 0.21 0.16 0.84 0.53 2.49 WT_S4_F1F3_AL 0.30 0.36 0.23 0.23 0.77 0.38 2.21 WT_S4_F1F4_AL 0.20 0.06 0.94 0.64 1.86 WT_S4_F1F5_AL- 0.27 -0.29 0.16 0.84 0.46 2.10 WT_S4_F1F6_AL- -0.63 0.43 0.43 0.57 0.08 1.18 WT_S4_F2F3_AL -0.22 0.06 0.94 0.07 1.50 WT_S4_F2F6_AL- 0.47 -0.35 0.24 0.40 0.40 0.60 0.56 2.40 WT_S4_F3F4_AL 0.23 0.06 0.94 0.00 1.08 WT_S4_F4F6_AL- 0.26 -0.26 0.14 0.86 0.49 2.10

With Sums of squares of: g F1* F2* F3* h2 2.88 4.10 3.00 0.01 3.35

general/max 0.7 max/min = 293.69 mean percent general = 0.32 with sd = 0.31 and cv of 0.95 Explained Common Variance of the general factor = 0.29

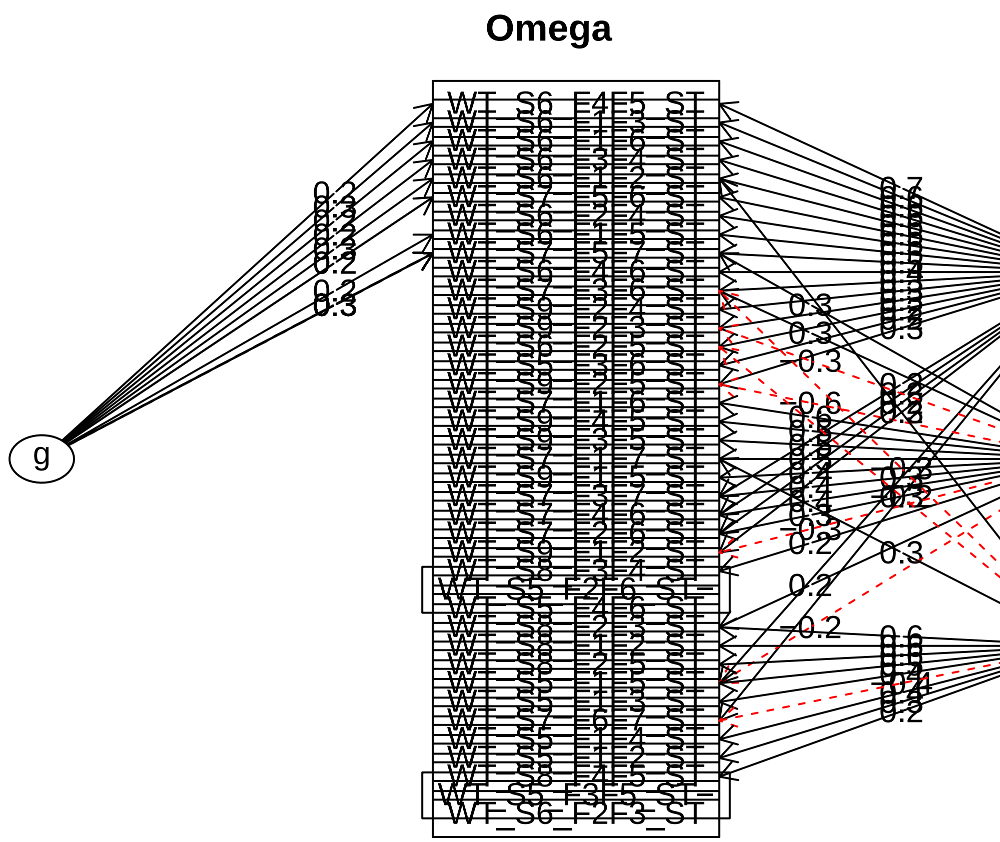
The degrees of freedom are 663 and the fit is 18.76 The number of observations was 84 with Chi Square = 1253.73 with prob < 6.8e-39 The root mean square of the residuals is 0.11 The df corrected root mean square of the residuals is 0.12 RMSEA index = 0.102 and the 10 % confidence intervals are 0.095 0.112 BIC = -1683.9

Compare this with the adequacy of just a general factor and no group factors The degrees of freedom for just the general factor are 740 and the fit is 24.06 The number of observations was 84 with Chi Square = 1639.81 with prob < 5e-70 The root mean square of the residuals is 0.17 The df corrected root mean square of the residuals is 0.17

RMSEA index = 0.12 and the 10 % confidence intervals are 0.113 0.129 BIC = -1639

Measures of factor score adequacy
g F1* F2* F3* Correlation of scores with factors 0.90 0.93 0.92 0.06 Multiple R square of scores with factors 0.81 0.87 0.84 0.00 Minimum correlation of factor score estimates 0.62 0.73 0.69 -0.99

Total, General and Subset omega for each subset g F1* F2* F3* Omega total for total scores and subscales 0.75 0.56 0.39 NA Omega general for total scores and subscales 0.66 0.53 0.38 NA Omega group for total scores



and subscales 0.01 0.03 0.00 NA
Omega Call: omegah(m = m, nfactors = nfactors, fm = fm, key = key, flip = flip, digits = digits, title = title, sl = sl, labels = labels, plot = plot, n.obs = n.obs, rotate = rotate, Phi = Phi, option = option, covar = covar) Alpha: 0.81 G.6: 0.95 Omega Hierarchical: 0.13 Omega H asymptotic: 0.16 Omega Total 0.84

Schmid Leiman Factor loadings greater than 0.2 g F1* F2* F3* h2 h2 u2 p2 com WT_S5_F1F2_ST 0.28 0.11 0.89 0.09 1.90 WT_S5_F1F3_ST 0.41 0.20 0.20 0.80 0.07 1.46 WT_S5_F1F4_ST 0.37 0.19 0.81 0.06 1.74 WT_S5_F1F5_ST 0.27 -0.22 0.53 0.42 0.42 0.58 0.05 2.08 WT_S5_F2F6_ST- 0.04 0.96 0.00 1.68

WT_S5_F3F5_ST- 0.20 0.08 0.92 0.02 2.57 WT_S5_F3F6_ST 0.20 0.05 0.95 0.10 1.30 WT_S5_F4F6_ST 0.05 0.95 0.14 2.61 WT_S6_F1F2_ST 0.26 0.55 0.34 0.49 0.49 0.51 0.13 2.15 WT_S6_F1F3_ST 0.25 0.64 0.50 0.50 0.50 0.13 1.44 WT_S6_F1F5_ST 0.23 0.51 0.34 0.34 0.66 0.15 1.61 WT_S6_F1F6_ST 0.25 0.64 0.48 0.48 0.52 0.13 1.35 WT_S6_F2F3_ST 0.07 0.93 0.02 2.50 WT_S6_F2F4_ST 0.55 0.35 0.35 0.65 0.09 1.34 WT_S6_F2F5_ST 0.24 -0.21 0.13 0.87 0.05 2.87 WT_S6_F3F4_ST 0.22 0.62 0.45 0.45 0.55 0.11 1.39 WT_S6_F4F5_ST 0.25 0.71 0.58 0.58 0.42 0.10 1.32 WT_S6_F4F6_ST 0.43 0.21 0.21 0.79 0.11 1.33 WT_S7_F1F6_ST 0.64 0.48 0.48 0.52 0.07 1.37 WT_S7_F1F7_ST 0.47 0.30 0.35 0.35 0.65 0.08 2.09 WT_S7_F2F6_ST 0.24 0.29 0.17 0.83 0.09 2.78 WT_S7_F3F6_ST 0.32 0.30 -0.30 0.30 0.30 0.70 0.06 3.30 WT_S7_F3F7_ST 0.23 0.37 0.24 0.24 0.76 0.07 2.42 WT_S7_F4F6_ST 0.30 0.37 0.28 0.28 0.72 0.08 2.78 WT_S7_F5F6_ST 0.21 0.55 0.37 0.37 0.63 0.12 1.49 WT_S7_F5F7_ST 0.25 0.46 0.31 0.39 0.39 0.61 0.16 2.64 WT_S7_F6F7_ST 0.27 -0.37 0.23 0.23 0.77 0.02 2.02 WT_S8_F1F2_ST 0.59 0.37 0.37 0.63 0.00 1.13 WT_S8_F2F3_ST 0.24 0.63 0.47 0.47 0.53 0.03 1.37 WT_S8_F2F5_ST 0.58 0.35 0.35 0.65 0.03 1.09 WT_S8_F3F4_ST 0.22 0.05 0.95 0.04 1.21 WT_S8_F4F5_ST 0.23 0.08 0.92 0.10 2.24 WT_S9_F1F2_ST 0.24 -0.25 0.12 0.88 0.02 2.07 WT_S9_F1F5_ST 0.41 0.19 0.81 0.06 1.36 WT_S9_F2F3_ST 0.28 -0.27 0.16 0.84 0.03 2.14 WT_S9_F2F4_ST 0.32 0.15 0.85 0.10 1.97 WT_S9_F2F5_ST 0.35 -0.64 0.53 0.53 0.47 0.00 1.55 WT_S9_F3F5_ST 0.48 0.27 0.27 0.73 0.01 1.33 WT_S9_F4F5_ST 0.54 0.35 0.35 0.65 0.06 1.42

With Sums of squares of: g F1* F2* F3* h2 0.82 4.38 2.79 2.65 3.86

general/max 0.19 max/min = 1.65 mean percent general = 0.07 with sd = 0.04 and cv of 0.63 Explained Common Variance of the general factor = 0.08

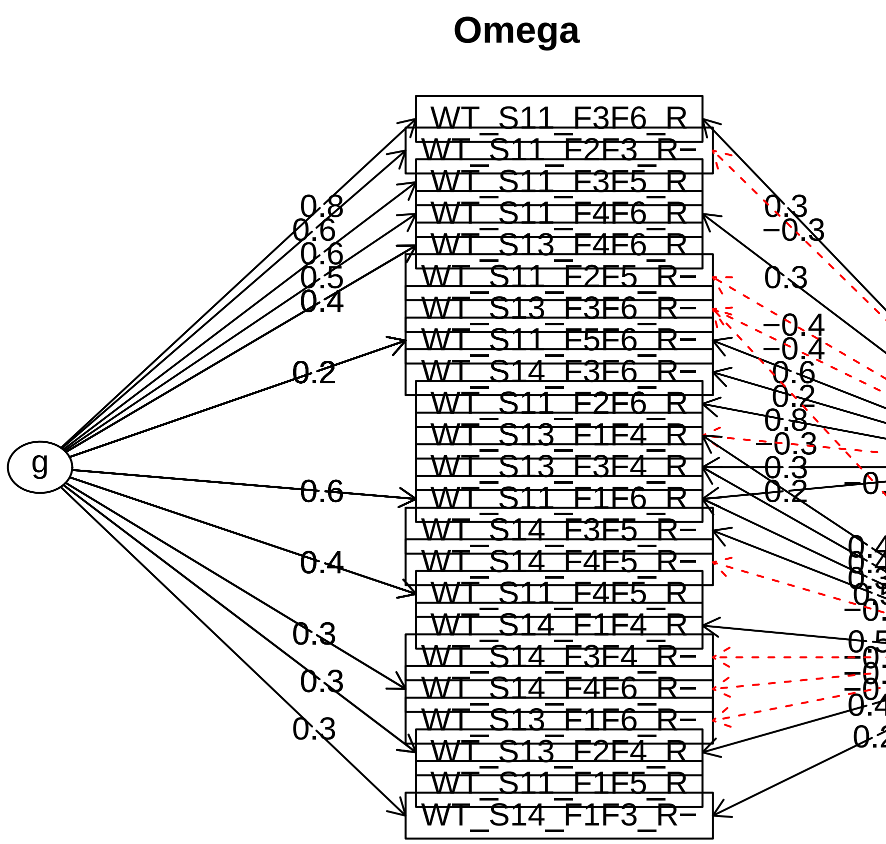
The degrees of freedom are 627 and the fit is 18.95 The number of observations was 84 with Chi Square = 1273.13 with prob < 2.9e-46 The root mean square of the residuals is 0.11 The df corrected root mean square of the residuals is 0.12 RMSEA index = 0.11 and the 10 % confidence intervals are 0.103 0.12 BIC = -1504.99

Compare this with the adequacy of just a general factor and no group factors The degrees of freedom for just the general factor are 702 and the fit is 24.66 The number of observations was 84 with Chi Square = 1689.12 with prob < 4.7e-83 The root mean square of the residuals is 0.18 The df corrected root mean square of the residuals is 0.19

RMSEA index = 0.129 and the 10 % confidence intervals are 0.122 0.138 BIC = -1421.31

Measures of factor score adequacy
g F1* F2* F3* Correlation of scores with factors 0.39 0.89 0.90 0.89 Multiple R square of scores with factors 0.15 0.80 0.81 0.80 Minimum correlation of factor score estimates -0.70 0.60 0.61 0.59

Total, General and Subset omega for each subset g F1* F2* F3* Omega total for total scores and subscales 0.84 0.84 0.39 0.49 Omega general for total scores and subscales 0.13 0.11 0.06 0.04 Omega group for total



scores and subscales 0.37 0.73 0.33 0.45
Omega Call: omegah(m = m, nfactors = nfactors, fm = fm, key = key, flip = flip, digits = digits, title = title, sl = sl, labels = labels, plot = plot, n.obs = n.obs, rotate = rotate, Phi = Phi, option = option, covar = covar) Alpha: 0.65 G.6: 0.84 Omega Hierarchical: 0.69 Omega H asymptotic: 0.94 Omega Total 0.74

Schmid Leiman Factor loadings greater than 0.2 g F1* F2* F3* h2 h2 u2 p2 com WT_S11_F1F5_R 0.06 0.94 0.51 2.02 WT_S11_F1F6_R 0.58 0.24 0.26 0.46 0.46 0.54 0.73 1.76 WT_S11_F2F3_R- 0.62 -0.29 0.49 0.49 0.51 0.78 1.57 WT_S11_F2F5_R- -0.38 0.16 0.84 0.11 1.26 WT_S11_F2F6_R 0.80 0.68 0.68 0.32 0.04 1.12 WT_S11_F3F5_R 0.60 0.37 0.37 0.63 0.96 1.09 WT_S11_F3F6_R 0.79 0.33 0.73 0.73 0.27 0.84 1.36 WT_S11_F4F5_R 0.41 0.22 0.22 0.78 0.76 1.64 WT_S11_F4F6_R 0.51 0.27 0.36 0.36 0.64 0.72 1.80 WT_S11_F5F6_R- 0.21 0.59 0.40 0.40 0.60 0.11 1.26 WT_S13_F1F4_R -0.33 0.41 0.29 0.29 0.71 0.02 1.99 WT_S13_F1F6_R- -0.50 0.29 0.29 0.71 0.11 1.28 WT_S13_F2F4_R 0.26 0.38 0.21 0.21 0.79 0.33 1.81 WT_S13_F3F4_R 0.25 0.37 0.21 0.21 0.79 0.07 2.01 WT_S13_F3F6_R- -0.38 -0.33 0.26 0.26 0.74 0.05 2.17 WT_S13_F4F6_R 0.40 0.19 0.81 0.85 1.35 WT_S14_F1F3_R- 0.34 0.24 0.18 0.82 0.67 1.81 WT_S14_F1F4_R 0.55 0.32 0.32 0.68 0.01 1.12 WT_S14_F3F4_R- -0.22 0.07 0.93 0.22 2.00 WT_S14_F3F5_R- 0.49 0.30 0.30 0.70 0.10 1.49 WT_S14_F3F6_R- 0.24 0.07 0.93 0.19 1.48 WT_S14_F4F5_R- -0.64 0.43 0.43 0.57 0.01 1.14 WT_S14_F4F6_R- 0.26 -0.23 0.12 0.88 0.54 2.13

With Sums of squares of: g F1* F2* F3* h2 2.80 0.01 1.97 2.11 2.75

general/max 1.02 max/min = 211.46 mean percent general = 0.38 with sd = 0.34 and cv of 0.89 Explained Common Variance of the general factor = 0.41

The degrees of freedom are 187 and the fit is 6.03 The number of observations was 72 with Chi Square = 365.08 with prob < 1.3e-13 The root mean square of the residuals is 0.1 The df corrected root mean square of the residuals is 0.12 RMSEA index = 0.114 and the 10 % confidence intervals are 0.098 0.133 BIC = -434.66

Compare this with the adequacy of just a general factor and no group factors The degrees of freedom for just the general factor are 230 and the fit is 8.49 The number of observations was 72 with Chi Square =

525.16 with prob < 4e-25 The root mean square of the residuals is 0.15 The df corrected root mean square of the residuals is 0.16

RMSEA index = 0.133 and the 10 % confidence intervals are 0.119 0.15 BIC = -458.47

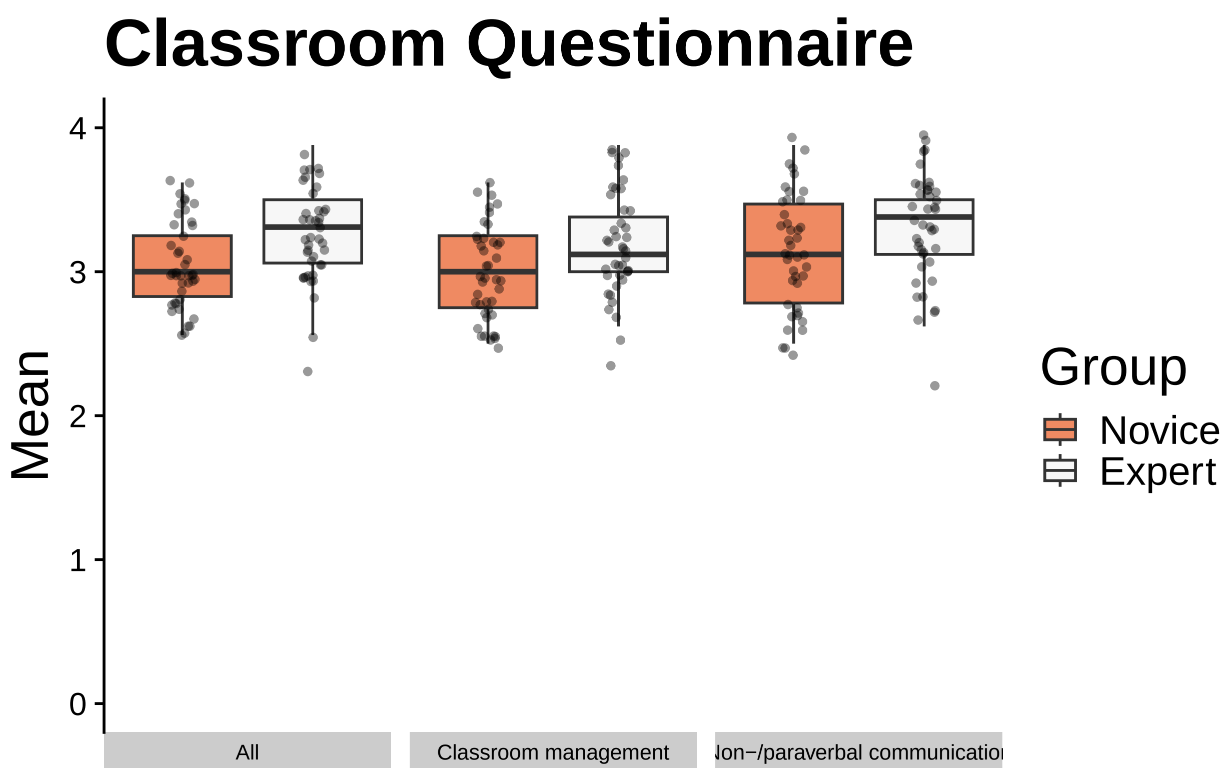
Measures of factor score adequacy
g F1* F2* F3* Correlation of scores with factors 0.93 0.06 0.9 0.87 Multiple R square of scores with factors 0.86 0.00 0.8 0.76 Minimum correlation of factor score estimates 0.72 -0.99 0.6 0.52

Total, General and Subset omega for each subset g F1* F2* F3* Omega total for total scores and subscales 0.74 NA 0.67 0.44 Omega general for total scores and subscales 0.69 NA 0.63 0.35 Omega group for total scores and subscales 0.05 NA 0.04 0.09

2.0.5 2.4 Classroom Questionnaire

Table 21: Mean, SD, min, max for classroom managament (cm) and non-/paraverbal communication (n&pv com)

Group	N	M cm	SD cm	Min cm	Max cm	M n&pv com	SD n&pv com	Min n&pv com	Max n&pv com
Expert	41	3.2	0.72	1	4	3.30	0.65	1	4
Novice	42	3.0	0.77	1	4	3.13	0.73	1	4



2.0.5.1 t-test & effect size “Classroom Questionnaire - All”

```
Two Sample t-test
```

data: df_quest_plot$All[df_quest_plot$Group == "Expert"] and df_quest_plot$All[df_quest_plot$Group == "Novice"] t = 2.7419, df = 81, p-value = 0.007516 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: 0.05014992 0.31545984 sample estimates: mean of x mean of y 3.247805 3.065000

[1] 0.6 attr(,"magnitude") [1] "medium"

2.0.5.2 t-test & effect size "Classroom Questionnaire - Classroom Management"

```
Two Sample t-test
```

data: df_quest_plot`$Classroommanagement$`[$df_{q}uest_{p}lot$Group == "Expert"] and df_quest_plot`$Classroommanagement$ == "Novice"] t = 2.6421, df = 81, p-value = 0.009887 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: 0.04912362 0.34875094 sample estimates: mean of x mean of y 3.195366 2.996429

[1] 0.58 attr(,"magnitude") [1] "medium"

2.0.5.3 t-test & effect size "Classroom Questionnaire - Non-/paraverbal communication"

```
Two Sample t-test
```

data: df_quest_plot`$Non-/paraverbalcommunication$`[$df_{q}uest_{p}lot$Group == "Expert"] and df_quest_plot`$Non-/paraverbalcommunication$`[$df_{q}uest_{p}lot$Group == "Novice"] t = 1.997, df = 81, p-value = 0.04919 alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: 0.0006129687 0.3361233844 sample estimates: mean of x mean of y 3.301463 3.133095

[1] 0.44 attr(,"magnitude") [1] "small"

2.1 3. Correlations

```
##
##  Pearson's product-moment correlation
##
## data:  df_merge$GRI_mtu and df_merge$SJT_All
## t = -2.1712, df = 80, p-value = 0.03288
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.43084846 -0.01990909
## sample estimates:
##       cor
## -0.235897
```

```
##
##  Pearson's product-moment correlation
##
## data:  df_merge$GRI_mtu and df_merge$Quest_All
## t = 0.64655, df = 80, p-value = 0.5198
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.1472121  0.2846518
```

```
## sample estimates:
##        cor
## 0.07209825

##
##  Pearson's product-moment correlation
##
## data:  df_merge$GRI_mtu and df_merge$Mean_disruption_appraisal
## t = 0.60918, df = 80, p-value = 0.5441
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.1512868  0.2808174
## sample estimates:
##        cor
## 0.06795118

##
##  Pearson's product-moment correlation
##
## data:  df_merge$GRI_mtu and df_merge$Mean_confidence_appraisal
## t = -0.11168, df = 80, p-value = 0.9114
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.2288719  0.2050778
## sample estimates:
##        cor
## -0.0124849

##
##  Pearson's product-moment correlation
##
## data:  df_merge_experts$GRI_mtu and df_merge_experts$`Teaching Experience`
## t = -1.4152, df = 38, p-value = 0.1652
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.50038371  0.09433299
## sample estimates:
##        cor
## -0.2237514
```