

Sacando los Composite Scores de NP para BIOFACE

Limpiando la DB

Vamos a cargar la DB,

```
setwd("/old_nas/bioface/css")
read_sav("db20211021.sav") -> bioface_data
```

De aqui no nos interesa todo, sino solo las variables de NP

```
bioface_np <-
bioface_data[, c(140, 149, 150, 153:155, 145:147, 160:167, 157, 158, 169, 170)]
```

y lo que nos interesa es montar un *dataframe*,

```
bfdf <- data.frame(bioface_np)
for(index in 1:102) { row.names(bfdf)[row.names(bfdf) == index] <-
bioface_data[index, 1]}
```

Voy a mirar un poco las variables.

```
> describe(bfdf)
```

	vars	n	mean	sd	median	trimmed	mad	min	max	range
skew										
kurtosis										
se										
0_Total_NP	1	100	14.83	0.47	15	14.96	0.00	13	15	2
-2.77										
6.87										
0.05										
M_digtspan_direct_NP	2	100	4.86	0.84	5	4.81	1.48	3	7	4
0.36										
-0.76										
0.08										
M_digtspan_invers_NP	3	100	3.48	0.82	4	3.49	1.48	2	5	3
-0.10										
-0.58										
0.08										
LL_Namingtotal_NP	4	100	14.21	1.56	15	14.57	0.00	5	15	10
-3.04										
11.99										
0.16										
LL_comprensio_NP	5	100	5.91	0.29	6	6.00	0.00	5	6	1
-2.82										
6.03										
0.03										
LL_R_total_NP	6	100	4.00	0.00	4	4.00	0.00	4	4	0
NaN										
NaN										
0.00										
M_WMS_total_NP	7	100	24.42	5.85	25	24.49	5.93	11	39	28
-0.07										
-0.53										
0.59										
M_ret_NP	8	100	5.08	2.55	5	5.11	1.48	0	12	12
0.05										
-0.07										
0.25										
M_recon_NP	9	100	20.90	3.48	22	21.51	2.97	4	24	20
-1.95										
4.98										
0.35										
G_Luria_NP	10	100	3.35	1.01	4	3.58	0.00	0	4	4
-1.84										
3.05										
0.10										

P_Ecopraxiatotal_NP	11	100	3.80	0.47	4	3.91	0.00	2	4	2
-2.29			4.57	0.05						
P_ideo_total_NP	12	100	3.99	0.10	4	4.00	0.00	3	4	1
-9.70			93.06	0.01						
P_constr_total_NP	13	99	3.48	0.88	4	3.68	0.00	0	4	4
-1.88			3.07	0.09						
FE_SKTtemps_NP	14	100	33.10	28.16	27	29.21	7.41	0	290	290
7.62			66.38	2.82						
FE_SKTerrors_NP	15	100	0.94	1.61	0	0.59	0.00	0	8	8
2.38			6.41	0.16						
FE_Pflu_NP	16	100	12.08	3.89	12	12.18	4.45	2	22	20
-0.05			-0.23	0.39						
FE_anflu_NP	17	100	15.93	5.05	16	15.85	5.93	5	28	23
0.16			-0.40	0.50						
G_pop_total_NP	18	100	9.72	0.91	10	9.90	0.00	2	10	8
-6.33			49.02	0.09						
G_15obj_NP	19	100	12.39	2.41	13	12.69	1.48	2	15	13
-1.55			3.49	0.24						
FE_R_abstracta_NP	20	100	10.90	2.69	11	11.10	2.97	2	15	13
-0.69			0.13	0.27						
FE_T_rellotge_NP	21	100	6.34	1.72	7	6.78	0.00	0	9	9
-2.67			6.94	0.17						

y ahora me quedo solo con las filas completas,

```
> dim(bfdf)
[1] 102 21
> bfdf <- bfdf[complete.cases(bfdf),]
> dim(bfdf)
[1] 99 21
```

Some minor edits (**arreglar esto en la DB!**)

```
> bfdf["B017",14] <- 29
> bfdf[row.names(bfdf) != "B063",] -> bfdf
> dim(bfdf)
[1] 98 21
```

y quito las filas con $sd=0$,

```
bfdf[-c(6)] -> bfdf
```

y ahora todo va a z-scores,

```
data.frame(row.names=row.names(bfdf)) -> zdb
for(xname in row.names(describe(bfdf))) {print((bfdf[xname] -
describe(bfdf[xname])$mean)/describe(bfdf[xname])$sd) -> zdb[xname]}
```

Composites Scores agrupando por tipo de pruebas

Las variables a estudiar se agrupan por,

```
1) Orientation:
0_Total_NP

2) Attention and working memory:
M_digtspan_direct_NP
M_digtspan_invers_NP

3) Processing speed and Executive function:
FE_SKTtemps_NP
FE_SKTerrors_NP

4) Executive function-verbal:
FE_Pflu_NP
FE_anflu_NP
FE_R_abstracto_NP

5) Language:
LL_Namingtotal_NP
LL_comprensio_NP
LL_R_total_NP (esta ha desaparecido)

6) Verbal Learning and Memory:
M_WMS_total_NP
M_ret_NP
M_recon_NP

7) Praxis:
P_constr_total_NP
P_ideo_total_NP
P_Ecopraxiatotal_NP

8) Visual gnosis:
G_pop_total_NP
G_Luria_NP
G_15obj_NP

9) Global cognition:
FE_T_rellotge_NP
```

Segun esto habria que hacer 9 composites scores,

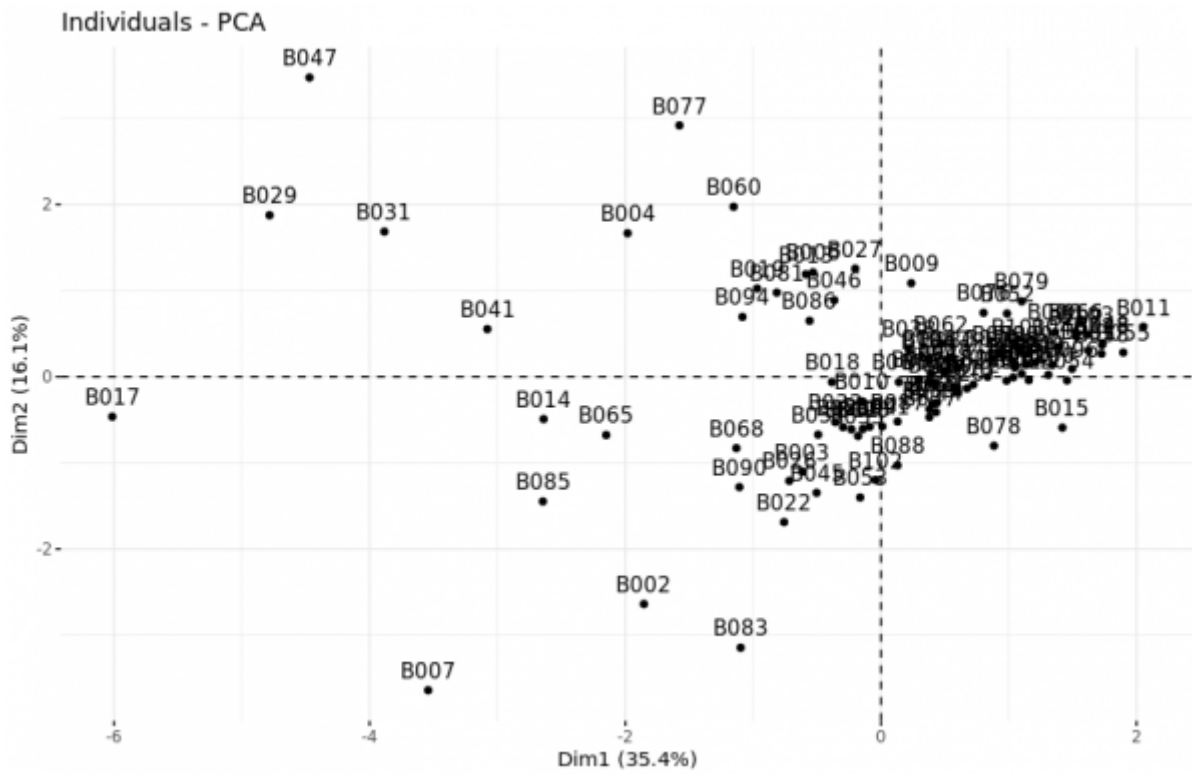
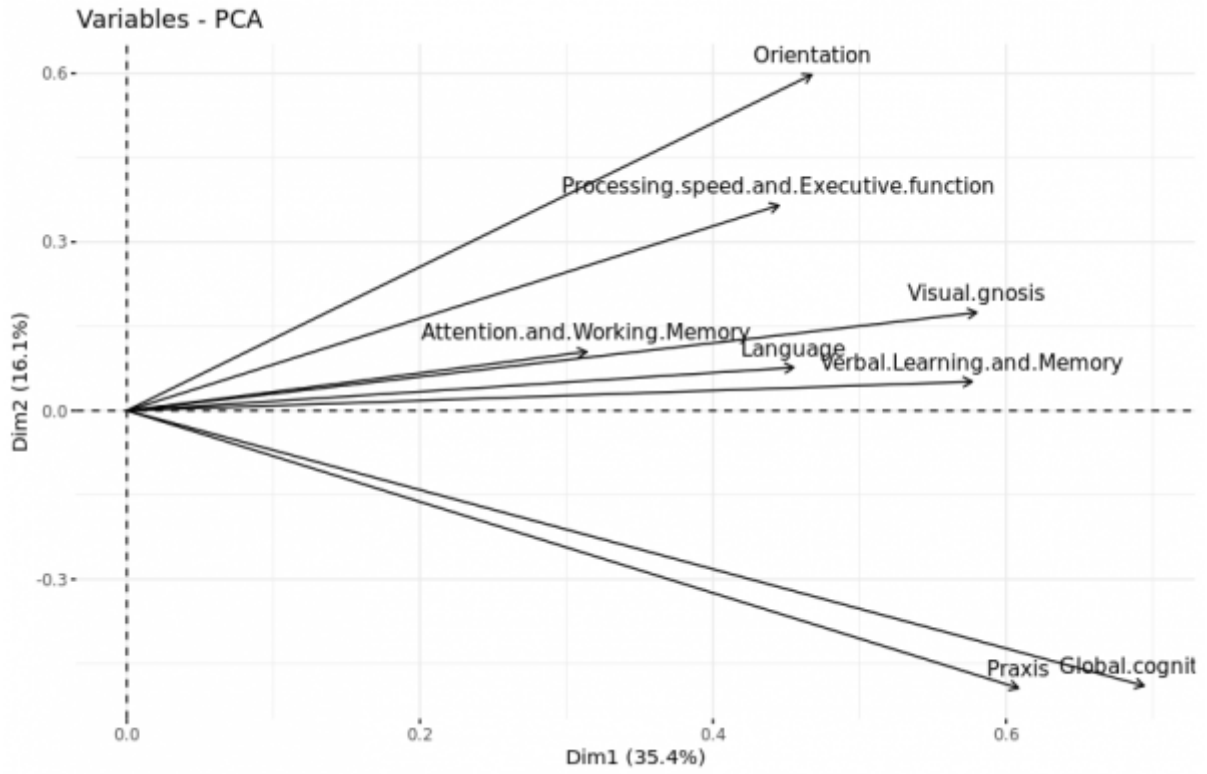
```
data.frame(row.names=row.names(zdb)) -> cs
cs$Orientation = zdb$0_Total_NP
tt <- data.frame(zdb$M_digtspan_direct_NP,zdb$M_digtspan_invers_NP)
mod <- fa(tt, scores="regression")
cs$Attention.and.Working.Memory = mod$scores
```

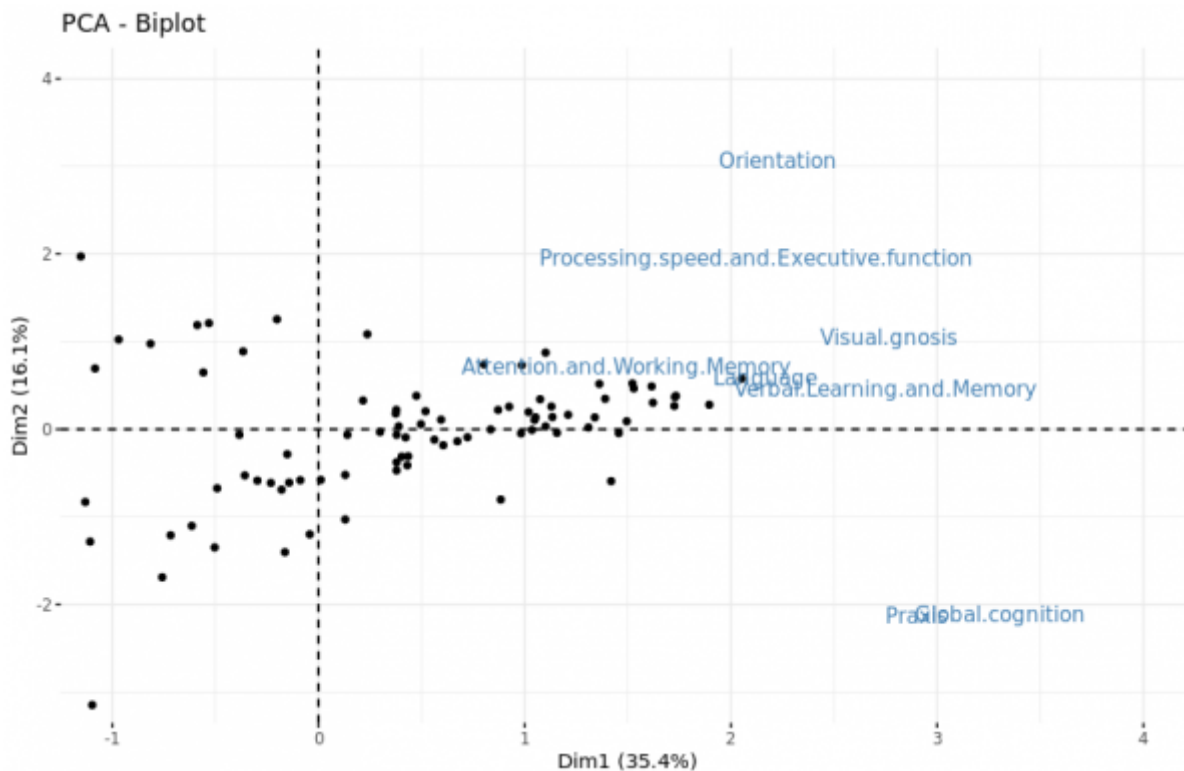
```
remove(tt)
tt <- data.frame(zdb$FE_SKTtemps_NP, zdb$FE_SKTerrors_NP)
mod <- fa(tt, scores="regression")
cs$"Processing.speed.and.Executive.function" <- mod$scores
tt <- data.frame(zdb$FE_Pflu_NP, zdb$FE_anflu_NP, zdb$FE_R_abstract_NP)
mod <- fa(tt, scores="regression")
cs$"Executive.function.verbal" <- mod$scores
remove(tt)
tt <- data.frame(zdb$LL_Namingtotal_NP, zdb$LL_comprensio_NP)
mod <- fa(tt, scores="regression")
cs$Language = mod$scores
remove(tt)
tt <- data.frame(zdb$M_WMS_total_NP, zdb$M_ret_NP, zdb$M_recon_NP)
mod <- fa(tt, scores="regression")
cs$"Verbal.Learning.and.Memory" = mod$scores
remove(tt)
tt <- data.frame(zdb$P_constr_total_NP, zdb$P_ideo_total_NP,
zdb$P_Ecopraxiatotal_NP)
mod <- fa(tt, scores="regression")
cs$Praxis = mod$scores
remove(tt)
tt <- data.frame(zdb$G_pop_total_NP, zdb$G_Luria_NP, zdb$G_15obj_NP)
mod <- fa(tt, scores="regression")
cs$"Visual.gnosis" = mod$scores
cs$"Global.cognition" = zdb$FE_T_rellotge_NP
```

Para escribir os datos a un archivo SPSS,

```
write_sav(cs, "bioface_composite_scores.sav")
```

y evidentemente podemos hacer un PCA de esto incluso y,



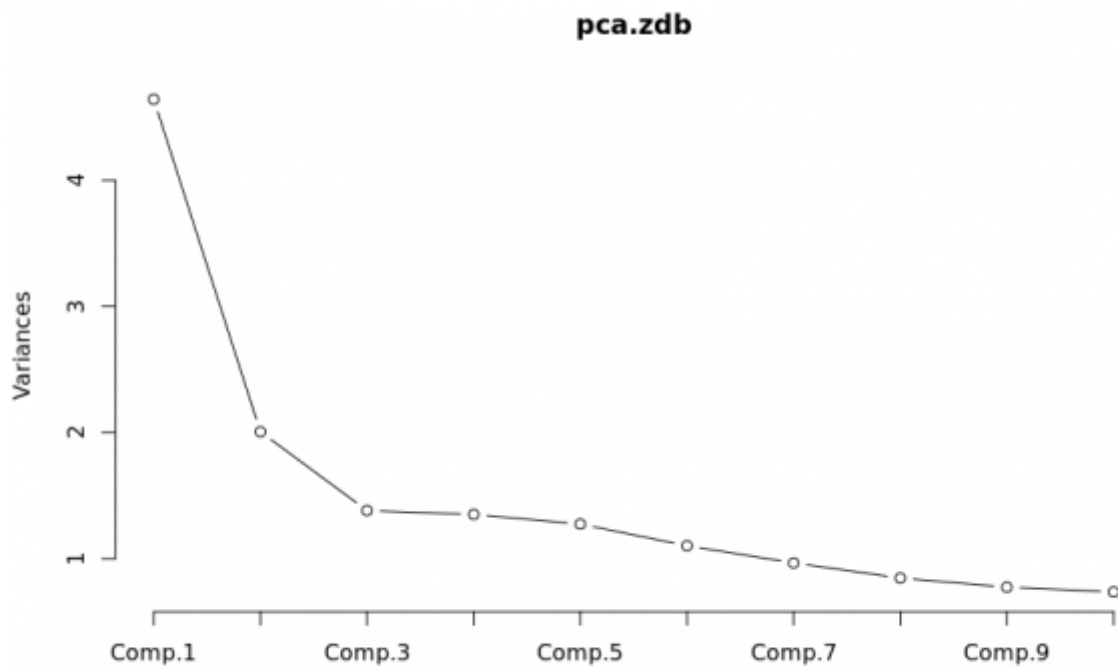


A ver

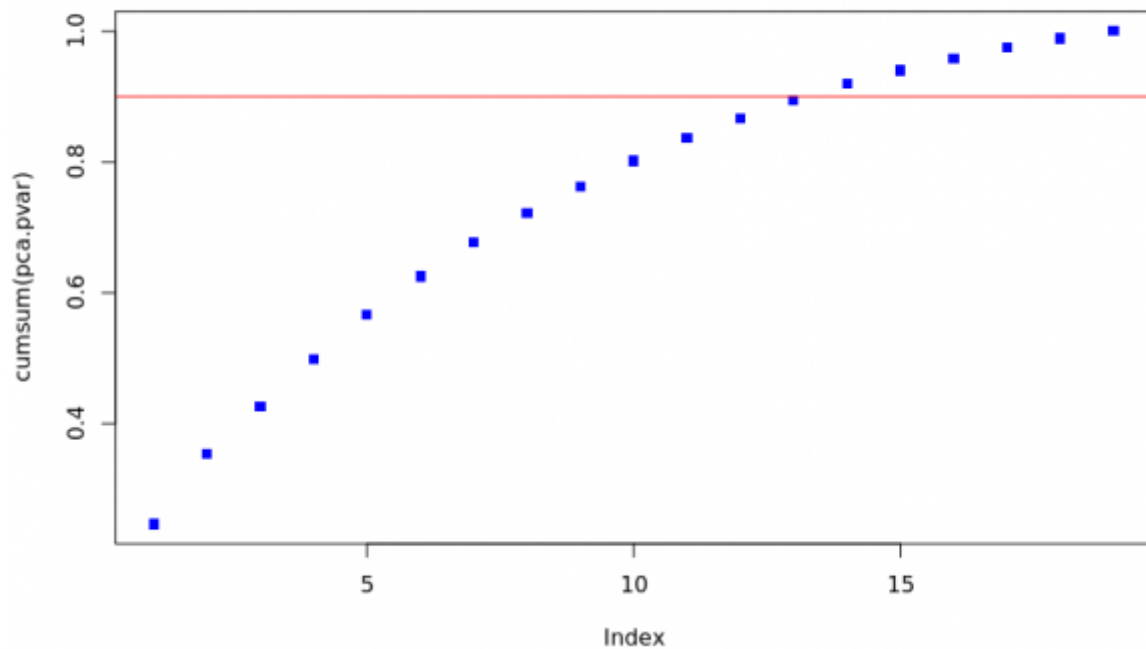
Lo que se puede observar a simple vista es que tenemos una poblacion bastante homogenea en cuanto a los dominios cognitivos donde los sujetos empeoran en algun dominio aleatorio y no en todos al mismo tiempo, ya que no se observa ninguna direccion preferencial en la desviacion de los sujetos hacia la izquierda sino que ocurre mas bien en forma de nube. Luego, hay algunos dominios que estan muy relacionados como *Praxis* y *Global cognition* o *Language* y *Verbal learning and Memory*, mientras otros, como *Orientation* son independientes del resto.

PCA

```
> princomp(zdb) -> pca.zdb  
> plot(pca.zdb, type="l")
```



```
> pca.var = pca.zdb$sdev^2  
> pca.pvar = pca.var/sum(pca.var)  
> plot(cumsum(pca.pvar))
```



Los loadings,

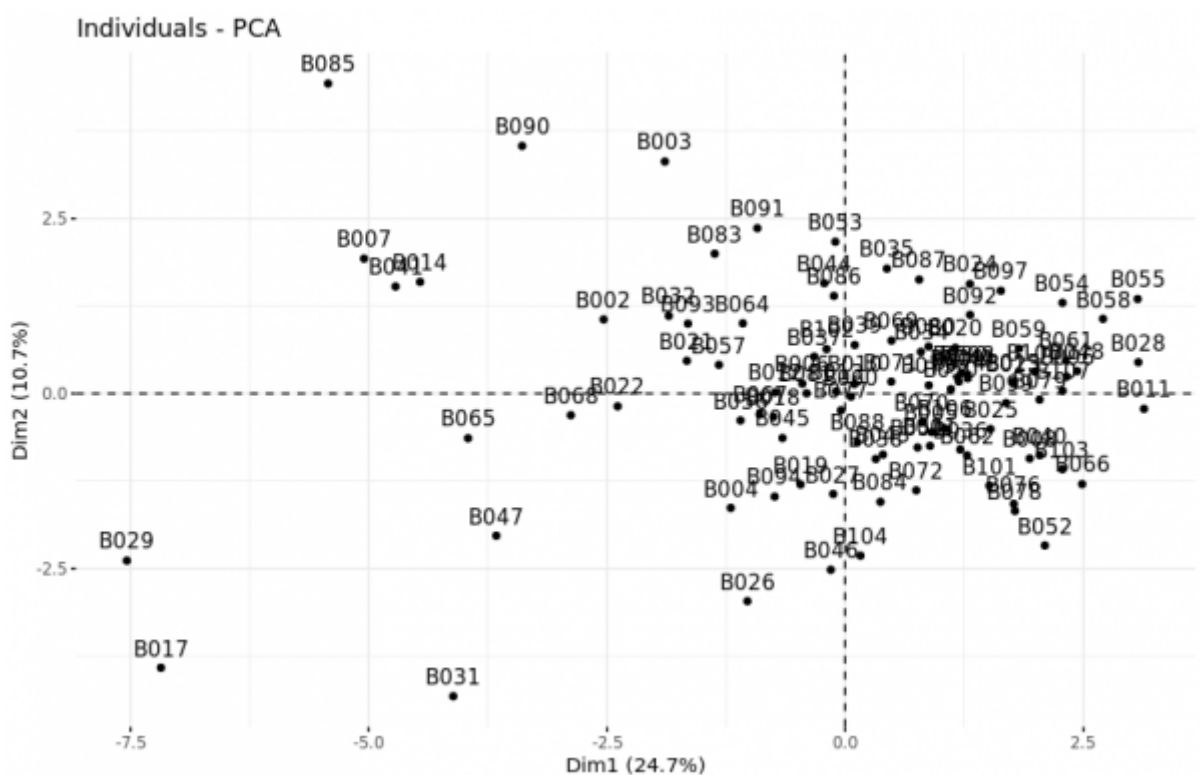
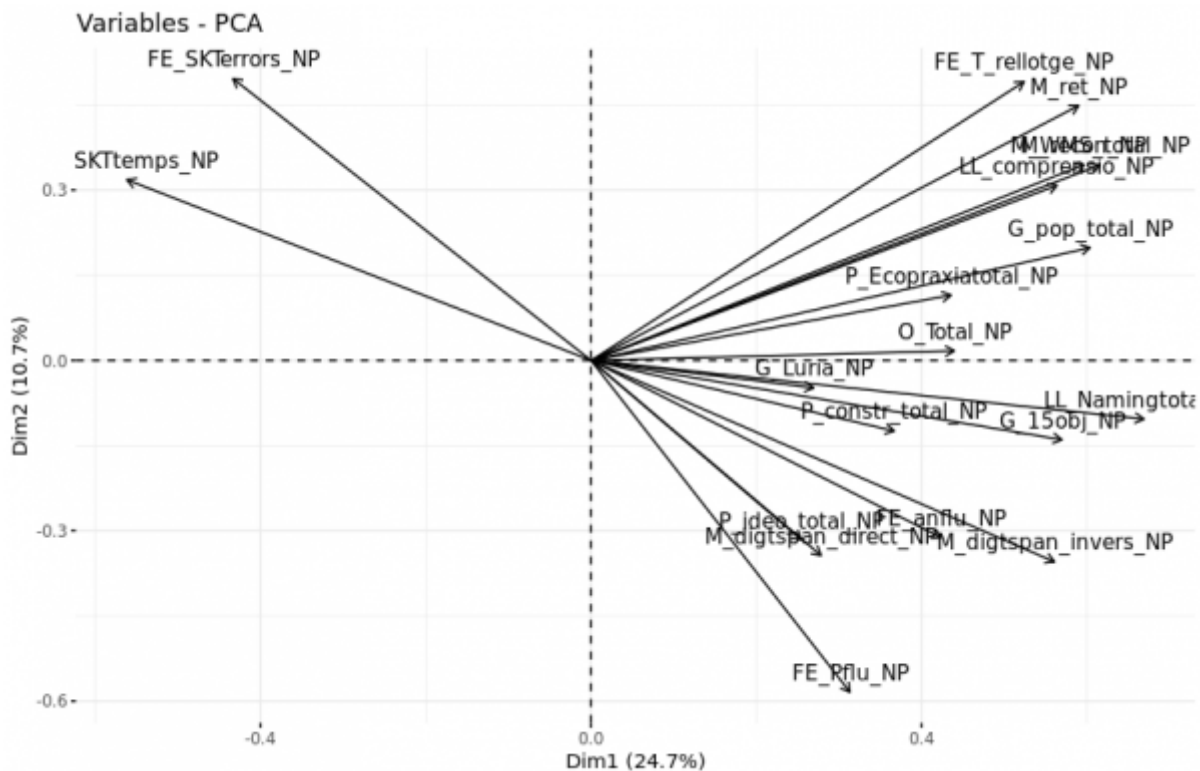
```
> pca.zdb$loadings
```

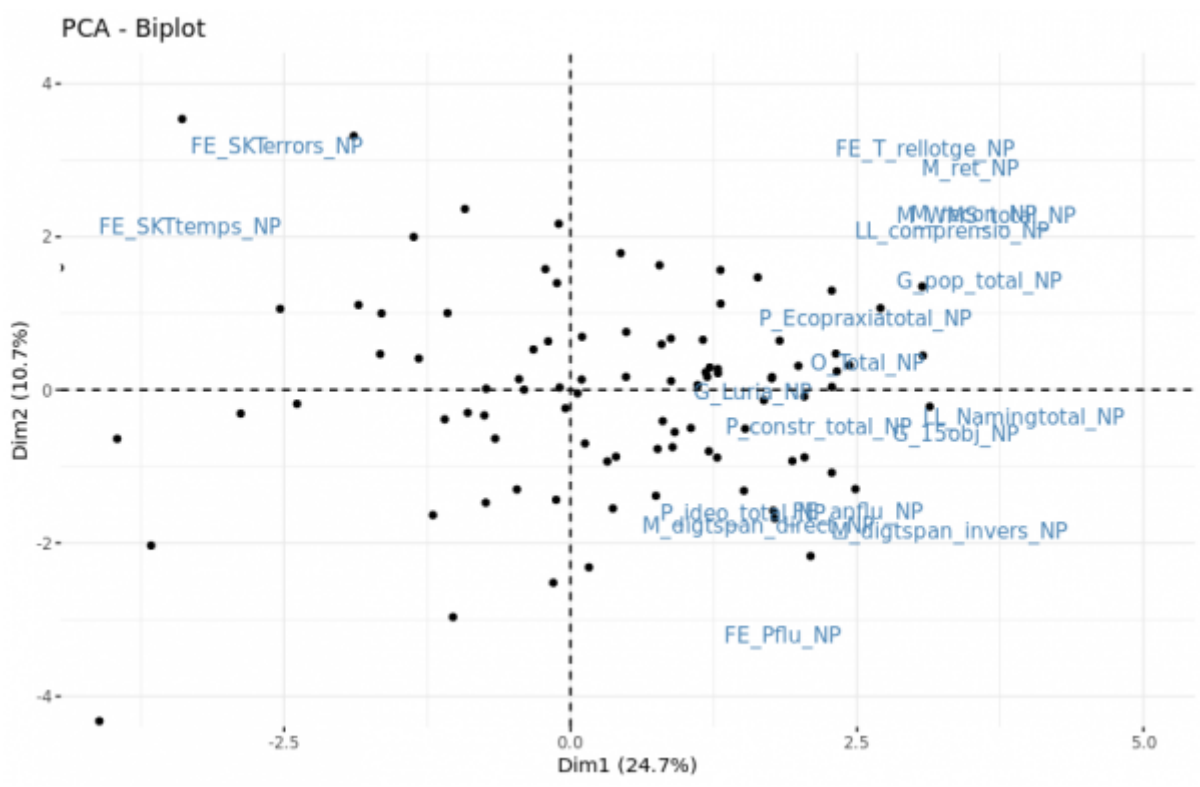
Loadings:

	Comp.1	Comp.2	Comp.3	Comp.4	Comp.5	Comp.6	Comp.7	Comp.8
Comp.9								
Comp.10								
Comp.11								
O_Total_NP	0.204		0.366	0.342	0.213	0.170		
0.469		0.209						
M_digtspan_direct_NP	0.129	-0.243	-0.578		0.204	0.109		
0.132								
M_digtspan_invers_NP	0.260	-0.250	-0.373		0.106	0.199	-0.121	
-0.224								
LL_Namingtotal_NP	0.311			0.323	-0.121		-0.372	
0.209	0.233	-0.246						
LL_comprensio_NP	0.262	0.218	0.129	-0.109		0.391	0.155	-0.407
-0.100	-0.143	-0.234						
M_WMS_total_NP	0.286	0.243		-0.182	0.227	-0.256	0.296	0.173
M_ret_NP	0.274	0.317		-0.137	0.285	-0.282		0.132
-0.127	-0.225							
M_recon_NP	0.277	0.244			0.247	-0.113	-0.252	0.245
-0.255		0.121						
G_Luria_NP	0.125		0.287	-0.391	-0.266	0.260		0.545
0.221	-0.107	-0.204						
P_Ecopraxiatotal_NP	0.202		-0.243	0.109	-0.446		0.484	0.110
0.158	0.192	0.201						
P_ideo_total_NP	0.118	-0.223		0.530		-0.186	0.225	
0.365	-0.502	-0.171						
P_constr_total_NP	0.170		-0.188	-0.438		-0.147	-0.195	-0.261
0.597		0.346						
FE_SKTtemps_NP	-0.261	0.225	-0.186		-0.221	-0.160	-0.324	
0.125		-0.428						
FE_SKTerrors_NP	-0.201	0.350	-0.177	0.116	-0.236	-0.317	0.123	0.136
-0.149		0.201						
FE_Pflu_NP	0.145	-0.412		-0.188	-0.240	-0.203	0.224	-0.110
-0.429		-0.206						
FE_anflu_NP	0.197	-0.220	0.299			-0.529		-0.291
0.126								
G_pop_total_NP	0.280	0.140		0.111	-0.186	0.111	-0.166	-0.167
-0.153	-0.544	0.378						
G_15obj_NP	0.265		0.108		-0.354		-0.368	0.287
-0.208		0.176						
FE_T_rellotge_NP	0.243	0.347	-0.140		-0.314	0.106		-0.312
0.208	-0.201							
	Comp.12	Comp.13	Comp.14	Comp.15	Comp.16	Comp.17	Comp.18	
Comp.19								
O_Total_NP	0.337	0.333			0.206	0.194	0.182	
0.116								
M_digtspan_direct_NP	0.410	-0.307	-0.155	-0.416	0.154			
M_digtspan_invers_NP		0.478	-0.103	0.304	-0.457	-0.137	0.105	
0.180								
LL_Namingtotal_NP			0.209				-0.235	
-0.596								
LL_comprensio_NP	0.129	0.175		-0.263	0.176	-0.389	-0.343	
M_WMS_total_NP	-0.105	0.114	-0.218		-0.119	0.477	-0.502	

M_ret_NP -0.285				-0.207			0.276	-0.262	0.523	
M_recon_NP 0.361			-0.277	0.551	0.190				-0.123	
G_Luria_NP	0.342		-0.116	0.138	-0.104	-0.189			0.103	
P_Ecopraxiatotal_NP			-0.157		0.421	0.147	-0.300		-0.114	
P_ideo_total_NP 0.271					-0.230					
P_constr_total_NP			0.209	0.238		0.142				
FE_SKTtemps_NP 0.231	0.421			-0.166	0.235	0.336			-0.149	
FE_SKTerrors_NP -0.143	0.233	0.438		0.249	-0.337	-0.256	-0.175			
FE_Pflu_NP -0.114			0.184	0.369		0.326	0.285			
FE_anflu_NP 0.197	0.346	-0.225		-0.204		-0.339	-0.253			
G_pop_total_NP -0.240	0.298			-0.211	0.210		0.292			
G_15obj_NP 0.229	-0.304	0.165		-0.348	-0.317	0.251	-0.128			
FE_T_rellotge_NP 0.246	-0.166	-0.210			-0.223	-0.206	0.325	0.416		
			Comp.1	Comp.2	Comp.3	Comp.4	Comp.5	Comp.6	Comp.7	Comp.8
Comp.9	Comp.10	Comp.11	Comp.12							
SS loadings	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1.000	1.000	1.000	1.000							
Proportion Var	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
0.053	0.053	0.053	0.053							
Cumulative Var	0.053	0.105	0.158	0.211	0.263	0.316	0.368	0.421		
0.474	0.526	0.579	0.632							
			Comp.13	Comp.14	Comp.15	Comp.16	Comp.17	Comp.18	Comp.19	
SS loadings	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Proportion Var	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	
Cumulative Var	0.684	0.737	0.789	0.842	0.895	0.947	1.000			

un vistazo rapido,





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