Experiment 2: Supplementary Analyses

Bethany Gardner

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Contents

Setup

Variable names:

- Experiment: exp2
- Type
  - d = data
  - m = model
  - est = log odds estimate from model
  - OR = odds ratio converted from est

- Analysis
  - count =sums of response types
  - cond = effect of Condition (Last vs First+Full)
  - nameGender = effects of Condition (First vs Full) and Name Gender Rating
- Subset
  - all = including *other* responses
  - noOther = excluding *other* responses
  - FF = First and Full Name conditions only
  - Last = Last Name condition only

Load data and select columns used in model. See data/exp2_data_about.txt for more details.

```
exp2_d <- read.csv("../data/exp2_data.csv",
                   stringsAsFactors=TRUE) %>%
  rename("Participant"="SubjID", "Item"="NameShown") %>%
  select(Participant, SubjGender, Condition, GenderRating,
         Item, Male, Female, Other)
str(exp2_d)
```

```
## 'data.frame':    9457 obs. of  8 variables:
##  $ Participant : Factor w/ 1351 levels "R_06Tps0XX28Fe09j",..: 694 694 694 694 694 694 694 301 301 3
##  $ SubjGender  : Factor w/ 5 levels "female","genderqueer",..: 3 3 3 3 3 3 3 1 1 1 ...
##  $ Condition   : Factor w/ 3 levels "first","full",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ GenderRating: num  5.59 4.22 2.12 6.73 3.61 4.73 1.21 6.24 4.39 2.61 ...
##  $ Item        : Factor w/ 105 levels "Ashley","Ashley Cook",..: 51 91 18 60 87 55 63 1 47 29 ...
##  $ Male        : int  1 1 0 1 1 0 1 0 0 1 ...
##  $ Female      : int  0 0 1 0 0 1 0 1 1 0 ...
##  $ Other       : int  0 0 0 0 0 0 0 0 0 0 ...
```

Center gender rating for names: Original scale from 1 to 7, with 1 as most masculine and 7 as most feminine. Mean-centered with higher still as more feminine.

```
exp2_d %<>% mutate(GenderRatingCentered=
            scale(GenderRating, scale=FALSE))
```

Set contrasts for name conditions.

```
contrasts(exp2_d$Condition) = cbind(
  "last vs first/full"=c(.33,.33,-0.66),
  "first vs full"=c(-.5,.5,0))
contrasts(exp2_d$Condition)
```

```
##       last vs first/full first vs full
## first               0.33          -0.5
## full                0.33           0.5
## last               -0.66           0.0
```

Subset for gender rating effects (First and Full conditions only).

```
exp2_d_FF <- exp2_d %>% filter(Condition!="last")
exp2_d_FF$Condition <- droplevels(exp2_d_FF$Condition)
contrasts(exp2_d_FF$Condition) = cbind(
  "first vs full"=c(-.5,.5)) #add contrast back
contrasts(exp2_d_FF$Condition)
```

```
##       first vs full
## first          -0.5
## full            0.5
```

Without *Other* Responses

The first supplementary analysis tests if excluding OTHER responses (4.15% of total responses) affects the pattern of results.

```
sum(exp2_d$Other)
```

```
## [1] 392
```

```
sum(exp2_d$Other)/length(exp2_d$Other)
```

```
## [1] 0.04145078
```

Exclude *other* responses.

```
exp2_d_noOther <- exp2_d %>% filter(Other==0)
exp2_d_FF_noOther<- exp2_d_FF %>% filter(Other==0)
```

Model 1: Condition w/o *Other* Responses

Effect of Name Condition (first name, last name, full name) on likelihood of a *female* response, as opposed to a *male* response, with *other* responses excluded. Participant and Item are again included as random intercepts, with items defined as the unique first, last and first + last name combinations.

```
exp2_m_cond_noOther <- glmer(
  Female ~ Condition + (1|Participant) + (1|Item),
  exp2_d_noOther, family=binomial)
summary(exp2_m_cond_noOther)
```

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula: Female ~ Condition + (1 | Participant) + (1 | Item)
##    Data: exp2_d_noOther
##
##      AIC      BIC   logLik deviance df.resid
##   8899.0   8934.6  -4444.5   8889.0     9060
##
```

```
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -2.8742 -0.4709 -0.3084  0.5478  4.7464
##
## Random effects:
##  Groups      Name        Variance Std.Dev.
##  Participant (Intercept) 0.100    0.3163
##  Item        (Intercept) 1.789    1.3376
## Number of obs: 9065, groups:  Participant, 1321; Item, 105
##
## Fixed effects:
##                             Estimate Std. Error z value Pr(>|z|)
## (Intercept)                  -0.7936     0.1509  -5.261 1.43e-07 ***
## Conditionlast vs first/full   1.9098     0.3430   5.567 2.59e-08 ***
## Conditionfirst vs full       -0.2023     0.3451  -0.586    0.558
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr) Cvfrs/
## Cndtnvfrst/ -0.170
## Cndtnfrstvf -0.362 -0.241
```

No differences.

Odds Ratios: Intercept

```
exp2_OR_noOther_I <- exp2_m_cond_noOther %>%
  tidy() %>%
  filter(term=="(Intercept)") %>%
  select(estimate) %>% as.numeric()
exp(exp2_OR_noOther_I)
```

```
## [1] 0.4521943
```

```
exp(-exp2_OR_noOther_I)
```

```
## [1] 2.211439
```

```
#Save this for the table comparing all 4 experiments
exp2_OR_noOther_I <- exp(-exp2_OR_noOther_I) %>%
  round(2)
```

0.45x less likely to recall as female overall. Easier to interpret: 2.21x more likely to recall as male/other overall, $p<.001$

Odds Ratios: Last vs First+Full

```
exp2_est_noOther_LFF <- exp2_m_cond_noOther %>%
  tidy() %>%
  filter(term=="Conditionlast vs first/full") %>%
  select(estimate) %>% as.numeric()
exp(exp2_est_noOther_LFF)
```

```
## [1] 6.75189
```

```
#Save this for the table comparing all 4 experiments
exp2_OR_noOther_LFF <- exp(exp2_est_noOther_LFF) %>%
  round(2)
```

6.75x more likely to use *she* in First + Full compared to Last. –> 6.75x times more likely to use *he* and *other* in Last than in First + Full, p<.001

Odds Ratios: Last Only

Dummy code with Last Name as 0, so that intercept is the Last Name condition only.

```
exp2_d_noOther %<>% mutate(Condition_Last=case_when(
  Condition=="first" ~ 1,
  Condition=="full" ~ 1,
  Condition=="last" ~ 0))
exp2_d_noOther$Condition_Last %<>% as.factor()
```

```
exp2_m_L_noOther <- glmer(
  Female ~ Condition_Last + (1|Participant) + (1|Item),
  data=exp2_d_noOther, family=binomial)
summary(exp2_m_L_noOther)
```

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula: Female ~ Condition_Last + (1 | Participant) + (1 | Item)
##    Data: exp2_d_noOther
##
##      AIC      BIC   logLik deviance df.resid
##   8897.3   8925.8  -4444.7   8889.3     9061
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -2.8673 -0.4711 -0.3084  0.5471  4.7767
##
## Random effects:
##  Groups      Name        Variance Std.Dev.
##  Participant (Intercept) 0.100    0.3163
##  Item        (Intercept) 1.794    1.3396
## Number of obs: 9065, groups:  Participant, 1321; Item, 105
##
## Fixed effects:
```

```
##                 Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -2.054      0.293  -7.011 2.36e-12 ***
## Condition_Last1    1.843      0.330   5.584 2.35e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr)
## Condtn_Lst1 -0.887
```

```
exp2_est_L_noOther <- exp2_m_L_noOther %>%
  tidy() %>%
  filter(term=="(Intercept)") %>%
  select(estimate) %>% as.numeric()

exp(exp2_est_L_noOther)
```

```
## [1] 0.1281981
```

```
exp(-exp2_est_L_noOther)
```

```
## [1] 7.800429
```

```
#Save this for the table comparing all 4 experiments
exp2_OR_noOther_L <- exp(-exp2_est_L_noOther) %>%
  round(2)
```

0.12x times less likely to recall as female in the Last Name condition –> 7.80x more likely to recall as male in the Last Name condition, p<.001

Odds Ratios: First and Full Only

Dummy code with First and Full Name as 0, so that intercept is average for these two conditions.

```
exp2_d_noOther %<>% mutate(Condition_FF=case_when(
  Condition=="first" ~ 0,
  Condition=="full" ~ 0,
  Condition=="last" ~ 1))
exp2_d_noOther$Condition_FF %<>% as.factor()
```

```
exp2_m_FF_noOther <- glmer(
  Female ~ Condition_FF + (1|Participant) + (1|Item),
  data=exp2_d_noOther, family=binomial)
summary(exp2_m_FF_noOther)
```

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula: Female ~ Condition_FF + (1 | Participant) + (1 | Item)
##    Data: exp2_d_noOther
```

```
##
##      AIC      BIC   logLik deviance df.resid
##   8897.3   8925.8  -4444.7   8889.3     9061
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -2.8673 -0.4711 -0.3084  0.5471  4.7766
##
## Random effects:
##  Groups      Name        Variance Std.Dev.
##  Participant (Intercept) 0.100    0.3163
##  Item        (Intercept) 1.794    1.3396
## Number of obs: 9065, groups:  Participant, 1321; Item, 105
##
## Fixed effects:
##               Estimate Std. Error z value Pr(>|z|)
## (Intercept)    -0.2114     0.1521  -1.390    0.165
## Condition_FF1  -1.8428     0.3301  -5.582 2.38e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr)
## Conditn_FF1 -0.460
```

```
exp2_est_FF_noOther <- exp2_m_FF_noOther %>%
  tidy() %>%
  filter(term=="(Intercept)") %>%
  select(estimate) %>% as.numeric()

exp(exp2_est_FF_noOther)
```

```
## [1] 0.8094392
```

```
exp(-exp2_est_FF_noOther)
```

```
## [1] 1.235423
```

```
#Save this for the table comparing all 4 experiments
exp2_OR_noOther_FF <- exp(-exp2_est_FF_noOther) %>%
  round(2)
```

0.81x times less likely o recall as female in the First and Full Name conditions –> 1.24x more likely to use *he* in the n the First and Full Name conditions, p=.17

Model 2: Condition * Name Gender w/o *Other* Responses

Effects of Name Condition (first name, full name) and the first name's Gender Rating (centered, positive=more feminine) on the likelihood of a *female* response as opposed to a *male* response, with *other* responses excluded. In Experiment 2, the Last Name condition does not include any instances of the gendered first name, so it is not included here. Participant and Item are again included as random intercepts.

```
exp2_m_nameGender_noOther <- glmer(
  Female ~ Condition * GenderRatingCentered + (1|Participant) + (1|Item),
  exp2_d_FF_noOther, family=binomial)
summary(exp2_m_nameGender_noOther)
```

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula: Female ~ Condition * GenderRatingCentered + (1 | Participant) +
##     (1 | Item)
##    Data: exp2_d_FF_noOther
##
##      AIC      BIC   logLik deviance df.resid
##   6559.7   6600.1  -3273.9   6547.7     6166
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -2.8717 -0.5959 -0.2364  0.6050  4.2845
##
## Random effects:
##  Groups      Name        Variance Std.Dev.
##  Participant (Intercept) 0.0268   0.1637
##  Item        (Intercept) 0.1459   0.3819
## Number of obs: 6172, groups:  Participant, 897; Item, 83
##
## Fixed effects:
##                                             Estimate Std. Error z value
## (Intercept)                                -0.13756    0.05860  -2.348
## Conditionfirst vs full                     -0.19127    0.11704  -1.634
## GenderRatingCentered                        0.78486    0.03552  22.098
## Conditionfirst vs full:GenderRatingCentered -0.06500    0.06969  -0.933
##                                            Pr(>|z|)
## (Intercept)                                  0.0189 *
## Conditionfirst vs full                       0.1022
## GenderRatingCentered                         <2e-16 ***
## Conditionfirst vs full:GenderRatingCentered   0.3509
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr) Cndtvf GndrRC
## Cndtnfrstvf -0.348
## GndrRtngCnt -0.059 -0.012
## Cvfll:GndRC -0.010 -0.053 -0.299
```

Compared to the main analysis including *other* responses, the intercept has a larger p-value, the difference between the First and Full Name conditions is no longer trending, and the Name Gender Rating is the same.

Quadratic Name Gender Rating

The second supplementary analysis tested the effect of squared name gender rating, such that larger values meant names with stronger gender associations (masc or fem), and smaller values meant names with weaker

gender associations.

```
exp2_d_FF %<>% mutate(GenderRatingSquared=GenderRatingCentered^2)
```

Model 3: Quadratic

No quadratic effects.

```
exp2_m_nameGenderQuad <- glmer(
  Female ~ Condition*GenderRatingCentered + Condition*GenderRatingSquared +
    (1|Participant) + (1|Item),
  exp2_d_FF, family="binomial")
summary(exp2_m_nameGenderQuad)
```

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula:
## Female ~ Condition * GenderRatingCentered + Condition * GenderRatingSquared +
##     (1 | Participant) + (1 | Item)
##    Data: exp2_d_FF
##
##      AIC      BIC   logLik deviance df.resid
##   6784.5   6838.5  -3384.2   6768.5     6313
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -2.9223 -0.6307 -0.2334  0.6387  4.5272
##
## Random effects:
##  Groups      Name        Variance Std.Dev.
##  Participant (Intercept) 0.1278   0.3575
##  Item        (Intercept) 0.1503   0.3877
## Number of obs: 6321, groups:  Participant, 903; Item, 83
##
## Fixed effects:
##                                             Estimate Std. Error z value
## (Intercept)                                -0.16962    0.08275  -2.050
## Conditionfirst vs full                     -0.25725    0.16551  -1.554
## GenderRatingCentered                        0.77974    0.03630  21.481
## GenderRatingSquared                        -0.01045    0.02004  -0.521
## Conditionfirst vs full:GenderRatingCentered -0.06953    0.07121  -0.976
## Conditionfirst vs full:GenderRatingSquared  0.01019    0.04004   0.254
##                                            Pr(>|z|)
## (Intercept)                                  0.0404 *
## Conditionfirst vs full                       0.1201
## GenderRatingCentered                        <2e-16 ***
## GenderRatingSquared                          0.6020
## Conditionfirst vs full:GenderRatingCentered  0.3289
## Conditionfirst vs full:GenderRatingSquared   0.7992
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Correlation of Fixed Effects:
##             (Intr) Cndtvf GndrRC GndrRS Cvf:GRC
## Cndtnfrstvf -0.380
## GndrRtngCnt -0.166  0.054
## GndrRtngSqr -0.688  0.262  0.170
## Cvfll:GndRC  0.059 -0.166 -0.314 -0.088
## Cvfll:GndRS  0.262 -0.689 -0.084 -0.339  0.177
```

Participant Gender

Setup/Data Summary

The third supplementary analysis looks at participant gender: if male participants show a larger bias to recall the character as male than non-male participants.

Participants entered their gender in a free-response box.

```
exp2_d %>% group_by(SubjGender) %>%
  summarise(total=n_distinct(Participant)) %>%
  kable()
```

SubjGender	total
female	566
genderqueer	1
male	694
N/A	88
non-binary	2

For this analysis, we exclude participants who did not respond. Because there are not enough participants to create 3 groups, we compare male to non-male participants.

```
exp2_d_gender <- exp2_d %>%
  filter(SubjGender != "N/A") %>%
  mutate(SubjGenderMale=(ifelse(SubjGender=="male", 1, 0)))

exp2_d_gender %>% group_by(SubjGenderMale) %>%
  summarise(total=n_distinct(Participant)) %>%
  kable()
```

SubjGenderMale	total
0	569
1	694

Summary of responses by condition and participant gender.

```
exp2_d_gender %<>% mutate(ResponseAll=case_when(
  Male==1 ~ "Male",
  Female==1 ~ "Female",
  Other==1 ~ "Other"))

exp2_d_gender <- exp2_d %>%
  filter(SubjGender != "N/A") %>%
  mutate(SubjGenderMale=(ifelse(SubjGender=="male", 1, 0)))

exp2_d_gender %>% group_by(SubjGenderMale) %>%
  summarise(total=n_distinct(Participant)) %>%
  kable()
```

SubjGenderMale	total
0	569
1	694

Participant gender is mean centered effects coded, comparing non-male participants to male participants.

```
exp2_d_gender$SubjGenderMale %<>% as.factor()
contrasts(exp2_d_gender$SubjGenderMale)=cbind("NM_M"=c(-.5,.5))
contrasts(exp2_d_gender$SubjGenderMale)
```

```
##   NM_M
## 0 -0.5
## 1  0.5
```

Subset First and Full conditions.

```
exp2_d_FF_gender <- exp2_d_gender %>% filter(Condition!="last")
exp2_d_FF_gender$Condition <- droplevels(exp2_d_FF_gender$Condition)
contrasts(exp2_d_FF_gender$Condition) =
  cbind("first vs full"=c(-.5,.5)) #add contrast back
contrasts(exp2_d_FF_gender$Condition)
```

```
##       first vs full
## first          -0.5
## full            0.5
```

Model 4: Condition * Participant Gender

Effect of Name Condition (first name, last name, full name) and Participant Gender (non-male vs male) on likelihood of a *female* response, as opposed to a *male* response or *other* response. Participant and Item are again included as random intercepts.

```
exp2_m_cond_gender <- glmer(
  Female ~ Condition * SubjGenderMale + (1|Participant) + (1|Item),
  exp2_d_gender, family=binomial)
summary(exp2_m_cond_gender)
```

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula: Female ~ Condition * SubjGenderMale + (1 | Participant) + (1 |
##     Item)
##    Data: exp2_d_gender
##
##      AIC      BIC   logLik deviance df.resid
##   8545.3   8602.0  -4264.7   8529.3     8833
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -3.6710 -0.4651 -0.2896  0.5581  4.7148
##
## Random effects:
##  Groups      Name        Variance Std.Dev.
##  Participant (Intercept) 0.195    0.4416
##  Item        (Intercept) 1.832    1.3535
## Number of obs: 8841, groups:  Participant, 1263; Item, 105
##
## Fixed effects:
##                                             Estimate Std. Error z value
## (Intercept)                                -0.87078    0.15305  -5.689
## Conditionlast vs first/full                 2.00537    0.34799   5.763
## Conditionfirst vs full                     -0.20540    0.35009  -0.587
## SubjGenderMaleNM_M                         -0.12519    0.06240  -2.006
## Conditionlast vs first/full:SubjGenderMaleNM_M -0.39906    0.14326  -2.786
## Conditionfirst vs full:SubjGenderMaleNM_M   0.06204    0.14105   0.440
##                                            Pr(>|z|)
## (Intercept)                                1.28e-08 ***
## Conditionlast vs first/full                8.28e-09 ***
## Conditionfirst vs full                      0.55741
## SubjGenderMaleNM_M                          0.04482 *
## Conditionlast vs first/full:SubjGenderMaleNM_M  0.00534 **
## Conditionfirst vs full:SubjGenderMaleNM_M   0.66002
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr) Cvfrs/ Cndtvf SGMNM_ Cvf/:S
## Cndtnvfrst/ -0.169
## Cndtnfrstvf -0.359 -0.240
## SbjGndMNM_M -0.021  0.001 -0.001
## Cvf/:SGMNM_  0.003 -0.022 -0.001 -0.194
## Cvf:SGMNM_M -0.002 -0.001 -0.024 -0.002 -0.001
```

- Male participants are less likely to recall the character as female overall, but this is not significant after correction for multiple comparisons.
- The interaction between Condition (Last vs. First + Full) and Participant Gender is significant.

Interaction

Dummy code to get the Participant Gender effect just for First and Full Name conditions.

```
exp2_d_gender$FFdummy = as.numeric(exp2_d_gender$Condition)
exp2_d_gender$FFdummy[exp2_d_gender$FFdummy == 1] <- 0
exp2_d_gender$FFdummy[exp2_d_gender$FFdummy == 2] <- 0
exp2_d_gender$FFdummy[exp2_d_gender$FFdummy == 3] <- 1
with(exp2_d_gender, tapply(FFdummy, list(Condition), mean))
```

```
## first  full  last
##     0     0     1
```

```
exp2_m_cond_genderFF <- glmer(Female ~
    FFdummy*SubjGenderMale + (1|Participant) + (1|Item),
    data=exp2_d_gender, family=binomial)
summary(exp2_m_cond_genderFF)
```

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula: Female ~ FFdummy * SubjGenderMale + (1 | Participant) + (1 |
##     Item)
##    Data: exp2_d_gender
##
##      AIC      BIC   logLik deviance df.resid
##   8541.9   8584.4  -4264.9   8529.9     8835
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -3.7121 -0.4647 -0.2896  0.5561  4.7190
##
## Random effects:
##  Groups      Name        Variance Std.Dev.
##  Participant (Intercept) 0.1953   0.4419
##  Item        (Intercept) 1.8379   1.3557
## Number of obs: 8841, groups:  Participant, 1263; Item, 105
##
## Fixed effects:
##                            Estimate Std. Error z value Pr(>|z|)
## (Intercept)                -0.25645    0.15463  -1.658 0.097228 .
## FFdummy                    -1.93803    0.33481  -5.788 7.11e-09 ***
## SubjGenderMaleNM_M         -0.25700    0.07058  -3.641 0.000271 ***
## FFdummy:SubjGenderMaleNM_M  0.39519    0.14182   2.787 0.005326 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr) FFdmmy SGMNM_
## FFdummy     -0.461
## SbjGndMNM_M -0.028  0.015
## FFd:SGMNM_M  0.014 -0.023 -0.498
```

Then dummy code to get the participant gender effect just for Last Name condition.

```
exp2_d_gender$Ldummy = as.numeric(exp2_d_gender$Condition)
exp2_d_gender$Ldummy[exp2_d_gender$Ldummy == 1] <- 1
exp2_d_gender$Ldummy[exp2_d_gender$Ldummy == 2] <- 1
exp2_d_gender$Ldummy[exp2_d_gender$Ldummy == 3] <- 0
with(exp2_d_gender, tapply(Ldummy, list(Condition), mean))
```

```
## first  full  last
##     1     1     0
```

```
exp2_m_cond_genderL <- glmer(Female ~
    Ldummy*SubjGenderMale + (1|Participant) + (1|Item),
    data=exp2_d_gender, family=binomial)
summary(exp2_m_cond_genderL)
```

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula: Female ~ Ldummy * SubjGenderMale + (1 | Participant) + (1 | Item)
##    Data: exp2_d_gender
##
##      AIC      BIC   logLik deviance df.resid
##   8541.9   8584.4  -4264.9   8529.9     8835
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -3.7121 -0.4647 -0.2896  0.5561  4.7190
##
## Random effects:
##  Groups      Name        Variance Std.Dev.
##  Participant (Intercept) 0.1953   0.4419
##  Item        (Intercept) 1.8379   1.3557
## Number of obs: 8841, groups:  Participant, 1263; Item, 105
##
## Fixed effects:
##                            Estimate Std. Error z value Pr(>|z|)
## (Intercept)                 -2.1944     0.2970  -7.388 1.49e-13 ***
## Ldummy                       1.9380     0.3347   5.791 7.02e-09 ***
## SubjGenderMaleNM_M           0.1382     0.1230   1.124  0.26120
## Ldummy:SubjGenderMaleNM_M   -0.3952     0.1418  -2.787  0.00532 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr) Ldummy SGMNM_
## Ldummy      -0.887
## SbjGndMNM_M -0.020  0.018
## Ldm:SGMNM_M  0.019 -0.023 -0.867
```

- Beta for subj gender in First + Full: -0.25700
- Beta for subj gender in Last: 0.1382 NS

–> Male participants were less likely to recall the referent as female than non-male participants in the First and Full Name conditions. No participant gender difference in the Last Name condition.

Model 5: Condition * Name Gender * Participant Gender

Effects of Name Condition (first name, full name), the first name's Gender Rating (centered, positive=more feminine), and Participant Gender (non-male vs. male) on the likelihood of a *female* response as opposed to *male* or *other* responses. In Experiment 2, the Last Name condition does not include any instances of the gendered first name, so it is not included here.

```
exp2_m_nameGender_gender <- buildmer(formula=
            (Female ~ Condition * GenderRatingCentered * SubjGenderMale +
            (1|Participant) + (1|Item)),
            data=exp2_d_FF_gender, family=binomial,
            direction=c("order"), quiet=TRUE)
summary(exp2_m_nameGender_gender)
```

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) (p-values based on Wald z-scores) [glmerMod]
##  Family: binomial  ( logit )
## Formula: Female ~ 1 + GenderRatingCentered + SubjGenderMale + Condition +
##     GenderRatingCentered:SubjGenderMale + GenderRatingCentered:Condition +
##     SubjGenderMale:Condition + GenderRatingCentered:SubjGenderMale:Condition +
##     (1 | Item) + (1 | Participant)
##    Data: exp2_d_FF_gender
##
##      AIC      BIC   logLik deviance df.resid
##   6261.5   6328.3  -3120.7   6241.5     5870
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -3.3535 -0.6348 -0.2316  0.6346  4.4956
##
## Random effects:
##  Groups      Name        Variance Std.Dev.
##  Participant (Intercept) 0.1147   0.3387
##  Item        (Intercept) 0.1590   0.3987
## Number of obs: 5880, groups:  Participant, 840; Item, 83
##
## Fixed effects:
##                                                                 Estimate
## (Intercept)                                                    -0.18616
## GenderRatingCentered                                            0.80851
## SubjGenderMaleNM_M                                             -0.21834
## Conditionfirst vs full                                         -0.20510
## GenderRatingCentered:SubjGenderMaleNM_M                        -0.15373
## GenderRatingCentered:Conditionfirst vs full                    -0.06485
## SubjGenderMaleNM_M:Conditionfirst vs full                       0.10276
## GenderRatingCentered:SubjGenderMaleNM_M:Conditionfirst vs full -0.12901
##                                                                Std. Error
## (Intercept)                                                       0.06211
## GenderRatingCentered                                              0.03749
## SubjGenderMaleNM_M                                                0.06894
## Conditionfirst vs full                                            0.12412
## GenderRatingCentered:SubjGenderMaleNM_M                           0.04501
## GenderRatingCentered:Conditionfirst vs full                       0.07337
## SubjGenderMaleNM_M:Conditionfirst vs full                         0.13781
```

```
## GenderRatingCentered:SubjGenderMaleNM_M:Conditionfirst vs full    0.08998
##                                                                    z value
## (Intercept)                                                       -2.99716
## GenderRatingCentered                                              21.56648
## SubjGenderMaleNM_M                                                -3.16697
## Conditionfirst vs full                                            -1.65246
## GenderRatingCentered:SubjGenderMaleNM_M                           -3.41552
## GenderRatingCentered:Conditionfirst vs full                       -0.88395
## SubjGenderMaleNM_M:Conditionfirst vs full                          0.74569
## GenderRatingCentered:SubjGenderMaleNM_M:Conditionfirst vs full -1.43370
##                                                                   Pr(>|z|)
## (Intercept)                                                          0.003
## GenderRatingCentered                                                 0.000
## SubjGenderMaleNM_M                                                   0.002
## Conditionfirst vs full                                               0.098
## GenderRatingCentered:SubjGenderMaleNM_M                              0.001
## GenderRatingCentered:Conditionfirst vs full                          0.377
## SubjGenderMaleNM_M:Conditionfirst vs full                            0.456
## GenderRatingCentered:SubjGenderMaleNM_M:Conditionfirst vs full       0.152
##                                                                   Pr(>|t|)
## (Intercept)                                                       0.002725 **
## GenderRatingCentered                                               < 2e-16 ***
## SubjGenderMaleNM_M                                                0.001540 **
## Conditionfirst vs full                                            0.098441 .
## GenderRatingCentered:SubjGenderMaleNM_M                           0.000637 ***
## GenderRatingCentered:Conditionfirst vs full                       0.376724
## SubjGenderMaleNM_M:Conditionfirst vs full                         0.455854
## GenderRatingCentered:SubjGenderMaleNM_M:Conditionfirst vs full 0.151657
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr) GndrRC SGMNM_ Cndtvf GRC:SG GRC:Cvf SGMNvf
## GndrRtngCnt -0.064
## SbjGndMNM_M -0.091 -0.006
## Cndtnfrstvf -0.334 -0.013 -0.018
## GRC:SGMNM_M -0.007 -0.145 -0.133  0.023
## GndrRtC:Cvf -0.010 -0.283  0.020 -0.057 -0.035
## SGMNM_M:Cvf -0.019  0.021  0.010 -0.092 -0.034  0.001
## GRC:SGMNMvf  0.023 -0.036 -0.034 -0.008 -0.004 -0.142  -0.134
```

- Male participants are less likely to recall the character as female overall. This matches the results of the interaction in the condition-only model.
- The interaction between participant gender and first name gender rating is significant. Smaller effect of name gender rating in male participants.
- Interaction with Condition, three-way interaction with Name Gender and Condition n.s.