**The R code for the illustrative example (the PHLAME firefighter study) of Scenario 1 (independent paths).**

# the Bayes factor for path a is 10.06 (computed in Nuijten et.al 2014)

# The Bayes factor for path b is 2.68 (computed in Nuijten et.al 2014)

BFa=10.06

BFb=2.68

# independent paths

# pathb.a

outpathb.a=pathb.a(PriorOdds.a = 1,PriorOdds.b = 1,

BF.a = 10.06,BF.b = 2.68)

out1pathb.a=matrix(outpathb.a,3,3, dimnames = list(c('Path a','Path b','Mediation'),c('Prior Odds','Bayes Factor','Posterior Odds')))

out1pathb.a=as.data.frame(out1pathb.a)

out1pathb.a$`Posterior Prob`=(out1pathb.a$`Posterior Odds`)/(1+out1pathb.a$`Posterior Odds`)

#med.a

outmed.a=med.a(PriorOdds.med = 1,PriorOdds.a = sqrt(1/2)/(1-sqrt(1/2)),

BF.a = 10.06,BF.b = 2.68)

out1med.a=matrix(outmed.a,3,3, dimnames = list(c('Path a','Path b','Mediation'),c('Prior Odds','Bayes Factor','Posterior Odds')))

out1med.a=as.data.frame(out1med.a)

out1med.a$`Posterior Prob`=(out1med.a$`Posterior Odds`)/(1+out1med.a$`Posterior Odds`)

**The R code for the illustrative example (the simulated data example) of Scenario 2 (dependent paths).**

# simulated data: latent mediation ----

simudat.latentm <- function(seed=12,n=100, a=0, b=.39, cp=0,vlamb=c(.9,.8,.7) ){

sigma\_zetam=sqrt(1-a^2) # sd of structural residuals

sigma\_zetay=sqrt(1-cp^2-b^2-2\*cp\*b\*a)

sigma\_epsi=sqrt(1-vlamb^2)

set.seed(seed = seed)

xix=rnorm(n)

etam=a\*xix+rnorm(n,0,sigma\_zetam)

etay=cp\*xix+b\*etam+rnorm(n,0,sigma\_zetay)

x = xix%\*%t(vlamb)+rmvnorm(n,sigma = diag(sigma\_epsi^2))

m = etam%\*%t(vlamb)+rmvnorm(n,sigma = diag(sigma\_epsi^2))

y = etay%\*%t(vlamb)+rmvnorm(n,sigma = diag(sigma\_epsi^2))

dat=cbind(x,m,y)

colnames(dat)=unlist(lapply(c('x','m','y'), paste0, 1:length(vlamb) ))

dat=as.data.frame(dat)

return(dat)

}

dat\_latentm=simudat.latentm(seed = 12, n=100,a=0,b=.39,cp=0,vlamb=c(.9,.8,.7) )

library(lavaan)

# M11

model11 <- '

# measurement model

xix =~ x1+x2+x3

etam =~ m1+m2+m3

etay =~ y1+y2+y3

# structural model

etam ~ xix

etay ~ etam+xix

'

fit\_M11 = sem(model11, data = dat\_latentm, std.lv=T)

# summary(fit\_M11)

bic\_M11 = BIC(fit\_M11)

# M00

model00 <- '

# measurement model

xix =~ x1+x2+x3

etam =~ m1+m2+m3

etay =~ y1+y2+y3

# structural model

etam ~ 0\*xix

etay ~ 0\*etam+xix

'

fit\_M00 = sem(model00, data = dat\_latentm, std.lv=T)

bic\_M00 = BIC(fit\_M00)

# M01

model01 <- '

# measurement model

xix =~ x1+x2+x3

etam =~ m1+m2+m3

etay =~ y1+y2+y3

# structural model

etam ~ 0\*xix

etay ~ etam+xix

'

fit\_M01 = sem(model01, data = dat\_latentm, std.lv=T)

bic\_M01 = BIC(fit\_M01)

# M10

model10 <- '

# measurement model

xix =~ x1+x2+x3

etam =~ m1+m2+m3

etay =~ y1+y2+y3

# structural model

etam ~ xix

etay ~ 0\*etam+xix

'

fit\_M10 = sem(model10, data = dat\_latentm, std.lv=T)

bic\_M10 = BIC(fit\_M10)

# med.qs

outmed.qs=med.qs(PriorOdds.med = 1,H0.q10 = 1/3,H0.q01 = 1/3,H0.q00 = 1/3,

BIC11 = bic\_M11,BIC01 = bic\_M01,BIC10 = bic\_M10,BIC00 = bic\_M00)

out1med.qs=matrix(outmed.qs,3,3, dimnames = list(c('Path a','Path b','Mediation'),c('Prior Odds','Bayes Factor','Posterior Odds')))

out1med.qs=as.data.frame(out1med.qs)

out1med.qs$`Posterior Prob`=(out1med.qs$`Posterior Odds`)/(1+out1med.qs$`Posterior Odds`)

# med=a=b=1

outmed.ab111=med.ab(PriorOdds.med = 1,PriorOdds.a = 1,PriorOdds.b = 1,

BIC11 = bic\_M11,BIC01 = bic\_M01,BIC10 = bic\_M10,BIC00 = bic\_M00)

out1med.ab111=matrix(outmed.ab111,3,3, dimnames = list(c('Path a','Path b','Mediation'),c('Prior Odds','Bayes Factor','Posterior Odds')))

out1med.ab111=as.data.frame(out1med.ab111)

out1med.ab111$`Posterior Prob`=(out1med.ab111$`Posterior Odds`)/(1+out1med.ab111$`Posterior Odds`)