Additional file 4

The adaptive community-response (ACR) method for collecting misinformation on social media

Julian Kauk[1], Helene Kreysa[1], André Scherag[2, 3], and Stefan R. Schweinberger[1, 3, 4]

[1]*Department of General Psychology and Cognitive Neuroscience, Friedrich Schiller University Jena, Jena, Germany*
[2]*Institute of Medical Statistics, Computer and Data Sciences, Jena University Hospital, Jena, Germany*
[3]*Michael Stifel Center Jena, Jena, Germany*
[4]*German Center for Mental Health (DZPG), Site Jena-Magdeburg-Halle, Germany*

August 29, 2023

Outputs of the LMEM

In the present document, we present the outputs of the LMEM for mean text similarity and mean sentiment score, as provided by the STATSMODEL package. We also report the AIC and BIC of the models, and AIC and BIC differences between the nested models.

Output 1: Fixed effects model for the mean text similarity. The AIC and BIC of this model are -2364.94 and -2328.96, respectively.

```
                        Mixed Linear Model Regression Results
=======================================================================================
Model:                     MixedLM          Dependent Variable:          value
No. Observations:          1261             Method:                      ML
No. Groups:                348              Scale:                       0.0051
Min. group size:           1                Log-Likelihood:              1189.4702
Max. group size:           5                Converged:                   Yes
Mean group size:           3.6
---------------------------------------------------------------------------------------
                                            Coef.  Std.Err.    z    P>|z| [0.025 0.975]
---------------------------------------------------------------------------------------
Intercept                                   0.470   0.006   72.646 0.000  0.458  0.483
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] -0.096   0.006  -14.940 0.000 -0.109 -0.084
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] -0.112   0.006  -18.729 0.000 -0.124 -0.100
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] -0.097   0.006  -16.860 0.000 -0.108 -0.085
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] -0.088   0.008  -10.952 0.000 -0.104 -0.072
Group Var                                   0.009   0.014
=======================================================================================
```

Output 2: Random effects model for the mean text similarity. The AIC and BIC of this model are -2502.46 and -2394.53, respectively. The AIC and BIC differences of the fixed and the random models are 137.52 and 65.57, respectively.

```
                                Mixed Linear Model Regression Results
==============================================================================================================
Model:                            MixedLM           Dependent Variable:           value
No. Observations:                 1261              Method:                       ML
No. Groups:                       348               Scale:                        0.0019
Min. group size:                  1                 Log-Likelihood:               1272.2322
Max. group size:                  5                 Converged:                    Yes
Mean group size:                  3.6
--------------------------------------------------------------------------------------------------------------
                                                             Coef.  Std.Err.   z     P>|z|  [0.025 0.975]
--------------------------------------------------------------------------------------------------------------
Intercept                                                    0.470  0.007  66.130  0.000  0.456  0.484
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1]           -0.099  0.007 -13.326  0.000 -0.113 -0.084
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2]           -0.115  0.007 -16.538  0.000 -0.128 -0.101
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3]           -0.099  0.007 -15.059  0.000 -0.111 -0.086
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4]           -0.088  0.008 -11.486  0.000 -0.103 -0.073
Group Var                                                    0.016
Group x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] Cov  -0.007
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] Var          0.011
Group x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] Cov  -0.007
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] Cov 0.010
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] Var          0.011
Group x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] Cov  -0.007
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] Cov 0.008
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] Cov 0.010
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] Var          0.010
Group x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Cov  -0.008
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Cov 0.007
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Cov 0.007
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Cov 0.006
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Var          0.007
==============================================================================================================
```

Output 3: Fixed effects model for the mean sentiment score. The AIC and BIC of this model are -1568.06 and -1532.08, respectively.

```
                    Mixed Linear Model Regression Results
=============================================================================================
Model:                      MixedLM         Dependent Variable:        value
No. Observations:           1261            Method:                    ML
No. Groups:                 348             Scale:                     0.0106
Min. group size:            1               Log-Likelihood:            791.0303
Max. group size:            5               Converged:                 Yes
Mean group size:            3.6
---------------------------------------------------------------------------------------------
                                            Coef. Std.Err.   z    P>|z| [0.025 0.975]
---------------------------------------------------------------------------------------------
Intercept                                   0.429   0.008 51.985 0.000 0.412 0.445
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] -0.112 0.009 -12.157 0.000 -0.130 -0.094
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] -0.097 0.009 -11.356 0.000 -0.114 -0.080
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] -0.082 0.008 -10.022 0.000 -0.098 -0.066
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] -0.043 0.011 -3.756 0.000 -0.066 -0.021
Group Var                                   0.013   0.015
=============================================================================================
```

Output 4: Random effects model for the mean sentiment score. The AIC and BIC of this model are -1598.72 and -1490.79, respectively. The AIC and BIC differences of the fixed and the random models are 30.66 and -41.29, respectively.

```
                           Mixed Linear Model Regression Results
=================================================================================================
Model:                        MixedLM          Dependent Variable:          value
No. Observations:             1261             Method:                      ML
No. Groups:                   348              Scale:                       0.0062
Min. group size:              1                Log-Likelihood:              820.3623
Max. group size:              5                Converged:                   Yes
Mean group size:              3.6
-------------------------------------------------------------------------------------------------
                                                          Coef. Std.Err.   z    P>|z| [0.025 0.975]
-------------------------------------------------------------------------------------------------
Intercept                                                 0.429  0.008 54.693 0.000 0.413 0.444
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1]         -0.111  0.009 -11.730 0.000 -0.129 -0.092
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2]         -0.096  0.009 -10.127 0.000 -0.115 -0.078
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3]         -0.083  0.008 -9.873 0.000 -0.099 -0.067
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4]         -0.042  0.011 -3.758 0.000 -0.064 -0.020
Group Var                                                 0.015
Group x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] Cov                                    -0.002
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] Var      0.010
Group x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] Cov                                    -0.005
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] Cov 0.011
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] Var      0.014
Group x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] Cov                                    -0.003
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] Cov 0.007
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] Cov 0.009
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] Var      0.010
Group x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Cov                                    -0.005
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b1] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Cov 0.003
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b2] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Cov 0.006
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b3] x C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Cov 0.001
C(t, levels=['s', 'b1', 'b2', 'b3', 'b4'])[T.b4] Var      0.008
=================================================================================================
```