# Funnel plot for Mitchell et al. 2005 "Racial Bias in Mock Juror Decision-Making: A Meta-Analytic Review of Defendant Treatment"

# Sentences

library(metafor)

data <- read.csv(file.choose(), header=TRUE)

N <- data$N

Status <- data$Status

Race <- data$Race

d <- data$d

# Calculate variance and standard errors based on formula 7.30 of Hunter and Schmidt (2004: 286)

var <- ((N-1)/(N-3))\*((4/N)\*(1+(d^2)/8))

se <- sqrt(var)

res.re <- rma(d, var, method="REML")

res.re

# New funnel plot

par(mfrow=c(2,2), mar=c(5,5,2,1), oma=c(0,0,3,0))

res.wp <- rma(d, var, method="REML", subset=Race=="W" & Status=="P")

funnel(res.wp, yaxis="sei", level=95, main="White Participants: Published Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", pch=19, bg="white", xlim=c(-1,1), ylim=c(0.6,0), at=seq(from=-1, to=1, by=0.5), cex.lab=1, cex.axis=1, cex.main=1.25)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

res.wa <- rma(d, var, method="REML", subset=Race=="W")

funnel(res.wa, yaxis="sei", level=95, main="White Participants: All Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", pch=19, bg="white", xlim=c(-1,1), ylim=c(0.6,0), at=seq(from=-1, to=1, by=0.5), cex.lab=1, cex.axis=1, cex.main=1.25)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

res.bp <- rma(d, var, method="REML", subset=Race=="B" & Status=="P")

funnel(res.bp, yaxis="sei", level=95, main="Black Participants: Published Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", pch=19, bg="white", xlim=c(-1,1), ylim=c(0.6,0), at=seq(from=-1, to=1, by=0.5), cex.lab=1, cex.axis=1, cex.main=1.25)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

res.ba <- rma(d, var, method="REML", subset=Race=="B")

funnel(res.ba, yaxis="sei", level=95, main="Black Participants: All Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", pch=19, bg="white", xlim=c(-1,1), ylim=c(0.6,0), at=seq(from=-1, to=1, by=0.5), cex.lab=1, cex.axis=1, cex.main=1.25)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

title("Funnel Plots for Mitchell et al. 2005 Sentences", outer=TRUE)

#mtext("Funnel Plots for Mitchell et al. 2005 Sentences", outer=TRUE, cex=1.25)

# Egger's test

regtest(res.wp , model="lm", predictor = "sei")

regtest(res.wa , model="lm", predictor = "sei")

regtest(res.bp , model="lm", predictor = "sei")

regtest(res.ba , model="lm", predictor = "sei")

# Trim and Fill L0

par(mfrow=c(2,2))

par(mar=c(5,5,2,1))

# Trim and Fill: White and Published Only

res.wp <- rma(d, var, method="REML", subset=Race=="W" & Status=="P")

tfwp.L0 <- trimfill(res.wp, estimator="L0")

tfwp.L0

funnel(tfwp.L0 , main="White Participants: Published Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", ylim=c(0.5,0), xlim=c(-1,1), cex.lab=1, cex.axis=1)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

# Trim and Fill: Black and Published Only

res.bp <- rma(d, var, method="REML", subset=Race=="B" & Status=="P")

tfbp.L0 <- trimfill(res.bp, estimator="L0")

tfbp.L0

funnel(tfbp.L0 , main="Black Participants: Published Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", ylim=c(0.5,0), xlim=c(-1,1), cex.lab=1, cex.axis=1)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

#mtext("Same-Race Bias in Mock Juror Sentences.\nMitchell et al. 2005 Data. Published Studies Only.", outer=TRUE, cex=1.25)

# Trim and Fill: White All

res.wpa <- rma(d, var, method="REML", subset=Race=="W")

tfwa.L0 <- trimfill(res.wpa, estimator="L0")

tfwa.L0

funnel(tfwa.L0 , main="White Participants: All Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", ylim=c(0.5,0), xlim=c(-1,1), cex.lab=1, cex.axis=1)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

# Trim and Fill: Black All

res.bpa <- rma(d, var, method="REML", subset=Race=="B")

tfba.L0 <- trimfill(res.bpa, estimator="L0")

tfba.L0

funnel(tfba.L0 , main="Black Participants: All Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", ylim=c(0.5,0), xlim=c(-1,1), cex.lab=1, cex.axis=1)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

title("Trim-and-Fill L0 for Mitchell et al. 2005 Sentences", outer=TRUE)

# Trim and Fill R0

par(mfrow=c(2,2))

par(mar=c(5,5,2,1))

# Trim and Fill: White and Published Only

res.wp <- rma(d, var, method="REML", subset=Race=="W" & Status=="P")

tfwp.R0 <- trimfill(res.wp, estimator="R0")

tfwp.R0

funnel(tfwp.R0 , main="White Participants: Published Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", ylim=c(0.5,0), xlim=c(-1,1), cex.lab=1, cex.axis=1)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

# Trim and Fill: Black and Published Only

res.table.bp <- rma(d, var, method="REML", subset=Race=="B" & Status=="P")

tfbp.R0 <- trimfill(res.table.bp, estimator="R0")

tfbp.R0

funnel(tfbp.R0 , main="Black Participants: Published Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", ylim=c(0.5,0), xlim=c(-1,1), cex.lab=1, cex.axis=1)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

#mtext("Same-Race Bias in Mock Juror Sentences.\nMitchell et al. 2005 Data. Published Studies Only.", outer=TRUE, cex=1.25)

# Trim and Fill: White All

res.wpa <- rma(d, var, method="REML", subset=Race=="W")

tfwa.R0 <- trimfill(res.wpa, estimator="R0")

tfwa.R0

funnel(tfwa.R0 , main="White Participants: All Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", ylim=c(0.5,0), xlim=c(-1,1), cex.lab=1, cex.axis=1)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

# Trim and Fill: Black All

res.bpa <- rma(d, var, method="REML", subset=Race=="B")

tfba.R0 <- trimfill(res.bpa, estimator="R0")

tfba.R0

funnel(tfba.R0 , main="Black Participants: All Studies", xlab="Effect Size (d)", ylab="Estimated Standard Error", ylim=c(0.5,0), xlim=c(-1,1), cex.lab=1, cex.axis=1)

box()

text(1, 0.025, "Same-race favoritism >", cex=0.8, pos=2)

text(-1, 0.025, "< Opposite-race favoritism", cex=0.8, pos=4)

title("Trim-and-Fill R0 for Mitchell et al. 2005 Sentences", outer=TRUE)