Mental Health Analysis

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Looking at Mental, Trust, Optimism and Age

From doc: We can test for a significant difference in the strength of the relationship between mh and trust/optimism across age groups.

```
Attaching package: 'dplyr'

The following objects are masked from 'package:stats':

    filter, lag

The following objects are masked from 'package:base':

    intersect, setdiff, setequal, union

Warning: package 'ggplot2' was built under R version 4.3.3

Warning: package 'ggrepel' was built under R version 4.3.3

Warning: package 'haven' was built under R version 4.3.3

Warning: package 'locfit' was built under R version 4.3.3

locfit 1.5-9.10       2024-06-24

Warning in rm(data_haven): object 'data_haven' not found
```

```r
# rename the trust variables

d <- orig_dat %>%
  # ggplot uses alphabetical order, so a number at the
  # front keeps the order
  dplyr::rename(
    ` 1. national_tv_media` = a1_1,
    ` 2. local_tv_media` = a1_2,
    ` 3. trust_media_national_radio_media` = a1_3,
    ` 4. local_radio_media` = a1_4,
    ` 5. international_tv_media` = a1_5,
    ` 6. international_radio_media` = a1_6,
    ` 7. national_print_media` = a1_7,
    ` 8. local_print_media` = a1_8,
    ` 9. word_of_mouth_media` = a1_9,
    `10. govt_comms_media` = a1_10,
    `11. social_media_media` = a1_11,
    `12. internet_media` = a1_12,
    `13. messaging_media` = a1_13) %>%
  dplyr::mutate(
    mh_problems = ifelse(c1_6 == "Yes", TRUE, ifelse(
      c1_6 == "No", FALSE, NA))
  ) %>%
  dplyr::mutate_at(
    vars(ends_with("media")), as.numeric
  )


d <- d %>% dplyr::mutate(
  global_region = as.character(global_region),
  gender = as.character(gender),
  gender = ifelse(gender %in% c("Male", "Female"), gender, NA),
  youth = age_group == "18-24 years old",
  youth = ifelse(youth, "Age 18-24", "Age25+"),
  Region = as.character(region),
  country = as.character(country),
  age_group = as.character(age_group),
  age_group = ifelse(age_group == "Don't know/ Prefer not to say", NA, age_group))
```

Results

Lots of output below. I will try to summarise.

##1. National TV

35-44 have higher trust than 18-25, 45-54 and 55+ have lower trust than 18-25. MH problems are associated with lower trust (by 0.025 points on a 1-4 scale, so not very much).

The effect of MH problems on trust does not vary across age groups.

2. local_tv_media

45-54 and 55+ have lower trust than 18-25.

There is a change in the relationship across age, which appears to be driven by 55+ with MH problems having higher trust than those without, which is the reverse of other age groups.

3. national_radio_media

35-44, 45-54 and 55+ have lower trust than youth. MH problems not associated with trust (controlling for age group) No variation in MH effect across age detected.

4. local_radio_media

All age groups have lower trust than youth.

MH problem effect does not vary.

```
vars <- d %>%
  select(ends_with("media")) %>%
  names()


for (outcome_var in vars) {

  cat("Current outcome variable: ", outcome_var, "\n")

  d$outcome_var <- d[[outcome_var]]

  fit_1 <- lme4::lmer(outcome_var ~ (1|country), data = d, REML = FALSE)
  fit_2 <- lme4::lmer(outcome_var ~ age_group + (1|country), data = d,
                      REML = FALSE)
```

```r
summary(fit_2) %>% print()
fit_3 <- lme4::lmer(
  outcome_var ~ mh_problems + age_group + (1|country), data = d, REML = FALSE
)
summary(fit_3) %>% print()

fit_3a <- lme4::lmer(
  outcome_var ~ mh_problems + age_group + (age_group|country), data = d,
  REML = FALSE
)
summary(fit_3a) %>% print()

anova(fit_3, fit_3a, test = "LRT")


fit_4 <- lme4::lmer(
  outcome_var ~ mh_problems * age_group + (1|country), data = d,
  REML = FALSE
)
summary(fit_4) %>% print()
anova(fit_3, fit_4, test = "LRT") %>% print()

fit_4a <- lme4::lmer(
  outcome_var ~ mh_problems * age_group + (age_group|country), data = d,
  REML = FALSE
)
summary(fit_4a) %>% print()
anova(fit_3a, fit_4a, test = "LRT") %>% print()


d_grouped <- d%>%
  dplyr::filter(!is.na(mh_problems), !is.na(age_group)) %>%
  dplyr::group_by(country) %>%
  dplyr::mutate(outcome_var_mean = mean(outcome_var, na.rm = TRUE)) %>%
  dplyr::mutate(outcome_var_centered = outcome_var - outcome_var_mean) %>%
  dplyr::group_by(age_group, mh_problems) %>%
  dplyr::summarise(outcome_var = mean(outcome_var_centered))

p <- d_grouped %>%
  ggplot2::ggplot(
    aes(x = age_group, y = outcome_var, group = mh_problems, color = mh_problems)
  ) +
```

```
    geom_line() +
    ggtitle(outcome_var)
  print(p)
}
```

```
Current outcome variable:   1. national_tv_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

     AIC       BIC    logLik  deviance  df.resid
 203448.1  203512.3 -101717.0  203434.1     70676


Scaled residuals:
    Min      1Q  Median      3Q      Max
-1.6965 -0.8086 -0.1111  0.3288  3.3846


Random effects:
 Groups    Name         Variance Std.Dev.
 country   (Intercept) 0.05638  0.2374
 Residual              1.03693  1.0183
Number of obs: 70683, groups:  country, 70


Fixed effects:
                         Estimate Std. Error t value
(Intercept)               2.07063    0.03004  68.933
age_group25-34 years old  0.02331    0.01265   1.842
age_group35-44 years old  0.02674    0.01317   2.031
age_group45-54 years old -0.03610    0.01401  -2.577
age_group55+ years       -0.08393    0.01281  -6.554


Correlation of Fixed Effects:
           (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.247
ag_g35-44yo -0.244  0.566
ag_g45-54yo -0.235  0.535  0.534
ag_grp55+yr -0.263  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d

     AIC       BIC    logLik deviance df.resid
```

```
193647.9 193720.9 -96815.9 193631.9    68127


Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.7190 -0.8164 -0.0917  0.3308  3.4588


Random effects:
 Groups   Name        Variance Std.Dev.
 country  (Intercept) 0.05629  0.2373
 Residual             0.99988  0.9999
Number of obs: 68135, groups:  country, 70


Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.052944   0.030224  67.924
mh_problemsTRUE          -0.024831   0.008574  -2.896
age_group25-34 years old  0.023284   0.012693   1.834
age_group35-44 years old  0.026644   0.013224   2.015
age_group45-54 years old -0.024295   0.014076  -1.726
age_group55+ years       -0.068625   0.012938  -5.304


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.110
ag_g25-34yo -0.249  0.013
ag_g35-44yo -0.248  0.034  0.568
ag_g45-54yo -0.241  0.051  0.537  0.537
ag_grp55+yr -0.275  0.108  0.589  0.596  0.589


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d


     AIC      BIC   logLik deviance df.resid
193360.5 193561.3 -96658.2 193316.5    68113


Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.7190 -0.7921 -0.0966  0.3428  3.4751
```

```
Random effects:
 Groups    Name                        Variance  Std.Dev. Corr
 country   (Intercept)                 6.184e-02 0.248681
           age_group25-34 years old 5.576e-05 0.007467  1.00
           age_group35-44 years old 8.453e-03 0.091942 -0.03 -0.03
           age_group45-54 years old 1.976e-02 0.140558 -0.43 -0.43  0.60
           age_group55+ years        4.412e-02 0.210056 -0.33 -0.33  0.58  0.82
 Residual                             9.922e-01 0.996101
Number of obs: 68135, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.073024   0.031575  65.655
mh_problemsTRUE          -0.036041   0.008608  -4.187
age_group25-34 years old  0.018921   0.012710   1.489
age_group35-44 years old  0.015082   0.017322   0.871
age_group45-54 years old -0.032978   0.021984  -1.500
age_group55+ years       -0.053267   0.028496  -1.869

Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.110
ag_g25-34yo -0.174  0.016
ag_g35-44yo -0.207  0.034  0.433
ag_g45-54yo -0.461  0.037  0.320  0.559
ag_grp55+yr -0.394  0.045  0.244  0.530  0.720
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')

Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d

     AIC       BIC    logLik deviance df.resid
193653.9 193763.5 -96815.0 193629.9     68123

Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.7234 -0.8148 -0.0890  0.3306  3.4614

Random effects:
 Groups    Name         Variance Std.Dev.
 country   (Intercept) 0.05629  0.2372
```

```
 Residual              0.99985  0.9999
Number of obs: 68135, groups:  country, 70

Fixed effects:
                                              Estimate Std. Error t value
(Intercept)                                  2.0476490  0.0311085  65.823
mh_problemsTRUE                             -0.0120238  0.0198136  -0.607
age_group25-34 years old                     0.0281828  0.0162852   1.731
age_group35-44 years old                     0.0365804  0.0167365   2.186
age_group45-54 years old                    -0.0142554  0.0175237  -0.813
age_group55+ years                          -0.0657589  0.0157751  -4.169
mh_problemsTRUE:age_group25-34 years old    -0.0119731  0.0258961  -0.462
mh_problemsTRUE:age_group35-44 years old    -0.0264276  0.0270193  -0.978
mh_problemsTRUE:age_group45-54 years old    -0.0282353  0.0289726  -0.975
mh_problemsTRUE:age_group55+ years          -0.0008083  0.0267798  -0.030


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.260
ag_g25-34yo -0.314  0.485
ag_g35-44yo -0.313  0.478  0.585
ag_g45-54yo -0.305  0.462  0.563  0.566
ag_grp55+yr -0.345  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.196 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.191 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.179 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
m_TRUE:_55y  0.195 -0.739 -0.362 -0.359 -0.350 -0.557  0.560       0.540
           m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 193648 193721 -96816   193632
```

```
fit_4    12 193654 193764 -96815    193630 1.9473  4      0.7455


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

     AIC      BIC   logLik deviance df.resid
193367.3 193604.7 -96657.7 193315.3    68109

Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.7206 -0.7942 -0.0976  0.3447  3.4740

Random effects:
 Groups   Name                     Variance  Std.Dev. Corr
 country  (Intercept)              6.172e-02 0.248433
          age_group25-34 years old 5.925e-05 0.007697  1.00
          age_group35-44 years old 8.425e-03 0.091790 -0.03 -0.03
          age_group45-54 years old 1.975e-02 0.140531 -0.43 -0.43  0.60
          age_group55+ years       4.427e-02 0.210409 -0.33 -0.33  0.58  0.82
 Residual                          9.922e-01 0.996090
Number of obs: 68135, groups:  country, 70

Fixed effects:
                                          Estimate Std. Error t value
(Intercept)                                2.06757    0.03240  63.813
mh_problemsTRUE                           -0.02282    0.01988  -1.148
age_group25-34 years old                   0.02124    0.01630   1.303
age_group35-44 years old                   0.02159    0.02016   1.071
age_group45-54 years old                  -0.02399    0.02436  -0.985
age_group55+ years                        -0.04548    0.02999  -1.516
mh_problemsTRUE:age_group25-34 years old  -0.00511    0.02584  -0.198
mh_problemsTRUE:age_group35-44 years old  -0.01637    0.02727  -0.600
mh_problemsTRUE:age_group45-54 years old  -0.02457    0.02925  -0.840
mh_problemsTRUE:age_group55+ years        -0.02211    0.02703  -0.818


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.252
ag_g25-34yo -0.251  0.482
```

```
ag_g35-44yo -0.270  0.402  0.487
ag_g45-54yo -0.484  0.336  0.387  0.568
ag_grp55+yr -0.427  0.272  0.311  0.542  0.710
m_TRUE:_2yo  0.190 -0.749 -0.626 -0.305 -0.253 -0.205
m_TRUE:_3yo  0.184 -0.724 -0.353 -0.512 -0.246 -0.200  0.547
m_TRUE:_4yo  0.172 -0.679 -0.328 -0.275 -0.428 -0.190  0.509        0.496
m_TRUE:_55y  0.185 -0.736 -0.354 -0.296 -0.250 -0.302  0.551        0.534
             m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.505
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
       npar    AIC    BIC logLik deviance  Chisq Df Pr(>Chisq)
fit_3a   22 193360 193561 -96658   193316
fit_4a   26 193367 193605 -96658   193315 1.1856  4     0.8805


`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.


Current outcome variable:   2. local_tv_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

     AIC       BIC    logLik  deviance  df.resid
 203260.4  203324.5 -101623.2  203246.4    70676

Scaled residuals:
   Min      1Q  Median      3Q     Max
-1.7862 -0.7349 -0.1541  0.4856  3.3598
```

```
Random effects:
 Groups    Name         Variance Std.Dev.
 country   (Intercept) 0.06511   0.2552
 Residual              1.03403   1.0169
Number of obs: 70683, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)                2.20150    0.03204  68.704
age_group25-34 years old -0.01634    0.01264  -1.293
age_group35-44 years old -0.02030    0.01315  -1.544
age_group45-54 years old -0.04425    0.01399  -3.163
age_group55+ years       -0.06365    0.01279  -4.977

Correlation of Fixed Effects:
           (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.231
ag_g35-44yo -0.228  0.566
ag_g45-54yo -0.220  0.535  0.534
ag_grp55+yr -0.246  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d

     AIC      BIC   logLik deviance df.resid
193778.5 193851.6 -96881.3 193762.5    68127

Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.8156 -0.7229 -0.1375  0.4635  3.4172

Random effects:
 Groups    Name         Variance Std.Dev.
 country   (Intercept) 0.066     0.2569
 Residual              1.002     1.0008
Number of obs: 68135, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.186795   0.032440  67.410
mh_problemsTRUE          -0.025271   0.008582  -2.945
age_group25-34 years old -0.013629   0.012705  -1.073
```

```
age_group35-44 years old -0.022081   0.013237  -1.668
age_group45-54 years old -0.034583   0.014089  -2.455
age_group55+ years       -0.051439   0.012952  -3.971


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.103
ag_g25-34yo -0.232  0.013
ag_g35-44yo -0.231  0.034  0.568
ag_g45-54yo -0.225  0.051  0.537  0.537
ag_grp55+yr -0.256  0.108  0.589  0.596  0.589


Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
Model failed to converge with max|grad| = 0.00491765 (tol = 0.002, component 1)


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

     AIC      BIC   logLik deviance df.resid
193527.8 193728.7 -96741.9 193483.8    68113

Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.8503 -0.7291 -0.1476  0.4449  3.5023

Random effects:
 Groups    Name                     Variance Std.Dev. Corr
 country   (Intercept)              0.059850 0.24464
           age_group25-34 years old 0.005409 0.07355   0.15
           age_group35-44 years old 0.008915 0.09442   0.16  0.70
           age_group45-54 years old 0.012389 0.11131  -0.06  0.15  0.59
           age_group55+ years       0.039044 0.19759  -0.16 -0.12  0.60  0.76
 Residual                           0.994685 0.99734
Number of obs: 68135, groups:  country, 70

Fixed effects:
                         Estimate Std. Error t value
(Intercept)              2.194574   0.031198  70.344
mh_problemsTRUE         -0.034328   0.008618  -3.983
age_group25-34 years old -0.009506   0.015748  -0.604
age_group35-44 years old -0.023624   0.017637  -1.339
```

```
age_group45-54 years old -0.035454    0.019599  -1.809
age_group55+ years         -0.031388    0.027292  -1.150


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.113
ag_g25-34yo -0.130  0.016
ag_g35-44yo -0.097  0.035  0.624
ag_g45-54yo -0.217  0.044  0.391  0.566
ag_grp55+yr -0.256  0.048  0.189  0.554  0.657
optimizer (nloptwrap) convergence code: 0 (OK)
Model failed to converge with max|grad| = 0.00491765 (tol = 0.002, component 1)


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d


     AIC      BIC   logLik deviance df.resid
193773.7 193883.3 -96874.9 193749.7    68123


Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.8232 -0.7301 -0.1329  0.4608  3.4318


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.06594  0.2568
 Residual             1.00145  1.0007
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                             Estimate Std. Error t value
(Intercept)                                   2.19020    0.03326  65.857
mh_problemsTRUE                              -0.03294    0.01983  -1.661
age_group25-34 years old                     -0.00743    0.01630  -0.456
age_group35-44 years old                     -0.01533    0.01675  -0.915
age_group45-54 years old                     -0.04280    0.01754  -2.440
age_group55+ years                           -0.06560    0.01579  -4.154
mh_problemsTRUE:age_group25-34 years old     -0.01710    0.02592  -0.660
mh_problemsTRUE:age_group35-44 years old     -0.02166    0.02704  -0.801
mh_problemsTRUE:age_group45-54 years old      0.02314    0.02900   0.798
mh_problemsTRUE:age_group55+ years            0.05711    0.02680   2.131
```

```
Correlation of Fixed Effects:
            (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.243
ag_g25-34yo -0.294  0.485
ag_g35-44yo -0.293  0.478  0.585
ag_g45-54yo -0.286  0.462  0.563  0.566
ag_grp55+yr -0.323  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.184 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.178 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.168 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
m_TRUE:_55y  0.183 -0.739 -0.362 -0.359 -0.350 -0.557  0.560       0.540
            m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC logLik deviance Chisq Df Pr(>Chisq)
fit_3    8 193779 193852 -96881   193763
fit_4   12 193774 193883 -96875   193750  12.8  4    0.01229 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

    AIC      BIC   logLik deviance df.resid
193539.5 193776.9 -96743.8 193487.5    68109

Scaled residuals:
    Min      1Q  Median      3Q     Max
```

```
-1.8323 -0.7336 -0.1441  0.4467  3.5045


Random effects:
 Groups    Name                         Variance  Std.Dev. Corr
 country   (Intercept)                  0.0588785 0.24265
           age_group25-34 years old 0.0004407 0.02099   1.00
           age_group35-44 years old 0.0046691 0.06833    0.37  0.37
           age_group45-54 years old 0.0123054 0.11093   -0.04 -0.04  0.55
           age_group55+ years       0.0410324 0.20256   -0.17 -0.17  0.78  0.79
 Residual                           0.9951460 0.99757
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                                 Estimate Std. Error t value
(Intercept)                                       2.20227    0.03173  69.401
mh_problemsTRUE                                  -0.04262    0.01984  -2.148
age_group25-34 years old                         -0.01177    0.01646  -0.715
age_group35-44 years old                         -0.02433    0.01868  -1.302
age_group45-54 years old                         -0.04915    0.02205  -2.229
age_group55+ years                               -0.04874    0.02909  -1.675
mh_problemsTRUE:age_group25-34 years old -0.01031    0.02586  -0.399
mh_problemsTRUE:age_group35-44 years old -0.01338    0.02709  -0.494
mh_problemsTRUE:age_group45-54 years old  0.02689    0.02921   0.921
mh_problemsTRUE:age_group55+ years        0.04015    0.02701   1.486


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.256
ag_g25-34yo -0.165  0.477
ag_g35-44yo -0.132  0.430  0.543
ag_g45-54yo -0.261  0.369  0.436  0.549
ag_grp55+yr -0.309  0.278  0.309  0.585  0.662
m_TRUE:_2yo  0.193 -0.750 -0.619 -0.327 -0.279 -0.209
m_TRUE:_3yo  0.188 -0.724 -0.352 -0.549 -0.271 -0.207  0.551
m_TRUE:_4yo  0.175 -0.677 -0.326 -0.294 -0.472 -0.195  0.511        0.493
m_TRUE:_55y  0.187 -0.735 -0.350 -0.315 -0.273 -0.308  0.550        0.537
          m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
```

```
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.504
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
       npar    AIC    BIC logLik deviance Chisq Df Pr(>Chisq)
fit_3a   22 193528 193729 -96742   193484
fit_4a   26 193540 193777 -96744   193488     0  4           1
```
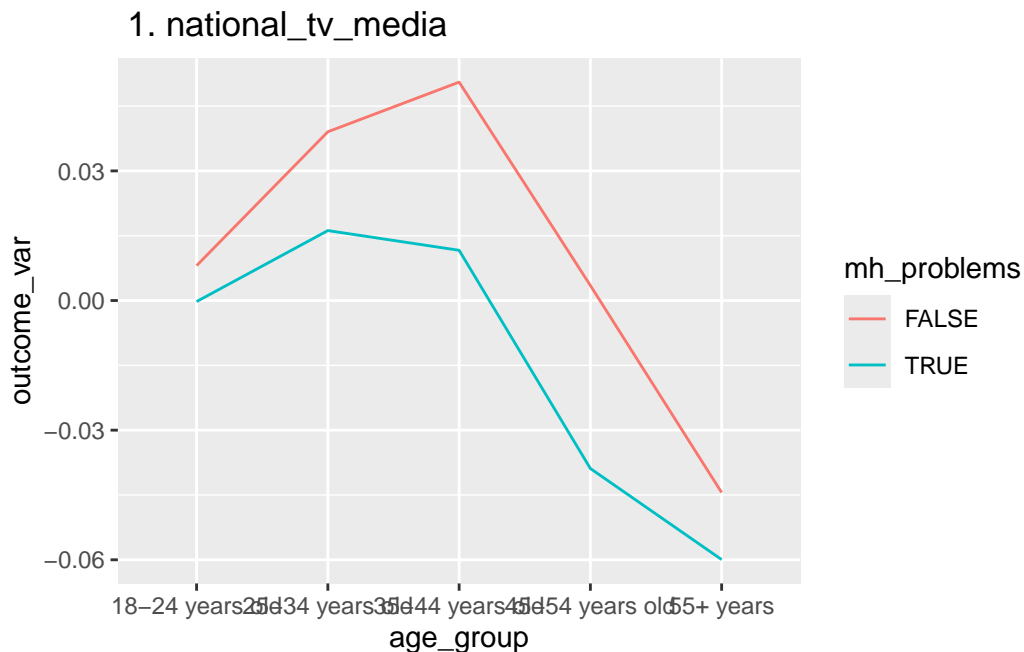
`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.

1. national_tv_media


```
Current outcome variable:   3. trust_media_national_radio_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d


     AIC       BIC    logLik  deviance  df.resid
```

```
  206602.2  206666.3 -103294.1  206588.2      70676
```

Scaled residuals:
```
    Min      1Q  Median      3Q     Max
-1.9760 -0.8141 -0.1353  0.3658  3.1980
```

Random effects:
```
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.0782   0.2796
 Residual             1.0839   1.0411
Number of obs: 70683, groups:  country, 70
```

Fixed effects:
```
                        Estimate Std. Error t value
(Intercept)              2.21617    0.03491  63.491
age_group25-34 years old -0.02255    0.01294  -1.743
age_group35-44 years old -0.03929    0.01346  -2.918
age_group45-54 years old -0.08020    0.01433  -5.598
age_group55+ years       -0.10237    0.01310  -7.816
```

Correlation of Fixed Effects:
```
           (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.218
ag_g35-44yo -0.215  0.566
ag_g45-54yo -0.206  0.535  0.534
ag_grp55+yr -0.232  0.589  0.593  0.584
```
Linear mixed model fit by maximum likelihood ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d

```
     AIC       BIC   logLik deviance df.resid
196987.1 197060.1 -98485.5 196971.1    68127
```

Scaled residuals:
```
    Min      1Q  Median      3Q     Max
-2.0121 -0.8202 -0.1225  0.3279  3.2637
```

Random effects:
```
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.07843  0.280
 Residual             1.04980  1.025
Number of obs: 68135, groups:  country, 70
```

```
Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.192767   0.035146  62.391
mh_problemsTRUE          -0.015922   0.008787  -1.812
age_group25-34 years old -0.016319   0.013007  -1.255
age_group35-44 years old -0.034464   0.013552  -2.543
age_group45-54 years old -0.067843   0.014425  -4.703
age_group55+ years       -0.079743   0.013261  -6.013


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.097
ag_g25-34yo -0.220  0.013
ag_g35-44yo -0.219  0.034  0.568
ag_g45-54yo -0.212  0.051  0.537  0.537
ag_grp55+yr -0.242  0.108  0.589  0.596  0.589


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

     AIC       BIC   logLik deviance df.resid
196561.5 196762.4 -98258.8 196517.5    68113


Scaled residuals:
    Min     1Q Median     3Q    Max
-2.2897 -0.8054 -0.1231  0.3244  3.2797


Random effects:
 Groups   Name                      Variance  Std.Dev. Corr
 country  (Intercept)               7.736e-02 0.278141
          age_group25-34 years old 9.499e-05 0.009746  1.00
          age_group35-44 years old 7.280e-03 0.085322 -0.10 -0.10
          age_group45-54 years old 1.664e-02 0.128982 -0.26 -0.26  0.22
          age_group55+ years       5.389e-02 0.232151 -0.18 -0.18  0.23  0.86
 Residual                          1.040e+00 1.019572
Number of obs: 68135, groups:  country, 70


Fixed effects:
                          Estimate Std. Error t value
```

```
(Intercept)                    2.205829   0.034978  63.063
mh_problemsTRUE               -0.026085   0.008809  -2.961
age_group25-34 years old -0.017931   0.013025  -1.377
age_group35-44 years old -0.038361   0.017073  -2.247
age_group45-54 years old -0.072315   0.021179  -3.414
age_group55+ years            -0.065195   0.031032  -2.101


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.101
ag_g25-34yo -0.136  0.016
ag_g35-44yo -0.234  0.033  0.445
ag_g45-54yo -0.328  0.039  0.347  0.393
ag_grp55+yr -0.252  0.041  0.234  0.321  0.733
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d

     AIC      BIC   logLik deviance df.resid
196989.7 197099.2 -98482.8 196965.7    68123


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0127 -0.8168 -0.1229  0.3270  3.2551


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.07844  0.2801
 Residual             1.04972  1.0246
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                            Estimate Std. Error t value
(Intercept)                                 2.191917   0.035951  60.970
mh_problemsTRUE                            -0.013523   0.020303  -0.666
age_group25-34 years old                   -0.009304   0.016687  -0.558
age_group35-44 years old                   -0.026749   0.017150  -1.560
age_group45-54 years old                   -0.066938   0.017958  -3.727
age_group55+ years                         -0.086228   0.016168  -5.333
mh_problemsTRUE:age_group25-34 years old -0.018443   0.026534  -0.695
```

```
mh_problemsTRUE:age_group35-44 years old -0.022296   0.027685  -0.805
mh_problemsTRUE:age_group45-54 years old -0.002706   0.029687  -0.091
mh_problemsTRUE:age_group55+ years                0.031718   0.027441   1.156

Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.230
ag_g25-34yo -0.278  0.485
ag_g35-44yo -0.278  0.478  0.585
ag_g45-54yo -0.271  0.462  0.563  0.566
ag_grp55+yr -0.306  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.174 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.169 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.159 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
m_TRUE:_55y  0.173 -0.739 -0.362 -0.359 -0.350 -0.557  0.560       0.540
          m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 196987 197060 -98486    196971
fit_4   12 196990 197099 -98483    196966 5.3851  4        0.25


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

    AIC      BIC   logLik deviance df.resid
196568.9 196806.2 -98258.4 196516.9    68109
```

```
Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.2845 -0.8054 -0.1232  0.3214  3.2712


Random effects:
 Groups    Name                     Variance  Std.Dev. Corr
 country   (Intercept)              0.0772752 0.277984
           age_group25-34 years old 0.0000985 0.009924  1.00
           age_group35-44 years old 0.0073286 0.085607 -0.10 -0.10
           age_group45-54 years old 0.0166314 0.128963 -0.26 -0.26  0.23
           age_group55+ years       0.0536688 0.231665 -0.18 -0.18  0.23  0.86
 Residual                           1.0395164 1.019567
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                              Estimate Std. Error t value
(Intercept)                                   2.205402   0.035768  61.658
mh_problemsTRUE                              -0.025132   0.020330  -1.236
age_group25-34 years old                     -0.013383   0.016690  -0.802
age_group35-44 years old                     -0.037737   0.020104  -1.877
age_group45-54 years old                     -0.072670   0.023747  -3.060
age_group55+ years                           -0.067352   0.032399  -2.079
mh_problemsTRUE:age_group25-34 years old     -0.011859   0.026444  -0.448
mh_problemsTRUE:age_group35-44 years old     -0.001542   0.027936  -0.055
mh_problemsTRUE:age_group45-54 years old      0.001528   0.029873   0.051
mh_problemsTRUE:age_group55+ years            0.009219   0.027664   0.333


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.233
ag_g25-34yo -0.214  0.482
ag_g35-44yo -0.289  0.412  0.496
ag_g45-54yo -0.365  0.352  0.412  0.445
ag_grp55+yr -0.292  0.258  0.299  0.368  0.717
m_TRUE:_2yo  0.176 -0.749 -0.625 -0.313 -0.266 -0.194
m_TRUE:_3yo  0.170 -0.722 -0.352 -0.525 -0.257 -0.188  0.546
m_TRUE:_4yo  0.160 -0.679 -0.329 -0.282 -0.449 -0.182  0.511       0.492
m_TRUE:_55y  0.171 -0.735 -0.354 -0.303 -0.262 -0.287  0.550       0.532
           m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
```

```
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y   0.506
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')

Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
      npar    AIC     BIC logLik deviance  Chisq Df Pr(>Chisq)
fit_3a   22 196562 196762 -98259    196518
fit_4a   26 196569 196806 -98258    196517 0.6964  4      0.9518


`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.
```
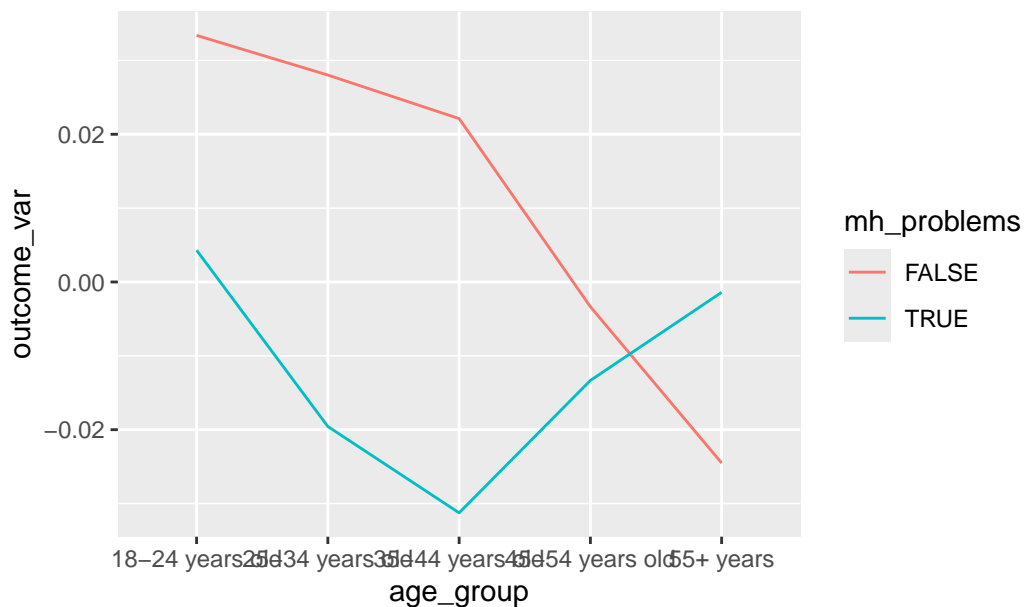
2. local_tv_media


```
Current outcome variable:   4. local_radio_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d
```

```
       AIC        BIC     logLik   deviance   df.resid
 203693.0   203757.2 -101839.5   203679.0      70676


Scaled residuals:
    Min       1Q   Median       3Q      Max
-2.0761  -0.7108  -0.1687   0.5452   3.2943


Random effects:
 Groups    Name         Variance Std.Dev.
 country   (Intercept) 0.08189  0.2862
 Residual              1.04015  1.0199
Number of obs: 70683, groups:  country, 70


Fixed effects:
                         Estimate Std. Error t value
(Intercept)               2.31876    0.03560  65.143
age_group25-34 years old -0.05902    0.01267  -4.657
age_group35-44 years old -0.09376    0.01319  -7.108
age_group45-54 years old -0.13655    0.01403  -9.729
age_group55+ years       -0.13018    0.01283 -10.146


Correlation of Fixed Effects:
          (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.209
ag_g35-44yo -0.206  0.566
ag_g45-54yo -0.198  0.535  0.534
ag_grp55+yr -0.222  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d


    AIC        BIC    logLik deviance df.resid
 194318    194391    -97151   194302    68127


Scaled residuals:
    Min       1Q   Median       3Q      Max
-2.1138  -0.7152  -0.1529   0.5056   3.3535


Random effects:
 Groups    Name         Variance Std.Dev.
 country   (Intercept) 0.08254  0.2873
 Residual              1.00938  1.0047
```

```
Number of obs: 68135, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.301621   0.035910  64.095
mh_problemsTRUE          -0.023262   0.008616  -2.700
age_group25-34 years old -0.054038   0.012754  -4.237
age_group35-44 years old -0.088928   0.013289  -6.692
age_group45-54 years old -0.125859   0.014145  -8.898
age_group55+ years       -0.113645   0.013005  -8.739

Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.093
ag_g25-34yo -0.211  0.013
ag_g35-44yo -0.210  0.034  0.568
ag_g45-54yo -0.204  0.051  0.537  0.537
ag_grp55+yr -0.232  0.108  0.589  0.596  0.589


Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
Model failed to converge with max|grad| = 0.0252044 (tol = 0.002, component 1)


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

     AIC      BIC   logLik deviance df.resid
194059.7 194260.5 -97007.8 194015.7    68113

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.2712 -0.7293 -0.1469  0.5286  3.3803

Random effects:
 Groups   Name                     Variance Std.Dev. Corr
 country  (Intercept)              0.078959 0.28100
          age_group25-34 years old 0.006137 0.07834  -0.09
          age_group35-44 years old 0.008381 0.09155  -0.02  0.97
          age_group45-54 years old 0.009583 0.09789  -0.13  0.53  0.55
          age_group55+ years       0.039755 0.19939  -0.10  0.30  0.44  0.81
 Residual                          1.002455 1.00123
Number of obs: 68135, groups:  country, 70
```

```
Fixed effects:
                        Estimate Std. Error t value
(Intercept)              2.30652    0.03534  65.261
mh_problemsTRUE         -0.03061    0.00865  -3.539
age_group25-34 years old -0.05348   0.01619  -3.303
age_group35-44 years old -0.08699   0.01751  -4.969
age_group45-54 years old -0.12641   0.01863  -6.786
age_group55+ years       -0.10779   0.02756  -3.911


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.100
ag_g25-34yo -0.235  0.019
ag_g35-44yo -0.187  0.035  0.730
ag_g45-54yo -0.249  0.048  0.549  0.555
ag_grp55+yr -0.198  0.048  0.390  0.466  0.663
optimizer (nloptwrap) convergence code: 0 (OK)
Model failed to converge with max|grad| = 0.0252044 (tol = 0.002, component 1)


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d

     AIC       BIC    logLik deviance df.resid
194318.8 194428.3 -97147.4 194294.8    68123


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.1132 -0.7107 -0.1501  0.5059  3.3642


Random effects:
 Groups    Name        Variance Std.Dev.
 country   (Intercept) 0.08253  0.2873
 Residual              1.00927  1.0046
Number of obs: 68135, groups:  country, 70

Fixed effects:
                                  Estimate Std. Error t value
(Intercept)                      2.3004102  0.0366645  62.742
mh_problemsTRUE                 -0.0201659  0.0199080  -1.013
age_group25-34 years old        -0.0521045  0.0163624  -3.184
age_group35-44 years old        -0.0749677  0.0168169  -4.458
```

```
age_group45-54 years old                        -0.1253108  0.0176092  -7.116
age_group55+ years                              -0.1192556  0.0158550  -7.522
mh_problemsTRUE:age_group25-34 years old -0.0048894  0.0260182  -0.188
mh_problemsTRUE:age_group35-44 years old -0.0402321  0.0271469  -1.482
mh_problemsTRUE:age_group45-54 years old -0.0009857  0.0291097  -0.034
mh_problemsTRUE:age_group55+ years        0.0288836  0.0269070   1.073


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.222
ag_g25-34yo -0.268  0.485
ag_g35-44yo -0.267  0.478  0.585
ag_g45-54yo -0.260  0.462  0.563  0.566
ag_grp55+yr -0.294  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.167 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.163 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.153 -0.680 -0.335 -0.332 -0.591 -0.364  0.517         0.499
m_TRUE:_55y  0.166 -0.739 -0.362 -0.359 -0.350 -0.557  0.560         0.540
           m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 194318 194391 -97151    194302
fit_4   12 194319 194428 -97147    194295 7.1711  4      0.1271


Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
Model failed to converge with max|grad| = 0.0546031 (tol = 0.002, component 1)


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d
```

```
     AIC      BIC   logLik deviance df.resid
194065.0 194302.3 -97006.5 194013.0    68109

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.2644 -0.7339 -0.1473  0.5291  3.3930

Random effects:
 Groups   Name                      Variance Std.Dev. Corr
 country  (Intercept)               0.079014 0.28109
          age_group25-34 years old  0.006186 0.07865  -0.09
          age_group35-44 years old  0.008108 0.09004  -0.01  0.97
          age_group45-54 years old  0.009604 0.09800  -0.13  0.54  0.56
          age_group55+ years        0.039555 0.19888  -0.10  0.30  0.45  0.81
 Residual                           1.002426 1.00121
Number of obs: 68135, groups:  country, 70

Fixed effects:
                                        Estimate Std. Error t value
(Intercept)                             2.306886   0.036172  63.775
mh_problemsTRUE                        -0.031610   0.020222  -1.563
age_group25-34 years old               -0.055868   0.019342  -2.888
age_group35-44 years old               -0.078570   0.020342  -3.862
age_group45-54 years old               -0.128934   0.021505  -5.995
age_group55+ years                     -0.111710   0.029103  -3.838
mh_problemsTRUE:age_group25-34 years old  0.006118   0.026369   0.232
mh_problemsTRUE:age_group35-44 years old -0.024953   0.027519  -0.907
mh_problemsTRUE:age_group45-54 years old  0.007967   0.029435   0.271
mh_problemsTRUE:age_group55+ years        0.015270   0.027351   0.558

Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.233
ag_g25-34yo -0.292  0.429
ag_g35-44yo -0.251  0.412  0.701
ag_g45-54yo -0.299  0.392  0.569  0.575
ag_grp55+yr -0.246  0.290  0.433  0.499  0.658
m_TRUE:_2yo  0.177 -0.759 -0.545 -0.318 -0.300 -0.220
m_TRUE:_3yo  0.171 -0.731 -0.319 -0.517 -0.290 -0.214  0.567
m_TRUE:_4yo  0.161 -0.684 -0.297 -0.286 -0.495 -0.206  0.523       0.502
m_TRUE:_55y  0.172 -0.739 -0.317 -0.305 -0.294 -0.320  0.561       0.542
           m_TRUE:_4yo
```

```
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.512
optimizer (nloptwrap) convergence code: 0 (OK)
Model failed to converge with max|grad| = 0.0546031 (tol = 0.002, component 1)


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
       npar    AIC    BIC logLik deviance  Chisq Df Pr(>Chisq)
fit_3a   22 194060 194261 -97008   194016
fit_4a   26 194065 194302 -97006   194013 2.7175  4     0.6062


`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.
```


3. trust_media_national_radio_media
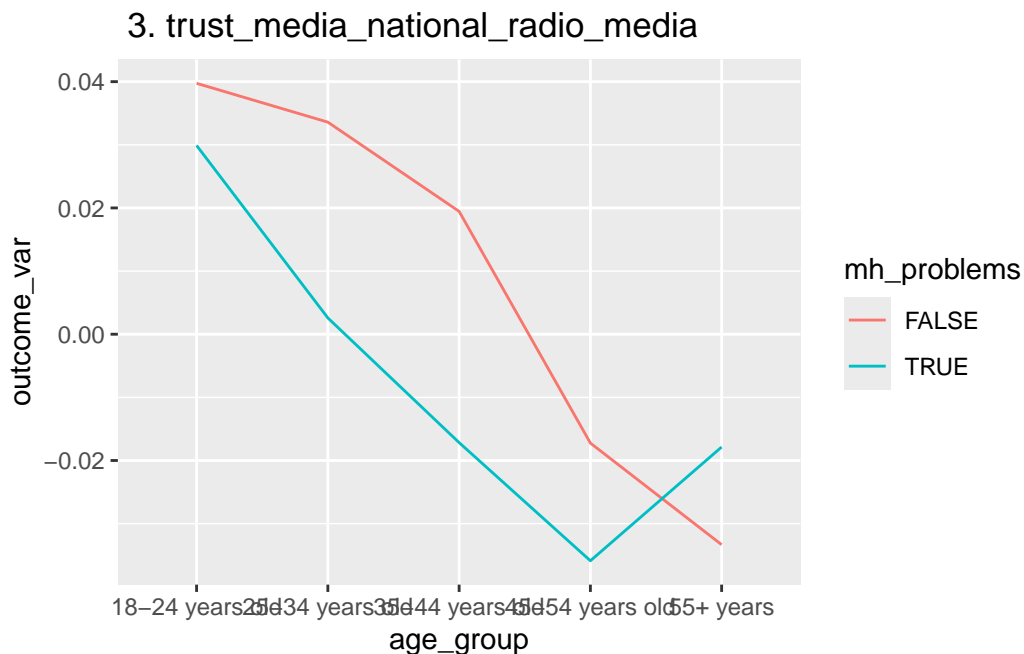
```
Current outcome variable:   5. international_tv_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 218073.6  218137.8 -109029.8  218059.6     70676

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0509 -0.7417 -0.2233  0.5459  2.9066

Random effects:
 Groups    Name        Variance Std.Dev.
 country   (Intercept) 0.0999   0.3161
 Residual              1.2748   1.1291
Number of obs: 70683, groups:  country, 70

Fixed effects:
                         Estimate Std. Error t value
(Intercept)               2.26898    0.03932  57.701
age_group25-34 years old  0.01750    0.01403   1.247
age_group35-44 years old  0.05851    0.01460   4.007
age_group45-54 years old  0.08662    0.01554   5.575
age_group55+ years        0.19437    0.01420  13.684

Correlation of Fixed Effects:
           (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.209
ag_g35-44yo -0.207  0.566
ag_g45-54yo -0.199  0.535  0.534
ag_grp55+yr -0.223  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 208682.6  208755.6 -104333.3  208666.6     68127

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0904 -0.7462 -0.2021  0.5581  3.0255
```

```
Random effects:
 Groups    Name         Variance Std.Dev.
 country  (Intercept) 0.1009   0.3177
 Residual               1.2463   1.1164
Number of obs: 68135, groups:  country, 70

Fixed effects:
                           Estimate Std. Error t value
(Intercept)               2.272530   0.039722  57.211
mh_problemsTRUE          -0.072478   0.009574  -7.570
age_group25-34 years old  0.018878   0.014172   1.332
age_group35-44 years old  0.055343   0.014766   3.748
age_group45-54 years old  0.088744   0.015718   5.646
age_group55+ years        0.198543   0.014450  13.740

Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.094
ag_g25-34yo -0.212  0.013
ag_g35-44yo -0.211  0.034  0.568
ag_g45-54yo -0.205  0.051  0.537  0.537
ag_grp55+yr -0.234  0.108  0.589  0.596  0.589

boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

     AIC       BIC    logLik  deviance  df.resid
 208320.9  208521.8 -104138.5  208276.9     68113

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.3041 -0.7507 -0.2059  0.5688  2.9660

Random effects:
 Groups    Name                         Variance Std.Dev. Corr
 country  (Intercept)                 0.071160 0.26676
          age_group25-34 years old 0.001692 0.04113  1.00
          age_group35-44 years old 0.012505 0.11183  0.53 0.53
          age_group45-54 years old 0.019199 0.13856  0.29 0.29 0.70
```

```
         age_group55+ years        0.059119 0.24314  0.18 0.18 0.51 0.88
 Residual                          1.235816 1.11167
Number of obs: 68135, groups:  country, 70


Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.272590   0.033992  66.857
mh_problemsTRUE          -0.078527   0.009604  -8.177
age_group25-34 years old  0.023981   0.014954   1.604
age_group35-44 years old  0.060047   0.019991   3.004
age_group45-54 years old  0.093633   0.022843   4.099
age_group55+ years        0.209084   0.032722   6.390


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.114
ag_g25-34yo  0.076  0.015
ag_g35-44yo  0.149  0.031  0.511
ag_g45-54yo  0.029  0.039  0.413  0.615
ag_grp55+yr  0.034  0.042  0.293  0.495  0.744
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d

      AIC        BIC    logLik  deviance  df.resid
 208687.7   208797.2 -104331.8  208663.7     68123


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0908 -0.7455 -0.2021  0.5565  3.0210


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.1009   0.3177
 Residual             1.2462   1.1164
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                  Estimate Std. Error t value
(Intercept)                        2.269198   0.040567  55.937
```

```
mh_problemsTRUE                                 -0.064152  0.022122  -2.900
age_group25-34 years old                         0.030616  0.018182   1.684
age_group35-44 years old                         0.050574  0.018687   2.706
age_group45-54 years old                         0.093548  0.019567   4.781
age_group55+ years                               0.202019  0.017618  11.467
mh_problemsTRUE:age_group25-34 years old -0.030513  0.028912  -1.055
mh_problemsTRUE:age_group35-44 years old  0.015344  0.030166   0.509
mh_problemsTRUE:age_group45-54 years old -0.013145  0.032347  -0.406
mh_problemsTRUE:age_group55+ years        -0.009029  0.029899  -0.302


Correlation of Fixed Effects:
            (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.223
ag_g25-34yo -0.269  0.485
ag_g35-44yo -0.268  0.478  0.585
ag_g45-54yo -0.261  0.462  0.563  0.566
ag_grp55+yr -0.296  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.168 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.163 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.154 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
m_TRUE:_55y  0.167 -0.739 -0.362 -0.359 -0.350 -0.557  0.560       0.540
            m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
     npar    AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
fit_3    8 208683 208756 -104333   208667
fit_4   12 208688 208797 -104332   208664 2.896  4     0.5754


Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
Model failed to converge with max|grad| = 0.00373416 (tol = 0.002, component 1)


Linear mixed model fit by maximum likelihood  ['lmerMod']
```

```
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

     AIC       BIC    logLik  deviance  df.resid
 208315.6  208552.9 -104131.8  208263.6    68109


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.3076 -0.7496 -0.2095  0.5715  2.9659


Random effects:
 Groups    Name                      Variance Std.Dev. Corr
 country   (Intercept)               0.072207 0.2687
           age_group25-34 years old 0.006497 0.0806    0.39
           age_group35-44 years old 0.019227 0.1387    0.33 0.80
           age_group45-54 years old 0.018918 0.1375    0.28 0.23 0.71
           age_group55+ years       0.059235 0.2434    0.17 0.17 0.50 0.88
 Residual                           1.235223 1.1114
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                             Estimate Std. Error t value
(Intercept)                                   2.26704    0.03532  64.192
mh_problemsTRUE                              -0.06713    0.02232  -3.007
age_group25-34 years old                      0.03647    0.02087   1.747
age_group35-44 years old                      0.05403    0.02527   2.138
age_group45-54 years old                      0.10041    0.02582   3.889
age_group55+ years                            0.21911    0.03448   6.355
mh_problemsTRUE:age_group25-34 years old     -0.02815    0.02911  -0.967
mh_problemsTRUE:age_group35-44 years old      0.02255    0.03064   0.736
mh_problemsTRUE:age_group45-54 years old     -0.01519    0.03257  -0.466
mh_problemsTRUE:age_group55+ years           -0.02917    0.03027  -0.964


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.262
ag_g25-34yo -0.118  0.432
ag_g35-44yo -0.046  0.366  0.641
ag_g45-54yo -0.077  0.359  0.461  0.634
ag_grp55+yr -0.046  0.268  0.356  0.525  0.727
m_TRUE:_2yo  0.198 -0.753 -0.554 -0.280 -0.271 -0.203
m_TRUE:_3yo  0.191 -0.729 -0.317 -0.459 -0.264 -0.196  0.558
m_TRUE:_4yo  0.181 -0.681 -0.298 -0.255 -0.455 -0.191  0.513       0.504
```

```
m_TRUE:_55y  0.193 -0.738 -0.318 -0.270 -0.269 -0.297  0.555       0.538
             m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.510
optimizer (nloptwrap) convergence code: 0 (OK)
Model failed to converge with max|grad| = 0.00373416 (tol = 0.002, component 1)


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
       npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3a   22 208321 208522 -104138   208277
fit_4a   26 208316 208553 -104132   208264 13.371  4   0.009598 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1


`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.
```
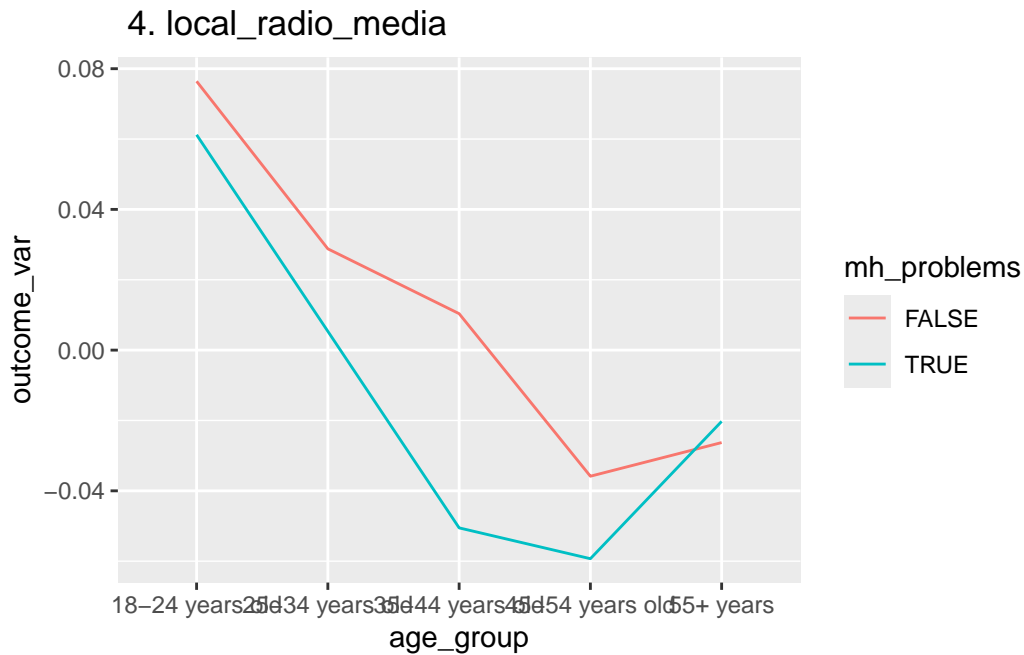
4. local_radio_media


```
Current outcome variable:   6. international_radio_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

     AIC        BIC    logLik  deviance  df.resid
 219662.3   219726.5 -109824.2   219648.3      70676

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0877 -0.7578 -0.2286  0.5869  2.8949

Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.1044   0.3231
 Residual             1.3038   1.1418
Number of obs: 70683, groups:  country, 70

Fixed effects:
                        Estimate Std. Error t value
(Intercept)             2.344972   0.040165  58.383
age_group25-34 years old 0.006979   0.014189   0.492
age_group35-44 years old 0.064229   0.014767   4.349
```

```
age_group45-54 years old 0.073469   0.015713    4.676
age_group55+ years        0.187024   0.014365   13.019


Correlation of Fixed Effects:
          (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.207
ag_g35-44yo -0.205  0.566
ag_g45-54yo -0.197  0.535  0.534
ag_grp55+yr -0.221  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d

     AIC       BIC    logLik  deviance  df.resid
 210251.3  210324.3 -105117.7  210235.3     68127


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.1311 -0.7505 -0.2253  0.5879  2.9708


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.1048   0.3238
 Residual             1.2753   1.1293
Number of obs: 68135, groups:  country, 70


Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.344375   0.040460  57.944
mh_problemsTRUE          -0.066061   0.009685  -6.821
age_group25-34 years old  0.006750   0.014336   0.471
age_group35-44 years old  0.064328   0.014937   4.307
age_group45-54 years old  0.079046   0.015900   4.972
age_group55+ years        0.196928   0.014618  13.472


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.093
ag_g25-34yo -0.210  0.013
ag_g35-44yo -0.209  0.034  0.568
ag_g45-54yo -0.203  0.051  0.537  0.537
ag_grp55+yr -0.232  0.108  0.589  0.596  0.589
```

```
boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d


      AIC       BIC    logLik  deviance  df.resid
 209828.6  210029.5  -104892.3  209784.6     68113


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.3223 -0.7360 -0.2039  0.5861  2.9762


Random effects:
 Groups   Name                      Variance  Std.Dev. Corr
 country  (Intercept)               0.0804618 0.28366
          age_group25-34 years old  0.0005131 0.02265  1.00
          age_group35-44 years old  0.0124894 0.11176  0.32 0.32
          age_group45-54 years old  0.0234473 0.15313  0.15 0.15 0.45
          age_group55+ years        0.0634496 0.25189  0.14 0.14 0.32 0.92
 Residual                           1.2630911 1.12387
Number of obs: 68135, groups:  country, 70


Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.342354   0.035953  65.151
mh_problemsTRUE          -0.069800   0.009711  -7.187
age_group25-34 years old  0.011792   0.014545   0.811
age_group35-44 years old  0.070149   0.020149   3.482
age_group45-54 years old  0.085278   0.024286   3.511
age_group55+ years        0.202969   0.033743   6.015


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.109
ag_g25-34yo -0.057  0.016
ag_g35-44yo  0.019  0.031  0.452
ag_g45-54yo -0.047  0.037  0.364  0.487
ag_grp55+yr  0.004  0.042  0.270  0.379  0.783
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')
```

```
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 210255.1  210364.6 -105115.5  210231.1     68123


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.1303 -0.7502 -0.2241  0.5865  2.9760


Random effects:
 Groups    Name        Variance Std.Dev.
 country   (Intercept) 0.1048   0.3237
 Residual              1.2752   1.1293
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                                  Estimate Std. Error t value
(Intercept)                                       2.333359   0.041297  56.502
mh_problemsTRUE                                  -0.039037   0.022378  -1.744
age_group25-34 years old                          0.025335   0.018392   1.377
age_group35-44 years old                          0.081887   0.018903   4.332
age_group45-54 years old                          0.083657   0.019794   4.226
age_group55+ years                                0.207470   0.017822  11.641
mh_problemsTRUE:age_group25-34 years old         -0.047220   0.029246  -1.615
mh_problemsTRUE:age_group35-44 years old         -0.046185   0.030515  -1.514
mh_problemsTRUE:age_group45-54 years old         -0.005892   0.032721  -0.180
mh_problemsTRUE:age_group55+ years               -0.024264   0.030245  -0.802


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.221
ag_g25-34yo -0.267  0.485
ag_g35-44yo -0.266  0.478  0.585
ag_g45-54yo -0.260  0.462  0.563  0.566
ag_grp55+yr -0.294  0.517  0.630  0.638  0.632
m_TRUE:_2yo  0.167 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.162 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.153 -0.680 -0.335 -0.332 -0.591 -0.364  0.517        0.499
m_TRUE:_55y  0.166 -0.739 -0.362 -0.359 -0.350 -0.557  0.560        0.540
           m_TRUE:_4yo
mh_prblTRUE
```

```
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 210251 210324 -105118   210235
fit_4   12 210255 210365 -105116   210231 4.2542  4     0.3727


Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
Model failed to converge with max|grad| = 0.0287625 (tol = 0.002, component 1)


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 209826.7  210064.1 -104887.4  209774.7     68109


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.3242 -0.7361 -0.2036  0.5869  2.9866


Random effects:
 Groups    Name                     Variance Std.Dev. Corr
 country   (Intercept)              0.080667 0.28402
           age_group25-34 years old 0.003135 0.05599  0.32
           age_group35-44 years old 0.020028 0.14152  0.15 0.94
           age_group45-54 years old 0.024411 0.15624  0.13 0.27 0.53
           age_group55+ years       0.063698 0.25239  0.13 0.14 0.36 0.91
 Residual                           1.262783 1.12374
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                        Estimate Std. Error t value
```

```
(Intercept)                                      2.331056   0.037044   62.926
mh_problemsTRUE                                 -0.042436   0.022555   -1.881
age_group25-34 years old                         0.029369   0.019724    1.489
age_group35-44 years old                         0.084852   0.025656    3.307
age_group45-54 years old                         0.090068   0.027418    3.285
age_group55+ years                               0.216377   0.035492    6.096
mh_problemsTRUE:age_group25-34 years old -0.045633   0.029277   -1.559
mh_problemsTRUE:age_group35-44 years old -0.036324   0.031037   -1.170
mh_problemsTRUE:age_group45-54 years old -0.005575   0.032986   -0.169
mh_problemsTRUE:age_group55+ years              -0.035964   0.030576   -1.176


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.252
ag_g25-34yo -0.188  0.458
ag_g35-44yo -0.139  0.364  0.630
ag_g45-54yo -0.138  0.341  0.455  0.556
ag_grp55+yr -0.066  0.263  0.344  0.445  0.765
m_TRUE:_2yo  0.191 -0.753 -0.589 -0.279 -0.258 -0.199
m_TRUE:_3yo  0.183 -0.728 -0.335 -0.457 -0.250 -0.192  0.557
m_TRUE:_4yo  0.173 -0.682 -0.314 -0.251 -0.432 -0.188  0.514        0.500
m_TRUE:_55y  0.186 -0.738 -0.338 -0.269 -0.256 -0.291  0.555        0.537
          m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.511
optimizer (nloptwrap) convergence code: 0 (OK)
Model failed to converge with max|grad| = 0.0287625 (tol = 0.002, component 1)


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
       npar    AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
fit_3a   22 209829 210029 -104892   209785
fit_4a   26 209827 210064 -104887   209775 9.917  4    0.04185 *
---
```
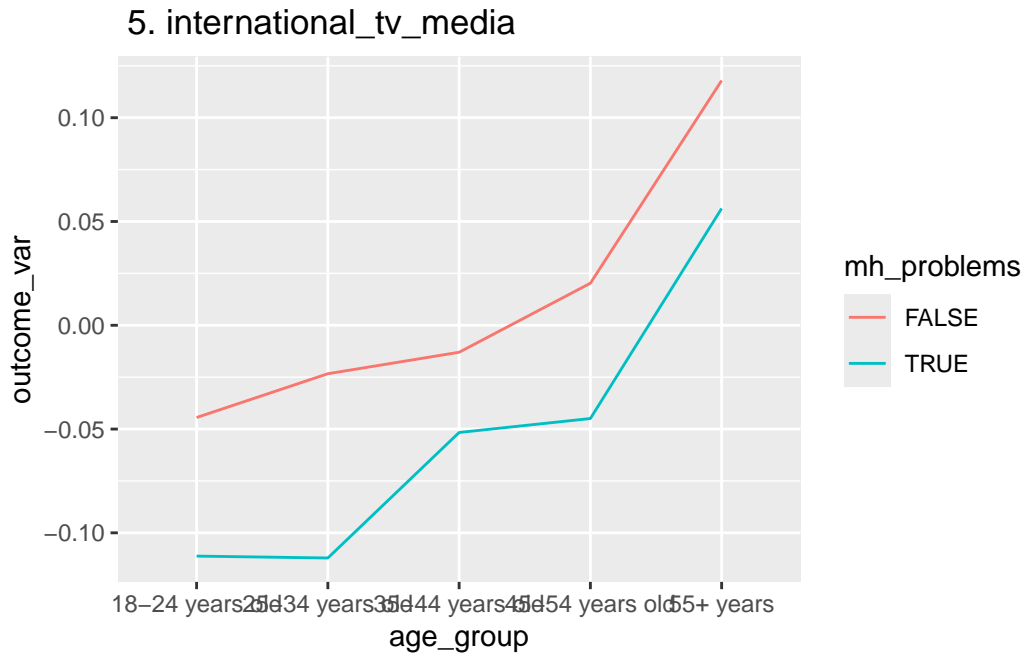
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.

5. international_tv_media

Current outcome variable: 7. national_print_media
Linear mixed model fit by maximum likelihood ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

      AIC   BIC   logLik deviance df.resid
 210106.0 210170.2 -105046.0 210092.0   70676

Scaled residuals:
    Min   1Q Median   3Q   Max
-1.9604 -0.5949 -0.2237 0.5830 3.0036

Random effects:
 Groups   Name   Variance Std.Dev.
 country   (Intercept) 0.06905 0.2628
 Residual   1.13923 1.0673
Number of obs: 70683, groups: country, 70

```
Fixed effects:
                         Estimate Std. Error t value
(Intercept)               2.28541    0.03306  69.131
age_group25-34 years old  0.04059    0.01326   3.061
age_group35-44 years old  0.05625    0.01380   4.075
age_group45-54 years old  0.05061    0.01469   3.446
age_group55+ years        0.06088    0.01342   4.535


Correlation of Fixed Effects:
          (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.235
ag_g35-44yo -0.232  0.566
ag_g45-54yo -0.223  0.535  0.534
ag_grp55+yr -0.251  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d


     AIC       BIC    logLik  deviance  df.resid
 200714.2  200787.2 -100349.1  200698.2     68127


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0019 -0.6183 -0.2015  0.5744  3.0894


Random effects:
 Groups   Name        Variance Std.Dev.
 country  (Intercept) 0.06971  0.264
 Residual             1.10902  1.053
Number of obs: 68135, groups:  country, 70


Fixed effects:
                         Estimate Std. Error t value
(Intercept)              2.271802   0.033423  67.971
mh_problemsTRUE         -0.038246   0.009031  -4.235
age_group25-34 years old 0.045416   0.013368   3.397
age_group35-44 years old 0.058050   0.013928   4.168
age_group45-54 years old 0.064668   0.014825   4.362
age_group55+ years       0.077505   0.013628   5.687


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.105
```

```
ag_g25-34yo -0.237  0.013
ag_g35-44yo -0.236  0.034  0.568
ag_g45-54yo -0.230  0.051  0.537  0.537
ag_grp55+yr -0.262  0.108  0.589  0.596  0.589


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 200381.7  200582.5 -100168.8  200337.7     68113


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0773 -0.6687 -0.1860  0.5660  3.0994


Random effects:
 Groups    Name                     Variance  Std.Dev.  Corr
 country   (Intercept)              6.794e-02 0.2606605
           age_group25-34 years old 8.384e-08 0.0002895 -1.00
           age_group35-44 years old 9.585e-03 0.0979028  0.19 -0.19
           age_group45-54 years old 1.874e-02 0.1369049 -0.14  0.14  0.57
           age_group55+ years       5.372e-02 0.2317776 -0.20  0.20  0.48  0.90
 Residual                           1.100e+00 1.0487711
Number of obs: 68135, groups:  country, 70


Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.290789   0.033110  69.187
mh_problemsTRUE          -0.049089   0.009063  -5.416
age_group25-34 years old  0.040552   0.013351   3.037
age_group35-44 years old  0.046462   0.018320   2.536
age_group45-54 years old  0.056300   0.022148   2.542
age_group55+ years        0.095810   0.031119   3.079


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.111
ag_g25-34yo -0.244  0.016
ag_g35-44yo -0.071  0.033  0.434
```

```
ag_g45-54yo -0.254  0.039  0.361  0.550
ag_grp55+yr -0.280  0.043  0.256  0.469  0.766
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')

Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 200705.6  200815.2  -100340.8  200681.6     68123

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0106 -0.6205 -0.2038  0.5777  3.1069

Random effects:
 Groups    Name        Variance Std.Dev.
 country   (Intercept) 0.06957  0.2638
 Residual              1.10876  1.0530
Number of obs: 68135, groups:  country, 70

Fixed effects:
                                        Estimate Std. Error t value
(Intercept)                             2.284887   0.034284  66.645
mh_problemsTRUE                        -0.069511   0.020865  -3.331
age_group25-34 years old                0.037687   0.017149   2.198
age_group35-44 years old                0.054103   0.017625   3.070
age_group45-54 years old                0.052121   0.018454   2.824
age_group55+ years                      0.050061   0.016614   3.013
mh_problemsTRUE:age_group25-34 years old  0.018026   0.027270   0.661
mh_problemsTRUE:age_group35-44 years old  0.005034   0.028453   0.177
mh_problemsTRUE:age_group45-54 years old  0.028998   0.030510   0.950
mh_problemsTRUE:age_group55+ years      0.096987   0.028201   3.439

Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.248
ag_g25-34yo -0.300  0.485
ag_g35-44yo -0.299  0.478  0.585
ag_g45-54yo -0.292  0.462  0.563  0.566
ag_grp55+yr -0.330  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.188 -0.753 -0.626 -0.364 -0.351 -0.393
```

```
m_TRUE:_3yo  0.182 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.172 -0.680 -0.335 -0.332 -0.591 -0.364  0.517         0.499
m_TRUE:_55y  0.186 -0.739 -0.362 -0.359 -0.350 -0.557  0.560         0.540
             m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 200714 200787 -100349   200698
fit_4   12 200706 200815 -100341   200682 16.567  4   0.002345 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 200382.6   200620.0 -100165.3  200330.6      68109


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0780 -0.6785 -0.1854  0.5595  3.1132


Random effects:
 Groups    Name                     Variance  Std.Dev.  Corr
 country   (Intercept)              6.790e-02 0.2605836
           age_group25-34 years old 8.418e-08 0.0002901 -1.00
           age_group35-44 years old 9.715e-03 0.0985654  0.19 -0.19
           age_group45-54 years old 1.891e-02 0.1375109 -0.14  0.14  0.58
```

```
        age_group55+ years           5.265e-02 0.2294633 -0.20  0.20  0.48  0.90
 Residual                            1.100e+00 1.0487217
Number of obs: 68135, groups:  country, 70

Fixed effects:
                                            Estimate Std. Error t value
(Intercept)                                  2.30392    0.03400  67.753
mh_problemsTRUE                             -0.08110    0.02093  -3.875
age_group25-34 years old                     0.02949    0.01713   1.721
age_group35-44 years old                     0.03605    0.02136   1.688
age_group45-54 years old                     0.04375    0.02480   1.765
age_group55+ years                           0.07238    0.03236   2.237
mh_problemsTRUE:age_group25-34 years old     0.02696    0.02720   0.991
mh_problemsTRUE:age_group35-44 years old     0.02401    0.02873   0.836
mh_problemsTRUE:age_group45-54 years old     0.02981    0.03072   0.970
mh_problemsTRUE:age_group55+ years           0.07300    0.02845   2.566


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.253
ag_g25-34yo -0.307  0.483
ag_g35-44yo -0.160  0.400  0.486
ag_g45-54yo -0.306  0.347  0.420  0.566
ag_grp55+yr -0.325  0.265  0.320  0.494  0.747
m_TRUE:_2yo  0.191 -0.750 -0.627 -0.303 -0.262 -0.200
m_TRUE:_3yo  0.184 -0.723 -0.354 -0.509 -0.255 -0.194  0.547
m_TRUE:_4yo  0.173 -0.680 -0.330 -0.275 -0.442 -0.188  0.511       0.496
m_TRUE:_55y  0.186 -0.736 -0.355 -0.294 -0.259 -0.294  0.551       0.533
           m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.508
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')

Data: d
Models:
```

```
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
        npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3a    22 200382 200583 -100169   200338
fit_4a    26 200383 200620 -100165   200331 7.0625  4     0.1326
```

`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.

6. international_radio_media
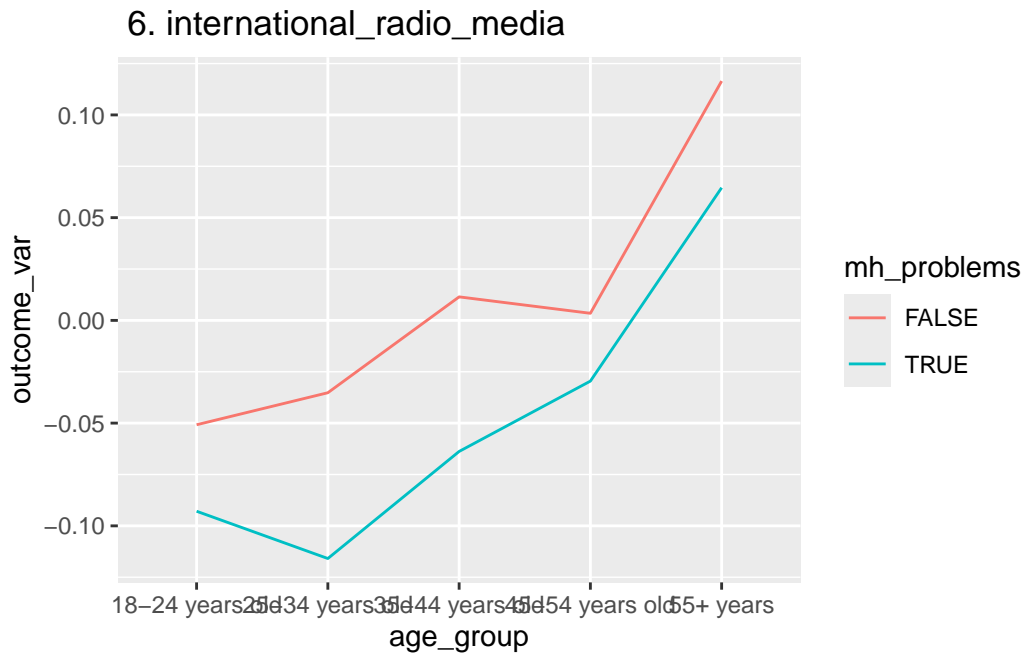
Current outcome variable: 8. local_print_media
Linear mixed model fit by maximum likelihood ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

```
      AIC       BIC    logLik  deviance  df.resid
 209011.2  209075.3 -104498.6  208997.2     70676
```

Scaled residuals:
```
    Min      1Q  Median      3Q     Max
-2.0170 -0.5860 -0.2419  0.5516  2.9828
```

Random effects:
```
 Groups   Name         Variance Std.Dev.
```

```
 country  (Intercept) 0.06975  0.2641
 Residual               1.12169  1.0591
Number of obs: 70683, groups:  country, 70

Fixed effects:
                            Estimate Std. Error t value
(Intercept)                2.386e+00  3.319e-02  71.894
age_group25-34 years old -1.922e-04  1.316e-02  -0.015
age_group35-44 years old  1.808e-02  1.370e-02   1.320
age_group45-54 years old  2.594e-05  1.457e-02   0.002
age_group55+ years        7.926e-03  1.332e-02   0.595

Correlation of Fixed Effects:
          (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.233
ag_g35-44yo -0.230  0.566
ag_g45-54yo -0.221  0.535  0.534
ag_grp55+yr -0.248  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d

     AIC      BIC   logLik deviance df.resid
199721.5 199794.5 -99852.8 199705.5     68127

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0451 -0.6029 -0.2303  0.5716  3.0861

Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.07043  0.2654
 Residual             1.09296  1.0454
Number of obs: 68135, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.373943   0.033551  70.757
mh_problemsTRUE          -0.037593   0.008965  -4.193
age_group25-34 years old  0.003903   0.013271   0.294
age_group35-44 years old  0.018216   0.013827   1.317
age_group45-54 years old  0.012408   0.014717   0.843
age_group55+ years        0.022215   0.013529   1.642
```

```
Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.104
ag_g25-34yo -0.235  0.013
ag_g35-44yo -0.234  0.034  0.568
ag_g45-54yo -0.227  0.051  0.537  0.537
ag_grp55+yr -0.259  0.108  0.589  0.596  0.589


Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
unable to evaluate scaled gradient


Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
Model failed to converge: degenerate Hessian with 1 negative eigenvalues


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

     AIC      BIC   logLik deviance df.resid
199473.4 199674.3 -99714.7 199429.4    68113

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0994 -0.5888 -0.2138  0.5637  3.1211

Random effects:
 Groups    Name                     Variance Std.Dev. Corr
 country   (Intercept)              0.073301 0.27074
           age_group25-34 years old 0.004687 0.06846  -0.12
           age_group35-44 years old 0.018424 0.13573  -0.03  0.99
           age_group45-54 years old 0.013196 0.11487  -0.27  0.70  0.76
           age_group55+ years       0.044949 0.21201  -0.33  0.44  0.51  0.90
 Residual                           1.085611 1.04193
Number of obs: 68135, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.395275   0.034332  69.769
mh_problemsTRUE          -0.045535   0.009006  -5.056
age_group25-34 years old -0.008224   0.015852  -0.519
age_group35-44 years old  0.002477   0.021617   0.115
```

```
age_group45-54 years old -0.002056    0.020365   -0.101
age_group55+ years            0.031436    0.029096    1.080


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.108
ag_g25-34yo -0.268  0.021
ag_g35-44yo -0.185  0.032  0.716
ag_g45-54yo -0.347  0.047  0.595  0.656
ag_grp55+yr -0.394  0.048  0.442  0.522  0.740
optimizer (nloptwrap) convergence code: 0 (OK)
unable to evaluate scaled gradient
Model failed to converge: degenerate  Hessian with 1 negative eigenvalues


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d


     AIC       BIC    logLik deviance df.resid
199718.7 199828.3 -99847.4 199694.7     68123


Scaled residuals:
    Min       1Q  Median       3Q      Max
-2.0443  -0.6063 -0.2285   0.5697   3.1053


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.07035  0.2652
 Residual             1.09278  1.0454
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                            Estimate Std. Error t value
(Intercept)                                2.3882923  0.0344076  69.412
mh_problemsTRUE                           -0.0720419  0.0207145  -3.478
age_group25-34 years old                  -0.0066540  0.0170254  -0.391
age_group35-44 years old                   0.0075483  0.0174977   0.431
age_group45-54 years old                  -0.0005115  0.0183213  -0.028
age_group55+ years                        -0.0034217  0.0164943  -0.207
mh_problemsTRUE:age_group25-34 years old   0.0252865  0.0270730   0.934
mh_problemsTRUE:age_group35-44 years old   0.0241069  0.0282473   0.853
mh_problemsTRUE:age_group45-54 years old   0.0292849  0.0302895   0.967
mh_problemsTRUE:age_group55+ years         0.0857721  0.0279972   3.064
```

```
Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.246
ag_g25-34yo -0.297  0.485
ag_g35-44yo -0.296  0.478  0.585
ag_g45-54yo -0.289  0.462  0.563  0.566
ag_grp55+yr -0.326  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.186 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.180 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.170 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
m_TRUE:_55y  0.184 -0.739 -0.362 -0.359 -0.350 -0.557  0.560       0.540
           m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 199722 199795 -99853    199706
fit_4   12 199719 199828 -99847    199695 10.768  4    0.02929 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

    AIC      BIC   logLik deviance df.resid
199492.0 199729.3 -99720.0 199440.0    68109

Scaled residuals:
```

```
     Min      1Q  Median      3Q     Max
-2.1067 -0.5848 -0.2182  0.5652  3.0988


Random effects:
 Groups    Name                     Variance  Std.Dev. Corr
 country   (Intercept)              6.965e-02 0.263907
           age_group25-34 years old 7.547e-05 0.008687  1.00
           age_group35-44 years old 9.912e-03 0.099560  0.19  0.19
           age_group45-54 years old 8.926e-03 0.094480 -0.18 -0.18  0.58
           age_group55+ years       3.845e-02 0.196081 -0.27 -0.27  0.39  0.91
 Residual                           1.086e+00 1.042081
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                             Estimate Std. Error t value
(Intercept)                                  2.404417   0.034323  70.052
mh_problemsTRUE                             -0.080157   0.020776  -3.858
age_group25-34 years old                    -0.012873   0.017046  -0.755
age_group35-44 years old                    -0.008094   0.021318  -0.380
age_group45-54 years old                    -0.010214   0.021587  -0.473
age_group55+ years                           0.015420   0.028968   0.532
mh_problemsTRUE:age_group25-34 years old     0.033262   0.027027   1.231
mh_problemsTRUE:age_group35-44 years old     0.038661   0.028559   1.354
mh_problemsTRUE:age_group45-54 years old     0.032078   0.030400   1.055
mh_problemsTRUE:age_group55+ years           0.062572   0.028249   2.215


Correlation of Fixed Effects:
            (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.249
ag_g25-34yo -0.243  0.482
ag_g35-44yo -0.154  0.398  0.488
ag_g45-54yo -0.334  0.395  0.472  0.572
ag_grp55+yr -0.387  0.294  0.340  0.470  0.688
m_TRUE:_2yo  0.187 -0.749 -0.625 -0.301 -0.299 -0.221
m_TRUE:_3yo  0.181 -0.723 -0.352 -0.506 -0.290 -0.215  0.546
m_TRUE:_4yo  0.171 -0.681 -0.331 -0.275 -0.503 -0.209  0.513      0.498
m_TRUE:_55y  0.183 -0.736 -0.354 -0.292 -0.295 -0.326  0.551      0.533
            m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
```

```
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.508
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
        npar    AIC    BIC logLik deviance Chisq Df Pr(>Chisq)
fit_3a    22 199473 199674 -99715   199429
fit_4a    26 199492 199729 -99720   199440     0  4           1


`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.
```
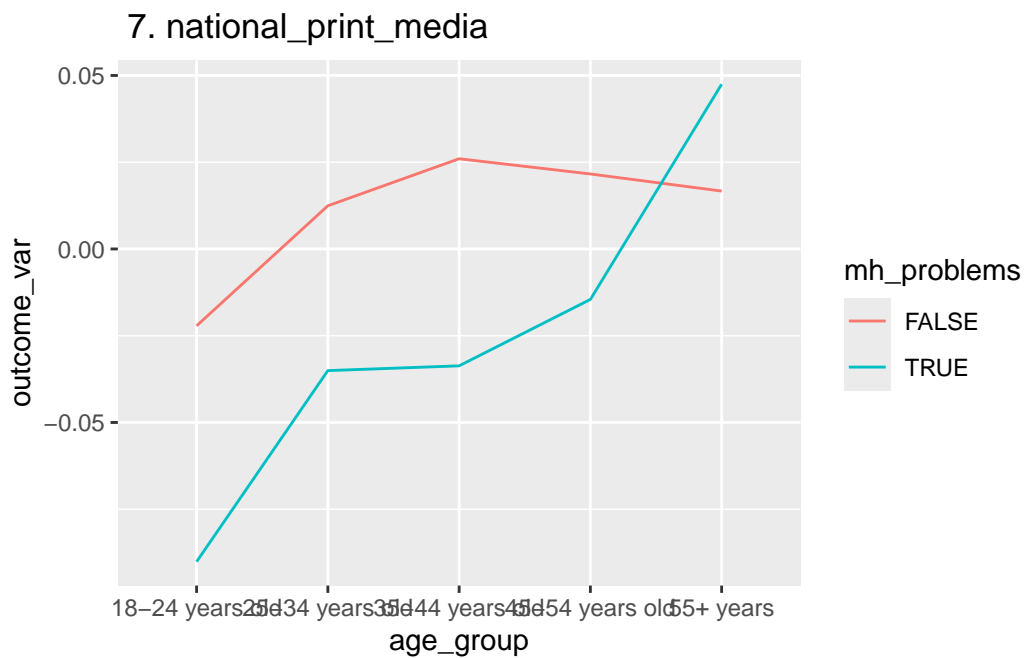
7. national_print_media


```
Current outcome variable:   9. word_of_mouth_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d
```

```
      AIC         BIC    logLik   deviance  df.resid
 207547.2   207611.3  -103766.6   207533.2      70676


Scaled residuals:
    Min      1Q  Median      3Q      Max
-2.1317 -0.7013 -0.1500  0.6202  2.7475


Random effects:
 Groups    Name          Variance Std.Dev.
 country  (Intercept) 0.06814  0.261
 Residual               1.09870  1.048
Number of obs: 70683, groups:  country, 70


Fixed effects:
                         Estimate Std. Error t value
(Intercept)               2.69700    0.03280  82.217
age_group25-34 years old -0.08604    0.01302  -6.606
age_group35-44 years old -0.10839    0.01356  -7.996
age_group45-54 years old -0.11183    0.01442  -7.754
age_group55+ years       -0.05170    0.01318  -3.922


Correlation of Fixed Effects:
           (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.233
ag_g35-44yo -0.230  0.566
ag_g45-54yo -0.221  0.535  0.534
ag_grp55+yr -0.248  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d


     AIC        BIC   logLik deviance df.resid
198437.8 198510.8 -99210.9 198421.8    68127


Scaled residuals:
    Min      1Q  Median      3Q      Max
-2.1762 -0.6964 -0.1600  0.6280  2.8156


Random effects:
 Groups    Name          Variance Std.Dev.
 country  (Intercept) 0.06541  0.2557
 Residual               1.07261  1.0357
Number of obs: 68135, groups:  country, 70
```

```
Fixed effects:
                        Estimate Std. Error t value
(Intercept)             2.712760   0.032430  83.650
mh_problemsTRUE        -0.084469   0.008881  -9.511
age_group25-34 years old -0.088896  0.013147  -6.762
age_group35-44 years old -0.113601  0.013697  -8.294
age_group45-54 years old -0.108235  0.014579  -7.424
age_group55+ years      -0.055428   0.013402  -4.136


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.106
ag_g25-34yo -0.240   0.013
ag_g35-44yo -0.240   0.034   0.568
ag_g45-54yo -0.233   0.051   0.537   0.537
ag_grp55+yr -0.265   0.108   0.589   0.596   0.589


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

     AIC      BIC   logLik deviance df.resid
198355.8 198556.7 -99155.9 198311.8    68113


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.2208 -0.6994 -0.1453  0.6292  2.8636


Random effects:
 Groups   Name                     Variance Std.Dev. Corr
 country  (Intercept)              0.070058 0.26469
          age_group25-34 years old 0.003441 0.05866  -0.19
          age_group35-44 years old 0.008857 0.09411  -0.17  0.96
          age_group45-54 years old 0.014257 0.11940  -0.21  0.55  0.68
          age_group55+ years       0.017750 0.13323  -0.31  0.23  0.40  0.93
 Residual                          1.068886 1.03387
Number of obs: 68135, groups:  country, 70


Fixed effects:
```

```
                        Estimate Std. Error t value
(Intercept)              2.714605   0.033591  80.813
mh_problemsTRUE         -0.085188   0.008924  -9.546
age_group25-34 years old -0.091036   0.015171  -6.001
age_group35-44 years old -0.113055   0.018017  -6.275
age_group45-54 years old -0.109636   0.020586  -5.326
age_group55+ years       -0.055087   0.021206  -2.598

Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.108
ag_g25-34yo -0.299  0.019
ag_g35-44yo -0.291  0.035  0.683
ag_g45-54yo -0.309  0.042  0.528  0.607
ag_grp55+yr -0.394  0.069  0.431  0.495  0.767
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')

Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d

     AIC      BIC   logLik deviance df.resid
198436.1 198545.6 -99206.0 198412.1    68123

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.1755 -0.6996 -0.1590  0.6240  2.8287

Random effects:
 Groups   Name        Variance Std.Dev.
 country  (Intercept) 0.0652   0.2553
 Residual             1.0725   1.0356
Number of obs: 68135, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)                2.69123    0.03327  80.886
mh_problemsTRUE           -0.03221    0.02052  -1.570
age_group25-34 years old  -0.06148    0.01687  -3.645
age_group35-44 years old  -0.08895    0.01733  -5.132
age_group45-54 years old  -0.07727    0.01815  -4.257
age_group55+ years        -0.03462    0.01634  -2.119
```

```
mh_problemsTRUE:age_group25-34 years old -0.06861    0.02682  -2.558
mh_problemsTRUE:age_group35-44 years old -0.06166    0.02798  -2.203
mh_problemsTRUE:age_group45-54 years old -0.08271    0.03001  -2.756
mh_problemsTRUE:age_group55+ years        -0.04685    0.02774  -1.689


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.252
ag_g25-34yo -0.304  0.485
ag_g35-44yo -0.303  0.478  0.585
ag_g45-54yo -0.296  0.462  0.563  0.566
ag_grp55+yr -0.334  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.190 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.185 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.174 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
m_TRUE:_55y  0.189 -0.739 -0.362 -0.359 -0.350 -0.557  0.560       0.540
           m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 198438 198511 -99211   198422
fit_4   12 198436 198546 -99206   198412 9.6896  4    0.04599 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d
```

```
     AIC      BIC   logLik deviance df.resid
198356.4 198593.8 -99152.2 198304.4    68109


Scaled residuals:
    Min     1Q  Median     3Q     Max
-2.2205 -0.6990 -0.1432  0.6353  2.8775


Random effects:
 Groups   Name                    Variance Std.Dev. Corr
 country  (Intercept)             0.069518 0.26366
          age_group25-34 years old 0.002561 0.05061  -0.18
          age_group35-44 years old 0.008256 0.09086  -0.15  1.00
          age_group45-54 years old 0.014301 0.11959  -0.22  0.66  0.65
          age_group55+ years       0.018410 0.13568  -0.32  0.38  0.38  0.94
 Residual                         1.068847 1.03385
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                             Estimate Std. Error t value
(Intercept)                                   2.69381    0.03437  78.371
mh_problemsTRUE                              -0.03637    0.02080  -1.748
age_group25-34 years old                     -0.06482    0.01821  -3.560
age_group35-44 years old                     -0.09083    0.02081  -4.364
age_group45-54 years old                     -0.07930    0.02332  -3.400
age_group55+ years                           -0.03399    0.02346  -1.449
mh_problemsTRUE:age_group25-34 years old     -0.06299    0.02700  -2.333
mh_problemsTRUE:age_group35-44 years old     -0.05323    0.02842  -1.873
mh_problemsTRUE:age_group45-54 years old     -0.07959    0.03038  -2.620
mh_problemsTRUE:age_group55+ years           -0.04689    0.02807  -1.671


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.251
ag_g25-34yo -0.346  0.461
ag_g35-44yo -0.336  0.413  0.656
ag_g45-54yo -0.357  0.370  0.561  0.599
ag_grp55+yr -0.437  0.370  0.518  0.527  0.763
m_TRUE:_2yo  0.191 -0.756 -0.590 -0.318 -0.282 -0.281
m_TRUE:_3yo  0.184 -0.729 -0.341 -0.520 -0.274 -0.271  0.562
m_TRUE:_4yo  0.172 -0.685 -0.316 -0.285 -0.466 -0.265  0.520      0.505
m_TRUE:_55y  0.187 -0.741 -0.343 -0.308 -0.282 -0.402  0.561      0.540
          m_TRUE:_4yo
mh_prblTRUE
```

```
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.518
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')

Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
       npar    AIC    BIC logLik deviance  Chisq Df Pr(>Chisq)
fit_3a   22 198356 198557 -99156   198312
fit_4a   26 198356 198594 -99152   198304 7.4125  4     0.1156
```
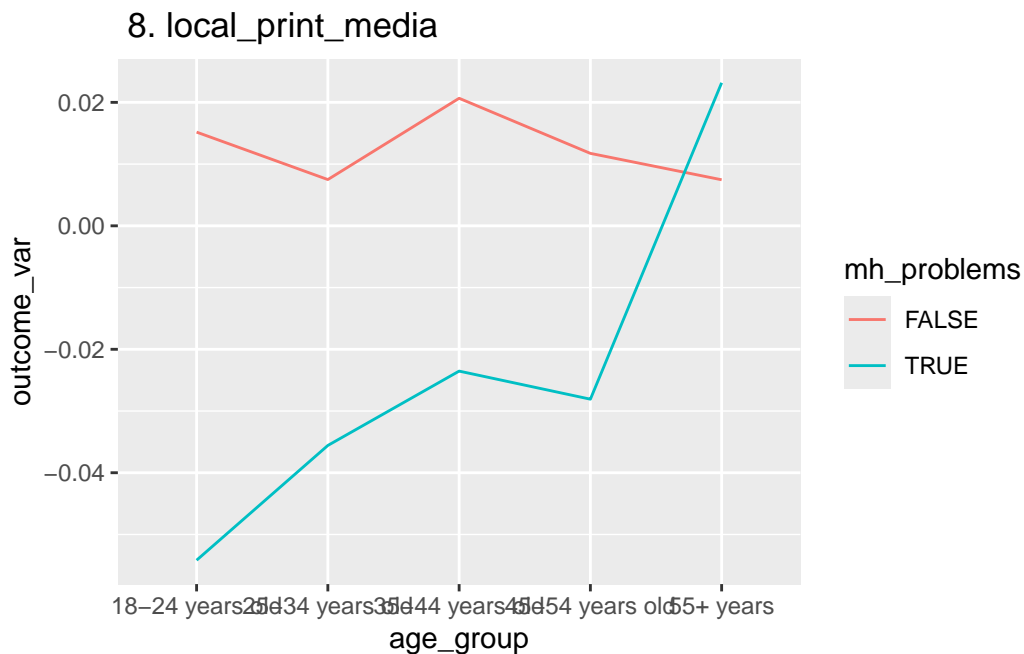
`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.

8. local_print_media


```
Current outcome variable:  10. govt_comms_media
```

```
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 210951.1  211015.2 -105468.5  210937.1     70676


Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.7656 -0.7761 -0.1637  0.5129  3.1884

Random effects:
 Groups    Name        Variance Std.Dev.
 country   (Intercept) 0.07072  0.2659
 Residual              1.15291  1.0737
Number of obs: 70683, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)                2.17354    0.03344  65.006
age_group25-34 years old   0.02108    0.01334   1.580
age_group35-44 years old   0.04993    0.01389   3.595
age_group45-54 years old   0.05390    0.01477   3.648
age_group55+ years         0.08664    0.01351   6.415


Correlation of Fixed Effects:
           (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.234
ag_g35-44yo -0.231  0.566
ag_g45-54yo -0.222  0.535  0.534
ag_grp55+yr -0.249  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 201611.9  201685.0 -100798.0  201595.9     68127


Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.8083 -0.7990 -0.1583  0.5059  3.2496


Random effects:
```

```
 Groups   Name        Variance Std.Dev.
 country  (Intercept) 0.07097  0.2664
 Residual             1.12373  1.0601
Number of obs: 68135, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.15899     0.03372  64.036
mh_problemsTRUE          -0.02940     0.00909  -3.234
age_group25-34 years old  0.02560     0.01346   1.902
age_group35-44 years old  0.04972     0.01402   3.546
age_group45-54 years old  0.06432     0.01492   4.310
age_group55+ years        0.09854     0.01372   7.183

Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.105
ag_g25-34yo -0.237  0.013
ag_g35-44yo -0.236  0.034  0.568
ag_g45-54yo -0.229  0.051  0.537  0.537
ag_grp55+yr -0.261  0.108  0.589  0.596  0.589

boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 201324.6  201525.4 -100640.3  201280.6     68113

Scaled residuals:
    Min     1Q  Median      3Q     Max
-2.0619 -0.7909 -0.1573  0.5314  3.2949

Random effects:
 Groups   Name                     Variance Std.Dev. Corr
 country  (Intercept)              0.062550 0.25010
          age_group25-34 years old 0.002358 0.04856   0.11
          age_group35-44 years old 0.007912 0.08895   0.27  0.84
          age_group45-54 years old 0.018845 0.13728  -0.03 -0.01  0.50
          age_group55+ years       0.042718 0.20668  -0.01 -0.06  0.40  0.88
```

```
 Residual                            1.115543 1.05619
Number of obs: 68135, groups:  country, 70


Fixed effects:
                           Estimate Std. Error t value
(Intercept)                2.170493   0.031997  67.834
mh_problemsTRUE           -0.039015   0.009125  -4.276
age_group25-34 years old  0.025332   0.014822   1.709
age_group35-44 years old  0.045605   0.017799   2.562
age_group45-54 years old  0.060859   0.022334   2.725
age_group55+ years         0.113203   0.028602   3.958


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.116
ag_g25-34yo -0.198  0.017
ag_g35-44yo -0.058  0.035  0.624
ag_g45-54yo -0.190  0.040  0.339  0.519
ag_grp55+yr -0.140  0.048  0.246  0.437  0.752
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d


     AIC       BIC    logLik  deviance  df.resid
 201611.1  201720.6 -100793.5  201587.1     68123


Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.8165 -0.7920 -0.1565  0.5059  3.2605


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.07092  0.2663
 Residual             1.12358  1.0600
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                  Estimate Std. Error t value
(Intercept)                        2.166256   0.034598  62.613
mh_problemsTRUE                   -0.046556   0.021004  -2.216
```

```
age_group25-34 years old                        0.025582   0.017264   1.482
age_group35-44 years old                        0.048675   0.017743   2.743
age_group45-54 years old                        0.055843   0.018578   3.006
age_group55+ years                              0.080761   0.016725   4.829
mh_problemsTRUE:age_group25-34 years old -0.001332   0.027452  -0.049
mh_problemsTRUE:age_group35-44 years old -0.000691   0.028643  -0.024
mh_problemsTRUE:age_group45-54 years old  0.020780   0.030713   0.677
mh_problemsTRUE:age_group55+ years        0.065287   0.028389   2.300


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.248
ag_g25-34yo -0.299  0.485
ag_g35-44yo -0.298  0.478  0.585
ag_g45-54yo -0.291  0.462  0.563  0.566
ag_grp55+yr -0.329  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.187 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.182 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.171 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
m_TRUE:_55y  0.186 -0.739 -0.362 -0.359 -0.350 -0.557  0.560       0.540
           m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 201612 201685 -100798   201596
fit_4   12 201611 201721 -100794   201587 8.8941  4     0.0638 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
```

```
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 201332.8  201570.2 -100640.4  201280.8     68109


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0563 -0.7983 -0.1583  0.5246  3.2886


Random effects:
 Groups    Name                      Variance  Std.Dev. Corr
 country   (Intercept)               0.0626611 0.25032
           age_group25-34 years old  0.0003244 0.01801   0.40
           age_group35-44 years old  0.0062717 0.07919   0.35  1.00
           age_group45-54 years old  0.0209498 0.14474  -0.06  0.53  0.54
           age_group55+ years        0.0450379 0.21222  -0.04  0.43  0.44  0.89
 Residual                            1.1156640 1.05625
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                                  Estimate Std. Error t value
(Intercept)                                       2.179322   0.032933  66.175
mh_problemsTRUE                                  -0.054406   0.021090  -2.580
age_group25-34 years old                          0.019556   0.017423   1.122
age_group35-44 years old                          0.038797   0.020270   1.914
age_group45-54 years old                          0.051302   0.025474   2.014
age_group55+ years                                0.096715   0.030708   3.150
mh_problemsTRUE:age_group25-34 years old          0.004027   0.027411   0.147
mh_problemsTRUE:age_group35-44 years old          0.010025   0.028860   0.347
mh_problemsTRUE:age_group45-54 years old          0.016435   0.030992   0.530
mh_problemsTRUE:age_group55+ years                0.043585   0.028651   1.521


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.263
ag_g25-34yo -0.272  0.481
ag_g35-44yo -0.136  0.424  0.573
ag_g45-54yo -0.264  0.341  0.454  0.540
ag_grp55+yr -0.214  0.282  0.383  0.474  0.751
m_TRUE:_2yo  0.199 -0.752 -0.622 -0.324 -0.258 -0.213
m_TRUE:_3yo  0.193 -0.725 -0.354 -0.540 -0.251 -0.207  0.553
m_TRUE:_4yo  0.180 -0.680 -0.328 -0.291 -0.433 -0.200  0.513       0.497
```

```
m_TRUE:_55y  0.194 -0.736 -0.354 -0.312 -0.255 -0.313  0.553      0.534
             m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.509
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
       npar    AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
fit_3a   22 201325 201525 -100640   201281
fit_4a   26 201333 201570 -100640   201281     0  4          1


`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.
```

9. word_of_mouth_media
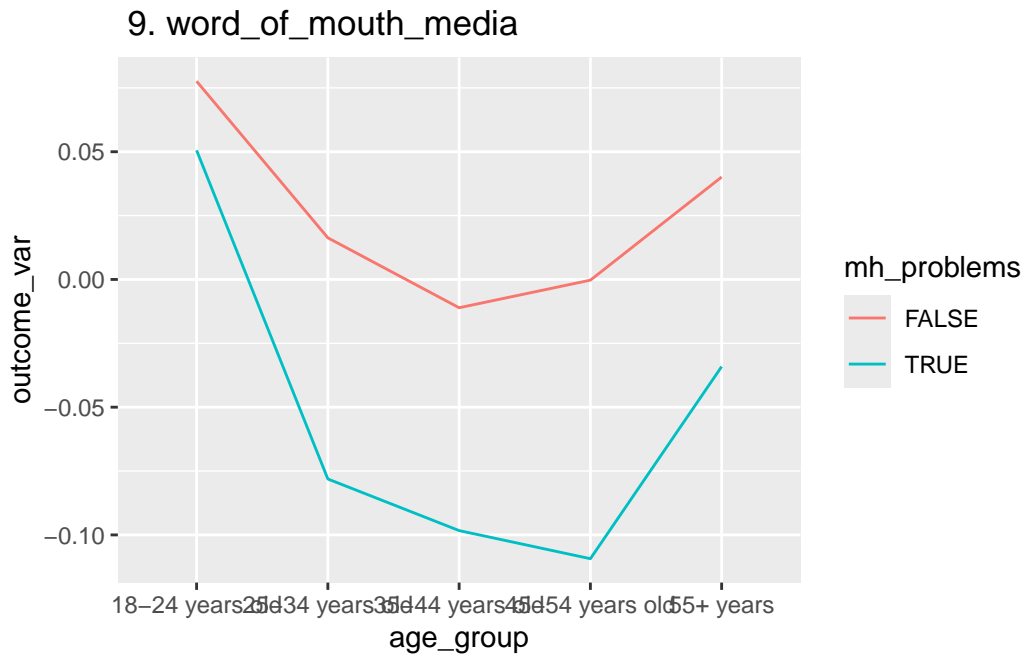

```
Current outcome variable:  11. social_media_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

     AIC       BIC    logLik  deviance  df.resid
 210951.5  211015.6  -105468.7  210937.5     70676

Scaled residuals:
    Min       1Q   Median       3Q      Max
-2.22310 -0.76581 -0.08644  0.73179  2.95434

Random effects:
 Groups    Name        Variance Std.Dev.
 country   (Intercept) 0.1034   0.3215
 Residual              1.1525   1.0735
Number of obs: 70683, groups:  country, 70

Fixed effects:
                         Estimate Std. Error t value
(Intercept)               2.43769    0.03980   61.243
age_group25-34 years old  0.03074    0.01334    2.305
age_group35-44 years old  0.13293    0.01388    9.574
```

```
age_group45-54 years old  0.23654    0.01477  16.010
age_group55+ years         0.42947    0.01351  31.796


Correlation of Fixed Effects:
          (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.197
ag_g35-44yo -0.194  0.566
ag_g45-54yo -0.187  0.535  0.534
ag_grp55+yr -0.209  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d

     AIC       BIC   logLik  deviance  df.resid
 202160.2  202233.2 -101072.1  202144.2     68127


Scaled residuals:
    Min     1Q  Median     3Q     Max
-2.2899 -0.7562 -0.0782  0.7388  3.0719


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.1043   0.323
 Residual             1.1324   1.064
Number of obs: 68135, groups:  country, 70


Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.463475   0.040180  61.311
mh_problemsTRUE          -0.099716   0.009126 -10.926
age_group25-34 years old  0.028392   0.013509   2.102
age_group35-44 years old  0.124864   0.014075   8.871
age_group45-54 years old  0.232475   0.014983  15.516
age_group55+ years        0.421282   0.013775  30.582


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.088
ag_g25-34yo -0.199  0.013
ag_g35-44yo -0.199  0.034  0.568
ag_g45-54yo -0.193  0.051  0.537  0.537
ag_grp55+yr -0.220  0.108  0.589  0.596  0.589
```

```
boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 201467.5  201668.3 -100711.7  201423.5     68113


Scaled residuals:
     Min       1Q   Median       3Q      Max
-2.47011 -0.75943 -0.07379  0.69710  3.12238

Random effects:
 Groups   Name                      Variance Std.Dev. Corr
 country  (Intercept)               0.076588 0.27674
          age_group25-34 years old  0.007817 0.08841   0.43
          age_group35-44 years old  0.019157 0.13841   0.42  0.67
          age_group45-54 years old  0.025939 0.16106   0.31  0.68  0.67
          age_group55+ years        0.093756 0.30620  -0.02  0.48  0.42  0.93
 Residual                           1.116533 1.05666
Number of obs: 68135, groups:  country, 70

Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.463075   0.035020  70.333
mh_problemsTRUE          -0.097081   0.009138 -10.624
age_group25-34 years old  0.028195   0.017409   1.620
age_group35-44 years old  0.123455   0.021919   5.632
age_group45-54 years old  0.234986   0.024520   9.583
age_group55+ years        0.428196   0.039341  10.884

Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.107
ag_g25-34yo  0.054  0.018
ag_g35-44yo  0.143  0.031  0.608
ag_g45-54yo  0.083  0.038  0.592  0.622
ag_grp55+yr -0.107  0.034  0.437  0.427  0.806
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')
```

```
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 202162.4  202272.0  -101069.2  202138.4      68123


Scaled residuals:
     Min       1Q   Median       3Q      Max
-2.29839 -0.75821 -0.07656  0.74046  3.05188


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.1042   0.3228
 Residual             1.1323   1.0641
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                              Estimate Std. Error t value
(Intercept)                                    2.44786    0.04091  59.829
mh_problemsTRUE                               -0.06215    0.02109  -2.948
age_group25-34 years old                       0.04065    0.01733   2.346
age_group35-44 years old                       0.14286    0.01781   8.020
age_group45-54 years old                       0.25791    0.01865  13.827
age_group55+ years                             0.43954    0.01679  26.171
mh_problemsTRUE:age_group25-34 years old      -0.02953    0.02756  -1.071
mh_problemsTRUE:age_group35-44 years old      -0.04484    0.02875  -1.560
mh_problemsTRUE:age_group45-54 years old      -0.06926    0.03083  -2.246
mh_problemsTRUE:age_group55+ years            -0.04802    0.02850  -1.685


Correlation of Fixed Effects:
            (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.210
ag_g25-34yo -0.254  0.485
ag_g35-44yo -0.253  0.477  0.585
ag_g45-54yo -0.247  0.462  0.563  0.567
ag_grp55+yr -0.279  0.517  0.630  0.638  0.632
m_TRUE:_2yo  0.159 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.154 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.145 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
m_TRUE:_55y  0.158 -0.739 -0.362 -0.359 -0.350 -0.557  0.560       0.540
            m_TRUE:_4yo
mh_prblTRUE
```

```
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 202160 202233 -101072   202144
fit_4   12 202162 202272 -101069   202138 5.7749  4     0.2166


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 201474.5  201711.9 -100711.2  201422.5     68109


Scaled residuals:
     Min       1Q   Median       3Q      Max
-2.48207 -0.75428 -0.07334  0.69512  3.12376


Random effects:
 Groups   Name                     Variance Std.Dev. Corr
 country  (Intercept)              0.073183 0.27052
          age_group25-34 years old 0.002932 0.05415  1.00
          age_group35-44 years old 0.015804 0.12571  0.57 0.57
          age_group45-54 years old 0.020331 0.14259  0.47 0.47 0.59
          age_group55+ years       0.081332 0.28519  0.08 0.08 0.27 0.90
 Residual                          1.116862 1.05682
Number of obs: 68135, groups:  country, 70

Fixed effects:
                                   Estimate Std. Error t value
(Intercept)                         2.44475    0.03508  69.687
```

```
mh_problemsTRUE                                 -0.05376    0.02100   -2.560
age_group25-34 years old                         0.03898    0.01839    2.119
age_group35-44 years old                         0.14281    0.02334    6.118
age_group45-54 years old                         0.26515    0.02522   10.515
age_group55+ years                               0.45427    0.03825   11.876
mh_problemsTRUE:age_group25-34 years old -0.02264 0.02740   -0.826
mh_problemsTRUE:age_group35-44 years old -0.04675 0.02895   -1.615
mh_problemsTRUE:age_group45-54 years old -0.08152 0.03075   -2.651
mh_problemsTRUE:age_group55+ years       -0.07158 0.02863   -2.500


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.245
ag_g25-34yo  0.050  0.451
ag_g35-44yo  0.114  0.366  0.543
ag_g45-54yo  0.079  0.341  0.495  0.574
ag_grp55+yr -0.072  0.224  0.277  0.360  0.747
m_TRUE:_2yo  0.184 -0.748 -0.586 -0.277 -0.258 -0.168
m_TRUE:_3yo  0.178 -0.721 -0.328 -0.467 -0.250 -0.162  0.544
m_TRUE:_4yo  0.168 -0.680 -0.310 -0.253 -0.435 -0.161  0.513       0.496
m_TRUE:_55y  0.179 -0.734 -0.330 -0.268 -0.255 -0.251  0.548       0.529
           m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.509
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
       npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3a   22 201467 201668 -100712   201423
fit_4a   26 201474 201712 -100711   201422 0.9649  4     0.9151


`summarise()` has grouped output by 'age_group'. You can override using the
```

`.groups` argument.

10. govt_comms_media
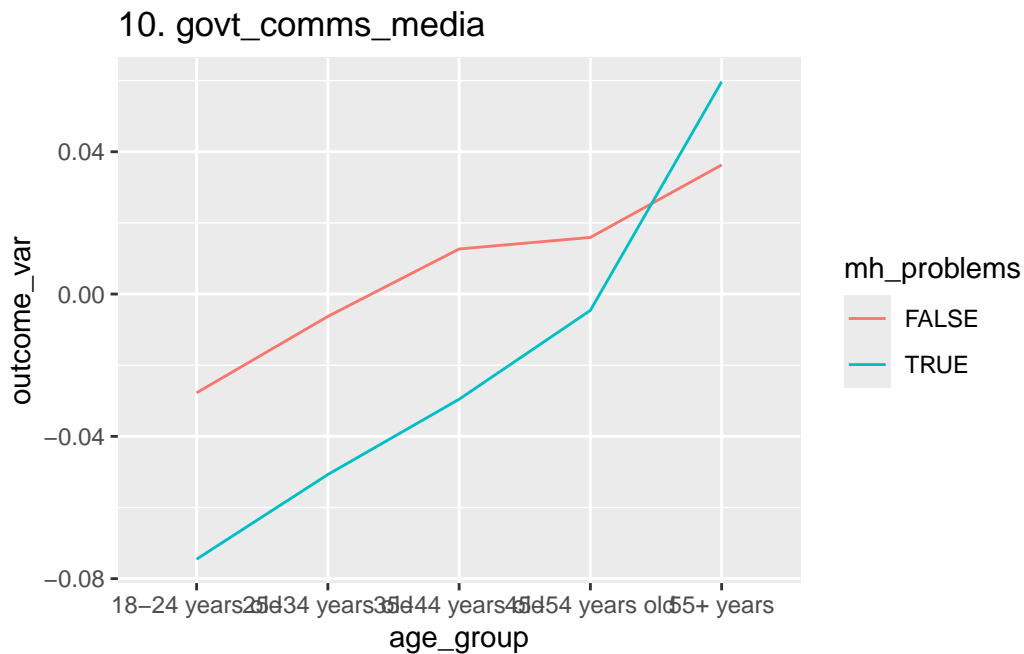

```
Current outcome variable:  12. internet_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

     AIC        BIC    logLik  deviance  df.resid
 210015.2   210079.4 -105000.6  210001.2     70676


Scaled residuals:
    Min      1Q  Median      3Q      Max
-2.2145 -0.6824 -0.1738  0.5377  3.0934


Random effects:
 Groups    Name        Variance Std.Dev.
 country   (Intercept) 0.08242  0.2871
 Residual              1.13757  1.0666
Number of obs: 70683, groups:  country, 70

Fixed effects:
                      Estimate Std. Error t value
(Intercept)            2.20183    0.03583  61.452
```

```
age_group25-34 years old  0.02722    0.01325    2.054
age_group35-44 years old  0.13402    0.01379    9.716
age_group45-54 years old  0.17317    0.01468   11.799
age_group55+ years        0.32671    0.01342   24.350


Correlation of Fixed Effects:
          (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.217
ag_g35-44yo -0.214  0.566
ag_g45-54yo -0.206  0.535  0.534
ag_grp55+yr -0.231  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d

     AIC       BIC    logLik  deviance  df.resid
 201020.7  201093.7 -100502.3  201004.7     68127


Scaled residuals:
    Min      1Q  Median      3Q      Max
-2.2759 -0.6846 -0.1759  0.5449  3.2070


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.08411  0.290
 Residual             1.11382  1.055
Number of obs: 68135, groups:  country, 70


Fixed effects:
                          Estimate Std. Error t value
(Intercept)               2.207466   0.036379  60.680
mh_problemsTRUE          -0.071863   0.009051  -7.940
age_group25-34 years old  0.030541   0.013397   2.280
age_group35-44 years old  0.135556   0.013959   9.711
age_group45-54 years old  0.182204   0.014858  12.263
age_group55+ years        0.331108   0.013660  24.239


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.097
ag_g25-34yo -0.218  0.013
ag_g35-44yo -0.218  0.034  0.568
ag_g45-54yo -0.211  0.051  0.537  0.537
```

```
ag_grp55+yr -0.241  0.108  0.589  0.596  0.589


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 200384.9  200585.7  -100170.4  200340.9     68113

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.7220 -0.7434 -0.1621  0.5513  3.1320

Random effects:
 Groups    Name                       Variance Std.Dev. Corr
 country   (Intercept)                0.061028 0.24704
           age_group25-34 years old   0.004694 0.06851  0.07
           age_group35-44 years old   0.024562 0.15672  0.27 0.89
           age_group45-54 years old   0.030891 0.17576  0.29 0.67 0.85
           age_group55+ years         0.103699 0.32202  0.08 0.65 0.67 0.91
 Residual                             1.099256 1.04845
Number of obs: 68135, groups:  country, 70

Fixed effects:
                           Estimate Std. Error t value
(Intercept)                2.234535   0.031677  70.541
mh_problemsTRUE           -0.082063   0.009067  -9.050
age_group25-34 years old  0.013341   0.015903   0.839
age_group35-44 years old  0.113429   0.023577   4.811
age_group45-54 years old  0.167223   0.025895   6.458
age_group55+ years        0.340836   0.041109   8.291

Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.118
ag_g25-34yo -0.192  0.020
ag_g35-44yo  0.039  0.029  0.670
ag_g45-54yo  0.073  0.037  0.558  0.747
ag_grp55+yr -0.019  0.033  0.481  0.621  0.803
optimizer (nloptwrap) convergence code: 0 (OK)
```

```
boundary (singular) fit: see help('isSingular')

Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d


     AIC        BIC    logLik  deviance  df.resid
 201024.5  201134.0  -100500.2   201000.5      68123


Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.2725 -0.6810 -0.1755  0.5392  3.1995


Random effects:
 Groups    Name        Variance  Std.Dev.
 country  (Intercept)  0.08412   0.290
 Residual              1.11375   1.055
Number of obs: 68135, groups:  country, 70


Fixed effects:
                                            Estimate Std. Error t value
(Intercept)                                 2.202096   0.037203  59.192
mh_problemsTRUE                            -0.058424   0.020913  -2.794
age_group25-34 years old                    0.045314   0.017188   2.636
age_group35-44 years old                    0.145345   0.017666   8.228
age_group45-54 years old                    0.184500   0.018498   9.974
age_group55+ years                          0.332019   0.016654  19.936
mh_problemsTRUE:age_group25-34 years old   -0.038178   0.027332  -1.397
mh_problemsTRUE:age_group35-44 years old   -0.026258   0.028517  -0.921
mh_problemsTRUE:age_group45-54 years old   -0.003400   0.030579  -0.111
mh_problemsTRUE:age_group55+ years          0.007428   0.028265   0.263


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.229
ag_g25-34yo -0.277  0.485
ag_g35-44yo -0.276  0.478  0.585
ag_g45-54yo -0.269  0.462  0.563  0.566
ag_grp55+yr -0.305  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.173 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.168 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.158 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
m_TRUE:_55y  0.172 -0.739 -0.362 -0.359 -0.350 -0.557  0.560       0.540
```

```
              m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 201021 201094 -100502   201005
fit_4   12 201024 201134 -100500   201000 4.1837  4     0.3817


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 200405.8  200643.2 -100176.9  200353.8     68109


Scaled residuals:
    Min     1Q  Median     3Q     Max
-2.7170 -0.7359 -0.1624  0.5559  3.1425


Random effects:
 Groups    Name                     Variance  Std.Dev. Corr
 country   (Intercept)              0.0563855 0.2375
           age_group25-34 years old 0.0006605 0.0257   1.00
           age_group35-44 years old 0.0164271 0.1282   0.55 0.55
           age_group45-54 years old 0.0250167 0.1582   0.48 0.48 0.83
           age_group55+ years       0.0901207 0.3002   0.22 0.22 0.61 0.87
 Residual                           1.0996908 1.0487
Number of obs: 68135, groups:  country, 70


Fixed effects:
```

```
                                          Estimate Std. Error t value
(Intercept)                                2.22077    0.03145  70.605
mh_problemsTRUE                           -0.06343    0.02087  -3.039
age_group25-34 years old                   0.03140    0.01738   1.807
age_group35-44 years old                   0.12820    0.02345   5.468
age_group45-54 years old                   0.17857    0.02645   6.752
age_group55+ years                         0.35730    0.03985   8.967
mh_problemsTRUE:age_group25-34 years old  -0.02351    0.02719  -0.864
mh_problemsTRUE:age_group35-44 years old  -0.02200    0.02870  -0.767
mh_problemsTRUE:age_group45-54 years old  -0.01088    0.03063  -0.355
mh_problemsTRUE:age_group55+ years        -0.02738    0.02845  -0.962


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.272
ag_g25-34yo -0.162  0.475
ag_g35-44yo  0.075  0.362  0.495
ag_g45-54yo  0.085  0.324  0.444  0.689
ag_grp55+yr  0.034  0.214  0.288  0.552  0.743
m_TRUE:_2yo  0.205 -0.749 -0.617 -0.275 -0.244 -0.161
m_TRUE:_3yo  0.198 -0.723 -0.347 -0.462 -0.238 -0.156  0.546
m_TRUE:_4yo  0.186 -0.679 -0.325 -0.250 -0.413 -0.151  0.512       0.499
m_TRUE:_55y  0.199 -0.734 -0.348 -0.265 -0.240 -0.240  0.549       0.531
          m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.505
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
       npar    AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
fit_3a   22 200385 200586 -100170   200341
fit_4a   26 200406 200643 -100177   200354     0  4          1
```
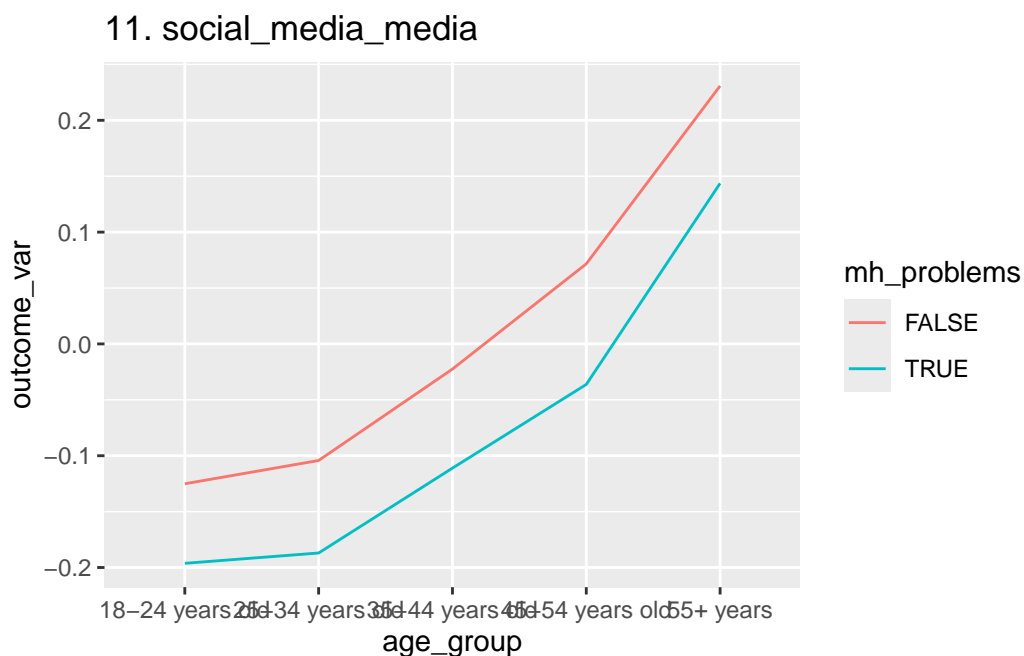
`summarise()` has grouped output by 'age_group'. You can override using the
`.groups` argument.

11. social_media_media


```
Current outcome variable:  13. messaging_media
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ age_group + (1 | country)
   Data: d

      AIC        BIC    logLik  deviance  df.resid
 213587.3   213651.5 -106786.7   213573.3      70676


Scaled residuals:
     Min       1Q    Median       3Q       Max
-2.13746 -0.76119 -0.08104   0.73333   2.75094


Random effects:
 Groups     Name        Variance  Std.Dev.
 country    (Intercept) 0.09215   0.3036
 Residual               1.19646   1.0938
Number of obs: 70683, groups:  country, 70


Fixed effects:
                         Estimate Std. Error t value
```

```
(Intercept)                    2.551768   0.037792  67.522
age_group25-34 years old -0.002498   0.013592  -0.184
age_group35-44 years old  0.054819   0.014146   3.875
age_group45-54 years old  0.123528   0.015053   8.206
age_group55+ years        0.286562   0.013761  20.824


Correlation of Fixed Effects:
          (Intr) a_25yo a_35yo a_45yo
ag_g25-34yo -0.211
ag_g35-44yo -0.208  0.566
ag_g45-54yo -0.200  0.535  0.534
ag_grp55+yr -0.225  0.589  0.593  0.584
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (1 | country)
   Data: d


     AIC        BIC    logLik  deviance  df.resid
 204808.9   204881.9 -102396.4  204792.9     68127


Scaled residuals:
    Min       1Q   Median       3Q      Max
-2.16045 -0.75280 -0.07874  0.72849  2.83134


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.09191  0.3032
 Residual             1.17746  1.0851
Number of obs: 68135, groups:  country, 70


Fixed effects:
                         Estimate Std. Error t value
(Intercept)               2.570389   0.037972  67.691
mh_problemsTRUE          -0.082229   0.009306  -8.836
age_group25-34 years old -0.004909   0.013775  -0.356
age_group35-44 years old  0.052723   0.014352   3.674
age_group45-54 years old  0.126399   0.015277   8.274
age_group55+ years        0.280498   0.014045  19.971


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.095
ag_g25-34yo -0.215  0.013
ag_g35-44yo -0.214  0.034  0.568
```

```
ag_g45-54yo -0.208   0.051   0.537   0.537
ag_grp55+yr -0.237   0.108   0.589   0.596   0.589


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems + age_group + (age_group | country)
   Data: d

      AIC        BIC     logLik  deviance  df.resid
 204084.2   204285.0  -102020.1   204040.2      68113

Scaled residuals:
     Min        1Q   Median        3Q       Max
-2.32486  -0.74332  -0.08723   0.68207   2.89214


Random effects:
 Groups    Name                        Variance Std.Dev. Corr
 country   (Intercept)                 0.064554 0.2541
           age_group25-34 years old 0.002852 0.0534    1.00
           age_group35-44 years old 0.016051 0.1267    0.38 0.38
           age_group45-54 years old 0.035517 0.1885    0.19 0.19 0.60
           age_group55+ years       0.092756 0.3046    0.05 0.05 0.45 0.87
 Residual                            1.160075 1.0771
Number of obs: 68135, groups:  country, 70


Fixed effects:
                           Estimate Std. Error t value
(Intercept)                2.575436   0.032448  79.372
mh_problemsTRUE           -0.086280   0.009312  -9.265
age_group25-34 years old -0.002168   0.015098  -0.144
age_group35-44 years old  0.048222   0.020921   2.305
age_group45-54 years old  0.130710   0.027230   4.800
age_group55+ years        0.288096   0.039261   7.338


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo
mh_prblTRUE -0.116
ag_g25-34yo  0.170  0.015
ag_g35-44yo  0.084  0.030  0.466
ag_g45-54yo  0.009  0.032  0.334  0.565
ag_grp55+yr -0.049  0.034  0.207  0.446  0.782
```

```
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')

Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (1 | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 204815.7  204925.3 -102395.9  204791.7     68123


Scaled residuals:
     Min       1Q   Median       3Q      Max
-2.16044 -0.75321 -0.07787  0.72809  2.82293


Random effects:
 Groups    Name        Variance Std.Dev.
 country  (Intercept) 0.09184  0.3031
 Residual             1.17744  1.0851
Number of obs: 68135, groups:  country, 70

Fixed effects:
                                              Estimate Std. Error t value
(Intercept)                                   2.563833   0.038792  66.092
mh_problemsTRUE                              -0.066425   0.021502  -3.089
age_group25-34 years old                      0.001456   0.017673   0.082
age_group35-44 years old                      0.059164   0.018164   3.257
age_group45-54 years old                      0.138425   0.019019   7.278
age_group55+ years                            0.287381   0.017124  16.782
mh_problemsTRUE:age_group25-34 years old     -0.015626   0.028102  -0.556
mh_problemsTRUE:age_group35-44 years old     -0.015600   0.029321  -0.532
mh_problemsTRUE:age_group45-54 years old     -0.033549   0.031441  -1.067
mh_problemsTRUE:age_group55+ years           -0.016565   0.029062  -0.570


Correlation of Fixed Effects:
           (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.226
ag_g25-34yo -0.273  0.485
ag_g35-44yo -0.272  0.478  0.585
ag_g45-54yo -0.266  0.462  0.563  0.566
ag_grp55+yr -0.300  0.518  0.630  0.638  0.632
m_TRUE:_2yo  0.171 -0.753 -0.626 -0.364 -0.351 -0.393
m_TRUE:_3yo  0.166 -0.725 -0.358 -0.611 -0.342 -0.385  0.554
m_TRUE:_4yo  0.156 -0.680 -0.335 -0.332 -0.591 -0.364  0.517       0.499
```

```
m_TRUE:_55y  0.170 -0.739 -0.362 -0.359 -0.350 -0.557  0.560        0.540
              m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.507
Data: d
Models:
fit_3: outcome_var ~ mh_problems + age_group + (1 | country)
fit_4: outcome_var ~ mh_problems * age_group + (1 | country)
      npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3    8 204809 204882 -102396   204793
fit_4   12 204816 204925 -102396   204792 1.1399  4     0.8879


boundary (singular) fit: see help('isSingular')


Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: outcome_var ~ mh_problems * age_group + (age_group | country)
   Data: d

      AIC       BIC    logLik  deviance  df.resid
 204088.2  204325.5 -102018.1  204036.2     68109


Scaled residuals:
     Min       1Q   Median       3Q      Max
-2.33427 -0.73557 -0.09031  0.68694  2.88915


Random effects:
 Groups   Name                     Variance Std.Dev. Corr
 country  (Intercept)              0.064219 0.25341
          age_group25-34 years old 0.002933 0.05415  1.00
          age_group35-44 years old 0.016053 0.12670  0.39 0.39
          age_group45-54 years old 0.035834 0.18930  0.19 0.19 0.60
          age_group55+ years       0.093408 0.30563  0.05 0.05 0.46 0.87
 Residual                          1.160015 1.07704
Number of obs: 68135, groups:  country, 70
```

```
Fixed effects:
                                            Estimate Std. Error t value
(Intercept)                                 2.566174   0.033329  76.995
mh_problemsTRUE                            -0.063861   0.021425  -2.981
age_group25-34 years old                    0.001282   0.018710   0.069
age_group35-44 years old                    0.056077   0.023703   2.366
age_group45-54 years old                    0.147195   0.029562   4.979
age_group55+ years                          0.303390   0.040625   7.468
mh_problemsTRUE:age_group25-34 years old   -0.007305   0.027937  -0.261
mh_problemsTRUE:age_group35-44 years old   -0.018265   0.029525  -0.619
mh_problemsTRUE:age_group45-54 years old   -0.045623   0.031598  -1.444
mh_problemsTRUE:age_group55+ years         -0.045220   0.029201  -1.549


Correlation of Fixed Effects:
          (Intr) m_TRUE a_25yo a_35yo a_45yo a_55+y m_TRUE:_2yo m_TRUE:_3yo
mh_prblTRUE -0.263
ag_g25-34yo  0.019  0.452
ag_g35-44yo -0.019  0.368  0.502
ag_g45-54yo -0.067  0.297  0.384  0.572
ag_grp55+yr -0.101  0.216  0.258  0.463  0.768
m_TRUE:_2yo  0.198 -0.747 -0.588 -0.278 -0.223 -0.162
m_TRUE:_3yo  0.191 -0.722 -0.329 -0.469 -0.217 -0.157  0.544
m_TRUE:_4yo  0.179 -0.677 -0.307 -0.251 -0.380 -0.151  0.507       0.493
m_TRUE:_55y  0.193 -0.734 -0.331 -0.270 -0.221 -0.241  0.548       0.530
          m_TRUE:_4yo
mh_prblTRUE
ag_g25-34yo
ag_g35-44yo
ag_g45-54yo
ag_grp55+yr
m_TRUE:_2yo
m_TRUE:_3yo
m_TRUE:_4yo
m_TRUE:_55y  0.504
optimizer (nloptwrap) convergence code: 0 (OK)
boundary (singular) fit: see help('isSingular')


Data: d
Models:
fit_3a: outcome_var ~ mh_problems + age_group + (age_group | country)
fit_4a: outcome_var ~ mh_problems * age_group + (age_group | country)
      npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
fit_3a   22 204084 204285 -102020   204040
```

```
fit_4a    26 204088 204326 -102018    204036 4.0286  4      0.4021
```

`summarise()` has grouped output by 'age_group'. You can override using the `.groups` argument.

12. internet_media

13. messaging_media