

# Hackathon Data

Jeff

May, 2024

How does overall positivity about life affect cognitive performance?

We ask 200 participants to rate their general affect a total of 20 occasions with EMA. On each occasion, they are given a prompt about how they then feel and they need to respond on the following 4-point scale: “great”, “good”, “ehh”, “piss off”.

Participants also perform a process dissociation task (100 include trials; 100 exclude trials) and a 100 trial simple RT task. What is the correlation among the three tasks and how well do you know them?

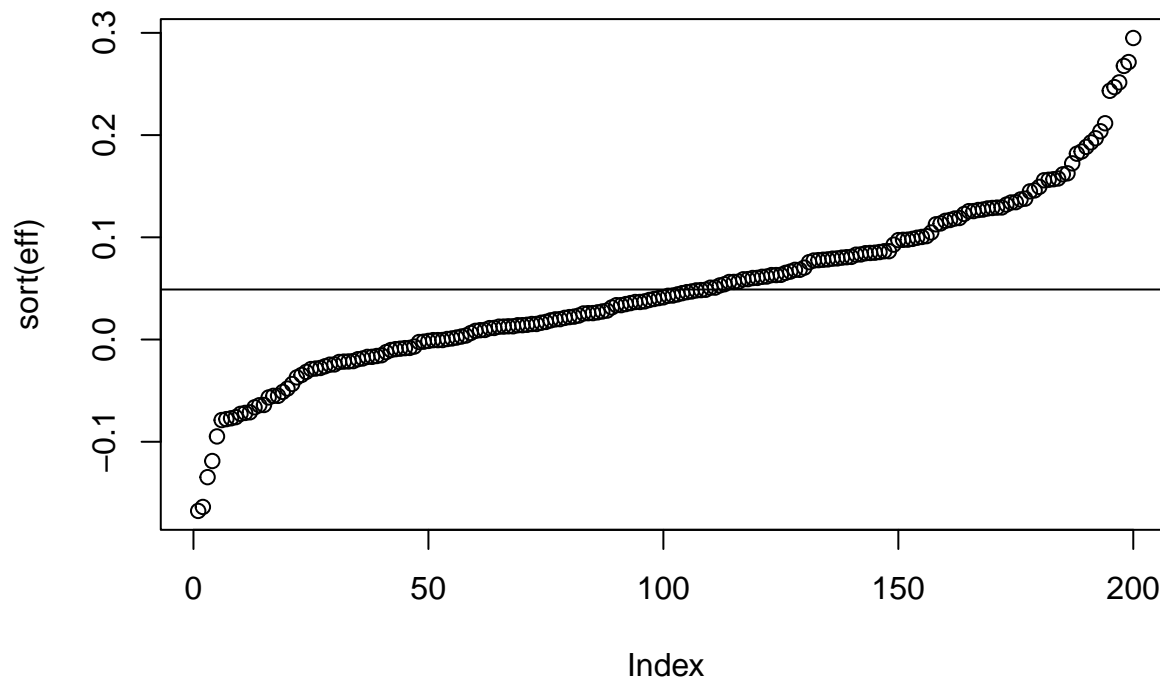
## Synthetic Data

```
set.seed(12347)
library(mvtnorm)
I=200
J=4
cor=matrix(.2,ncol=J,nrow=4)
diag(cor)=1
cor[1,3]=cor[3,1]=.5
cor[1,4]=cor[4,1]=.5
cor[3,4]=cor[4,3]=.5

z=rmvnorm(I,rep(0,4),cor)
cor(z)
```

```
##           [,1]      [,2]      [,3]      [,4]
## [1,] 1.0000000 0.1314764 0.5111892 0.53026493
## [2,] 0.1314764 1.0000000 0.1305298 0.07651497
## [3,] 0.5111892 0.13052976 1.0000000 0.50955734
## [4,] 0.5302649 0.07651497 0.5095573 1.00000000
```

```
# RT
K=50
tMu=matrix(nrow=I,ncol=2)
tMu[,1]=-.7+.2*z[,4]
tMu[,2]=-.6+.2*z[,4]
sub=rep(1:I,each=2*K)
cond=rep(rep(1:2,each=K),I)
rt=rlnorm(length(sub),tMu[cbind(sub,cond)],.6)
m=apply(rt,list(sub,cond),mean)
eff=(m[,2]-m[,1])
base=apply(rt,sub,mean)
plot(sort(eff))
abline(h=mean(eff))
```



```
rt=round(rt,3)

datRT=data.frame(sub,cond,rt)
saveRDS(datRT,file = "datRT.RDS")
```

## Process Dissociation

```
#Process Dissociation

r=pnorm(.2*z[,2]-.3)
f=pnorm(.2*z[,3]-.2)
K=50
tMu=matrix(nrow=I,ncol=2)
tMu[,1]=r+(1-r)*f
tMu[,2]=(1-r)*f
sub=rep(1:I,each=2*K)
cond=rep(rep(1:2,each=K),I)
resp=rbinom(length(sub),1,tMu[cbind(sub,cond)])
m=tapply(resp,list(sub,cond),mean)
datPD=data.frame(sub,cond,resp)
saveRDS(datPD,file = "datPD.RDS")

#Life Satisfaction
K=20
mu=-.3*z[,1]
cut=matrix(mu,nrow=I,ncol=3)
cut[,1]=mu-rexp(I)
cut[,3]=mu+rexp(I)
makeProb=function(cutoffs) diff(c(0,pnorm(cutoffs),1))
p=t(apply(cut,1,makeProb))
sub=rep(1:I,each=K)
```

```
resp=sub
for (n in 1:length(sub)){
  resp[n]=sum(1:4*rmultinom(1,1,p[sub[n],]))}
datEMA=data.frame(sub,resp)
saveRDS(datEMA,file = "datEMA.RDS")
```