final analyses

Main analyses

put table together

```
comp <- read.table("comp.txt",sep="\t",header=T,  dec = ",")
# comp=comp[,c("infant_group","mean_age_1_days" ,"z", "n_1","r", "Location", "lang_measure", "language_
comp$type="comp"

# prod <- read.table("prod.txt",sep="\t",header=T)
# prod=prod[,c("infant_group"  ,  "mean_age_1_days" ,"r"    ,  "n_1", "Location")]
# prod$type="prod"
all=comp
#all=rbind(comp,prod)
names(all)<-c("id","age","z","n","r", "loc", "lang_measure", "lang_cat", "SES_measure", "SES_cat", "SES_

all$locgen=ifelse(all$loc=="United States","US","other")

all$z=1/2*(log((1+all$r)/(1-all$r)))
all$age.c <- all$age-mean(all$age,na.rm=T)
all$se=sqrt(1/(all$n - 3))
all$v=1/all$se
all[!is.na(all$r),]->all
write.table(all,"final.txt",row.names=F,sep="\t",quote=T)
```

Main analyses

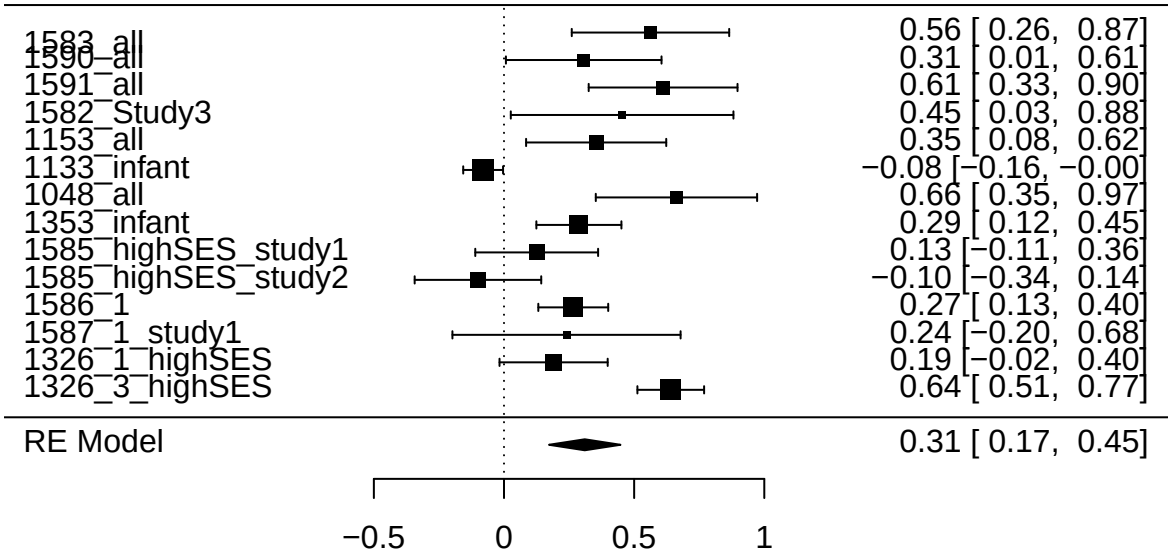
```
read.table("final.txt",header=T)->all

rma.all=rma(ri=all$r,ni=all$n,measure="ZCOR",slab=all$id)
rma.all
```

```
##
## Random-Effects Model (k = 14; tau^2 estimator: REML)
##
## tau^2 (estimated amount of total heterogeneity): 0.0520 (SE = 0.0266)
## tau (square root of estimated tau^2 value):      0.2279
## I^2 (total heterogeneity / total variability):   84.86%
## H^2 (total variability / sampling variability):  6.60
##
## Test for Heterogeneity:
## Q(df = 13) = 130.3347, p-val < .0001
##
## Model Results:
##
## estimate      se    zval    pval   ci.lb   ci.ub
##   0.3102  0.0700  4.4296  <.0001  0.1729  0.4474  ***
##
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
forest(rma.all)
```




```
regtest(rma.all)
```

```
##
## Regression Test for Funnel Plot Asymmetry
##
## model:     mixed-effects meta-regression model
## predictor: standard error
##
## test for funnel plot asymmetry: z = 1.1386, p = 0.2549
```

```
pdf("~/Desktop/funnel.pdf",height=5,width=5)
funnel(rma.all)
points(all$se~all$z,pch=20,col="white")
# points(all$se~all$z,subset=c(all$type=="prod"),pch=20,col="red")
# points(all$se~all$z,subset=c(all$id=="notre_CCT"),pch=3,cex=2)
# points(all$se~all$z,subset=c(all$id=="notre_CDI_production"),pch=3,cex=2)
```

all moderators

```
rma.typeAge=rma(ri=all$r,ni=all$n,measure="ZCOR",slab=all$id, mods=~all$age.c)
rma.typeAge
```

```
##
## Mixed-Effects Model (k = 14; tau^2 estimator: REML)
##
## tau^2 (estimated amount of residual heterogeneity):     0.0189 (SE = 0.0133)
## tau (square root of estimated tau^2 value):             0.1373
## I^2 (residual heterogeneity / unaccounted variability): 62.67%
## H^2 (unaccounted variability / sampling variability):   2.68
## R^2 (amount of heterogeneity accounted for):            63.69%
```

```
##
## Test for Residual Heterogeneity:
## QE(df = 12) = 35.0234, p-val = 0.0005
##
## Test of Moderators (coefficient(s) 2):
## QM(df = 1) = 14.2951, p-val = 0.0002
##
## Model Results:
##
##            estimate      se    zval    pval   ci.lb   ci.ub
## intrcpt      0.2291  0.0522  4.3915  <.0001  0.1269  0.3314  ***
## all$age.c    0.0005  0.0001  3.7809  0.0002  0.0002  0.0008  ***
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

location

```
rma.loc=rma(ri=all$r,ni=all$n,measure="ZCOR",slab=all$id,mods=~all$locgen)
rma.loc
```

```
##
## Mixed-Effects Model (k = 14; tau^2 estimator: REML)
##
## tau^2 (estimated amount of residual heterogeneity):     0.0497 (SE = 0.0267)
## tau (square root of estimated tau^2 value):             0.2229
## I^2 (residual heterogeneity / unaccounted variability): 84.61%
## H^2 (unaccounted variability / sampling variability):   6.50
## R^2 (amount of heterogeneity accounted for):            4.38%
##
## Test for Residual Heterogeneity:
## QE(df = 12) = 128.2664, p-val < .0001
##
## Test of Moderators (coefficient(s) 2):
## QM(df = 1) = 1.6067, p-val = 0.2050
##
## Model Results:
##
##               estimate      se    zval    pval    ci.lb   ci.ub
## intrcpt         0.0914  0.1854  0.4931  0.6219  -0.2720  0.4549
## all$locgenUS    0.2531  0.1997  1.2676  0.2050  -0.1383  0.6445
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

language cat

```
rma.lang_cat=rma(ri=all$r,ni=all$n,measure="ZCOR",slab=all$id,mods=~all$lang_cat+all$age.c)
rma.lang_cat
```

```
##
## Mixed-Effects Model (k = 14; tau^2 estimator: REML)
```

```
##
## tau^2 (estimated amount of residual heterogeneity):     0.0242 (SE = 0.0173)
## tau (square root of estimated tau^2 value):             0.1556
## I^2 (residual heterogeneity / unaccounted variability): 67.57%
## H^2 (unaccounted variability / sampling variability):   3.08
## R^2 (amount of heterogeneity accounted for):            53.42%
##
## Test for Residual Heterogeneity:
## QE(df = 10) = 34.6880, p-val = 0.0001
##
## Test of Moderators (coefficient(s) 2:4):
## QM(df = 3) = 12.6471, p-val = 0.0055
##
## Model Results:
##
##                   estimate      se    zval    pval    ci.lb   ci.ub
## intrcpt             0.1217  0.1542  0.7891  0.4300  -0.1806  0.4240
## all$lang_catCDI     0.1564  0.1766  0.8854  0.3760  -0.1898  0.5026
## all$lang_catPPVT    0.1262  0.2341  0.5390  0.5899  -0.3327  0.5851
## all$age.c           0.0005  0.0003  1.6586  0.0972  -0.0001  0.0010  .
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

SES cat

```
rma.SES_cat=rma(ri=all$r,ni=all$n,measure="ZCOR",slab=all$id,mods=~all$SES_cat)
rma.SES_cat
```

```
##
## Mixed-Effects Model (k = 14; tau^2 estimator: REML)
##
## tau^2 (estimated amount of residual heterogeneity):     0.0591 (SE = 0.0325)
## tau (square root of estimated tau^2 value):             0.2430
## I^2 (residual heterogeneity / unaccounted variability): 82.03%
## H^2 (unaccounted variability / sampling variability):   5.57
## R^2 (amount of heterogeneity accounted for):            0.00%
##
## Test for Residual Heterogeneity:
## QE(df = 11) = 65.3217, p-val < .0001
##
## Test of Moderators (coefficient(s) 2:3):
## QM(df = 2) = 0.4977, p-val = 0.7797
##
## Model Results:
##
##                              estimate      se     zval    pval    ci.lb
## intrcpt                        0.3034  0.1406   2.1584  0.0309   0.0279
## all$SES_cateducation_based    -0.0217  0.1715  -0.1264  0.8994  -0.3578
## all$SES_catincome_based        0.1239  0.2304   0.5378  0.5907  -0.3277
##                               ci.ub
## intrcpt                      0.5789  *
## all$SES_cateducation_based   0.3144
```

```
## all$SES_catincome_based     0.5755
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

SES priority

```
rma.SES_priority=rma(ri=all$r,ni=all$n,measure="ZCOR",slab=all$id,mods=~all$SES_priority)
rma.SES_priority
```

```
##
## Mixed-Effects Model (k = 14; tau^2 estimator: REML)
##
## tau^2 (estimated amount of residual heterogeneity):     0.0531 (SE = 0.0283)
## tau (square root of estimated tau^2 value):             0.2304
## I^2 (residual heterogeneity / unaccounted variability): 83.86%
## H^2 (unaccounted variability / sampling variability):   6.19
## R^2 (amount of heterogeneity accounted for):            0.00%
##
## Test for Residual Heterogeneity:
## QE(df = 12) = 129.2942, p-val < .0001
##
## Test of Moderators (coefficient(s) 2):
## QM(df = 1) = 0.9195, p-val = 0.3376
##
## Model Results:
##
##                      estimate      se     zval    pval    ci.lb   ci.ub
## intrcpt                0.3635  0.0897   4.0505  <.0001   0.1876  0.5394
## all$SES_priorityyes   -0.1394  0.1454  -0.9589  0.3376  -0.4245  0.1456
##
## intrcpt              ***
## all$SES_priorityyes
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

type of measure

```
rma.type_of_measure=rma(ri=all$r,ni=all$n,measure="ZCOR",slab=all$id,mods=~all$type_of_measure)
rma.type_of_measure
```

```
##
## Mixed-Effects Model (k = 14; tau^2 estimator: REML)
##
## tau^2 (estimated amount of residual heterogeneity):     0.0481 (SE = 0.0261)
## tau (square root of estimated tau^2 value):             0.2194
## I^2 (residual heterogeneity / unaccounted variability): 80.11%
## H^2 (unaccounted variability / sampling variability):   5.03
## R^2 (amount of heterogeneity accounted for):            7.32%
##
## Test for Residual Heterogeneity:
```

```
## QE(df = 12) = 62.3639, p-val < .0001
##
## Test of Moderators (coefficient(s) 2):
## QM(df = 1) = 1.2271, p-val = 0.2680
##
## Model Results:
##
##                              estimate      se     zval    pval    ci.lb
## intrcpt                        0.3532  0.0787   4.4902  <.0001   0.1990
## all$type_of_measureindirect   -0.1732  0.1564  -1.1077  0.2680  -0.4797
##                               ci.ub
## intrcpt                      0.5074  ***
## all$type_of_measureindirect  0.1333
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

age

```
pdf("~/Desktop/age.pdf")
plot(all$z~ all$age,cex=1+(all$n/max(all$n,na.rm=T)),col=ifelse(all$type=="comp","red","black"),xlab="Ag
lines(c(0,1500),c(0,0),lty=2)
dev.off()
```

```
## pdf
##   2
```