Supplemental Information (SI) 3 for

# Reading **your** emotions in **my** physiology? Reliable emotion interpretations in absence of a robust physiological resonance

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## Additional information to Analysis 2 (Physiological analysis)

## 1. Skin conductance

Table 1. Results of the linear mixed-effects model predicting the shape of the skin conductance level signal related to passive viewing of prototypical facial expressions by emotion category, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | -0.017 | 1 | 181345 | 1.754 | -1.324 | 0.185 | -0.034 | 0.001 |
| Emotion category | | 4 | 181345 | 0.476 | | 0.753 | | |
| ▪ *Angry* | 0.022 | | | | 1.217 | 0.224 | -0.001 | 0.047 |
| ▪ *Happy* | 0.015 | | | | 0.812 | 0.417 | -0.009 | 0.041 |
| ▪ *Sad* | 0.021 | | | | 1.171 | 0.241 | -0.005 | 0.049 |
| ▪ *Fearful* | 0.013 | | | | 0.749 | 0.454 | -0.015 | 0.042 |
| Linear polynomial | -6.639 | 1 | 181345 | 9.457 | -3.075 | **0.002** | -17.966 | 6.419 |
| Quadratic polynomial | -0.024 | 1 | 181345 | 0.001 | -0.027 | **0.978** | -3.812 | 4.241 |
| Cubic polynomial | -0.013 | 1 | 181345 | < .001 | -0.019 | **0.985** | -2.388 | 2.217 |
| Emotion category* linear polynomial | | 4 | 181345 | 5.596 | | **<.001** | | |
| ▪ *Angry* | 0.752 | | | | 0.390 | 0.697 | -19.337 | 20.148 |
| ▪ *Happy* | -5.460 | | | | -2.833 | **0.005** | -24.406 | 10.360 |
| ▪ *Sad* | -0.406 | | | | -0.210 | 0.833 | -17.746 | 18.510 |
| ▪ *Fearful* | 3.358 | | | | 1.744 | 0.081 | -16.794 | 23.617 |
| Emotion category* quadratic polynomial | | 4 | 181345 | 12.274 | | **< .001** | | |
| ▪ *Angry* | -0.457 | | | | -0.556 | 0.578 | -6.954 | 5.533 |
| ▪ *Happy* | -4.303 | | | | -5.244 | **< .001** | -9.794 | 0.516 |
| ▪ *Sad* | -2.982 | | | | -3.635 | **< .001** | -9.704 | 2.894 |
| ▪ *Fearful* | 0.242 | | | | 0.295 | 0.768 | -6.247 | 6.179 |
| Emotion category* cubic polynomial | | 4 | 181345 | 15.145 | | **< .001** | | |
| ▪ *Angry* | 3.154 | | | | 6.453 | **< .001** | **0.250** | **7.340** |
| ▪ *Happy* | 3.595 | | | | 6.604 | **<.001** | -0.025 | 7.464 |
| ▪ *Sad* | 2.503 | | | | 4.598 | **< .001** | -0.115 | 5.329 |
| ▪ *Fearful* | 1.578 | | | | 2.902 | **0.004** | -1.776 | 4.847 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | < .001 |
| | | Linear polynomial | 170.149 |
| | | Quadratic polynomial | 27.639 |
| $N_{Subject}$ | 61 | Cubic polynomial | 19.089 |
| Obs. | 181425 | Residual | 0.081 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

Table 2. Results of the linear mixed-effects model predicting the shape of the skin conductance level signal related to passive viewing of bodily expressions by emotion category, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | -0.010 | 1 | 181420 | 0.422 | -0.649 | 0.516 | -0.027 | 0.008 |
| Emotion category | | 4 | 181420 | 0.796 | | 0.527 | | |
| ▪ *Angry* | -0.011 | | | | -0.539 | 0.590 | -0.035 | 0.014 |
| ▪ *Happy* | 0.022 | | | | 1.028 | 0.304 | -0.010 | 0.053 |
| ▪ *Sad* | -0.003 | | | | -0.164 | 0.870 | -0.029 | 0.023 |
| ▪ *Fearful* | 0.013 | | | | 0.627 | 0.530 | -0.015 | 0.041 |
| Linear polynomial | -6.408 | 1 | 181420 | 9.981 | -3.159 | **0.002** | -20.678 | 10.233 |
| Quadratic polynomial | -0.674 | 1 | 181420 | 0.481 | -0.693 | 0.488 | -3.633 | 2.270 |
| Cubic polynomial | 0.011 | 1 | 181420 | 0.001 | 0.029 | 0.977 | -2.022 | 1.807 |
| Emotion category* linear polynomial | | 4 | 181420 | 22.935 | | **< . 001** | | |
| ▪ *Angry* | -4.802 | | | | -2.434 | **0.015** | -25.567 | 14.257 |
| ▪ *Happy* | 11.318 | | | | 5.733 | **< .001** | -14.420 | 44.602 |
| ▪ *Sad* | -2.990 | | | | -1.515 | 0.130 | -23.565 | 17.912 |
| ▪ *Fearful* | 6.014 | | | | 3.049 | **0.002** | -16.268 | 28.978 |
| Emotion category* quadratic polynomial | | 4 | 181420 | 0.528 | | 0.715 | | |
| ▪ *Angry* | 0.644 | | | | 0.770 | 0.441 | -3.653 | 4.758 |
| ▪ *Happy* | 0.555 | | | | 0.664 | 0.507 | -4.523 | 5.292 |
| ▪ *Sad* | 1.157 | | | | 1.384 | 0.167 | -3.376 | 5.840 |
| ▪ *Fearful* | 0.875 | | | | 1.047 | 0.295 | -3.862 | 5.989 |
| Emotion category* cubic polynomial | | 4 | 181420 | 5.541 | | **< .001** | | |
| ▪ *Angry* | 0.557 | | | | 1.005 | 0.315 | -2.622 | 4.206 |
| ▪ *Happy* | 0.783 | | | | 1.412 | 0.158 | -1.762 | 3.636 |
| ▪ *Sad* | 2.461 | | | | 4.438 | **< .001** | -0.582 | 5.562 |
| ▪ *Fearful* | 0.743 | | | | 1.340 | 0.180 | -1.795 | 3.111 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | < .001 |
| | | Linear polynomial | 131.66 |
| | | Quadratic polynomial | 36.307 |
| $N_{Subject}$ | 61 | Cubic polynomial | 0.002 |
| Obs. | 181500 | Residual | 0.110 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

Table 3. Results of the linear mixed-effects model predicting the shape of the skin conductance level signal related to passive viewing of subtle facial cues by cue type, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | -0.017 | 1 | 140024 | 1.594 | -1.262 | 0.207 | -0.038 | 0.001 |
| Cue type | | 3 | 140024 | 0.324 | | 0.808 | | |
| ▪ *Blush* | 0.007 | | | | 0.388 | 0.698 | -0.023 | 0.041 |
| ▪ *Dilated pupils* | 0.011 | | | | 0.595 | 0.552 | -0.013 | 0.039 |
| ▪ *Tears* | 0.019 | | | | 0.963 | 0.336 | -0.003 | 0.044 |
| Linear polynomial | -6.733 | 1 | 140024 | 8.855 | -2.976 | **0.003** | -18.046 | 7.377 |
| Quadratic polynomial | 0.086 | 1 | 140024 | 0.002 | 0.049 | 0.961 | -4.146 | 4.432 |
| Cubic polynomial | -0.048 | 1 | 140024 | 0.013 | -0.112 | 0.911 | -2.222 | 2.080 |
| Cue type* linear polynomial | | 3 | 140024 | 16.339 | | **< .001** | | |
| ▪ *Blush* | 2.930 | | | | 1.374 | 0.169 | -20.577 | 25.106 |
| ▪ *Dilated pupils* | 6.508 | | | | 3.048 | **0.002** | -14.912 | 23.903 |
| ▪ *Tears* | -8.343 | | | | -3.785 | **< .001** | -26.440 | 9.145 |
| Cue type* quadratic polynomial | | 3 | 140024 | 45.746 | | **< .001** | | |
| ▪ *Blush* | -0.656 | | | | -0.721 | 0.471 | -7.963 | 5.418 |
| ▪ *Dilated pupils* | 1.944 | | | | 2.135 | **0.033** | -4.091 | 8.344 |
| ▪ *Tears* | -8.388 | | | | -8.924 | **< .001** | **-15.628** | **-2.301** |
| Cue type* cubic polynomial | | 3 | 140024 | 11.745 | | **< .001** | | |
| ▪ *Blush* | 0.070 | | | | 0.116 | 0.908 | -4.122 | 3.866 |
| ▪ *Dilated pupils* | 0.316 | | | | 0.522 | 0.601 | -2.200 | 2.798 |
| ▪ *Tears* | 3.179 | | | | 5.099 | **< .001** | -0.443 | 6.902 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | < .001 |
| | | Linear polynomial | 172.772 |
| | | Quadratic polynomial | 158.496 |
| $N_{Subject}$ | 61 | Cubic polynomial | < .001 |
| Obs. | 140100 | Residual | 0.009 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

## 2. Skin temperature

Table 4. Results of the linear mixed-effects model predicting the shape of the skin temperature signal related to passive viewing of prototypical facial expressions by emotion category, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | 0.006 | 1 | 182620 | 0.927 | 0.963 | 0.336 | -0.002 | 0.013 |
| Emotion category | | 4 | 182620 | 0.484 | | 0.747 | | |
| ▪ *Angry* | -0.004 | | | | -0.577 | 0.564 | -0.016 | 0.007 |
| ▪ *Happy* | 0.005 | | | | 0.612 | 0.541 | -0.006 | 0.016 |
| ▪ *Sad* | -0.001 | | | | -0.183 | 0.855 | -0.014 | 0.010 |
| ▪ *Fearful* | 0.004 | | | | 0.501 | 0.616 | -0.007 | 0.014 |
| Linear polynomial | 2.234 | 1 | 182620 | 5.622 | 2.371 | **0.018** | -4.108 | 7.833 |
| Quadratic polynomial | -0.594 | 1 | 182620 | 2.405 | -1.551 | 0.121 | -2.203 | 0.982 |
| Cubic polynomial | -0.304 | 1 | 182620 | 4.909 | -2.216 | **0.027** | -1.145 | 0.629 |
| Emotion category* linear polynomial | | 4 | 182620 | 8.518 | | **< .001** | | |
| ▪ *Angry* | -1.438 | | | | -2.117 | **0.034** | -9.387 | 8.149 |
| ▪ *Happy* | 2.214 | | | | 3.260 | **0.001** | -7.395 | 12.493 |
| ▪ *Sad* | -0.297 | | | | -0.437 | 0.662 | -9.265 | 8.997 |
| ▪ *Fearful* | 1.148 | | | | 1.691 | **0.091** | -7.043 | 10.489 |
| Emotion category* quadratic polynomial | | 4 | 182620 | 6.948 | | **< .001** | | |
| ▪ *Angry* | 0.986 | | | | 3.429 | **0.001** | -1.066 | 3.043 |
| ▪ *Happy* | 0.300 | | | | 1.046 | 0.296 | -1.548 | 2.164 |
| ▪ *Sad* | -0.184 | | | | -0.641 | 0.521 | -2.765 | 2.324 |
| ▪ *Fearful* | -0.390 | | | | -1.536 | 0.175 | -2.244 | 1.385 |
| Emotion category* cubic polynomial | | 4 | 182620 | 4.757 | | **0.001** | | |
| ▪ *Angry* | 0.210 | | | | 1.103 | 0.270 | -1.139 | 1.411 |
| ▪ *Happy* | 0.126 | | | | 0.663 | 0.508 | -1.091 | 1.286 |
| ▪ *Sad* | -0.401 | | | | -2.105 | **0.035** | -1.437 | 0.586 |
| ▪ *Fearful* | -0.412 | | | | -2.159 | **0.031** | -1.917 | 0.876 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | < .001 |
| | | Linear polynomial | 40.071 |
| | | Quadratic polynomial | 6.442 |
| $N_{Subject}$ | 61 | Cubic polynomial | 0.037 |
| Obs. | 182700 | Residual | 0.014 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

Table 5. Results of the linear mixed-effects model predicting the shape of the skin temperature signal related to passive viewing of bodily expressions by emotion category, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | -0.002 | 1 | 182845 | 0.081 | -0.285 | 0.776 | -0.009 | 0.006 |
| Emotion category | | 4 | 182845 | 0.478 | | 0.752 | | |
| ▪ *Angry* | 0.008 | | | | 1.123 | 0.262 | 0.001 | 0.017 |
| ▪ *Happy* | 0.005 | | | | 0.684 | 0.494 | -0.006 | 0.015 |
| ▪ *Sad* | 0.001 | | | | 0.174 | 0.862 | -0.008 | 0.010 |
| ▪ *Fearful* | 0.007 | | | | 0.968 | 0.333 | -0.005 | 0.017 |
| Linear polynomial | -1.482 | 1 | 182845 | 4.220 | -2.054 | **0.040** | -7.266 | 4.047 |
| Quadratic polynomial | -0.517 | 1 | 182845 | 1.975 | -1.405 | 0.160 | -1.809 | 0.668 |
| Cubic polynomial | -0.081 | 1 | 182845 | 0.363 | -0.603 | 0.547 | -0.823 | 0.704 |
| Emotion category* linear polynomial | | 4 | 182845 | 9.937 | | **< .001** | | |
| ▪ *Angry* | 3.287 | | | | 4.903 | **< .001** | -3.876 | 11.028 |
| ▪ *Happy* | 1.858 | | | | 2.772 | **0.006** | -5.632 | 10.396 |
| ▪ *Sad* | 3.683 | | | | 5.489 | **< .001** | -2.791 | 10.139 |
| ▪ *Fearful* | 3.074 | | | | 4.585 | **< .001** | -5.126 | 12.059 |
| Emotion category* quadratic polynomial | | 4 | 182845 | 20.160 | | **< .001** | | |
| ▪ *Angry* | 0.215 | | | | 0.755 | 0.450 | -1.589 | 1.773 |
| ▪ *Happy* | 0.402 | | | | 1.416 | 0.157 | -1.283 | 1.945 |
| ▪ *Sad* | 2.235 | | | | 7.865 | **< .001** | **0.339** | **4.142** |
| ▪ *Fearful* | 0.382 | | | | 1.345 | 0.179 | -1.191 | 1.905 |
| Emotion category* cubic polynomial | | 4 | 182845 | 6.151 | | **<. 001** | | |
| ▪ *Angry* | 0.234 | | | | 1.244 | 0.214 | -1.071 | 1.510 |
| ▪ *Happy* | 0.416 | | | | 2.209 | **0.027** | -0.540 | 1.346 |
| ▪ *Sad* | -0.327 | | | | -1.737 | **0.083** | -1.624 | 0.907 |
| ▪ *Fearful* | 0.481 | | | | 2.552 | **0.011** | -0.568 | 1.529 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | < .001 |
| | | Linear polynomial | 18.044 |
| | | Quadratic polynomial | 5.784 |
| $N_{Subject}$ | 61 | Cubic polynomial | 0.010 |
| Obs. | 182925 | Residual | 0.013 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

Table 6. Results of the linear mixed-effects model predicting the shape of the skin temperature signal related to passive viewing of subtle facial cues by cue type, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | 0.006 | 1 | 141599 | 1.145 | 1.354 | 0.285 | -0.002 | 0.013 |
| Cue type | | 3 | 141599 | 0.970 | | 0.406 | | |
| ▪ *Blush* | 0.003 | | | | 0.441 | 0.659 | -0.008 | 0.014 |
| ▪ *Dilated pupils* | -0.004 | | | | -0.605 | 0.545 | -0.014 | 0.005 |
| ▪ *Tears* | -0.009 | | | | -1.167 | 0.243 | -0.020 | 0.002 |
| Linear polynomial | 2.154 | 1 | 141599 | 7.225 | 2.688 | **0.007** | -4.298 | 8.389 |
| Quadratic polynomial | -0.627 | 1 | 141599 | 2.410 | -1.552 | 0.121 | -2.160 | 1.019 |
| Cubic polynomial | -0.305 | 1 | 141599 | 5.227 | -2.297 | **0.022** | -1.189 | 0.539 |
| Cue type* linear polynomial | | 3 | 141599 | 5.543 | | **0.001** | | |
| ▪ *Blush* | -0.515 | | | | -0.770 | 0.442 | -9.874 | 9.593 |
| ▪ *Dilated pupils* | -0.037 | | | | -0.055 | 0.956 | -8.173 | 7.185 |
| ▪ *Tears* | -2.474 | | | | -3.572 | **< .001** | -12.689 | 7.543 |
| Cue type* quadratic polynomial | | 3 | 141599 | 24.200 | | **< .001** | | |
| ▪ *Blush* | -0.076 | | | | -0.267 | 0.790 | -1.944 | 1.954 |
| ▪ *Dilated pupils* | 1.938 | | | | 6.845 | **< .001** | -0.044 | 3.785 |
| ▪ *Tears* | 1.287 | | | | 4.391 | **< .001** | -0.866 | 3.276 |
| Cue type* cubic polynomial | | 3 | 141599 | 5.095 | | **0.002** | | |
| ▪ *Blush* | 0.595 | | | | 3.168 | **0.002** | -0.583 | 1.837 |
| ▪ *Dilated pupils* | -0.069 | | | | -0.366 | 0.714 | -0.958 | 0.884 |
| ▪ *Tears* | 0.239 | | | | 1.228 | 0.220 | -1.170 | 1.578 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | < .001 |
| | | Linear polynomial | 25.486 |
| | | Quadratic polynomial | 7.495 |
| $N_{Subject}$ | 61 | Cubic polynomial | < .001 |
| Obs. | 141675 | Residual | 0.014 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

## 3. Pupil size

Due to the lacking control of various stimulus parameters which influence pupil size such as brightness and contrast (see Bradley et al., 2017), we refrained from interpreting the results of the pupil size analysis and report it only in the Supplemental Materials. The inclusion of overall stimulus brightness in all pupil size models and the inclusion of pupil size of the presented stimulus in the model on prototypical facial expressions only revealed that variation in the pupil size signal could indeed robustly be explained by stimulus properties, as shown by the bootstrap confidence intervals. This highlights the importance of controlling for these parameters as well as additional properties such as contrast and local brightness in future studies.

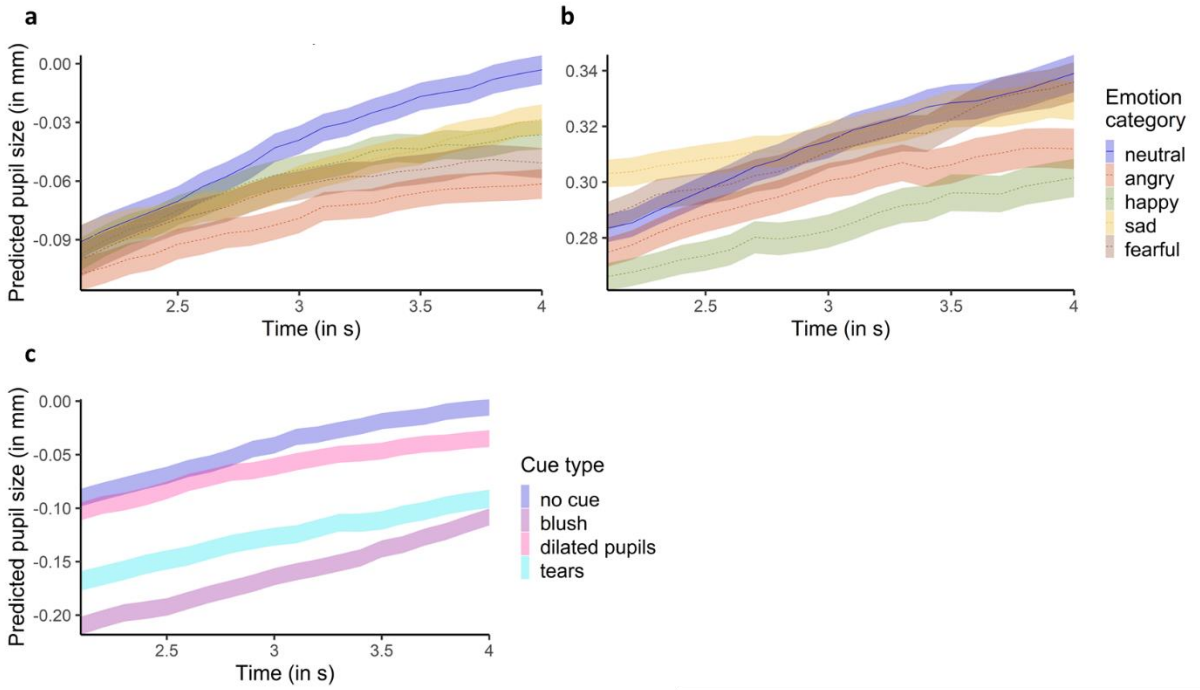


**Fig. 1** Predicted time course of the baseline-corrected pupil size signal related to passive viewing of (a) prototypical facial expressions and (b) bodily expressions by emotion category as well as (c) subtle facial cues by cue type. The shaded areas indicate standard errors of the predicted means

## Reference

Bradley, M. M., Sapigao, R. G., & Lang, P. J. (2017). Sympathetic ANS modulation of pupil diameter in emotional scene perception: Effects of hedonic content, brightness, and contrast. *Psychophysiology*, *54*(10), 1419–1435.

Table 7. Results of the linear mixed-effects model predicting the shape of the pupil size signal related to passive viewing of prototypical facial expressions by emotion category, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | 0.132 | 1 | 44647 | 10.824 | 3.290 | **0.001** | **0.074** | **0.187** |
| Emotion category | | 4 | 44647 | 0.391 | | 0.815 | | |
| ▪ *Angry* | -0.020 | | | | -0.920 | 0.358 | -0.058 | 0.011 |
| ▪ *Happy* | -0.017 | | | | -0.790 | 0.430 | -0.552 | 0.017 |
| ▪ *Sad* | -0.022 | | | | -1.028 | 0.304 | -0.057 | 0.013 |
| ▪ *Fearful* | -0.006 | | | | -0.284 | 0.776 | -0.042 | 0.022 |
| Linear polynomial | 9.491 | 1 | 44647 | 48.346 | 6.953 | **< .001** | **4.763** | **13.628** |
| Quadratic polynomial | -0.974 | 1 | 44647 | 1.317 | -1.148 | 0.251 | -2.756 | 0.352 |
| Pupil size of stimulus | -0.013 | 1 | 44647 | 3.057 | -1.748 | 0.080 | **-0.023** | **-0.003** |
| Stimulus brightness | -0.007 | 1 | 44647 | 35.507 | -5.959 | **< .001** | **-0.008** | **-0.005** |
| Emotion category* linear polynomial | | 4 | 44647 | 5.100 | | **< .001** | | |
| ▪ *Angry* | -4.332 | | | | -3.937 | **< .001** | -8.743 | 1.789 |
| ▪ *Happy* | -3.269 | | | | -2.987 | **0.003** | -7.182 | 2.995 |
| ▪ *Sad* | -2.774 | | | | -2.518 | **0.012** | -5.903 | 4.478 |
| ▪ *Fearful* | -4.266 | | | | -3.827 | **< .001** | -8.215 | 2.915 |
| Emotion category* quadratic polynomial | | 4 | 44647 | 3.071 | | **0.015** | | |
| ▪ *Angry* | 0.254 | | | | 0.459 | 0.646 | -1.371 | 3.026 |
| ▪ *Happy* | -0.630 | | | | -1.149 | 0.250 | -2.519 | 1.579 |
| ▪ *Sad* | 1.029 | | | | 1.855 | 0.064 | -1.084 | 3.725 |
| ▪ *Fearful* | -0.608 | | | | -1.094 | 0.274 | -2.808 | 2.099 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | 0.033 |
| | | Linear polynomial | 78.830 |
| $N_{Subject}$ | 63 | Quadratic polynomial | 35.738 |
| Obs. | 44726 | Residual | 0.110 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

Table 8. Results of the linear mixed-effects model predicting the shape of the pupil size signal related to passive viewing of bodily expressions by emotion category, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | 0.113 | 1 | 43154 | 13.547 | 3.681 | **< .001** | **0.072** | **0.155** |
| Emotion category | | 4 | 43154 | 0.708 | | 0.586 | | |
| ▪ *Angry* | -0.006 | | | | -0.291 | 0.771 | -0.033 | 0.027 |
| ▪ *Happy* | -0.008 | | | | -0.422 | 0.673 | -0.032 | 0.018 |
| ▪ *Sad* | -0.010 | | | | -0.517 | 0.605 | -0.031 | 0.024 |
| ▪ *Fearful* | 0.018 | | | | 0.949 | 0.343 | -0.011 | 0.051 |
| Linear polynomial | 6.354 | 1 | 43154 | 22.267 | 4.722 | **< .001** | **2.521** | **13.046** |
| Quadratic polynomial | -0.689 | 1 | 43154 | 2.217 | -1.489 | 0.137 | -2.367 | 1.236 |
| Stimulus brightness | -0.005 | 1 | 43154 | 76.158 | -8.727 | **< .001** | **-0.005** | **-0.004** |
| Emotion category* linear polynomial | | 4 | 43154 | 2.498 | | **0.041** | | |
| ▪ *Angry* | -2.414 | | | | -1.990 | **0.047** | -7.198 | 3.687 |
| ▪ *Happy* | -2.407 | | | | -2.011 | **0.044** | -6.848 | 6.220 |
| ▪ *Sad* | -3.429 | | | | -2.843 | **0.005** | -10.088 | 4.357 |
| ▪ *Fearful* | -1.013 | | | | -0.844 | 0.399 | -6.644 | 4.268 |
| Emotion category* quadratic polynomial | | 4 | 43154 | 1.153 | | 0.330 | | |
| ▪ *Angry* | -0.049 | | | | -0.077 | 0.938 | -2.918 | 2.705 |
| ▪ *Happy* | 0.602 | | | | 0.962 | 0.336 | -2.234 | 3.801 |
| ▪ *Sad* | 0.953 | | | | 1.523 | 0.128 | -2.240 | 3.511 |
| ▪ *Fearful* | 0.881 | | | | 1.418 | 0.156 | -2.063 | 3.781 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | 0.015 |
| | | Linear polynomial | 69.271 |
| $N_{Subject}$ | 63 | Quadratic polynomial | 1.178 |
| Obs. | 43232 | Residual | 0.089 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

Table 9. Results of the linear mixed-effects model predicting the shape of the pupil size signal related to passive viewing of subtle facial cues by cue type, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | 0.082 | 1 | 34780 | 2.866 | 1.693 | 0.091 | **0.027** | **0.158** |
| Cue type | | 3 | 34780 | 12.345 | | **< .001** | | |
| ▪ *Blush* | -0.117 | | | | -5.376 | **< .001** | **-0.160** | **-0.087** |
| ▪ *Dilated pupils* | -0.017 | | | | -0.792 | 0.428 | -0.059 | 0.016 |
| ▪ *Tears* | -0.079 | | | | -3.503 | **0.001** | **-0.124** | **-0.043** |
| Linear polynomial | 9.017 | 1 | 34780 | 43.524 | 6.597 | **< .001** | -4.577 | 13.154 |
| Quadratic polynomial | -1.037 | 1 | 34780 | 7.595 | -2.756 | **0.006** | -2.608 | 0.244 |
| Stimulus brightness | -0.005 | 1 | 34780 | 10.075 | -3.174 | **0.002** | **-0.007** | **-0.003** |
| Cue type* linear polynomial | | 3 | 34780 | 3.669 | | **0.012** | | |
| ▪ *Blush* | 1.880 | | | | 1.739 | 0.082 | -3.508 | 6.941 |
| ▪ *Dilated pupils* | -1.540 | | | | -1.430 | 0.153 | -7.067 | 3.485 |
| ▪ *Tears* | -0.865 | | | | -0.772 | 0.440 | -6.065 | 3.635 |
| Cue type* quadratic polynomial | | 3 | 34780 | 2.047 | | 0.105 | | |
| ▪ *Blush* | -1.051 | | | | 1.964 | 0.050 | -1.025 | 3.323 |
| ▪ *Dilated pupils* | -0.002 | | | | -0.004 | 0.997 | -2.424 | 1.859 |
| ▪ *Tears* | 0.809 | | | | 1.471 | 0.141 | -1.639 | 3.033 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | 0.032 |
| | | Linear polynomial | 81.239 |
| $N_{Subject}$ | 63 | Quadratic polynomial | < .001 |
| Obs. | 34855 | Residual | 0.116 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

## 4. Intensity analysis

In addition to looking at the effect of specific emotional expressions, we also explored the possibility that perceived emotional intensity, independent of the expression modality and category, could predict changes in the shape of the physiological signals. Thus, for each measure, we ran one additional model on the joint data according to the procedure outlined in the Methods section, but taking perceived emotional intensity instead of emotion category as continuous predictor (rescaled to the range 0 – 1 and centered).

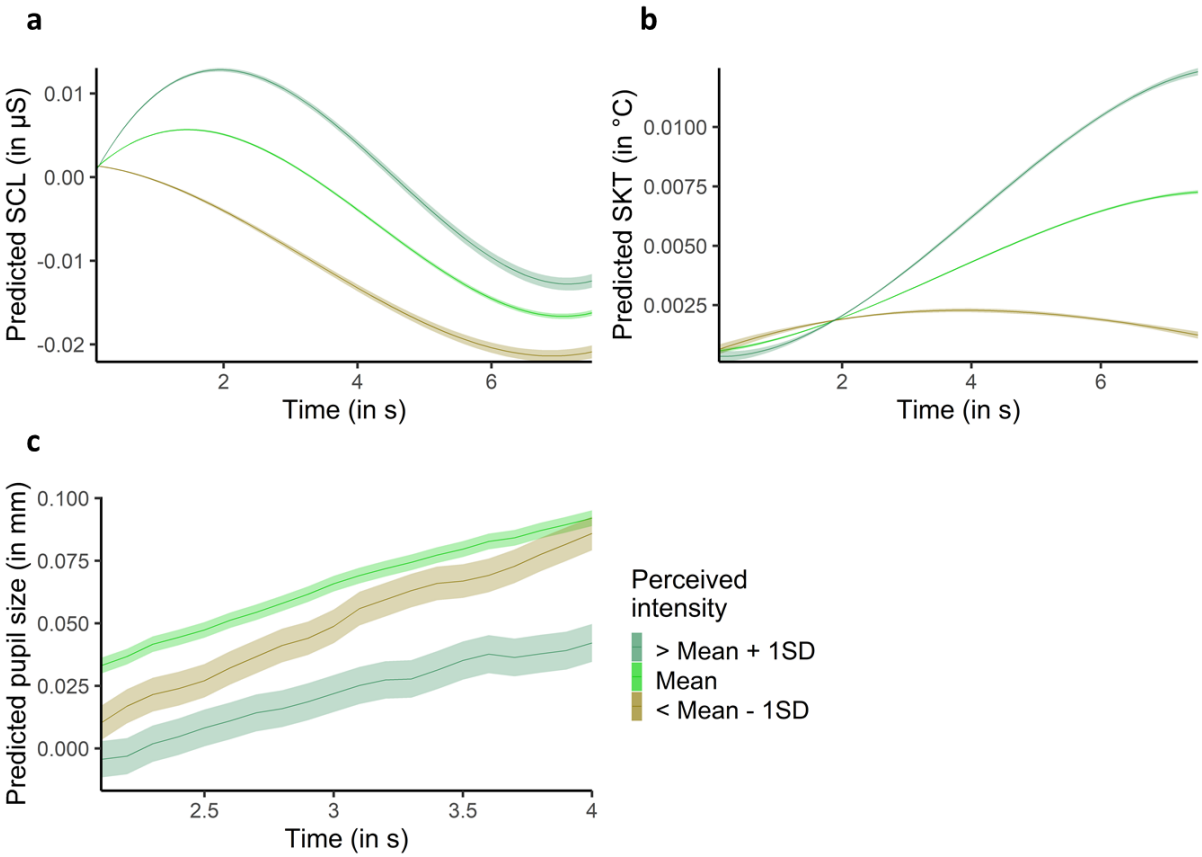


**Fig. 2** Predicted time course of the baseline-corrected (a) skin conductance level signal (SCL), (b) skin temperature signal (SKT) and (c) pupil size signal related to passive viewing of emotional expressions by perceived emotional intensity. For simplification, the continuous predictor intensity is split in three categories (values > 1 standard deviation than the mean, mean and values < 1 standard deviation than the mean). The shaded areas indicate standard errors of the predicted values

Table 10. Results of the linear mixed-effects model predicting the shape of the skin conductance level signal related to passive viewing of emotional expressions by their perceived intensity, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | -0.004 | 1 | 467107 | 1.073 | -1.036 | 0.300 | -0.010 | 0.001 |
| Intensity | 0.010 | 1 | 467107 | 0.567 | 0.753 | 0.451 | -0.002 | 0.032 |
| Linear polynomial | -5.793 | 1 | 467107 | 47.431 | -6.887 | **< .001** | **-9.222** | **-2.091** |
| Quadratic polynomial | -1.074 | 1 | 467107 | 39.208 | -6.262 | **< .001** | -2.786 | 0.676 |
| Cubic polynomial | 1.461 | 1 | 467107 | 170.541 | 13.059 | **< .001** | **0.649** | **2.397** |
| Intensity* linear polynomial | -2.229 | 1 | 467107 | 2.434 | -1.560 | 0.119 | -13.266 | 13.181 |
| Intensity* quadratic polynomial | -3.695 | 1 | 467107 | 39.296 | -6.269 | **< .001** | -7.330 | 0.177 |
| Intensity* cubic polynomial | 1.669 | 1 | 467107 | 18.237 | 4.270 | **< .001** | -0.451 | 4.109 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | < .001 |
| | | Linear polynomial | 33.599 |
| | | Quadratic polynomial | 0.062 |
| $N_{Subject}$ | 61 | Cubic polynomial | < .001 |
| Obs. | 467175 | Residual | 0.096 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

Table 11. Results of the generalized linear mixed-effects model predicting the shape of the skin temperature signal related to passive viewing of different emotional expressions by their perceived intensity, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | 0.004 | 1 | 470782 | 7.625 | 2.761 | **0.006** | **0.002** | **0.006** |
| Intensity | 0.005 | 1 | 470782 | 0.919 | 0.959 | 0.338 | -0.003 | 0.012 |
| Linear polynomial | 1.604 | 1 | 470782 | 41.990 | 6.480 | **< .001** | **0.701** | **2.567** |
| Quadratic polynomial | -0.035 | 1 | 470782 | 0.024 | -0.155 | 0.877 | -0.483 | 0.369 |
| Cubic polynomial | -0.134 | 1 | 470782 | 12.905 | -3.592 | **< .001** | -0.348 | 0.062 |
| Intensity* linear polynomial | 3.333 | 1 | 470782 | 47.944 | 6.924 | **< .001** | -2.205 | 10.500 |
| Intensity* quadratic polynomial | 0.766 | 1 | 470782 | 13.734 | 3.706 | **< .001** | -1.073 | 2.127 |
| Intensity* cubic polynomial | -0.364 | 1 | 470782 | 7.656 | -2.767 | **0.006** | -1.441 | 0.530 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | < .001 |
| | | Linear polynomial | 2.656 |
| | | Quadratic polynomial | 2.984 |
| $N_{Subject}$ | 61 | Cubic polynomial | < .001 |
| Obs. | 470850 | Residual | 0.014 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

Table 12. Results of the generalized linear mixed-effects model predicting the shape of the pupil size signal related to passive viewing of different emotional expressions by their perceived intensity, including the 95% confidence intervals of the coefficients from the clustered bootstrap analysis.

| Fixed effects | *B* | *df1* | *df2* | *F* | *t* | *p* | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| Intercept | 0.069 | 1 | 113787 | 0.974 | 0.987 | 0.324 | **0.042** | **0.095** |
| Intensity | -0.006 | 1 | 113787 | 0.155 | -0.394 | 0.694 | -0.018 | 0.051 |
| Linear polynomial | 6.181 | 1 | 113787 | 4.232 | 2.057 | **0.040** | **4.391** | **10.156** |
| Quadratic polynomial | -0.546 | 1 | 113787 | 0.826 | -0.909 | 0.363 | -1.155 | 0.152 |
| Stimulus brightness | -0.006 | 1 | 113787 | 2189.655 | -46.890 | < **.001** | **-0.006** | **-0.005** |
| Intensity* linear polynomial | -2.973 | 1 | 113787 | 13.004 | -3.606 | < **.001** | -6.566 | 2.110 |
| Intensity* quadratic polynomial | -0.141 | 1 | 113787 | 0.123 | 0.351 | 0.725 | -1.511 | 1.757 |

| Random effects | | Variance | |
|---|---|---|---|
| | | Intercept | 0.308 |
| | | Linear polynomial | 565.562 |
| $N_{Subject}$ | 63 | Quadratic polynomial | 21.919 |
| Obs. | 113856 | Residual | 0.109 |

*Note.* Bold font highlights p-values below the significance level of 0.05 or bootstrap confidence interval which do not include 0.

## 5. Facial electromyography

Table 13. Results of the spilt-half multilevel model looking at the effects of presenting different emotional vs. neutral expressions on the preprocessed Corrugator signal in 40 100ms time bins after stimulus onset.

| | **100ms** | **200ms** | **300ms** | **400ms** | **500ms** | **600ms** | **700ms** | **800ms** | **900ms** | **1000ms** | **1100ms** | **1200ms** | **1300ms** | **1400ms** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Neutral** | -3E-05 | 0.00012 | 9.00E-05 | 6.00E-05 | 1.00E-04 | 7.00E-05 | 0 | 0 | 2.00E-05 | -3.00E-05 | -4.00E-05 | -1.00E-05 | -3.00E-05 | -1.00E-05 |
| **Happy** | 2.00E-05 | 9.00E-05 | 0 | -0.00017 | -0.00033 | -0.00032 | -0.00029 | -0.00036 | -0.00041 | -5.00E-04 | -0.00055 | -0.00053 | -0.00033 | -4.00E-04 |
| *t*-value train | -1.209 | -1.835 | -1.799 | -2.942 | -3.143 | -2.394 | -0.807 | -1.905 | -1.205 | -1.451 | -0.900 | -1.599 | -0.137 | -0.950 |
| *p*-value train | 0.227 | 0.067 | 0.073 | **0.003** | **0.002** | **0.017** | 0.420 | 0.058 | 0.229 | 0.148 | 0.369 | 0.111 | 0.891 | 0.343 |
| *t*-value test | | | | -0.364 | -2.558 | -4.040 | | | | | | | | |
| *p*-value test | | | | 0.716 | **0.011** | **< 0.001** | | | | | | | | |
| **Angry** | -1.00E-04 | 0 | -6.00E-05 | 6.00E-05 | 0.00012 | -0.00022 | -0.00017 | -9.00E-05 | 9.00E-05 | -0.00019 | -0.00018 | 7.00E-05 | -0.00013 | -0.00015 |
| *t*-value train | -1.614 | -2.290 | -2.444 | -1.882 | -1.491 | -2.530 | -2.248 | -1.251 | 0.594 | -0.303 | 0.079 | 0.351 | -0.001 | -1.057 |
| *p*-value train | 0.107 | **0.023** | **0.015** | 0.061 | 0.137 | **0.012** | **0.025** | 0.212 | 0.553 | 0.762 | 0.937 | 0.726 | 0.999 | 0.291 |
| *t*-value test | | -2.385 | 0.690 | | | -2.082 | 0.412 | | | | | | | |
| *p*-value test | | **0.018** | 0.490 | | | **0.038** | 0.680 | | | | | | | |
| **Fearful** | -0.00014 | 0.00016 | 0.00012 | 5.00E-05 | 0.00016 | 0 | -0.00016 | -0.00013 | -0.00028 | -0.00012 | -3.00E-04 | -0.00025 | -2.00E-04 | -0.00011 |
| *t*-value train | -2.516 | -1.967 | -0.631 | -1.845 | -0.579 | -2.142 | -1.706 | -1.003 | -0.550 | 0.069 | -0.873 | -0.700 | -0.492 | -0.697 |
| *p*-value train | **0.012** | **0.050** | 0.529 | 0.066 | 0.563 | **0.033** | 0.089 | 0.316 | 0.583 | 0.945 | 0.383 | 0.484 | 0.623 | 0.486 |
| *t*-value test | -0.431 | -1.016 | | | | -0.791 | | | | | | | | |
| *p*-value test | 0.666 | 0.311 | | | | 0.429 | | | | | | | | |
| **Sad** | -4.00E-05 | 0.00011 | 5.00E-05 | -7.00E-05 | -9.00E-05 | -8.00E-05 | -0.00018 | -8.00E-05 | -0.00013 | -0.00012 | -6.00E-05 | -4.00E-05 | 1.00E-04 | 4.00E-05 |
| *t*-value train | -1.531 | -1.959 | -1.244 | -2.166 | -1.405 | -2.177 | -2.668 | -1.058 | -0.106 | -0.254 | 0.069 | -0.312 | 0.687 | 0.150 |
| *p*-value train | 0.126 | 0.051 | 0.214 | **0.031** | 0.161 | **0.030** | **0.008** | 0.291 | 0.915 | 0.800 | 0.945 | 0.756 | 0.493 | 0.881 |
| *t*-value test | | | | -0.102 | | -1.519 | 0.025 | | | | | | | |
| *p*-value test | | | | 0.919 | | 0.130 | 0.980 | | | | | | | |

| | **1500ms** | **1600ms** | **1700ms** | **1800ms** | **1900ms** | **2000ms** | **2100ms** | **2200ms** | **2300ms** | **2400ms** | **2500ms** | **2600ms** | **2700ms** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Neutral** | -4.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 | 0 | -5.00E-05 | -2.00E-05 | 3.00E-05 | 3.00E-05 | 5.00E-05 | 5.00E-05 | 2.00E-05 | 2.00E-05 |
| **Happy** | -4.00E-04 | -0.00061 | -0.00034 | -4.00E-04 | -0.00053 | -0.00045 | -0.00039 | -0.00031 | -0.00038 | -0.00036 | -0.00043 | -0.00019 | -0.00021 |
| *t*-value train | -0.692 | -2.418 | -0.758 | -1.476 | -1.105 | -0.684 | -0.892 | -0.184 | -0.121 | -0.253 | -0.830 | -0.743 | -0.044 |
| *p*-value train | 0.489 | **0.016** | 0.449 | 0.141 | 0.270 | 0.494 | 0.373 | 0.854 | 0.903 | 0.801 | 0.407 | 0.458 | 0.965 |
| *t*-value test | | -4.725 | | | | | | | | | | | |
| *p*-value test | | **< 0.001** | | | | | | | | | | | |
| **Angry** | -0.00013 | -0.00016 | -0.00025 | -0.00021 | -3.00E-04 | -0.00022 | -0.00013 | -0.00021 | -0.00036 | -0.00021 | -0.00031 | -0.00027 | -0.00021 |
| *t*-value train | -0.638 | -1.391 | -1.802 | -2.078 | -2.213 | -1.394 | -0.651 | -1.849 | -1.885 | -1.134 | -2.366 | -3.232 | -1.410 |
| *p*-value train | 0.524 | 0.165 | 0.072 | **0.038** | **0.027** | 0.164 | 0.516 | 0.065 | 0.060 | 0.258 | **0.018** | **0.001** | 0.159 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *t*-value test | | | | -1.827 | -1.876 | | | | | | -0.533 | -0.329 | |
| *p*-value test | | | | 0.069 | 0.061 | | | | | | 0.594 | 0.742 | |
| **Fearful** | -0.00022 | -7.00E-05 | -0.00025 | -0.00024 | -0.00019 | -0.00016 | -0.00017 | -0.00012 | 7.00E-05 | -2.00E-05 | -3.00E-05 | -1.00E-04 | -0.00023 |
| *t*-value train | -0.770 | -0.769 | -1.386 | -1.776 | -1.518 | -0.642 | -0.614 | -0.989 | 0.319 | 0.126 | -0.039 | -1.745 | -0.994 |
| *p*-value train | 0.442 | 0.442 | 0.167 | 0.076 | 0.130 | 0.521 | 0.539 | 0.323 | 0.750 | 0.899 | 0.969 | 0.082 | 0.321 |
| *t*-value test | | | | | | | | | | | | | |
| *p*-value test | | | | | | | | | | | | | |
| **Sad** | -5.00E-05 | 0.00013 | 8.00E-05 | -3.00E-05 | 0.00012 | 6.00E-05 | 2.00E-05 | 2.00E-04 | -1.00E-05 | 0.00012 | 4.00E-05 | -7.00E-05 | 0.00015 |
| *t*-value train | 0.179 | 0.245 | -0.449 | -0.810 | 0.012 | 0.073 | 0.366 | 0.483 | 0.313 | 0.683 | 0.251 | -0.421 | 0.926 |
| *p*-value train | 0.858 | 0.807 | 0.654 | 0.418 | 0.990 | 0.942 | 0.715 | 0.629 | 0.754 | 0.495 | 0.802 | 0.674 | 0.355 |
| *t*-value test | | | | | | | | | | | | | |
| *p*-value test | | | | | | | | | | | | | |

| | **2800ms** | **2900ms** | **3000ms** | **3100ms** | **3200ms** | **3300ms** | **3400ms** | **3500ms** | **3600ms** | **3700ms** | **3800ms** | **3900ms** | **4000ms** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Neutral** | -1.00E-05 | -1.00E-05 | 0 | 3.00E-05 | 3.00E-05 | 4.00E-05 | 4.00E-05 | 6.00E-05 | 2.00E-05 | 4.00E-05 | 7.00E-05 | 1.00E-05 | 1.00E-05 |
| **Happy** | -0.00023 | -0.00039 | -0.00037 | -0.00022 | -0.00024 | -0.00027 | -0.00035 | -2.00E-04 | -2.00E-04 | -0.00037 | -0.00035 | -3.00E-04 | -0.00034 |
| *t*-value train | -0.484 | -0.918 | -1.125 | -0.628 | -1.041 | -0.843 | -1.552 | -0.900 | -1.179 | -1.402 | -2.363 | -1.163 | -1.141 |
| *p*-value train | 0.629 | 0.359 | 0.261 | 0.531 | 0.298 | 0.400 | 0.121 | 0.369 | 0.239 | 0.162 | **0.019** | 0.245 | 0.255 |
| *t*-value test | | | | | | | | | | | -2.316 | | |
| *p*-value test | | | | | | | | | | | **0.021** | | |
| **Angry** | -0.00025 | -0.00035 | -0.00019 | -0.00016 | -0.00022 | -1.00E-04 | -1.00E-04 | -0.00015 | -2.00E-04 | -2.00E-04 | -0.00022 | -0.00028 | -2.00E-04 |
| *t*-value train | -2.006 | -2.650 | -2.658 | -1.736 | -1.774 | -1.380 | -1.760 | -1.259 | -1.574 | -1.267 | -1.961 | -1.922 | -1.064 |
| *p*-value train | **0.046** | **0.008** | **0.008** | 0.083 | 0.077 | 0.168 | 0.079 | 0.209 | 0.116 | 0.206 | 0.051 | 0.055 | 0.288 |
| *t*-value test | -1.249 | -1.645 | 0.040 | | | | | | | | | | |
| *p*-value test | 0.213 | 0.101 | 0.968 | | | | | | | | | | |
| **Fearful** | -0.00024 | -0.00017 | -0.00024 | -0.00021 | -2.00E-04 | -2.00E-04 | -0.00013 | -0.00024 | -0.00032 | -3.00E-04 | -5.00E-05 | -2.00E-04 | -0.00014 |
| *t*-value train | -1.524 | -0.743 | -1.551 | -1.432 | -1.381 | -1.301 | -1.356 | -1.803 | -2.665 | -2.312 | -1.331 | -1.194 | -1.029 |
| *p*-value train | 0.128 | 0.458 | 0.122 | 0.153 | 0.168 | 0.194 | 0.176 | 0.072 | **0.008** | **0.021** | 0.184 | 0.233 | 0.304 |
| *t*-value test | | | | | | | | | -2.746 | -1.843 | | | |
| *p*-value test | | | | | | | | | **0.006** | 0.066 | | | |
| **Sad** | 0.00016 | 0.00036 | 0.00013 | 0.00011 | 0.00011 | -7.00E-05 | -1.00E-04 | 0.00022 | 2.00E-05 | 0.00011 | 0.00035 | 7.00E-05 | 3.00E-05 |
| *t*-value train | 0.507 | 0.973 | 0.405 | -0.181 | -0.221 | -0.496 | -1.460 | 0.041 | -1.298 | 0.079 | 0.142 | -0.277 | 0.597 |
| *p*-value train | 0.613 | 0.331 | 0.685 | 0.857 | 0.825 | 0.620 | 0.145 | 0.967 | 0.195 | 0.937 | 0.887 | 0.782 | 0.551 |
| *t*-value test | | | | | | | | | | | | | |
| *p*-value test | | | | | | | | | | | | | |

Table 14. Results of the spilt-half multilevel model looking at the effects of presenting different emotional vs. neutral expressions on the preprocessed Zygomaticus signal in 40 100ms time bins after stimulus onset.

| | **100ms** | **200ms** | **300ms** | **400ms** | **500ms** | **600ms** | **700ms** | **800ms** | **900ms** | **1000ms** | **1100ms** | **1200ms** | **1300ms** | **1400ms** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Neutral** | -3.00E-05 | -2.00E-05 | -2.00E-05 | -3.00E-05 | -3.00E-05 | 6.00E-05 | 0.00016 | 0.00028 | 0.00034 | 0.00045 | 0.00043 | 4.00E-04 | 0.00044 | 0.00045 |
| **Happy** | -4.00E-05 | -7.00E-05 | -1.00E-05 | 2.00E-04 | 5.00E-04 | 0.001 | 0.00163 | 0.00186 | 0.00177 | 0.00199 | 0.00204 | 0.00189 | 0.00208 | 0.00212 |
| *t*-value train | -1.48076 | -0.93806 | -1.16201 | -0.86893 | 0.25155 | 1.24 | 2.27142 | 2.10777 | 1.98478 | 2.07297 | 2.25452 | 2.31236 | 2.75351 | 2.97646 |
| *p*-value train | 0.13956 | 0.34885 | 0.24601 | 0.38547 | 0.80153 | 0.21579 | **0.02372** | **0.03575** | **0.04794** | **0.0389** | **0.02477** | **0.02133** | **0.0062** | **0.00312** |
| *t*-value test | | | | | | | 2.80556 | 2.80355 | 2.61598 | 2.55399 | 3.07171 | 2.37614 | 2.36279 | 2.45597 |
| *p*-value test | | | | | | | **0.00529** | **0.00533** | **0.00927** | **0.01106** | **0.00229** | **0.01802** | **0.01867** | **0.01452** |
| **Angry** | -7.00E-05 | 5.00E-05 | 0.00014 | 1.00E-04 | 8.00E-05 | 0.00029 | 0.00063 | 0.00109 | 0.00166 | 0.00228 | 0.0023 | 0.00194 | 0.00207 | 0.00195 |
| *t*-value train | -0.87606 | 0.50247 | 0.70191 | 0.59945 | 0.83117 | 0.91609 | 1.29294 | 1.4637 | 1.44331 | 1.5611 | 1.25883 | 1.13557 | 1.14152 | 1.6598 |
| *p*-value train | 0.3816 | 0.61566 | 0.4832 | 0.54926 | 0.40644 | 0.36025 | 0.19688 | 0.14417 | 0.14983 | 0.1194 | 0.20893 | 0.25691 | 0.25444 | 0.09785 |
| *t*-value test | | | | | | | | | | | | | | |
| *p*-value test | | | | | | | | | | | | | | |
| **Fearful** | -1.00E-04 | -8.00E-05 | -5.00E-05 | -6.00E-05 | -1.00E-05 | 0.00017 | 5.00E-04 | 0.00098 | 0.00109 | 0.00118 | 0.00091 | 0.00084 | 0.00083 | 0.00097 |
| *t*-value train | -1.67121 | -1.46789 | -0.71607 | -1.52378 | -0.4468 | 0.22178 | 1.00152 | 0.15886 | -0.32085 | 0.99347 | 1.24043 | 1.10588 | 1.71642 | 1.97365 |
| *p*-value train | 0.09554 | 0.143 | 0.47441 | 0.12844 | 0.65529 | 0.82461 | 0.31724 | 0.87387 | 0.74851 | 0.32114 | 0.21562 | 0.26951 | 0.08694 | **0.04918** |
| *t*-value test | | | | | | | | | | | | | | 1.07683 |
| *p*-value test | | | | | | | | | | | | | | 0.28229 |
| **Sad** | -6.00E-05 | -7.00E-05 | 0 | -1.00E-04 | -9.00E-05 | 6.00E-05 | 0.00021 | 0.00066 | 0.00071 | 0.00089 | 0.00068 | 0.00061 | 6.00E-04 | 0.00071 |
| *t*-value train | -2.0028 | -1.88718 | -1.84931 | -2.2212 | -1.07218 | -1.51854 | -1.16978 | -1.04444 | -0.86078 | -0.41812 | -0.43403 | -0.25596 | -0.80749 | -0.10335 |
| *p*-value train | **0.04594** | 0.05993 | 0.06522 | **0.02695** | 0.28435 | 0.12974 | 0.24285 | 0.29697 | 0.38993 | 0.67611 | 0.66452 | 0.79813 | 0.41991 | 0.91774 |
| *t*-value test | -0.0457 | | | 0.37023 | | | | | | | | | | |
| *p*-value test | 0.96358 | | | 0.71143 | | | | | | | | | | |

| | **1500ms** | **1600ms** | **1700ms** | **1800ms** | **1900ms** | **2000ms** | **2100ms** | **2200ms** | **2300ms** | **2400ms** | **2500ms** | **2600ms** | **2700ms** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Neutral** | 5.00E-04 | 0.00045 | 0.00049 | 0.00053 | 5.00E-04 | 0.00056 | 0.00057 | 0.00059 | 0.00058 | 0.00051 | 0.00054 | 0.00052 | 0.00051 |
| **Happy** | 0.0022 | 0.00193 | 0.00225 | 0.00223 | 0.00201 | 0.00221 | 0.00213 | 0.00227 | 0.00206 | 0.00181 | 0.00181 | 0.00208 | 0.00178 |
| *t*-value train | 2.7512 | 3.02038 | 3.58484 | 2.75381 | 2.8377 | 3.36427 | 3.37122 | 2.58615 | 3.11765 | 3.05646 | 2.99817 | 2.07622 | 1.62943 |
| *p*-value train | **0.00624** | **0.00271** | **0.00038** | **0.00619** | **0.0048** | **0.00085** | **0.00083** | **0.0101** | **0.00197** | **0.00241** | **0.0029** | **0.03858** | 0.1041 |
| *t*-value test | 2.25357 | 2.02504 | 3.07487 | 3.2758 | 3.21115 | 3.09744 | 2.94977 | 2.72566 | 2.71697 | 2.77251 | 3.15286 | 3.18478 | |
| *p*-value test | **0.02482** | **0.0436** | **0.00226** | **0.00115** | **0.00144** | **0.0021** | **0.00338** | **0.00672** | **0.0069** | **0.00584** | **0.00175** | **0.00157** | |
| **Angry** | 0.00174 | 0.00188 | 0.00159 | 0.00153 | 0.00125 | 0.00134 | 0.00126 | 0.00117 | 0.00132 | 0.00142 | 0.00171 | 0.0015 | 0.00143 |
| *t*-value train | 1.55451 | 1.64414 | 1.89801 | 1.77762 | 1.78247 | 1.81344 | 1.71567 | 1.45921 | 1.80363 | 1.72616 | 1.76036 | 1.33187 | 1.30172 |
| *p*-value train | 0.12097 | 0.10105 | 0.05848 | 0.07629 | 0.0755 | 0.07058 | 0.08706 | 0.14536 | 0.0721 | 0.08516 | 0.07917 | 0.18373 | 0.19382 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *t*-value test | | | | | | | | | | | | | |
| *p*-value test | | | | | | | | | | | | | |
| **Fearful** | 0.0011 | 0.00121 | 0.0015 | 0.00174 | 0.00187 | 0.00213 | 0.00207 | 0.00177 | 0.00164 | 0.00159 | 0.00184 | 0.00161 | 0.0017 |
| *t*-value train | 1.90516 | 2.32477 | 2.14203 | 1.99872 | 2.2794 | 2.19752 | 2.18472 | 2.00064 | 1.93339 | 1.91971 | 1.73162 | 1.51016 | 1.49881 |
| *p*-value train | 0.05755 | **0.02064** | **0.03283** | **0.04636** | **0.0232** | **0.02859** | **0.02953** | **0.04615** | 0.05394 | 0.05565 | 0.08416 | 0.13185 | 0.13476 |
| *t*-value test | | 1.01695 | 1.91987 | 2.16413 | 2.13181 | 2.12553 | 2.20184 | 2.02222 | | | | | |
| *p*-value test | | 0.30987 | 0.05566 | **0.03111** | **0.0337** | **0.03422** | **0.02831** | **0.04389** | | | | | |
| **Sad** | 0.00086 | 0.00069 | 0.00077 | 0.00082 | 0.00075 | 0.00077 | 7.00E-04 | 0.00085 | 0.00095 | 0.00072 | 7.00E-04 | 0.00055 | 5.00E-04 |
| *t*-value train | -0.28324 | 0.18272 | 0.62516 | 0.28646 | 0.6168 | 0.35856 | 0.10794 | 0.20641 | 0.17191 | 0.06044 | 0.13959 | -0.61892 | -0.57581 |
| *p*-value train | 0.77715 | 0.85512 | 0.53225 | 0.77468 | 0.53774 | 0.72013 | 0.9141 | 0.83658 | 0.8636 | 0.95183 | 0.88906 | 0.53635 | 0.5651 |
| *t*-value test | | | | | | | | | | | | | |
| *p*-value test | | | | | | | | | | | | | |
| | **2800ms** | **2900ms** | **3000ms** | **3100ms** | **3200ms** | **3300ms** | **3400ms** | **3500ms** | **3600ms** | **3700ms** | **3800ms** | **3900ms** | **4000ms** |
| **Neutral** | 0.00047 | 0.00044 | 4.00E-04 | 0.00041 | 4.00E-04 | 0.00039 | 4.00E-04 | 0.00034 | 0.00032 | 0.00031 | 0.00032 | 0.00033 | 0.00034 |
| **Happy** | 0.0016 | 0.00162 | 0.00151 | 0.00152 | 0.00148 | 0.00134 | 0.00146 | 0.00127 | 0.00118 | 0.00133 | 0.0012 | 0.00121 | 0.00143 |
| *t*-value train | 2.12698 | 2.45612 | 1.62941 | 1.85692 | 2.05609 | 2.09186 | 2.78295 | 2.8798 | 3.06992 | 2.74767 | 3.20116 | 2.67822 | 2.88922 |
| *p*-value train | **0.0341** | **0.01452** | 0.1041 | 0.06414 | **0.04049** | **0.03715** | **0.00567** | **0.00422** | **0.0023** | **0.0063** | **0.00149** | **0.00774** | **0.0041** |
| *t*-value test | 2.81119 | 2.586 | | | 2.80727 | 2.74236 | 2.40034 | 2.84579 | 2.88731 | 2.79211 | 2.69 | 2.17066 | 1.83536 |
| *p*-value test | **0.0052** | **0.01009** | | | **0.00526** | **0.00639** | **0.01687** | **0.00468** | **0.00411** | **0.00551** | **0.00747** | **0.03059** | 0.06725 |
| **Angry** | 0.00143 | 0.00121 | 0.00114 | 0.00108 | 0.00096 | 0.00117 | 0.00121 | 0.00118 | 0.00116 | 0.00099 | 0.00104 | 0.00076 | 0.00093 |
| *t*-value train | 1.41278 | 1.36776 | 1.26281 | 1.54183 | 1.61802 | 1.48658 | 1.71749 | 1.84499 | 1.56748 | 1.70747 | 2.32999 | 1.75578 | 2.04441 |
| *p*-value train | 0.15856 | 0.17222 | 0.20745 | 0.12397 | 0.10651 | 0.13798 | 0.08673 | 0.06584 | 0.11786 | 0.08858 | **0.02035** | 0.07996 | **0.04162** |
| *t*-value test | | | | | | | | | | | 1.41071 | | 0.42963 |
| *p*-value test | | | | | | | | | | | 0.15917 | | 0.66771 |
| **Fearful** | 0.00153 | 0.00126 | 0.00112 | 0.00121 | 0.00145 | 0.0012 | 0.00144 | 0.00105 | 0.00116 | 0.00096 | 0.0012 | 0.00116 | 0.00099 |
| *t*-value train | 1.53334 | 1.7344 | 1.44078 | 1.2713 | 1.46866 | 1.20952 | 1.75795 | 1.56217 | 1.48623 | 1.68734 | 1.91851 | 1.79626 | 1.92582 |
| *p*-value train | 0.12604 | 0.08367 | 0.15048 | 0.20441 | 0.14276 | 0.22723 | 0.07957 | 0.11909 | 0.13806 | 0.09237 | 0.0558 | 0.07326 | 0.05488 |
| *t*-value test | | | | | | | | | | | | | |
| *p*-value test | | | | | | | | | | | | | |
| **Sad** | 0.00047 | 4.00E-04 | 0.00034 | 0.00039 | 0.00033 | 0.00045 | 0.00037 | 3.00E-04 | 0.00016 | 0.00037 | 0.00019 | 0.00034 | 0.00026 |
| *t*-value train | -0.30353 | -0.12569 | -0.75 | -0.47665 | -0.60151 | -0.34064 | 0.36716 | 0.14651 | -0.08136 | 0.27944 | 0.22935 | -0.15733 | -0.14597 |
| *p*-value train | 0.76166 | 0.90005 | 0.45373 | 0.63389 | 0.54787 | 0.73357 | 0.71371 | 0.8836 | 0.9352 | 0.78006 | 0.81873 | 0.87507 | 0.88402 |
| *t*-value test | | | | | | | | | | | | | |
| *p*-value test | | | | | | | | | | | | | |