hexattributes.R

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### Load Hexaco data and prepare it for Parameter estimation  
library(mirt)

## Loading required package: stats4

## Loading required package: lattice

library(plyr)  
  
# Set Working Directory  
setwd("e:/dropbox/dissertation/03 - code")  
  
# Load utilities  
source("utils.R")  
  
# Hexaco dataset downloaded from http://personality-testing.info/\_rawdata/  
# on 4/18/2016. Imported into SPSS then resaved as an actual .csv  
d <- read.csv("data/hexaco.csv", header=T, stringsAsFactors=F)  
  
# Find missing country codes and repalce them with NA values  
x <- which(d[,243]== " ")  
d[x,243] <- NA  
rm(x)  
  
# Remove obeservations where respondents reported inadequate   
# understanding of instructions or attention. Min time to completion  
# Was x and max time to completion was y, so instead of cutting by   
# standard deviation, somewhat arbirtrary time bounds were imposed.  
test1 <- d[,"V1"] >= 5  
test2 <- d[,"V2"] >= 5  
test3 <- d[,"elapse"] < 6000 # Around 2 hours  
test4 <- d[,"elapse"] > 1037.456 # less than 17.5 minutes  
d <- d[which(test1 & test2 & test3 & test4),]  
rownames(d) <- NULL  
  
# Remove extra characters from HSinc1 columname  
colnames(d)[1] <- "HSinc1"  
  
# Select out constructs to be included and create a vector of keys for   
# reverse coded items  
sincerity <- d[,1:10]  
fairness <- d[,11:20]  
anxiety <- d[,51:60]  
dependence <- d[,61:70]  
liveliness <- d[,111:120]  
forgiveness <- d[,121:130]  
patience <- d[,151:160]  
perfectionism <- d[,181:190]  
inquisitiveness <- d[,211:220]  
unconventionality <- d[,231:240]  
  
# Create a vector of names  
n <- c("sincerity", "fairness", "anxiety", "dependence", "liveliness",  
 "forgiveness", "patience", "perfectionism", "inquisitiveness",   
 "unconventionality")  
  
# Define keys for negatively coded variables  
# Note: Negative is defined in reference to the construct name,  
# Not it's social desirability. dependence is absent because it  
# consists of only positive items.  
key <- list()  
key[["sinc"]] <- c(2:10)  
key[["fair"]] <- c(6:10)  
key[["anxi"]] <- c(6:10)  
key[["live"]] <- c(9,10)  
key[["forg"]] <- c(5:10)  
key[["pati"]] <- c(6:10)  
key[["perf"]] <- c(9,10)  
key[["inqu"]] <- c(7:10)  
key[["unco"]] <- c(6:10)  
   
# Reverse code and compute factor scores for each facet.  
for (i in 1:length(n)){  
 name <- substr(n[i],1,4)  
 if(!is.null(key[[name]])) {   
 tmp <- revcode(eval(as.name(n[i])),key[[name]],7)  
 } else tmp <- eval(as.name(n[i]))  
 tmp <- rowMeans(tmp)  
 assign(name, tmp)   
}  
  
# Combine factor scores into a matrix  
factors <- cbind(sinc,fair,anxi,depe,live,forg,pati,perf,inqu,unco)  
  
fcorr <- cor(factors)  
  
# write out correlation matrix  
write.table(fcorr, file="resources/fcorr.dat")  
  
# Check response option frequencies   
x <- t(apply(d[,1:240],2,table))  
  
# Write out response option frequencies  
write.table(x, file="resources/responsefreq.dat")  
  
# Instantiate Looping Variables  
ipar <- NULL  
rows <- NULL  
  
# Estimate item parameters by construct using the grm. eval(as.name()) replaces   
# itself with the "name" for the current value of x. Then extract the item  
# parameters from the model object as a dataframe   
for(c in 1:length(n)) {  
 y <- mirt(eval(as.name(n[c])), 1)  
 p <- as.data.frame(coef(y, simplify=T)$items)   
 ipar <- rbind.fill(ipar,p)  
 rows <- c(rows, rownames(p))  
}

##   
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Iteration: 84, Log-Lik: -165597.827, Max-Change: 0.00043  
Iteration: 85, Log-Lik: -165597.826, Max-Change: 0.00010

# rbind.fill doesn't support row names, so rejoin those  
rownames(ipar) <- rows  
  
# Write out item parameters  
write.table(ipar, file="resources/ipar.dat")  
  
# Clean up the work space (warning this will wipe your R environment)  
rm(list=ls())