library(data.table)  
library(mediation)

## Loading required package: MASS

## Loading required package: Matrix

## Loading required package: mvtnorm

## Loading required package: sandwich

## mediation: Causal Mediation Analysis  
## Version: 4.5.0

main\_dir = "/Users/victorpokorny/Library/CloudStorage/GoogleDrive-vpokorny123@gmail.com/My Drive/CAPR Ebbinghaus and Mooney/"  
source(paste0(main\_dir,'R\_scripts/funcs.R')) # big group of functions  
load(file=paste0(main\_dir,"RData/cleaned.RData")) #read in the data

first model is x = group, m = mooney inverted, y = role functioning

main\_df\_subset <- main\_df[main\_df$phenotype\_final == 'hc' |   
 main\_df$phenotype\_final == 'chr']  
res<-mediating\_func(x = 'phenotype\_final', m = 'inverted\_faces\_reported',   
 y = 'gfr\_current', control.value = 'hc',   
 treat.value = 'chr', data = main\_df\_subset)  
summary(res)

##   
## Causal Mediation Analysis   
##   
## Quasi-Bayesian Confidence Intervals  
##   
## Estimate 95% CI Lower 95% CI Upper p-value   
## ACME -0.0958 -0.1807 -0.03 4e-04 \*\*\*  
## ADE -1.3028 -1.5973 -1.01 <2e-16 \*\*\*  
## Total Effect -1.3986 -1.6969 -1.10 <2e-16 \*\*\*  
## Prop. Mediated 0.0664 0.0229 0.13 4e-04 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Sample Size Used: 427   
##   
##   
## Simulations: 5000

pub\_ready\_stats(res)

## acme   
## [1,] "mediation" "ACME β=-0.1, 95% CI [-0.18, -0.03], p<.001"   
## [2,] "x to m" "b=3.767, t(425)=3.97, p<.001, r^2 = 0.036"   
## [3,] "m to y" "b=-0.038, t(425)=-4.61, p<.001, r^2 = 0.048"

next model is x = BACS, m = catch trial, y = context sensitivity

res<-mediating\_func(x = 'BACS Total', m = 'catch\_trial\_18\_only',   
 y = 'context\_sensitivity\_all\_trials', data = main\_df)  
summary(res)

##   
## Causal Mediation Analysis   
##   
## Quasi-Bayesian Confidence Intervals  
##   
## Estimate 95% CI Lower 95% CI Upper p-value   
## ACME 0.0463 0.0136 0.09 0.0040 \*\*  
## ADE 0.1807 0.0398 0.32 0.0124 \*   
## Total Effect 0.2270 0.0823 0.37 0.0012 \*\*  
## Prop. Mediated 0.1996 0.0590 0.56 0.0052 \*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Sample Size Used: 574   
##   
##   
## Simulations: 5000

pub\_ready\_stats(res)

## acme   
## [1,] "mediation" "ACME β=0.05, 95% CI [0.01, 0.09], p=0.004"  
## [2,] "x to m" "b=0.057, t(572)=2.84, p<.001, r^2 = 0.014"  
## [3,] "m to y" "b=0.851, t(572)=5.65, p<.001, r^2 = 0.053"

now swap HVLT for BACS

res<-mediating\_func(x = 'HVLT Total', m = 'catch\_trial\_18\_only', y = 'context\_sensitivity\_all\_trials', data = main\_df)  
summary(res)

##   
## Causal Mediation Analysis   
##   
## Quasi-Bayesian Confidence Intervals  
##   
## Estimate 95% CI Lower 95% CI Upper p-value   
## ACME 0.2165 0.1125 0.35 <2e-16 \*\*\*  
## ADE 0.3078 -0.0892 0.72 0.136   
## Total Effect 0.5243 0.1208 0.93 0.012 \*   
## Prop. Mediated 0.4112 0.1746 1.47 0.012 \*   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Sample Size Used: 610   
##   
##   
## Simulations: 5000

pub\_ready\_stats(res)

## acme   
## [1,] "mediation" "ACME β=0.22, 95% CI [0.11, 0.35], p<.001"   
## [2,] "x to m" "b=0.26, t(608)=4.94, p<.001, r^2 = 0.039"   
## [3,] "m to y" "b=0.873, t(608)=5.76, p<.001, r^2 = 0.052"

now swap WRAT for HVLT

res<-mediating\_func(x = 'WRAT Standard', m = 'catch\_trial\_18\_only', y = 'context\_sensitivity\_all\_trials', data = main\_df)  
summary(res)

##   
## Causal Mediation Analysis   
##   
## Quasi-Bayesian Confidence Intervals  
##   
## Estimate 95% CI Lower 95% CI Upper p-value   
## ACME 0.05799 0.02568 0.10 <2e-16 \*\*\*  
## ADE 0.08705 -0.05037 0.22 0.215   
## Total Effect 0.14505 0.00709 0.28 0.038 \*   
## Prop. Mediated 0.38525 0.11044 2.22 0.038 \*   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Sample Size Used: 552   
##   
##   
## Simulations: 5000

pub\_ready\_stats(res)

## acme   
## [1,] "mediation" "ACME β=0.06, 95% CI [0.03, 0.1], p<.001"   
## [2,] "x to m" "b=0.073, t(550)=3.94, p<.001, r^2 = 0.027"  
## [3,] "m to y" "b=0.824, t(550)=5.33, p<.001, r^2 = 0.049"