

Speed-Dating Data - Over-Perception Analysis

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Load Packages and Custom Functions

```
library(tidyverse)
library(mediation)
library(lme4)
library(lmerTest)
library(knitr)
library(MuMIn)
library(broom)
library(lm.beta)

#Easy Standardisation Function
z <- function(x,remove.outliers = FALSE,windsorise = FALSE){
  out <- (x - mean(x,na.rm = TRUE))/sd(x,na.rm = TRUE)
  if (remove.outliers == TRUE){
    out <- ifelse(out >3,NA,ifelse(out < -3,NA,out))
  }
  if (windsorise == TRUE){
    out <- ifelse(out > 3,3,ifelse(out < -3,-3,out))
  }
  return(out)
}

#Easy Descriptives Functions
descriptives <- function(data,variables){
  output <- data.frame("variable"=variables,"N"=NA,"min"=NA,"max"=NA,"mean"=NA,"sd"=NA)
  d <- data[variables]
  for (v in 1:NROW(variables)){
    output[v,"N"] <- sum(!is.na(d[v]))
    output[v,"min"] <- min(d[,v],na.rm=TRUE)
    output[v,"max"] <- max(d[,v],na.rm=TRUE)
    output[v,"mean"] <- mean(d[,v],na.rm=TRUE)
    output[v,"sd"] <- sd(d[,v],na.rm=TRUE)
  }
  output
}

frequencies <- function(data,variable,na.exclude=FALSE){
  missing <- c(NA, NaN)
  if (na.exclude==FALSE){missing <- NULL}
  count <- table(data[variable],exclude = missing)
  prop <- 100*prop.table(count)
  x <- t(rbind((count),(prop)))
  colnames(x) <- c("N","%")
  Total <- c(sum(count),sum(prop))
  x <- rbind(x,Total)
```

```
x  
}
```

Load Data

The code provided below is provided for data cleaning. Datasets provided are cleaned data. To reproduce analyses, run code from “Main Analysis” section onward.

Data collected in various years (2012-2018) are loaded and combined.

Level 1 - Interaction Level

Variables

ID: Rater ID code. partnerID: Partner ID code. rSexualInterest: Sexual interest rating received from partner. gPercInterest: Rater’s perceived sexual interest rating from partner. gSexualInterest: Rater’s sexual interest rating given to partner.

Pre-2016 Data

```
data1.15 <- read.csv("2010-2015 Speed-Dating L1.csv",stringsAsFactors = FALSE) %>%  
  dplyr::select(ID,partnerID,rSexualInterest,gPercInterest,gSexualInterest) %>%  
  filter(!is.na(rSexualInterest) & !is.na(gPercInterest) & !is.na(gSexualInterest))
```

2016 Data

```
data1.16 <- read.csv("complete data_2016.csv",stringsAsFactors = FALSE) %>%  
  filter(sessionid >= 1600) %>%  
  dplyr::select(id,partnerid,rsexualinterest,gpercinterest,gsexualinterest)  
  
colnames(data1.16) <- colnames(data1.15)
```

2017 Data

```
data1.17 <- read.csv("rating level data_2017.csv",stringsAsFactors = FALSE) %>%  
  dplyr::select(id,partnerid,rsexualinterest,gpercinterest,gsexualinterest) %>%  
  mutate( id = 17000000 + id,  
          partnerid = 17000000 + partnerid)  
  
colnames(data1.17) <- colnames(data1.15)
```

2018 Data

```
data1.18 <- read.csv("rating level data_2018.csv",stringsAsFactors = FALSE) %>%  
  dplyr::select(Participant.ID,partnerID,rSexualInterest,gPercInterest,gSexualInterest) %>%  
  mutate( Participant.ID = 18000000 + Participant.ID,  
          partnerID = 18000000 + partnerID)
```

```
colnames(data1.18) <- colnames(data1.15)
```

Descriptives and Combine Data

```
descriptives(data1.15,c("rSexualInterest","gPercInterest","gSexualInterest"))
```

```
##           variable      N min max      mean      sd
## 1 rSexualInterest 2233    1   7 3.390954 1.662319
## 2   gPercInterest 2233    1   7 3.216749 1.355510
## 3   gSexualInterest 2233    1   7 3.400806 1.660240
```

```
descriptives(data1.16,c("rSexualInterest","gPercInterest","gSexualInterest"))
```

```
##           variable      N min max      mean      sd
## 1 rSexualInterest  591    1   7 3.341794 1.466552
## 2   gPercInterest  601    1   6 3.472546 1.141488
## 3   gSexualInterest 605    1   7 3.343802 1.463965
```

```
descriptives(data1.17,c("rSexualInterest","gPercInterest","gSexualInterest"))
```

```
##           variable      N min max      mean      sd
## 1 rSexualInterest  473    1   7 3.395349 1.466483
## 2   gPercInterest  514    1   6 3.317121 1.177526
## 3   gSexualInterest 514    1   7 3.381323 1.475770
```

```
descriptives(data1.18,c("rSexualInterest","gPercInterest","gSexualInterest"))
```

```
##           variable      N min max      mean      sd
## 1 rSexualInterest  801    1   7 3.285893 1.486410
## 2   gPercInterest  812    1   7 3.221675 1.217474
## 3   gSexualInterest 812    1   7 3.288177 1.485884
```

```
data1 <- rbind(data1.15,data1.16,data1.17,data1.18)
```

```
mean.gSexualInterest <- group_by(data1,ID) %>%
  summarise(mean.gSexualInterest = mean(gSexualInterest,na.rm = TRUE))
```

```
data1 <- data1 %>%
  mutate( zgPercInterest = z(gPercInterest),
          zrSexualInterest = z(rSexualInterest),
          zgSexualInterest = z(gSexualInterest))
```

```
write.csv(data1,file = "data1.csv",row.names = FALSE)
```

Level 2 Data: Participant Level

Variables

SEX: Rater Sex (-.5 = Female, .5 = Male) ageyo: Rater age in years. SPA: Self-rated Attractiveness (Self-Perceived Attractiveness) soit: Sociosexual Orientation Inventory (total)

Custom Functions

```
recode.sex <- function(x){
  if (is.character(x)){
    x <- gsub("emale", "", x)
    x <- gsub("ale", "", x)
    out <- recode(x, "M" = .5,
                    "F" = -.5)
  }
  if(is.numeric(x)){
    out <- recode(x, "1" = -.5,
                    "0" = .5)
  }
  return(out)
}

recode.soi <- function(x){
  out <- ifelse(x == 0, 1,
               ifelse(x == 11, 1,
                     ifelse(x == 39, 3, x)))
  return(out)
}
```

Pre-2016 Data

```
data2.15 <- read.csv("2010-2015 Speed-Dating L2.csv", stringsAsFactors = FALSE) %>%
  filter(SessionID >= 1200) %>%
  dplyr::select(SessionID, ID, ageyo, SEX, SPA1:SPA4, soi1:soi9) %>%
  mutate( SEX = recode.sex(SEX),
          soi1 = recode.soi(soi1),
          soi2 = recode.soi(soi2),
          soi3 = recode.soi(soi3))
```

2016 Data

```
data2.16 <- read.csv("complete data_2016.csv", stringsAsFactors = FALSE) %>%
  filter(sessionid >= 1600) %>%
  group_by(id) %>%
  filter(row_number() == 1) %>%
  ungroup() %>%
  dplyr::select(sessionid, id, ageyo, sex, spa1:spa4, soi1:soi9) %>%
  as.data.frame() %>%
  mutate( sex = recode.sex(sex),
          soi5 = ifelse(soi5 > 2, ifelse(soi5 != 3, soi5 - 1, NA), soi5),
          soi6 = (soi6 * -1) + 10)

colnames(data2.16) <- colnames(data2.15)
```

2017 Data

```
data2.17 <- read.csv("person level data_2017.csv",stringsAsFactors = FALSE) %>%
  mutate( ageyo = ageyo_1 + ageyo_2/12,
          id = 17000000 + id) %>%
  dplyr::select(sessionid,id,ageyo,sex,spa1:spa4,soi1:soi9) %>%
  mutate(sex = recode.sex(sex))

colnames(data2.17) <- colnames(data2.15)
```

2018 Data

```
data2.18 <- read.csv("person level data_2018.csv",stringsAsFactors = FALSE) %>%
  mutate( ageyo = ageyo_1 + ageyo_2/12,
          Participant.ID = 18000000 + Participant.ID,
          SEX = recode.sex(SEX)) %>%
  dplyr::select(Session.ID,Participant.ID,ageyo,SEX,SPA1:SPA4,soi1:soi9)

colnames(data2.18) <- colnames(data2.15)
```

Descriptives and Combine Data

```
data2 <- rbind(data2.15,data2.16,data2.17,data2.18) %>%
  mutate(SPA = SPA1 + SPA2 + SPA3 + SPA4,
         soib = soi1 + soi2 + soi3,
         soia = soi4 + soi5 + ((soi6 * -1) + 10),
         soid = soi7 + soi8 + soi9,
         soit = soib + soia + soid) %>%
  dplyr::select(SessionID,ID,ageyo,SEX,SPA,soib:soit) %>%
  mutate(SessionID = as.numeric(SessionID),
         zSPA = z(SPA),
         zsoit = z(soit),
         zsoib = z(soib),
         zsoia = z(soia),
         zsoid = z(soid),
         zageyo = z(ageyo)) %>%
  left_join(mean.gSexualInterest) %>%
  mutate(zmean.gSexualInterest = z(mean.gSexualInterest))
```

```
## Joining, by = "ID"
```

```
descriptives(data2,c("ageyo","SPA","soit","mean.gSexualInterest"))
```

```
##           variable      N      min      max      mean      sd
## 1           ageyo 1209 10.08333 46.08333 19.474152  2.769138
## 2             SPA 1218   7.00000 27.00000 18.752874  2.905328
## 3             soit 1186   9.00000 77.00000 33.652614 14.482548
## 4 mean.gSexualInterest 1208   1.00000  7.00000  3.357795  1.156100
```

```
frequencies(data2,"SEX")
```

```
##           N           %
```

```
## -0.5    640  51.488335
##  0.5    586  47.144006
## <NA>    17   1.367659
## Total 1243 100.000000
```

```
write.csv(data2,file = "data2.csv",row.names = FALSE)
```

Male Participants

```
descriptives(filter(data2,SEX == .5),c("ageyo","SPA","soit"))
```

```
##  variable  N      min      max      mean      sd
## 1   ageyo 578 10.08333 43.33333 19.76745  2.875655
## 2     SPA 581  8.00000 27.00000 19.05336  2.853717
## 3    soit 563  9.00000 77.00000 38.64121 13.689199
```

Female Participants

```
descriptives(filter(data2,SEX == -.5),c("ageyo","SPA","soit"))
```

```
##  variable  N      min      max      mean      sd
## 1   ageyo 630 16.66667 46.08333 19.20079  2.641123
## 2     SPA 636  7.00000 27.00000 18.47484  2.927630
## 3    soit 622  9.00000 77.00000 29.08360 13.615590
```

Correlation Between Person-Level Variables

```
correlations <- function(data,variables,with=variables){
  vnames <- vector(mode="character",length=4*NROW(variables))
  for (v in 1:NROW(variables)){
    vnames[((v-1)*4)+2] <- variables[v]
  }
  output <- data.frame("variable"=vnames)
  for (w in 1:NROW(with)){
    print <- vector(mode="character",length=4*NROW(variables))
    for (v in 1:NROW(variables)){
      cor <- cor.test(data[,variables[v]],data[,with[w]])
      print[((v-1)*4)+2] <- paste("r = ",round(cor$estimate,3),sep="")
      print[((v-1)*4)+3] <- paste("p = ",round(cor$p.value,3),sep="")
      print[((v-1)*4)+4] <- paste("N = ",round(cor$parameter,3)+2,sep="")
    }
    output <- cbind(output,print)
  }
  colnames(output) <- c("variables",with)
  output
}
```

```
correlations(data2,c("SEX","ageyo","SPA","soit"))
```

```
##  variables      SEX      ageyo      SPA      soit
## 1
```

```
## 2      SEX      r = 1 r = 0.102 r = 0.099 r = 0.33
## 3          p = 0      p = 0 p = 0.001      p = 0
## 4          N = 1226 N = 1208 N = 1217 N = 1185
## 5
## 6      ageyo r = 0.102      r = 1 r = 0.003 r = 0.161
## 7          p = 0      p = 0 p = 0.924      p = 0
## 8          N = 1208 N = 1209 N = 1201 N = 1170
## 9
## 10     SPA r = 0.099 r = 0.003      r = 1 r = 0.179
## 11         p = 0.001 p = 0.924      p = 0      p = 0
## 12         N = 1217 N = 1201 N = 1218 N = 1178
## 13
## 14     soit r = 0.33 r = 0.161 r = 0.179      r = 1
## 15         p = 0      p = 0      p = 0      p = 0
## 16         N = 1185 N = 1170 N = 1178 N = 1186
```

Level 3: Session Level

```
NROW(unique(data2$SessionID))
```

```
## [1] 187
```

```
data3 <- group_by(data2,SessionID,SEX) %>%
  filter(!is.na(SEX)) %>%
  summarise(n = n()) %>%
  group_by(SEX) %>%
  summarise(n = mean(n))
```

```
data3
```

```
## # A tibble: 2 x 2
##   SEX      n
##   <dbl> <dbl>
## 1 -0.5  3.44
## 2  0.5  3.17
```

Main Analysis

Combine Data

```
analysis.data <- left_join(data1,data2,by = "ID") %>%
  filter(!is.na(zrSexualInterest)) %>%
  filter(!is.na(SEX)) %>%
  filter(!is.na(zageyo)) %>%
  filter(!is.na(zsoit)) %>%
  filter(!is.na(zSPA)) %>%
  filter(!is.na(zgSexualInterest)) %>%
  filter(!is.na(gPercInterest))
```

Base Model (Only Including Sex and Age)

```
model.0 <- lmer(gPercInterest ~ zrSexualInterest*SEX +
               zageyo*zrSexualInterest +
               (1 + zrSexualInterest*zageyo
                || partnerID) +
               (1 + zrSexualInterest || ID) +
               (1 + zrSexualInterest*SEX +
                zrSexualInterest*zageyo || SessionID),
               data = analysis.data)

summary(model.0)
```

```
r.squaredGLMM(model.0)
```

```
## Warning: 'r.squaredGLMM' now calculates a revised statistic. See the help
## page.
```

```
##           R2m           R2c
## [1,] 0.03390403 0.6663172
```

Model With All Predictors

```
model.full <- lmer(gPercInterest ~ zrSexualInterest*SEX +
                  zageyo*zrSexualInterest +
                  zsoit*zrSexualInterest +
                  zSPA*zrSexualInterest +
                  zgSexualInterest*zrSexualInterest +
                  (1 + zrSexualInterest*zageyo +
                   zrSexualInterest*zsoit +
                   zSPA*zrSexualInterest +
                   zgSexualInterest*zrSexualInterest
                    || partnerID) +
                  (1 + zrSexualInterest*zgSexualInterest || ID) +
                  (1 + zrSexualInterest*SEX +
                   zrSexualInterest*zageyo +
                   zrSexualInterest*zsoit +
                   zSPA*zrSexualInterest +
                   zgSexualInterest*zrSexualInterest || SessionID),
                  data = analysis.data)

summary(model.full)
```

Model With All Predictors + Mean Rater Interest

```
model.full_plus <- lmer(gPercInterest ~ zrSexualInterest*SEX +
                       zageyo*zrSexualInterest +
                       zsoit*zrSexualInterest +
                       zSPA*zrSexualInterest +
                       zgSexualInterest*zrSexualInterest +
                       zmean.gSexualInterest*zrSexualInterest +
```



```

(1 + zrSexualInterest*zageyo +
  zrSexualInterest*zsoit +
  zSPA*zrSexualInterest +
  zgSexualInterest*zrSexualInterest +
  zmean.gSexualInterest*zrSexualInterest || partnerID) +
(1 + zrSexualInterest*zgSexualInterest || ID),

data = analysis.data)

#Random effects of Session were removed to aid in model convergence.

summary(model.full_plus)

## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula:
## gPercInterest ~ zrSexualInterest * SEX + zageyo * zrSexualInterest +
##   zsoit * zrSexualInterest + zSPA * zrSexualInterest + zgSexualInterest *
##   zrSexualInterest + zmean.gSexualInterest * zrSexualInterest +
##   (1 + zrSexualInterest * zageyo + zrSexualInterest * zsoit +
##     zSPA * zrSexualInterest + zgSexualInterest * zrSexualInterest +
##     zmean.gSexualInterest * zrSexualInterest || partnerID) +
##   (1 + zrSexualInterest * zgSexualInterest || ID)
## Data: analysis.data
##
## REML criterion at convergence: 9592.3
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -4.5605 -0.4455 -0.0152  0.4614  5.2438
##
## Random effects:
##   Groups      Name                Variance Std.Dev.
##   partnerID   (Intercept)         1.839e-02 1.356e-01
##   partnerID.1 zrSexualInterest     1.565e-09 3.956e-05
##   partnerID.2 zageyo                0.000e+00 0.000e+00
##   partnerID.3 zsoit                 9.779e-03 9.889e-02
##   partnerID.4 zSPA                  0.000e+00 0.000e+00
##   partnerID.5 zgSexualInterest      3.527e-08 1.878e-04
##   partnerID.6 zmean.gSexualInterest 0.000e+00 0.000e+00
##   partnerID.7 zrSexualInterest:zageyo 4.209e-10 2.052e-05
##   partnerID.8 zrSexualInterest:zsoit 2.775e-09 5.268e-05
##   partnerID.9 zrSexualInterest:zSPA  0.000e+00 0.000e+00
##   partnerID.10 zrSexualInterest:zgSexualInterest 6.795e-03 8.243e-02
##   partnerID.11 zrSexualInterest:zmean.gSexualInterest 0.000e+00 0.000e+00
##   ID          (Intercept)         4.387e-01 6.623e-01
##   ID.1        zrSexualInterest     7.039e-03 8.390e-02
##   ID.2        zgSexualInterest      1.153e-01 3.395e-01
##   ID.3        zrSexualInterest:zgSexualInterest 1.561e-02 1.249e-01
##   Residual                                3.402e-01 5.833e-01
## Number of obs: 3847, groups: partnerID, 1188; ID, 1140
##
## Fixed effects:
##                                Estimate Std. Error    df
## (Intercept)                   3.295e+00  2.376e-02 1.155e+03

```

```

## zrSexualInterest      8.490e-02  1.456e-02  7.767e+02
## SEX                   -6.138e-02  5.122e-02  1.127e+03
## zageyo                -6.482e-02  2.463e-02  1.274e+03
## zsoit                 1.225e-01  2.597e-02  1.118e+03
## zSPA                  3.518e-01  2.383e-02  1.127e+03
## zgSexualInterest      4.619e-01  2.020e-02  9.466e+02
## zmean.gSexualInterest 2.650e-01  2.861e-02  1.774e+03
## zrSexualInterest:SEX   2.871e-02  3.143e-02  7.723e+02
## zrSexualInterest:zageyo 7.103e-03  1.474e-02  9.896e+02
## zrSexualInterest:zsoit 3.997e-04  1.593e-02  6.302e+02
## zrSexualInterest:zSPA  1.210e-02  1.460e-02  7.995e+02
## zrSexualInterest:zgSexualInterest -3.151e-02  2.015e-02  9.047e+02
## zrSexualInterest:zmean.gSexualInterest 1.907e-02  2.039e-02  1.509e+03
## t value Pr(>|t|)
## (Intercept)          138.657 < 2e-16 ***
## zrSexualInterest      5.831 8.06e-09 ***
## SEX                  -1.198  0.2310
## zageyo               -2.631  0.0086 **
## zsoit                4.719 2.67e-06 ***
## zSPA                 14.764 < 2e-16 ***
## zgSexualInterest     22.862 < 2e-16 ***
## zmean.gSexualInterest  9.261 < 2e-16 ***
## zrSexualInterest:SEX  0.913  0.3613
## zrSexualInterest:zageyo 0.482  0.6299
## zrSexualInterest:zsoit 0.025  0.9800
## zrSexualInterest:zSPA  0.828  0.4077
## zrSexualInterest:zgSexualInterest -1.564  0.1183
## zrSexualInterest:zmean.gSexualInterest 0.935  0.3499
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
## Correlation matrix not shown by default, as p = 14 > 12.
## Use print(x, correlation=TRUE) or
##     vcov(x)         if you need it

## convergence code: 0
## boundary (singular) fit: see ?isSingular

```

Without SOI

```

model.soi <- lmer(gPercInterest ~ zrSexualInterest*SEX +
                  zageyo*zrSexualInterest +
                  zSPA*zrSexualInterest +
                  zgSexualInterest*zrSexualInterest +
                  (1 + zrSexualInterest*zageyo +
                   zSPA*zrSexualInterest +
                   zgSexualInterest*zrSexualInterest
                   || partnerID) +
                  (1 + zrSexualInterest*zgSexualInterest || ID) +
                  (1 + zrSexualInterest*SEX +
                   zrSexualInterest*ageyo +
                   zSPA*zrSexualInterest +
                   zgSexualInterest*zrSexualInterest || SessionID),

```

```

data = analysis.data)

summary(model.soi)

r.squaredGLMM(model.soi)

##           R2m           R2c
## [1,] 0.3187262 0.7663918
data2.reduced <- data2 %>%
  filter(ID %in% analysis.data$ID)

m.model <- lm(zsoit ~ SEX + zageyo,data2.reduced)

y.model <- lmer(gPercInterest ~ SEX + zsoit + zageyo + zgSexualInterest + (1 + zgSexualInterest | ID),da

med.soi <- mediate(m.model,y.model,treat = "SEX",mediator = "zsoit",group.out = "ID")

##
## Causal Mediation Analysis
##
## Quasi-Bayesian Confidence Intervals
##
## Mediator Groups:
##
## Outcome Groups: ID
##
## Output Based on Overall Averages Across Groups
##
##           Estimate 95% CI Lower 95% CI Upper p-value
## ACME             0.1301      0.0898      0.17 <2e-16 ***
## ADE              0.0418     -0.0617      0.15  0.43
## Total Effect     0.1719      0.0704      0.28 <2e-16 ***
## Prop. Mediated   0.7626      0.4406      1.87 <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Sample Size Used: 3850
##
##
## Simulations: 1000

```

Model without Self-rated Attractiveness

```

model.spa <- lmer(gPercInterest ~ zrSexualInterest*SEX +
  zageyo*zrSexualInterest +
  zsoit*zrSexualInterest +
  zgSexualInterest*zrSexualInterest +
  (1 + zrSexualInterest*zageyo +
    zrSexualInterest*zsoit +
    zgSexualInterest*zrSexualInterest
    || partnerID) +
  (1 + zrSexualInterest*zgSexualInterest || ID) +

```

```

                                (1 + zrSexualInterest*SEX +
                                zrSexualInterest*ageyo +
                                zrSexualInterest*zsoit +
                                zgSexualInterest*zrSexualInterest || SessionID),

    data = analysis.data)

summary(model.spa)

save(model.spa,file = "model.spa.Rdata")

r.squaredGLMM(model.spa)

##           R2m           R2c
## [1,] 0.254036 0.7701815

m.model <- lm(zSPA ~ SEX + zageyo + zsoit,data = data2.reduced)
summary(m.model)

##
## Call:
## lm(formula = zSPA ~ SEX + zageyo + zsoit, data = data2.reduced)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -4.0391 -0.6680  0.0284  0.6598  3.0396
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.002473   0.028995   0.085   0.932
## SEX          0.099689   0.061349   1.625   0.104
## zageyo       -0.020729   0.029438  -0.704   0.481
## zsoit        0.170619   0.031274   5.456 5.99e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.978 on 1136 degrees of freedom
## Multiple R-squared:  0.0359, Adjusted R-squared:  0.03335
## F-statistic: 14.1 on 3 and 1136 DF, p-value: 5.008e-09

y.model <- lmer(gPercInterest ~ SEX + zSPA + zageyo + zsoit + zgSexualInterest + (1 | ID),data = analysis)

med.spa <- mediate(m.model,y.model,treat = "SEX",mediator = "zSPA",group.out = "ID")

summary(med.spa)

##
## Causal Mediation Analysis
##
## Quasi-Bayesian Confidence Intervals
##
## Mediator Groups:
##
## Outcome Groups: ID
##
## Output Based on Overall Averages Across Groups
##

```

```
##           Estimate 95% CI Lower 95% CI Upper p-value
## ACME          0.03489   -0.00912    0.08   0.10
## ADE           0.01465   -0.09335    0.12   0.77
## Total Effect   0.04954   -0.05770    0.16   0.40
## Prop. Mediated 0.43639   -5.06013    5.92   0.40
##
## Sample Size Used: 3850
##
##
## Simulations: 1000
```

Model without rater's own interest

```
model.gSI <- lmer(gPercInterest ~ zrSexualInterest*SEX +
                  zageyo*zrSexualInterest +
                  zsoit*zrSexualInterest +
                  zSPA*zrSexualInterest +
                  (1 + zrSexualInterest*zageyo +
                   zrSexualInterest*zsoit +
                   zrSexualInterest*zSPA || partnerID) +
                  (1 + zrSexualInterest || ID) +
                  (1 + zrSexualInterest*SEX +
                   zrSexualInterest*ageyo +
                   zrSexualInterest*zsoit +
                   zrSexualInterest*zSPA || SessionID),
                  data = analysis.data)

summary(model.gSI)
```

```
r.squaredGLMM(model.gSI)
```

```
##           R2m      R2c
## [1,] 0.1465877 0.6712098
```

```
m.model <- lme4::lmer(zgSexualInterest ~ SEX + zageyo + zsoit + zSPA + (1 | ID), data = analysis.data)
summary(m.model)
```

```
## Linear mixed model fit by REML ['lmerMod']
## Formula: zgSexualInterest ~ SEX + zageyo + zsoit + zSPA + (1 | ID)
## Data: analysis.data
##
## REML criterion at convergence: 10339.5
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.53270 -0.67578 -0.07048  0.67994  2.88163
##
## Random effects:
## Groups   Name                Variance Std.Dev.
## ID       (Intercept)  0.2826     0.5316
## Residual                    0.6577     0.8110
## Number of obs: 3850, groups: ID, 1140
##
## Fixed effects:
```

```

##               Estimate Std. Error t value
## (Intercept)  0.004755   0.020717   0.230
## SEX          0.341238   0.043915   7.770
## zageyo       -0.016502   0.020980  -0.787
## zsoit        0.107321   0.022585   4.752
## zSPA         -0.001821   0.021221  -0.086
##
## Correlation of Fixed Effects:
##      (Intr) SEX      zageyo zsoit
## SEX      0.025
## zageyo   -0.001 -0.044
## zsoit    -0.007 -0.303 -0.143
## zSPA     -0.002 -0.053  0.024 -0.156

y.model <- lme4::lmer(gPercInterest ~ SEX + zgSexualInterest + zageyo + zsoit + zSPA + (1 + zgSexualInte

med.gSI <- mediate(m.model,y.model,treat = "SEX",mediator = "zgSexualInterest",group.out = "ID")

summary(med.gSI)

##
## Causal Mediation Analysis
##
## Quasi-Bayesian Confidence Intervals
##
## Mediator Groups: ID
##
## Outcome Groups: ID
##
## Output Based on Overall Averages Across Groups
##
##               Estimate 95% CI Lower 95% CI Upper p-value
## ACME (control)         0.1799      0.1316      0.23 <2e-16 ***
## ACME (treated)         0.1799      0.1316      0.23 <2e-16 ***
## ADE (control)          0.0010     -0.0993      0.10  0.950
## ADE (treated)          0.0010     -0.0993      0.10  0.950
## Total Effect           0.1809      0.0663      0.28  0.002 **
## Prop. Mediated (control) 0.9788      0.6383      2.37  0.002 **
## Prop. Mediated (treated) 0.9788      0.6383      2.37  0.002 **
## ACME (average)         0.1799      0.1316      0.23 <2e-16 ***
## ADE (average)          0.0010     -0.0993      0.10  0.950
## Prop. Mediated (average) 0.9788      0.6383      2.37  0.002 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Sample Size Used: 3850
##
##
## Simulations: 1000

```

Plot Models

Forest plot of main effect estimates (and std error) for models predicting perceived interest from partner with and without rater's own interest in partner. With the inclusion of own interest as a predictor, the positive

estimate of sex disappears, while the estimates for other predictors are unaffected.

```
get_coefs <- function(model,label){
  out <- summary(model)$coefficients %>%
  as.data.frame(row.names = rownames(.)) %>%
  rownames_to_column("var") %>%
  mutate( se_low = Estimate - `Std. Error`,
          se_high = Estimate + `Std. Error`) %>%
  filter(!grepl(":",var)) %>%
  filter(!grepl("Intercept",var))
  out$Model <- label
  return(out)
}

coefs.full <- get_coefs(model.full,label = "Full Model")
coefs.base <- get_coefs(model.0,label = "Base Model")

coefs.soit <- get_coefs(model.soi,label = "Full Model minus SOI")
coefs.spa <- get_coefs(model.spa,label = "Full Model minus Self-rated Attractiveness")
coefs.gSI <- get_coefs(model.gSI,label = "Full Model minus Own Sexual Interest")

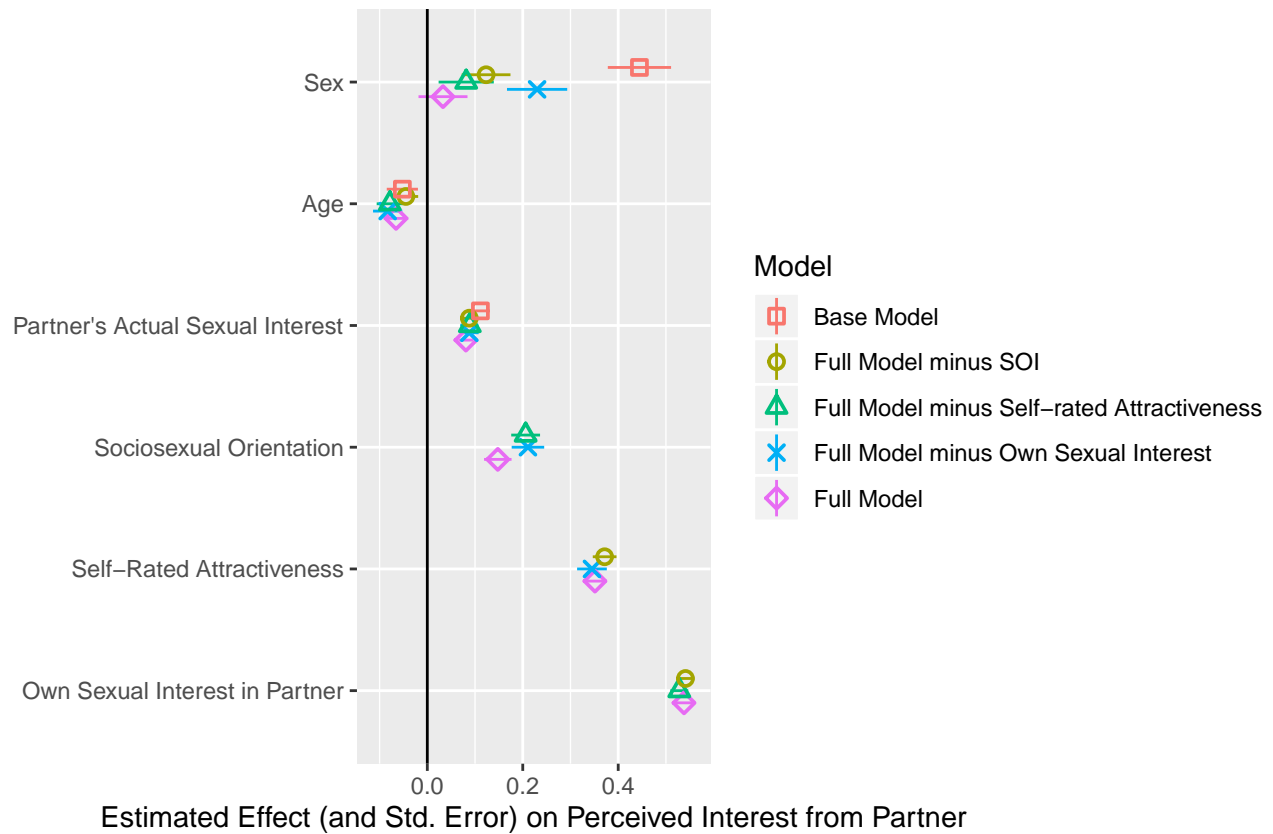
plot.data <- full_join(coefs.base,coefs.soit,by = colnames(coefs.base)) %>%
  full_join(coefs.spa,by = colnames(.)) %>%
  full_join(coefs.gSI,by = colnames(.)) %>%
  full_join(coefs.full,by = colnames(.)) %>%
  mutate(var = factor(var,levels = c("zgSexualInterest",
                                     "zSPA",
                                     "zsoit",
                                     "zrSexualInterest",
                                     "zageyo",
                                     "SEX"),
                      labels = c("Own Sexual Interest in Partner",
                                "Self-Rated Attractiveness",
                                "Sociosexual Orientation",
                                "Partner's Actual Sexual Interest",
                                "Age",
                                "Sex")),
         Model = factor(Model,levels = c("Base Model",
                                          "Full Model minus SOI",
                                          "Full Model minus Self-rated Attractiveness",
                                          "Full Model minus Own Sexual Interest",
                                          "Full Model"))))

ggplot(plot.data) +
  geom_pointrange(aes(x = var,
                      y = Estimate,
                      ymin = se_low,
                      ymax = se_high,
                      group = Model,
                      colour = Model,
                      shape = Model),
                size = .5,
                position = position_dodge(width = -.3)) +
```

```

geom_hline(yintercept = 0) +
coord_flip() +
xlab("") +
ylab("Estimated Effect (and Std. Error) on Perceived Interest from Partner") +
theme(legend.direction = "vertical") +
scale_shape_manual(values = c(0,1,2,4,5))

```



```

ggsave("Figure 1.png",height = 6,width = 10)

```

```
## Warning: position_dodge requires non-overlapping x intervals
```

Model with SOI subscales

```

model.soi2 <- lmer(gPercInterest ~ zrSexualInterest*SEX +
  zageyo*zrSexualInterest +
  zsoib*zrSexualInterest +
  zsoia*zrSexualInterest +
  zsoid*zrSexualInterest +
  (1 + zrSexualInterest*zageyo +
  zrSexualInterest*zsoib +
  zrSexualInterest*zsoia +
  zrSexualInterest*zsoid
  || partnerID) +
  (1 + zrSexualInterest || ID) +
  (1 + zrSexualInterest*SEX +
  zrSexualInterest*ageyo +

```



```

                                zrSexualInterest*zsoit +
                                zrSexualInterest*soia +
                                zrSexualInterest*soid || SessionID),

data = analysis.data)

summary(model.soi2)

## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula:
## gPercInterest ~ zrSexualInterest * SEX + zageyo * zrSexualInterest +
##   zsoib * zrSexualInterest + zsoia * zrSexualInterest + zsoid *
##   zrSexualInterest + (1 + zrSexualInterest * zageyo + zrSexualInterest *
##   zsoib + zrSexualInterest * zsoia + zrSexualInterest * zsoid ||
##   partnerID) + (1 + zrSexualInterest || ID) + (1 + zrSexualInterest *
##   SEX + zrSexualInterest * ageyo + zrSexualInterest * zsoit +
##   zrSexualInterest * soia + zrSexualInterest * soid || SessionID)
## Data: analysis.data
##
## REML criterion at convergence: 10976.6
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.3618 -0.4802 -0.0205  0.5144  4.4419
##
## Random effects:
##   Groups      Name                Variance Std.Dev.
##   partnerID   (Intercept)          5.208e-02 2.282e-01
##   partnerID.1 zrSexualInterest      0.000e+00 0.000e+00
##   partnerID.2 zageyo                 3.198e-09 5.655e-05
##   partnerID.3 zsoib                  1.079e-02 1.039e-01
##   partnerID.4 zsoia                   5.378e-11 7.333e-06
##   partnerID.5 zsoid                   8.832e-03 9.398e-02
##   partnerID.6 zrSexualInterest:zageyo 0.000e+00 0.000e+00
##   partnerID.7 zrSexualInterest:zsoib  1.945e-03 4.411e-02
##   partnerID.8 zrSexualInterest:zsoia  5.963e-03 7.722e-02
##   partnerID.9 zrSexualInterest:zsoid  6.432e-11 8.020e-06
##   ID          (Intercept)          8.499e-01 9.219e-01
##   ID.1        zrSexualInterest      4.303e-04 2.074e-02
##   SessionID   (Intercept)          2.060e-09 4.539e-05
##   SessionID.1 zrSexualInterest      1.390e-02 1.179e-01
##   SessionID.2 SEX                   2.197e-02 1.482e-01
##   SessionID.3 ageyo                  1.298e-09 3.603e-05
##   SessionID.4 zsoit                  2.120e-02 1.456e-01
##   SessionID.5 soia                   1.397e-09 3.737e-05
##   SessionID.6 soid                   0.000e+00 0.000e+00
##   SessionID.7 zrSexualInterest:SEX   8.084e-08 2.843e-04
##   SessionID.8 zrSexualInterest:ageyo 6.233e-11 7.895e-06
##   SessionID.9 zrSexualInterest:zsoit 4.188e-03 6.472e-02
##   SessionID.10 zrSexualInterest:soia 0.000e+00 0.000e+00
##   SessionID.11 zrSexualInterest:soid 0.000e+00 0.000e+00
##   Residual                                5.126e-01 7.160e-01
## Number of obs: 3847, groups: partnerID, 1188; ID, 1140; SessionID, 181
##

```

```

## Fixed effects:
##
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    3.278e+00  3.155e-02  1.092e+03 103.877 < 2e-16
## zrSexualInterest  9.935e-02  1.975e-02  1.401e+02   5.030 1.48e-06
## SEX             2.646e-01  6.834e-02  2.198e+02   3.872 0.000143
## zageyo          -9.726e-02  3.351e-02  1.241e+03  -2.902 0.003771
## zsoib           1.295e-01  3.892e-02  9.143e+02   3.327 0.000912
## zsoia           6.020e-02  3.869e-02  9.824e+02   1.556 0.120096
## zsoid           1.599e-01  3.717e-02  1.061e+03   4.301 1.86e-05
## zrSexualInterest:SEX  9.708e-03  3.641e-02  9.348e+02   0.267 0.789794
## zrSexualInterest:zageyo -2.510e-03  1.790e-02  1.086e+03  -0.140 0.888507
## zrSexualInterest:zsoib  1.116e-02  2.084e-02  3.380e+02   0.535 0.592728
## zrSexualInterest:zsoia -7.020e-03  2.041e-02  4.745e+02  -0.344 0.731103
## zrSexualInterest:zsoid  1.530e-02  2.025e-02  6.879e+02   0.756 0.450067
##
## (Intercept)      ***
## zrSexualInterest ***
## SEX               ***
## zageyo            **
## zsoib             ***
## zsoia
## zsoid            ***
## zrSexualInterest:SEX
## zrSexualInterest:zageyo
## zrSexualInterest:zsoib
## zrSexualInterest:zsoia
## zrSexualInterest:zsoid
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) zrSxll SEX      zageyo zsoib  zsoia  zsoid  zSI:SE
## zrSxllIntrst    0.000
## SEX             0.037  0.100
## zageyo          0.009  0.068 -0.068
## zsoib           0.027 -0.034  0.025 -0.296
## zsoia          -0.017 -0.027 -0.101  0.048 -0.367
## zsoid          -0.017 -0.024 -0.261  0.065 -0.133 -0.301
## zrSxllIn:SEX    0.117  0.001  0.010  0.013 -0.025  0.006 -0.012
## zrSxllIntrst:zg  0.073  0.030  0.009  0.211 -0.006  0.003 -0.023 -0.028
## zrSxllIntrst:zsb -0.039  0.037 -0.022  0.003 -0.025 -0.005  0.006 -0.004
## zrSexllIntrst:zs -0.029 -0.051 -0.001 -0.005 -0.004  0.012 -0.009 -0.097
## zrSxllIntrst:zsd -0.024  0.018 -0.006 -0.026  0.008 -0.014  0.022 -0.268
##              zrSxllIntrst:zg zrSxllIntrst:zsb zrSexllIntrst:zs
## zrSxllIntrst
## SEX
## zageyo
## zsoib
## zsoia
## zsoid
## zrSxllIn:SEX
## zrSxllIntrst:zg
## zrSxllIntrst:zsb -0.262
## zrSexllIntrst:zs  0.019      -0.335

```

```
## zrSxlIntrst:zsd 0.042 -0.160 -0.265
## convergence code: 1
## Model failed to converge with max|grad| = 0.128753 (tol = 0.002, component 1)
```

Model Including Partner Trait Variables

```
analysis.data <- left_join(data1,data2,by = "ID") %>%
  left_join(data2,by = c("partnerID" = "ID"),suffix = c("", "_p"))

model.partner <- lmer(gPercInterest ~ zrSexualInterest*SEX +
  zageyo*zrSexualInterest +
  zsoit*zrSexualInterest +
  zSPA*zrSexualInterest +
  zageyo_p*zrSexualInterest +
  zsoit_p*zrSexualInterest +
  zSPA_p*zrSexualInterest +
  zgSexualInterest*zrSexualInterest +
  (1 + zrSexualInterest*zageyo +
  zrSexualInterest*zSPA +
  zrSexualInterest*zsoit +
  zrSexualInterest*zgSexualInterest || partnerID) +
  (1 + zrSexualInterest*zageyo_p +
  zrSexualInterest*zSPA_p +
  zrSexualInterest*zsoit_p +
  zrSexualInterest*zgSexualInterest || ID) +
  (1 + zrSexualInterest*SEX +
  zrSexualInterest*zageyo +
  zrSexualInterest*zSPA +
  zrSexualInterest*zsoit +
  zrSexualInterest*zageyo_p +
  zrSexualInterest*zSPA_p +
  zrSexualInterest*zsoit_p +
  zrSexualInterest*zgSexualInterest || SessionID),
  data = analysis.data)

summary(model.partner)
```

```
## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula:
## gPercInterest ~ zrSexualInterest * SEX + zageyo * zrSexualInterest +
## zsoit * zrSexualInterest + zSPA * zrSexualInterest + zageyo_p *
## zrSexualInterest + zsoit_p * zrSexualInterest + zSPA_p *
## zrSexualInterest + zgSexualInterest * zrSexualInterest +
## (1 + zrSexualInterest * zageyo + zrSexualInterest * zSPA +
## zrSexualInterest * zsoit + zrSexualInterest * zgSexualInterest ||
## partnerID) + (1 + zrSexualInterest * zageyo_p + zrSexualInterest *
## zSPA_p + zrSexualInterest * zsoit_p + zrSexualInterest *
## zgSexualInterest || ID) + (1 + zrSexualInterest * SEX + zrSexualInterest *
## zageyo + zrSexualInterest * zSPA + zrSexualInterest * zsoit +
## zrSexualInterest * zageyo_p + zrSexualInterest * zSPA_p +
## zrSexualInterest * zsoit_p + zrSexualInterest * zgSexualInterest ||
## SessionID)
```

```

## Data: analysis.data
##
## REML criterion at convergence: 9314.5
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -4.5872 -0.4385 -0.0290  0.4481  5.0223
##
## Random effects:
##      Groups             Name                Variance Std.Dev.
## partnerID      (Intercept)                1.494e-02 1.222e-01
## partnerID.1    zrSexualInterest            0.000e+00 0.000e+00
## partnerID.2    zageyo                      0.000e+00 0.000e+00
## partnerID.3    zSPA                       0.000e+00 0.000e+00
## partnerID.4    zsoit                      7.951e-03 8.917e-02
## partnerID.5    zgSexualInterest            2.393e-14 1.547e-07
## partnerID.6    zrSexualInterest:zageyo      0.000e+00 0.000e+00
## partnerID.7    zrSexualInterest:zSPA        0.000e+00 0.000e+00
## partnerID.8    zrSexualInterest:zsoit       0.000e+00 0.000e+00
## partnerID.9    zrSexualInterest:zgSexualInterest 1.575e-03 3.969e-02
## ID              (Intercept)                4.376e-01 6.615e-01
## ID.1            zrSexualInterest            0.000e+00 0.000e+00
## ID.2            zageyo_p                   2.294e-03 4.789e-02
## ID.3            zSPA_p                     1.056e-02 1.028e-01
## ID.4            zsoit_p                    1.067e-02 1.033e-01
## ID.5            zgSexualInterest            1.266e-01 3.558e-01
## ID.6            zrSexualInterest:zageyo_p    2.733e-14 1.653e-07
## ID.7            zrSexualInterest:zSPA_p      7.434e-03 8.622e-02
## ID.8            zrSexualInterest:zsoit_p     4.037e-15 6.354e-08
## ID.9            zrSexualInterest:zgSexualInterest 1.136e-02 1.066e-01
## SessionID      (Intercept)                6.840e-03 8.271e-02
## SessionID.1    zrSexualInterest            3.802e-03 6.166e-02
## SessionID.2    SEX                        0.000e+00 0.000e+00
## SessionID.3    zageyo                     6.833e-03 8.266e-02
## SessionID.4    zSPA                       3.561e-03 5.967e-02
## SessionID.5    zsoit                      1.635e-02 1.279e-01
## SessionID.6    zageyo_p                   7.438e-04 2.727e-02
## SessionID.7    zSPA_p                     0.000e+00 0.000e+00
## SessionID.8    zsoit_p                    0.000e+00 0.000e+00
## SessionID.9    zgSexualInterest            0.000e+00 0.000e+00
## SessionID.10   zrSexualInterest:SEX        2.713e-03 5.209e-02
## SessionID.11   zrSexualInterest:zageyo      0.000e+00 0.000e+00
## SessionID.12   zrSexualInterest:zSPA        0.000e+00 0.000e+00
## SessionID.13   zrSexualInterest:zsoit       5.258e-04 2.293e-02
## SessionID.14   zrSexualInterest:zageyo_p    0.000e+00 0.000e+00
## SessionID.15   zrSexualInterest:zSPA_p      4.619e-03 6.796e-02
## SessionID.16   zrSexualInterest:zsoit_p     0.000e+00 0.000e+00
## SessionID.17   zrSexualInterest:zgSexualInterest 1.338e-04 1.157e-02
## Residual                                3.195e-01 5.653e-01
## Number of obs: 3688, groups: partnerID, 1140; ID, 1138; SessionID, 180
##
## Fixed effects:
##                                     Estimate Std. Error      df t value
## (Intercept)                       3.310e+00  2.527e-02 1.780e+02 131.010

```

```

## zrSexualInterest      8.210e-02  1.590e-02  1.525e+02   5.162
## SEX                   1.749e-02  5.232e-02  1.015e+03   0.334
## zageyo                -6.007e-02  2.796e-02  5.014e+01  -2.148
## zsoit                 1.551e-01  2.867e-02  1.639e+02   5.410
## zSPA                  3.469e-01  2.517e-02  1.404e+02  13.782
## zageyo_p              -5.149e-02  1.489e-02  5.140e+01  -3.458
## zsoit_p               -7.742e-03  1.547e-02  5.933e+02  -0.500
## zSPA_p                -4.034e-02  1.482e-02  5.303e+02  -2.721
## zgSexualInterest      5.338e-01  1.923e-02  9.309e+02  27.758
## zrSexualInterest:SEX   3.162e-02  3.389e-02  2.015e+02   0.933
## zrSexualInterest:zageyo 4.915e-03  1.512e-02  9.120e+02   0.325
## zrSexualInterest:zsoit  6.336e-03  1.644e-02  1.098e+02   0.385
## zrSexualInterest:zSPA   1.844e-02  1.505e-02  1.332e+03   1.225
## zrSexualInterest:zageyo_p 4.738e-02  1.405e-02  1.091e+02   3.372
## zrSexualInterest:zsoit_p -1.224e-03  1.422e-02  9.841e+02  -0.086
## zrSexualInterest:zSPA_p -1.537e-02  1.545e-02  9.251e+01  -0.995
## zrSexualInterest:zgSexualInterest -1.286e-02  1.544e-02  1.351e+02  -0.833
## Pr(>|t|)
## (Intercept)           < 2e-16 ***
## zrSexualInterest      7.52e-07 ***
## SEX                   0.73817
## zageyo                0.03654 *
## zsoit                 2.21e-07 ***
## zSPA                  < 2e-16 ***
## zageyo_p              0.00110 **
## zsoit_p               0.61700
## zSPA_p                0.00673 **
## zgSexualInterest      < 2e-16 ***
## zrSexualInterest:SEX   0.35192
## zrSexualInterest:zageyo 0.74511
## zrSexualInterest:zsoit  0.70070
## zrSexualInterest:zSPA   0.22061
## zrSexualInterest:zageyo_p 0.00103 **
## zrSexualInterest:zsoit_p 0.93140
## zrSexualInterest:zSPA_p 0.32254
## zrSexualInterest:zgSexualInterest 0.40624
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
## Correlation matrix not shown by default, as p = 18 > 12.
## Use print(x, correlation=TRUE) or
##     vcov(x)         if you need it

## convergence code: 0
## maxfun < 10 * length(par)^2 is not recommended.

```

Plot Model

```

coefs.partner <- get_coefs(model.partner,"Full Model plus Partner Variables")

plot.data <- full_join(coefs.base,coefs.full,by = colnames(coefs.base)) %>%
  full_join(coefs.partner,by = colnames(coefs.base)) %>%
  mutate(var = factor(var,levels = c("zgSexualInterest",

```

```

        "zrSexualInterest",
        "zSPA_p",
        "zsoit_p",
        "zageyo_p",
        "zSPA","zsoit",
        "zageyo",
        "SEX"),
    labels = c("Own Sexual Interest in Partner",
               "Partner's Actual Sexual Interest",
               "Partner's Self-Perceived Attractiveness",
               "Partner's Sociosexual Orientation",
               "Partner's Age","Self-Perceived Attractiveness",
               "Sociosexual Orientation",
               "Age",
               "Sex")),
  Model = factor(Model,levels = c("Base Model",
                                   "Full Model",
                                   "Full Model plus Partner Variables"))

ggplot(plot.data) +
  geom_pointrange(aes(x = var,
                      y = Estimate,
                      ymin = se_low,
                      ymax = se_high,
                      group = Model,
                      colour = Model),

  size = .5,
  position = position_dodge(width = -.25)) +
  geom_hline(yintercept = 0) +
  coord_flip() +
  xlab("") +
  ylab("Estimated Effect (and Std. Error) on Perceived Interest from Partner") +
  theme(legend.direction = "vertical")

```

