# PHYSICAL ACTIVITY ENVIRONMENT AND PERFEC/TENACI

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Today's Date

# INTRODUCTION.

Previous analyses showed that enviromental variables, such as school, have significant effects on IQ and Perf. variables.

For this reason:

- we explore the effect of the enviroment variables that promote physiscal activity in schools on IQ and Perf variables.
- Variables related to how the evironment of schools devoted to physical activity were collected.
- They are named and defined in the following section.

# DOCUMENTATION

## VARIABLES DE AMBIENTE PARA ACTIVIDAD FISICA

El sufijo aaf_ en todas las variables abrevia: Ambiente (para) Actividad Fisica.

- aaf_

### OBSERVED VARIABLES

| Nombre d Variable | Definicion | Valores |
|---|---|---|
| aaf_t_pe_class | t Tiempo en clase de ed. fisica | Minutos por semana |
| aaf_t_recess | t Tiempo de recreo | Minutos por semana |
| aaf_population_size | Poblacion total de la escuela | 1 - 4 = chica, mediana, grande, muy_gr |
| aaf_s_size | s Tamannho d Espacio para actividad | 0 - 4 = no_hay, chico, mediano, grande, muy_gr |
| aaf_s_avail | s Espacio esta disponible o no | 0, 1 |
| aaf_s_used | s Espacio se usa o no | 0, 1 |
| aaf_s_shape | s Forma del espacio | rectang, triang, irregular, other |

### COMPUTED VARIABLES

| Computed Variable | Definition | Formula |
|---|---|---|
| aaf_t_sum_total | total aggregated class+recess time | t_sum = t_class + t_recess |
| aaf_ratio_s_pop | space-size population-size ratio | ratio_sp = s_size / pop_size |
| aaf_indica_rec_t_s_p | time_space/population Indicator: Product of recess-time times the space/population ratio | indica_tsp = t_recesss * ratio_sp |
| aaf_indica_sum_t_s_p | total time_space/population Indicator: Product of aggregated time (class+recess) times the space/population ratio | indica_sum_tsp = t_sum * ratio_sp |

# ANALYSES.

## LINEAR REGRESSSION ASSOCIATION ANALYSES.

### PHYSICAL ACTIVITY ENVIROMENT VS IQ/FROST/OROS VARIABLES.

Six significant associations were found.

- 8 significant differences were found.
- The strongest association (r>0.6) was found between IQ and physical activity aggregated time.
- Of particular interest:
- Association between Oros's PSP social dimension and aggregated time was found.

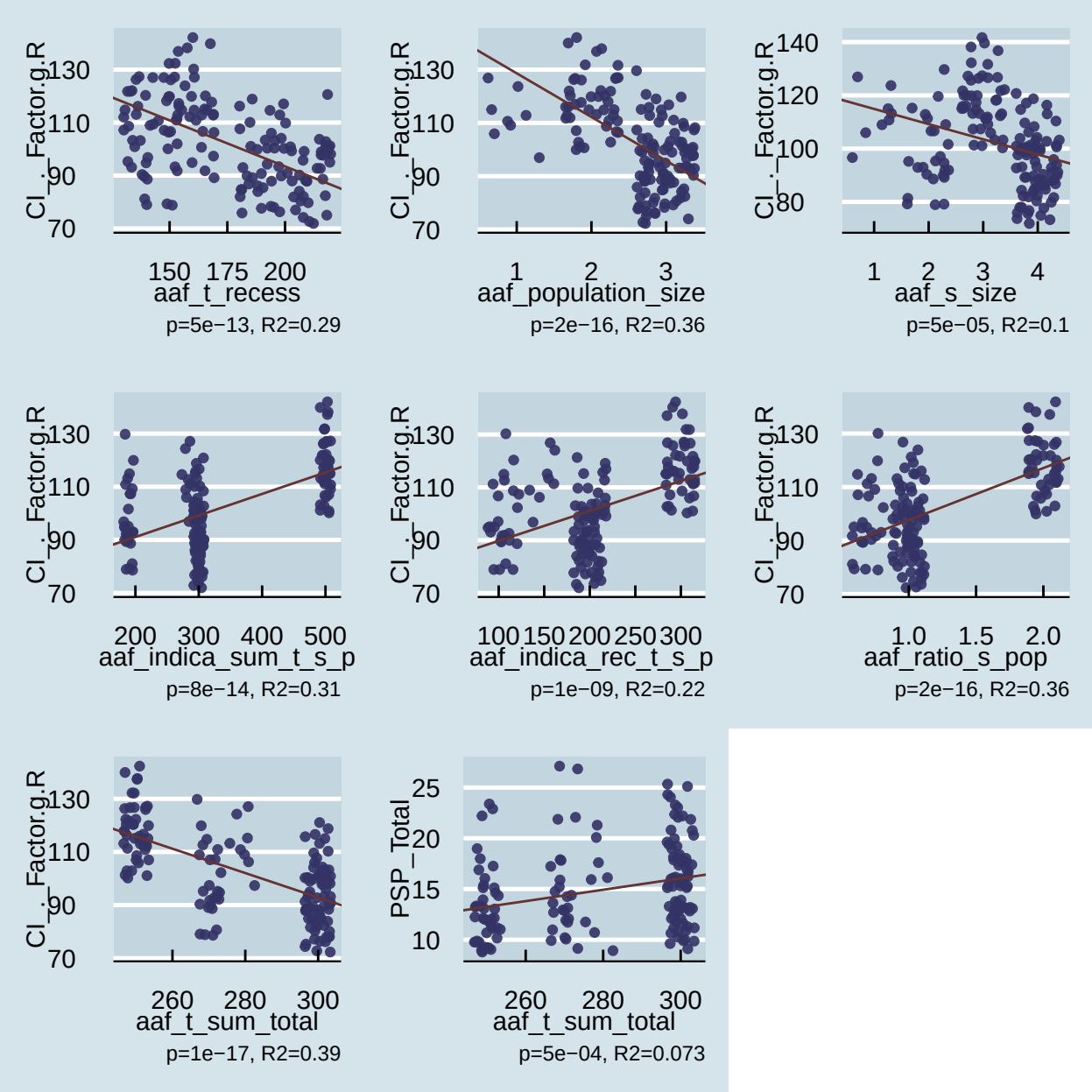
The following is the list of significant results, listing the name of variables, pvalue and Adjusted Rsquared.

```
show_pars(res_activity_corr)
```

```
## CI_._Factor.g.R aaf_t_sum_total
## pv= 1e-17
## R2= 0.39
## CI_._Factor.g.R aaf_population_size
## pv= 2e-16
## R2= 0.36
## CI_._Factor.g.R aaf_ratio_s_pop
## pv= 2e-16
## R2= 0.36
## CI_._Factor.g.R aaf_indica_sum_t_s_p
## pv= 8e-14
## R2= 0.31
## CI_._Factor.g.R aaf_t_recess
## pv= 5e-13
## R2= 0.29
## CI_._Factor.g.R aaf_indica_rec_t_s_p
## pv= 1e-09
## R2= 0.22
## CI_._Factor.g.R aaf_s_size
## pv= 5e-05
## R2= 0.1
## PSP_Total aaf_t_sum_total
## pv= 5e-04
## R2= 0.073
```

```
## TOTAL NUMBER OF SIGNIFICANT ANALISES: 8
```

```
grid.draw(res_activity_corr[['grid']])
```




### DIFFERENCES BETWEEN GROUPS ANALYSES.

By using the physical activity as groupping variables:

- 37 significant differences were found.
- Most of them with small effects.
- However, the associtiaion between IQ and Oros's PSP social dimension was replicated.

The following is the list of significant results, listing the name of variables, pvalue and Adjusted Rsquared.

```
## PRINT THE PARAMETERS WITH THE SHOW_PARS FUNTION
show_pars(res_activity_diff)
```

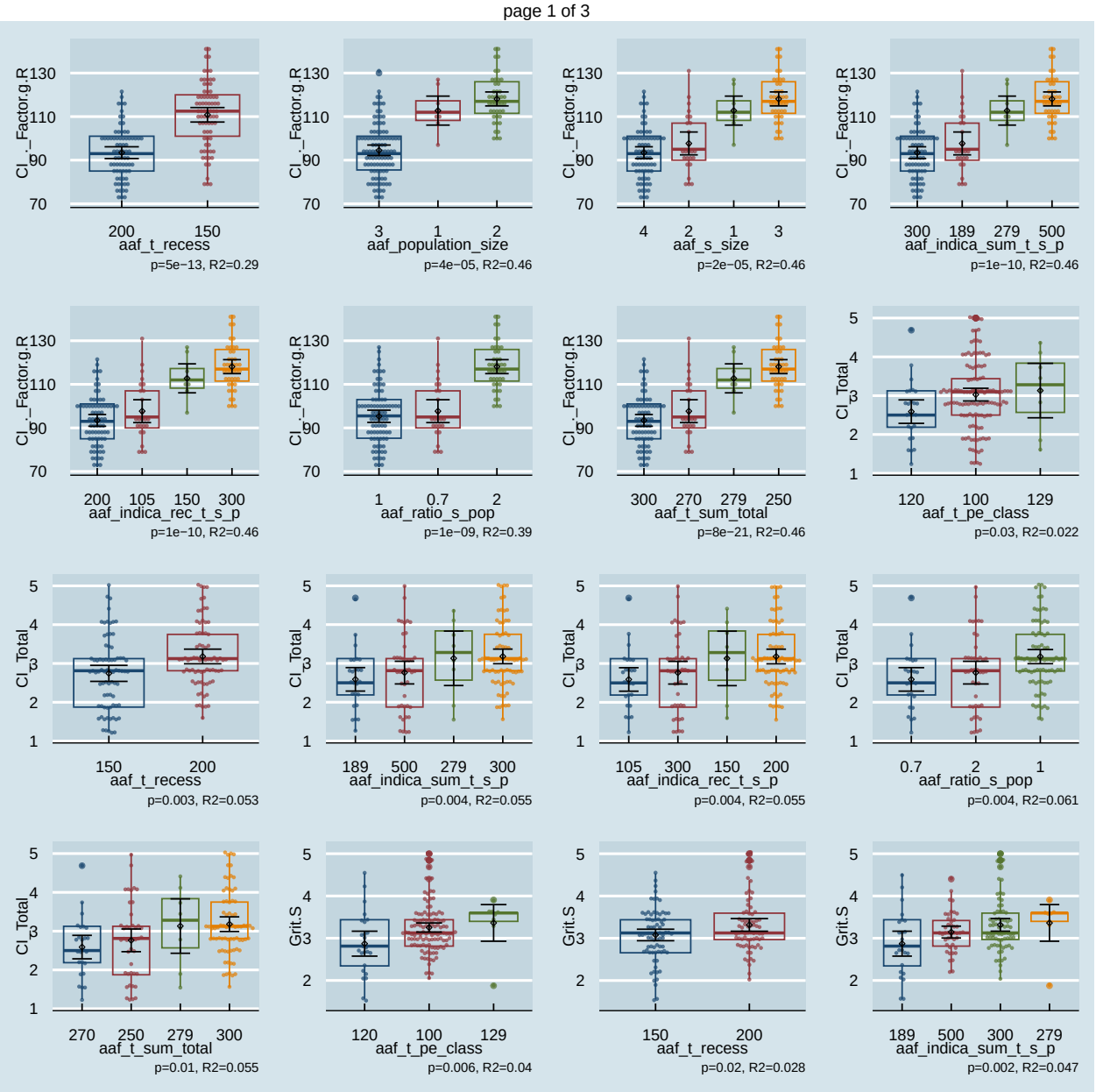
```
## CI_._Factor.g.R aaf_population_size
## pv= 4e-05
## R2= 0.46
## CI_._Factor.g.R aaf_s_size
## pv= 2e-05
## R2= 0.46
## CI_._Factor.g.R aaf_indica_sum_t_s_p
## pv= 1e-10
## R2= 0.46
## CI_._Factor.g.R aaf_indica_rec_t_s_p
## pv= 1e-10
## R2= 0.46
## CI_._Factor.g.R aaf_t_sum_total
## pv= 8e-21
## R2= 0.46
## CI_._Factor.g.R aaf_ratio_s_pop
## pv= 1e-09
## R2= 0.39
## CI_._Factor.g.R aaf_t_recess
## pv= 5e-13
## R2= 0.29
## PSP_Total aaf_t_sum_total
## pv= 3e-04
## R2= 0.067
## CI_Total aaf_ratio_s_pop
## pv= 0.004
## R2= 0.061
## CI_Total aaf_indica_sum_t_s_p
## pv= 0.004
## R2= 0.055
## CI_Total aaf_indica_rec_t_s_p
## pv= 0.004
## R2= 0.055
## CI_Total aaf_t_sum_total
## pv= 0.01
## R2= 0.055
## CI_Total aaf_t_recess
## pv= 0.003
## R2= 0.053
## Grit.S aaf_ratio_s_pop
## pv= 0.002
## R2= 0.053
## POO_Total aaf_t_pe_class
## pv= 0.01
## R2= 0.051
## Grit.S aaf_indica_sum_t_s_p
## pv= 0.002
## R2= 0.047
## Grit.S aaf_indica_rec_t_s_p
## pv= 0.002
## R2= 0.047
## PSP_Total aaf_t_recess
## pv= 0.004
## R2= 0.047
```

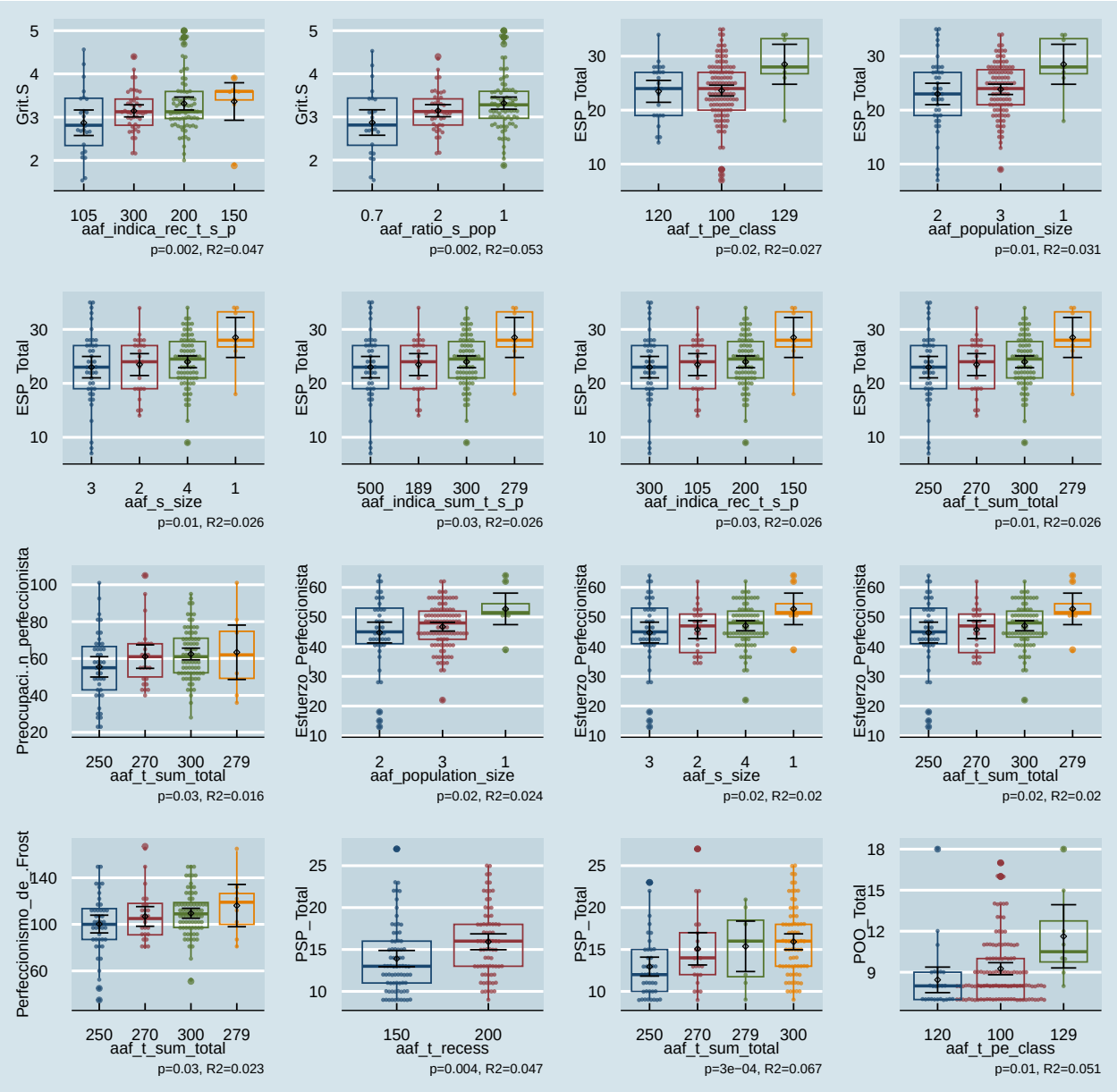
```
## POO_Total aaf_s_size
## pv= 0.002
## R2= 0.046
## POO_Total aaf_indica_sum_t_s_p
## pv= 0.002
## R2= 0.046
## POO_Total aaf_indica_rec_t_s_p
## pv= 0.002
## R2= 0.046
## POO_Total aaf_t_sum_total
## pv= 0.02
## R2= 0.046
## POO_Total aaf_population_size
## pv= 0.004
## R2= 0.042
## Grit.S aaf_t_pe_class
## pv= 0.006
## R2= 0.04
## ESP_Total aaf_population_size
## pv= 0.01
## R2= 0.031
## Grit.S aaf_t_recess
## pv= 0.02
## R2= 0.028
## ESP_Total aaf_t_pe_class
## pv= 0.02
## R2= 0.027
## ESP_Total aaf_s_size
## pv= 0.01
## R2= 0.026
## ESP_Total aaf_indica_sum_t_s_p
## pv= 0.03
## R2= 0.026
## ESP_Total aaf_indica_rec_t_s_p
## pv= 0.03
## R2= 0.026
## ESP_Total aaf_t_sum_total
## pv= 0.01
## R2= 0.026
## Esfuerzo_Perfeccionista aaf_population_size
## pv= 0.02
## R2= 0.024
## Perfeccionismo_de_.Frost aaf_t_sum_total
## pv= 0.03
## R2= 0.023
## CI_Total aaf_t_pe_class
## pv= 0.03
## R2= 0.022
## Esfuerzo_Perfeccionista aaf_s_size
## pv= 0.02
## R2= 0.02
## Esfuerzo_Perfeccionista aaf_t_sum_total
## pv= 0.02
## R2= 0.02
```

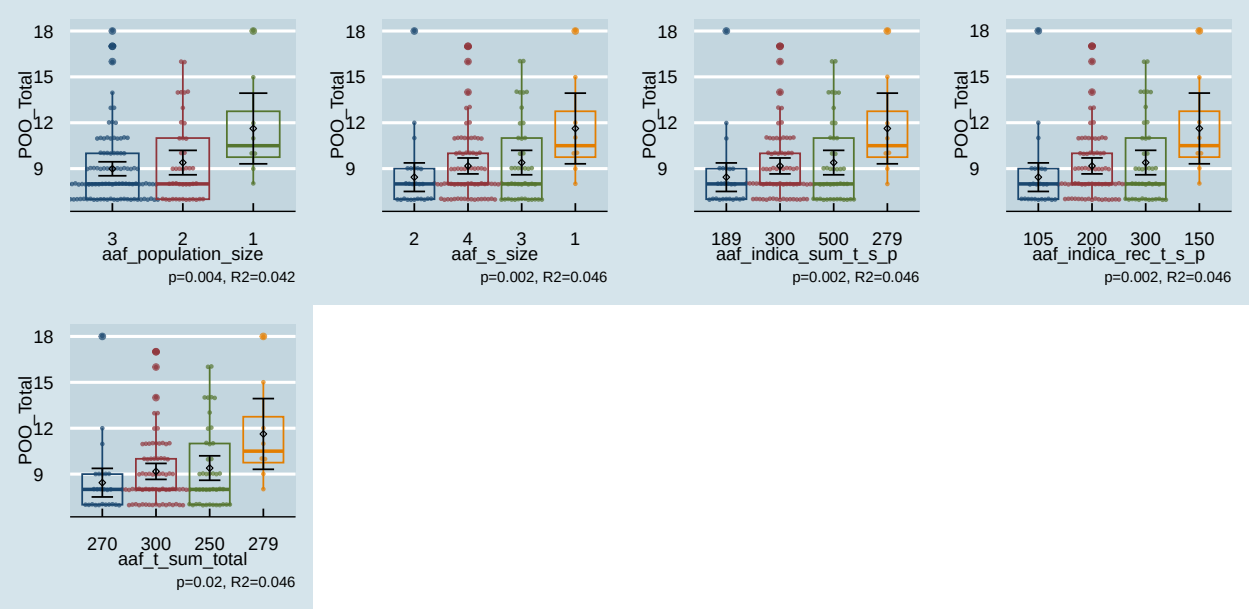
```
## Preocupaci..n_perfeccionista aaf_t_sum_total
## pv= 0.03
## R2= 0.016
## TOTAL NUMBER OF SIGNIFICANT ANALISES: 37
```

```
## DRAW THE DIFFERENCES BY CATEGORICAL VARIABLES GRID
grid.draw(res_activity_diff[['grid']])
```






Grit.S
aaf_indica_rec_t_s_p
p=0.002, R2=0.047
Grit.S
aaf_ratio_s_pop
p=0.002, R2=0.053
ESP_Total
aaf_t_pe_class
p=0.02, R2=0.027
ESP_Total
aaf_population_size
p=0.01, R2=0.031
ESP_Total
aaf_s_size
p=0.01, R2=0.026
ESP_Total
aaf_indica_sum_t_s_p
p=0.03, R2=0.026
ESP_Total
aaf_indica_rec_t_s_p
p=0.03, R2=0.026
ESP_Total
aaf_t_sum_total
p=0.01, R2=0.026
Preocupaci._n_perfeccionista
aaf_t_sum_total
p=0.03, R2=0.016
Esfuerzo_Perfeccionista
aaf_population_size
p=0.02, R2=0.024
Esfuerzo_Perfeccionista
aaf_s_size
p=0.02, R2=0.02
Esfuerzo_Perfeccionista
aaf_t_sum_total
p=0.02, R2=0.02
Perfeccionismo_de_Frost
aaf_t_sum_total
p=0.03, R2=0.023
PSP_Total
aaf_t_recess
p=0.004, R2=0.047
PSP_Total
aaf_t_sum_total
p=3e−04, R2=0.067
POO_Total
aaf_t_pe_class
p=0.01, R2=0.051

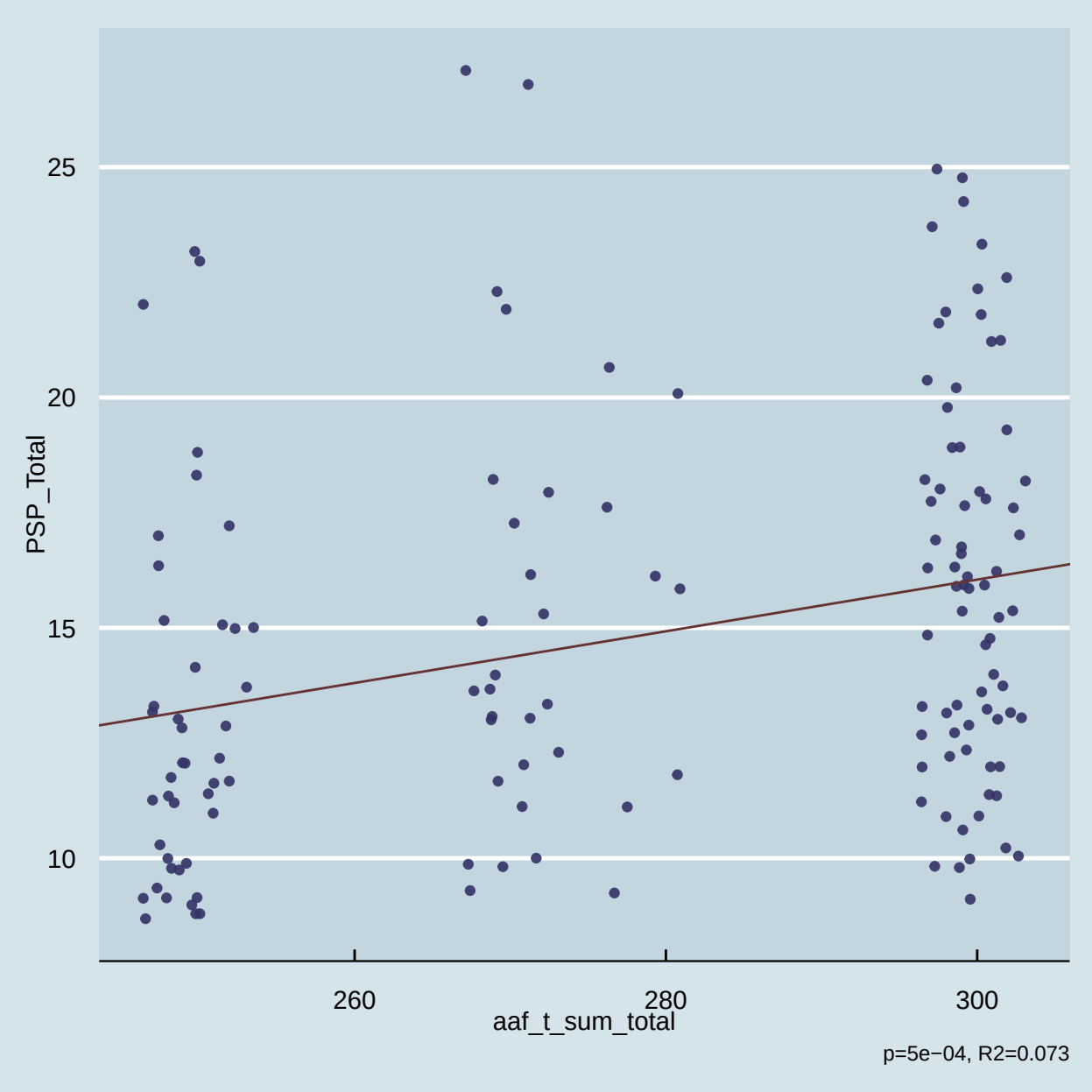



```
## [[1]]
## NULL
##
## [[2]]
## NULL
##
## [[3]]
## NULL
```

## VARIABLE OF INTEREST, OROS'S PSP SOCIAL DIMENSION, GRAPHICS IN DETAIL.

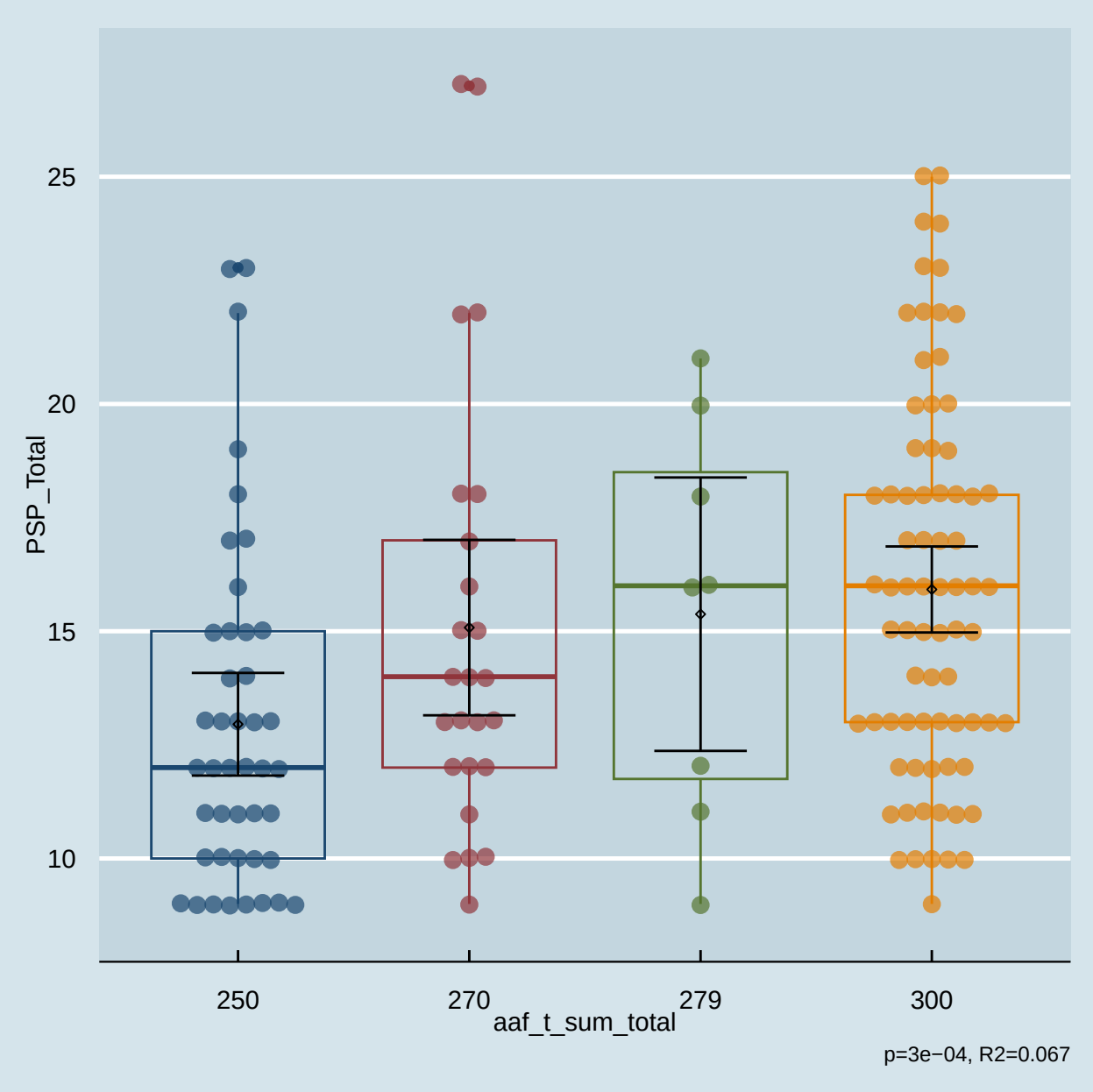
### PSP-TIME ASSOCIATION.

```
## SHOW THE PSP CORRELATION GRAPH
res_activity_corr[['plots']][['PSP_Total_~_aaf_t_sum_total']]
```




### DIFFERENCES IN PSP SOCIAL DIMENSION.

```
## SHOW THE PSP CORRELATION GRAPH
res_activity_diff[['plots']][['PSP_Total_~_aaf_t_sum_total']]
```


25
20
15
10
PSP_Total
250
270
279
300
aaf_t_sum_total
p=3e−04, R2=0.067