

**Table S2: R Code for DIF analysis**

```
library(lordif)
library(readr)
PM_Measurement_Validation_demogra2<-read_csv("Chi.Folder
/PM.Measurement.Validation.demogra2.csv", col_types = cols(x3 = col_double()))
lordif.data <- data.frame(PM_Measurement_Validation_demogra2)
lordif.data3 <- apply(lordif.data, 2, as.integer)
##Identifying column with the subgroups
grp2 <- lordif.data3[,23]
##Construct 1: OBM
#at alpha 0.25, 4 items flagged for DIF
Respoa <- lordif.data3[, c(1:6)]
grpDIFa <- lordif(Respoa, grp2, criterion = "Chisqr", alpha = 0.25, minCell = 2)
summary(grpDIFa)
plot(grpDIFa, labels = c("Academia", "Industry"), width = 7, height = 7)
#at alpha 0.5, all items got flagged for DIF
grpDIFa2 <- lordif(Respoa, grp2, criterion = "Chisqr", alpha = 0.5, minCell = 2)
#at alpha 0.01, no items got flagged for DIF
grpDIFa3 <- lordif(Respoa, grp2, criterion = "Chisqr", alpha = 0.01, minCell = 2)
##Construct 2: OrG
#at alpha 0.5, 4 out of 6 items got flagged for DIF
Respob <- lordif.data3[, c(7:12)]
grpDIFb <- lordif(Respob, grp2, criterion = "Chisqr", alpha = 0.5, minCell = 2)
summary(grpDIFb)
plot(grpDIFb, labels = c("Academia", "Industry"), width = 7, height = 7)
#at alpha 0.01, no items got flagged for DIF
grpDIFb2 <- lordif(Respob, grp2, criterion = "Chisqr", alpha = 0.01, minCell = 2)
##at alpha 0.25, 4 out of 6 items got flagged for DIF
grpDIFb3 <- lordif(Respob, grp2, criterion = "Chisqr", alpha = 0.25, minCell = 2)
summary(grpDIFb3)
##Construct 3: PGA
#at alpha 0.5, 2 items flagged for DIF
Respoc <- lordif.data3[, c(13:18)]
grpDIFc <- lordif(Respoc, grp2, criterion = "Chisqr", alpha = 0.5, minCell = 2)
summary(grpDIFc)
plot(grpDIFc, labels = c("Academia", "Industry"), width = 7, height = 7)
#at alpha 0.01, no items got flagged for DIF
grpDIFc2 <- lordif(Respoc, grp2, criterion = "Chisqr", alpha = 0.01, minCell = 2)
#at alpha 0.25, 2 items flagged for DIF
grpDIFc3 <- lordif(Respoc, grp2, criterion = "Chisqr", alpha = 0.25, minCell = 2)
##Construct 4: ImO
#at alpha 0.5, 3 items flagged for DIF
Respod <- lordif.data3[, c(19:22)]
grpDIFd <- lordif(Respod, grp2, criterion = "Chisqr", alpha = 0.5, minCell = 2)
summary(grpDIFd)
plot(grpDIFd, labels = c("Academia", "Industry"), width = 7, height = 7)
#at alpha 0.01, no items got flagged for DIF
grpDIFd2 <- lordif(Respod, grp2, criterion = "Chisqr", alpha = 0.01, minCell = 2)
#at alpha 0.25, 2 items flagged for DIF
```

```
grpDIFd3 <- lordif(Respod, grp2, criterion = "Chisqr", alpha = 0.25, minCell = 2)
```