

Supplement

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8.1. Ratings

Self-report data confirmed that the participants were engaged with the task and paid attention to both the cue and the outcome. Most participants reported to have paid close attention to the cue informing about reward probability ($M = 5.21$, $sd = 1.44$, *Range* 1-7), as well as the stimulus informing about the outcome ($M = 5.56$, $sd = 1.35$, *Range* 1-7). These ratings are comparable with those reported in Hajcak et al. (2003), where participants rated the attention directed to the cue at $M = 5.69$ ($sd = 1.14$), and outcome at $M = 5.50$ ($sd = 1.32$).

8.2. Preprocessing according to current standards & Quantification Methods

To provide another robustness test (3 & 4), we additionally preprocessed the data according to current standards (e.g., using ICA instead of Regression based Ocular correction, using all available electrodes instead of only 5 selected ones, etc.). Moreover, given that Peak Quantifications of ERPs are more sensitive to noise, we also used a (time-window) Mean Amplitude approach (robustness test 2 & 4). Nevertheless, data quality turned out to be comparable across quantifications and measurements. Standardized Measurement Error (SME, according to Luck et al. 2021) are summarized in Supplementary Table 1. As expected, SME values were higher for Peak compared to Mean quantification, and Difference Measures compared to keeping reward and no-reward outcomes separate. The SME values were comparable for the preprocessing following the original study and the one done according to current standards. The ERP waves were also comparable, see Supplementary Table 2, Figures 1 and 3.

Supplementary Table 1: Mean SME for different Quantification Methods and ERP components

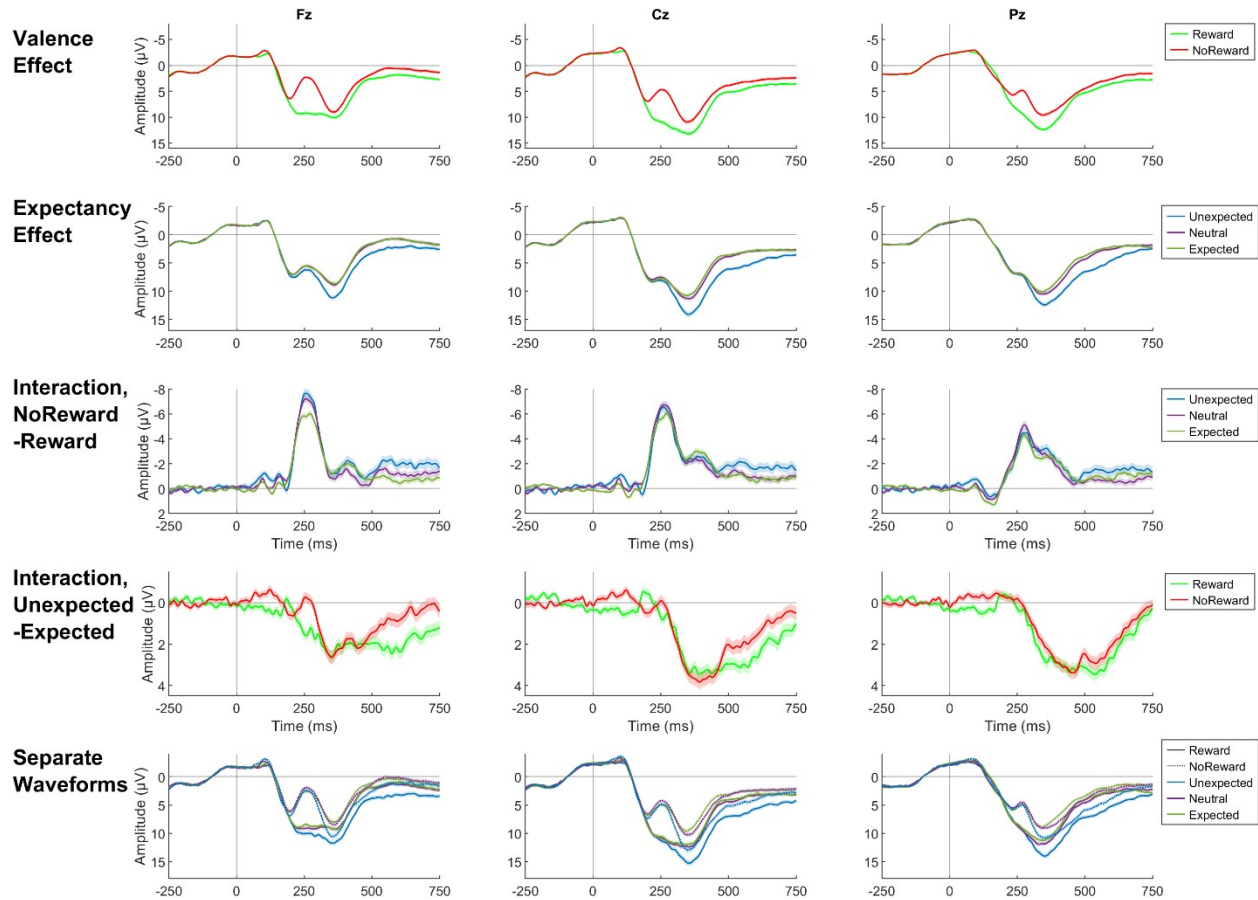
| Preprocessing | Peak | Mean | | |
|----------------|-------------|-------------|-------------|-------------|
| | Difference | Separate | Difference | Separate |
| FRN Component | | | | |
| Original | 3.09 (1.45) | 2.34 (1.23) | 2.59 (1.16) | 1.97 (0.94) |
| Current Std. | 3.33 (1.36) | 2.47 (1.08) | 2.78 (1.15) | 2.09 (0.91) |
| P300 Component | | | | |
| Original | | 2.24 (1.16) | | 2.02 (1.13) |
| Current Std. | | 2.29 (0.98) | | 2.04 (0.90) |

Note. Mean SME across Expectancy/Valence/Electrode Levels, with *sd* in parenthesis, for peak and mean quantification of the two ERP components under consideration. Separate/Difference refers to keeping outcome Valence separately (Reward vs. No-Reward) or creating a difference wave (No-Reward minus Reward).

Supplementary Table 2: Mean SME for different Quantification Methods and ERP components

| | | Difference | | | NoReward | | | Reward | | |
|----------------|------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------|
| | | UX | NE | EX | UX | NE | EX | UX | NE | EX |
| FRN Component | | | | | | | | | | |
| Original | Peak | -9.65 (6.46) | -9.03 (5.6) | -7.58 (4.57) | 1.19 (5.21) | 0.71 (5.03) | 1.62 (4.63) | 8.23 (7.26) | 7.24 (5.51) | 6.72 (5.7) |
| Original | Mean | -4.59 (5.16) | -4.91 (4.54) | -4.07 (3.84) | 5.33 (5.13) | 4.27 (4.8) | 4.69 (4.51) | 11.04 (6.4) | 9.98 (5.7) | 9.45 (5.5) |
| Current Std. | Peak | -10.56 (6.62) | -9.3 (5.48) | -8.14 (4.83) | -0.78 (6.01) | -0.36 (5.28) | 0.35 (4.83) | 5.32 (6.99) | 5.68 (6.01) | 5.65 (5.9) |
| Current Std. | Mean | -4.54 (5.53) | -4.84 (4.55) | -4.17 (3.91) | 3.93 (5.33) | 3.29 (4.66) | 3.77 (4.36) | 9.79 (6.48) | 8.97 (5.8) | 8.66 (5.4) |
| P300 Component | | | | | | | | | | |
| Original | Peak | | | | 15.42 (7.31) | 13 (6.47) | 12.51 (6.65) | 17.9 (7.66) | 15.58 (7.01) | 14.5 (6.5) |
| Original | Mean | | | | 10.06 (7.05) | 7.97 (6.18) | 7.51 (6.02) | 12.36 (6.92) | 10.03 (6.24) | 9.2 (5.9) |
| Current Std. | Peak | | | | 15.03 (6.81) | 12.29 (5.69) | 11.69 (5.27) | 17.38 (7.39) | 14.97 (6.52) | 13.9 (6.2) |
| Current Std. | Mean | | | | 9.02 (6.17) | 7.13 (5.09) | 6.49 (4.52) | 11.08 (6.4) | 8.94 (5.36) | 8.35 (5.1) |

Note. Mean ERP, with *sd* in parenthesis, for peak and mean quantification of the ERP components by keeping Valence separately (Reward vs. No-Reward) or creating a difference wave (No-Reward minus Reward). UX = Unexpected. NE = Neutral. EX = Expected



Supplementary Figure 1. ERP Plots using the preprocessing following current standards at electrode sites Fz, Cz, and Pz, separately for the different conditions. Shaded Areas represent \pm SEM.

8.3. Robustness Tests using Bayesian MLMs (Robustness Test 1 – 4)

All data and R scripts can be found on OSF (<https://osf.io/xt4c6/>). Posterior estimates for the fixed parameters showed convergence, as evidenced by R-hat values below 1.008 across all parameters and all models (different ERPs, Preprocessing, Quantification Methods, see Supplementary Table 3-5). Across all models, the marginal R^2 , accounting for fixed effects, ranged from 0.06 to 0.26 indicating that fixed effects alone explained on average 11.97% of the variance in the ERP variations. The conditional R^2 , accounting for both fixed and random effects, ranged from 0.89 to 0.98, indicating that the total model explained on average 92.81% of the variance.

Supplementary Table 3: Estimates of the posterior distributions of the model parameters for the different Robustness Tests and FRN/RewP component

| | Original | | Current Standards | |
|--------------------------------------|--|--|--|-------------------------------------|
| | Peak (RobTest 1) | Mean (RobTest 2) | Peak (RobTest 3) | Mean (RobTest 4) |
| Intercept | -10.79 (0.43) [-11.61, -9.89] 1.01 | -5.86 (0.37) [-6.56, -5.11] 1.01 | -11.96 (0.46) [-12.87, -11.07] 1 | -5.83 (0.4) [-6.61, -5.05] 1 |
| Location: PZ | 2.98 (0.33) [2.34, 3.63] 1 | 2.74 (0.26) [2.22, 3.23] 1 | 3.48 (0.32) [2.87, 4.11] 1.01 | 2.92 (0.28) [2.36, 3.48] 1 |
| Location: CZ | 0.82 (0.21) [0.42, 1.22] 1 | 0.65 (0.15) [0.37, 0.94] 1 | 1.1 (0.21) [0.68, 1.52] 1 | 0.94 (0.16) [0.63, 1.25] 1 |
| Expectancy: Neutral | 1.26 (0.35) [0.58, 1.93] 1.01 | 0.11 (0.29) [-0.46, 0.67] 1 | 1.85 (0.36) [1.13, 2.56] 1 | 0.13 (0.31) [-0.47, 0.72] 1 |
| Expectancy: Expected | 2.64 (0.33) [1.98, 3.26] 1.01 | 0.99 (0.28) [0.43, 1.54] 1.01 | 3.18 (0.33) [2.53, 3.82] 1 | 0.95 (0.29) [0.37, 1.52] 1 |
| Location: PZ Expectancy: Neutral | -0.93 (0.31) [-1.54, -0.31] 1 | -0.58 (0.25) [-1.07, -0.09] 1 | -0.92 (0.35) [-1.63, -0.26] 1 | -0.61 (0.29) [-1.18, -0.05] 1 |
| Location: CZ Expectancy: Neutral | -0.64 (0.21) [-1.06, -0.24] 1 | -0.51 (0.15) [-0.8, -0.21] 1 | -0.68 (0.22) [-1.11, -0.24] 1 | -0.68 (0.17) [-1.01, -0.35] 1 |
| Location: PZ Expectancy: Expected | -0.99 (0.3) [-1.58, -0.4] 1 | -0.65 (0.24) [-1.12, -0.18] 1 | -1.21 (0.3) [-1.81, -0.61] 1 | -0.77 (0.26) [-1.29, -0.26] 1 |
| Location: CZ Expectancy: Expected | -0.95 (0.21) [-1.36, -0.53] 1 | -0.67 (0.15) [-0.97, -0.37] 1 | -1.05 (0.23) [-1.5, -0.61] 1 | -0.92 (0.17) [-1.26, -0.57] 1 |

Note: First entry corresponds to Mean (standard deviation), second row shows [95 %
Confidence intervals] and last entry corresponds to Rhat.

Supplementary Table 4: Estimates of the posterior distributions of the model parameters for the different Robustness Tests and P300 component

| | Original | | Current Standards | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | Peak (RobTest 1) | Mean (RobTest 2) | Peak (RobTest 3) | Mean (RobTest 4) |
| Intercept | 18.22 (0.59) [17.02, 19.39] 1 | 12.64 (0.54) [11.56, 13.68] 1 | 17.39 (0.5) [16.41, 18.37] 1 | 11.08 (0.42) [10.27, 11.91] 1 |
| Valence: NoReward | -2.56 (0.37) [-3.28, -1.84] 1 | -2.29 (0.4) [-3.07, -1.48] 1 | -2.34 (0.38) [-3.09, -1.59] 1 | -2.02 (0.36) [-2.73, -1.29] 1 |
| Expectancy: Neutral | -2.38 (0.27) [-2.9, -1.85] 1 | -2.4 (0.25) [-2.89, -1.92] 1 | -2.42 (0.27) [-2.97, -1.89] 1 | -2.13 (0.27) [-2.66, -1.61] 1 |
| Expectancy: Expected | -3.44 (0.24) [-3.92, -2.95] 1 | -3.23 (0.22) [-3.66, -2.78] 1 | -3.47 (0.27) [-4, -2.94] 1 | -2.73 (0.24) [-3.2, -2.25] 1 |
| Valence: NoReward Expectancy: Neutral | -0.08 (0.34) [-0.75, 0.59] 1 | 0.28 (0.29) [-0.29, 0.86] 1 | -0.31 (0.38) [-1.06, 0.44] 1 | 0.24 (0.37) [-0.48, 0.97] 1 |
| Valence: NoReward Expectancy: Expected | 0.41 (0.34) [-0.27, 1.07] 1 | 0.45 (0.31) [-0.15, 1.06] 1 | 0.13 (0.36) [-0.57, 0.82] 1 | 0.19 (0.34) [-0.47, 0.86] 1 |

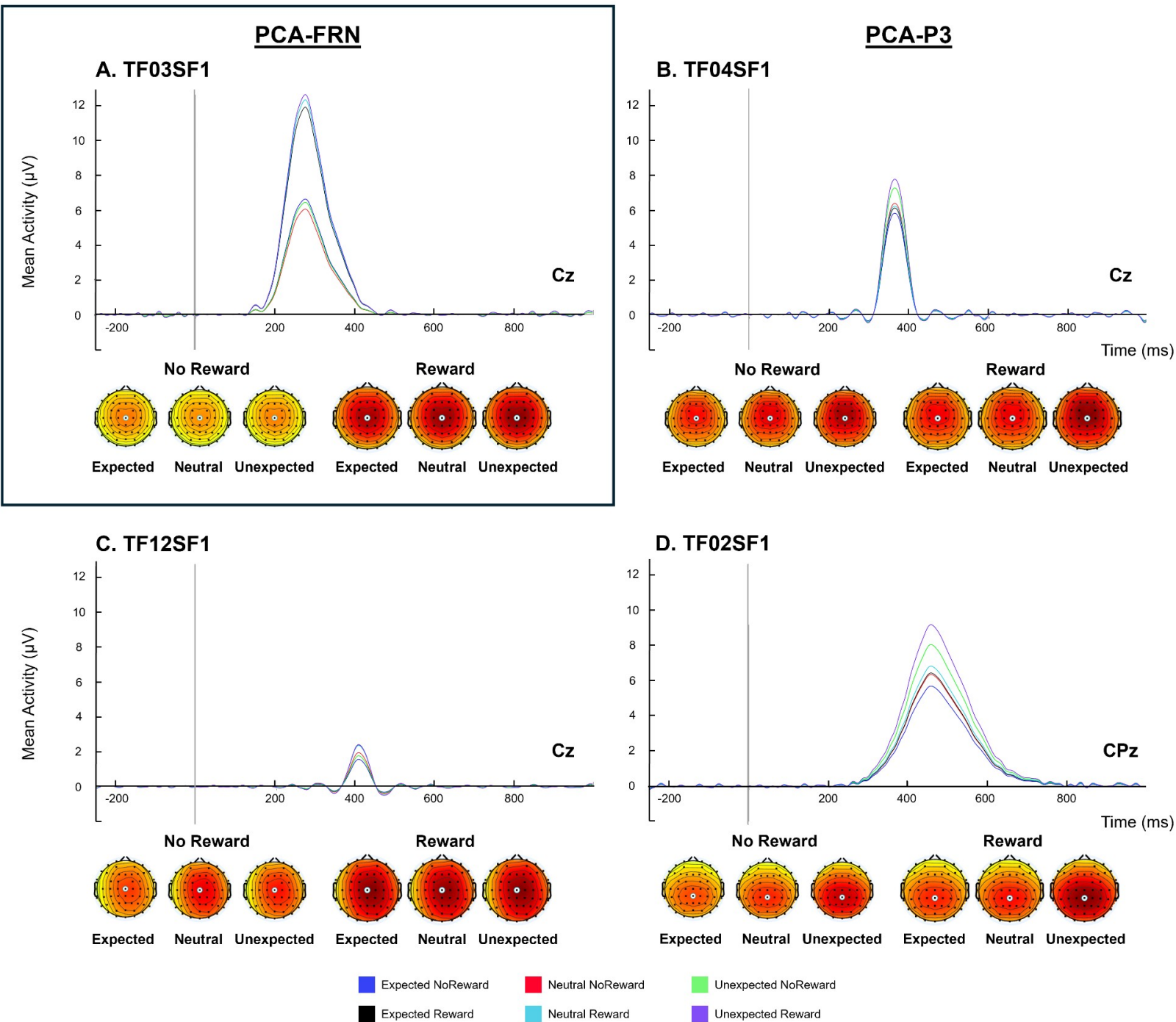
Note: First entry corresponds to Mean (standard deviation), second row shows [95 % Confidence intervals] and last entry corresponds to Rhat.

Supplementary Table 5: Estimates of the posterior distributions of the model parameters for the different Robustness Tests and FRN component at FZ, keeping Valence separate

| | Original | | Current Standards | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | Peak (RobTest 1) | Mean (RobTest 2) | Peak (RobTest 3) | Mean (RobTest 4) |
| Intercept | 8.74 (0.6) [7.55, 9.93] 1 | 11.27 (0.59) [10.11, 12.45] 1 | 5.47 (0.56) [4.35, 6.59] 1 | 9.76 (0.52) [8.72, 10.8] 1 |
| Valence: NoReward | -7.36 (0.42) [-8.18, -6.52] 1 | -5.84 (0.33) [-6.47, -5.22] 1 | -6.12 (0.44) [-6.96, -5.25] 1 | -5.79 (0.39) [-6.54, -5.02] 1 |
| Expectancy: Neutral | -0.97 (0.29) [-1.55, -0.41] 1 | -1.07 (0.22) [-1.51, -0.64] 1 | 0.37 (0.27) [-0.17, 0.89] 1 | -0.81 (0.22) [-1.23, -0.37] 1 |
| Expectancy: Expected | -1.3 (0.29) [-1.85, -0.73] 1 | -1.57 (0.21) [-1.99, -1.16] 1 | 0.33 (0.26) [-0.19, 0.84] 1 | -1.11 (0.2) [-1.51, -0.71] 1 |
| Valence: NoReward Expectancy: Neutral | 0.73 (0.39) [-0.03, 1.49] 1 | 0.09 (0.3) [-0.48, 0.66] 1 | 0.03 (0.36) [-0.69, 0.73] 1 | 0.14 (0.31) [-0.46, 0.72] 1 |
| Valence: NoReward Expectancy: Expected | 1.68 (0.37) [0.96, 2.41] 1 | 0.97 (0.27) [0.45, 1.51] 1 | 0.88 (0.35) [0.18, 1.58] 1 | 0.93 (0.27) [0.39, 1.46] 1 |

Note: First entry corresponds to Mean (standard deviation), second row shows [95 % Confidence intervals] and last entry corresponds to Rhat.

1.4. Robustness through PCA (Robustness Test 6)



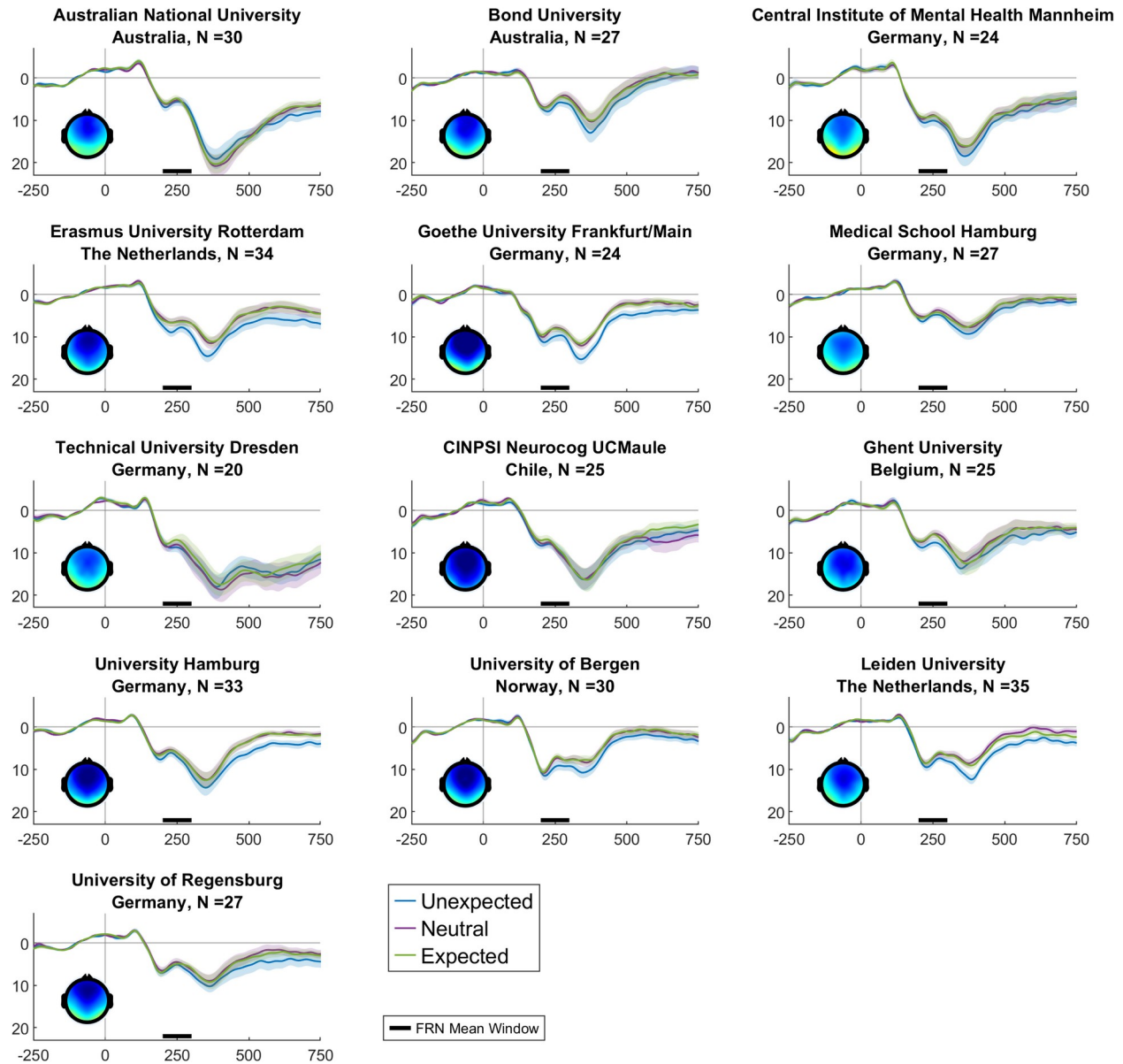
Supplementary Figure 2. Activation over time and topographical plots for PCA factors resembling the RewP and P300 components: (A) Factor TF03SF1 (corresponding to the RewP) peaks at 276 ms at the central area. (B) Factor TF04SF1 (corresponding to the P3) peaks at 366 ms at the central area. (C) Factor TF12SF1 (corresponding to the P3) peaks at 410 ms at the central area. (D) Factor TF02SF1 (corresponding to the P3) peaks at 458 ms at the centro-parietal area.

The PCA factor TF12SF1, corresponding to the P300 component, exhibited a peak latency at 410 ms over the central area (maximal at Cz). The robust ANOVA revealed a significant main effect of Valence ($T_{WJt}/c_{1.0,198.0} = 17.48, p < .001, MSe = 6.81$), showing a larger positivity for reward than no-reward outcomes ($M_{\text{Reward}} = 2.34 \mu\text{V}, sd = .01$ vs. $M_{\text{NoReward}} = 1.71 \mu\text{V}, sd = .02$). Both the main effect of Expectancy ($T_{WJt}/c_{2.0,176.0} = 1.18, p = .31, MSe = 2.58$, and the interaction effect did not reach significance ($T_{WJt}/c(2.0,176.0) = 2.22, p = .111, MSe = 2.57$).

The PCA factor TF02SF1, also accounting for the P300 component, exhibited a peak latency at 458 ms over the centro-parietal area (maximal at CPz). The robust ANOVA revealed a significant main effect of Valence ($T_{WJt}/c_{1.0,198.0} = 17.11, p < .001, MSe = 10.59$) showing a larger positivity for reward than no-reward outcomes ($M_{\text{Reward}} = 7.33 \mu\text{V}, sd = .02$ vs. $M_{\text{NoReward}} = 6.55 \mu\text{V}, sd = .02$). A significant main effect of Expectancy ($T_{WJt}/c_{2.0,176.0} = 67.61, p < .001, MSe = 10.80$) was also found, explained by a larger positivity for unexpected than expected outcomes ($M_{\text{Unexpected}} = 8.47 \mu\text{V}, SD = .03$ vs. $M_{\text{Expected}} = 5.90 \mu\text{V}, SD = .02$ vs. $M_{\text{Neutral}} = 6.45 \mu\text{V}, SD = .02$). The interaction between Valence and Expectancy was not significant ($T_{WJt}/c_{2.0,176.0} = 1.82, p = .164, MSe = 10.18$).

1.5. Lab Effects

Lab Effects were only modeled in the MLMs and the Meta-Analysis, indicating that there was some variation for some effects (e.g., the main effect of Expectancy for the FRN). Although all Labs showed canonical FRN and P300 components and ERP waveforms, there was some variation in the magnitude and timing of these components, see supplementary Figure 3.



Supplementary Figure 3. ERP Plots using the preprocessing following the original preprocessing at electrode site Fz, separately for each Lab and Expectancy level (across Valence). Shaded Areas represent \pm SEM. Inline of the topographical plots (based on the preprocessing according to current standards), defined as the average amplitude in the 200-300 ms (NoReward - Reward, across expectancy levels).

Supplementary Table 6: Mean ERP, Latency and SME values for different Labs and ERP components

| Lab | FRN | | | P300 | | |
|-----|---------------|----------------|-------------|--------------|----------------|-------------|
| | ERP | Latency | SME | ERP | Latency | SME |
| ANU | -7.14 (4.21) | 269.97 (27.63) | 3.19 (1.27) | 14.62 (5.37) | 376.63 (34.92) | 2.13 (0.95) |
| BON | -8.74 (4.28) | 277.34 (36.3) | 3.37 (0.51) | 14.87 (6.33) | 344.93 (49.75) | 2.63 (0.55) |
| CIM | -8.07 (4.51) | 272.66 (36.26) | 3 (0.83) | 17.56 (6.23) | 377.28 (51.74) | 2.12 (0.85) |
| ERA | -9.61 (4.66) | 271.84 (27.49) | 3.34 (1.38) | 16.74 (6.59) | 364.99 (52.47) | 2.53 (1.51) |
| GUF | -10.02 (4.94) | 263.17 (16.69) | 3.16 (0.73) | 15.23 (4.72) | 339.14 (36.57) | 2.25 (0.56) |
| MSH | -7.08 (4.2) | 271.29 (28.21) | 3.2 (2.45) | 11.33 (4.92) | 354.17 (43.55) | 2.16 (0.99) |
| TUD | -7.69 (2.91) | 274.02 (24.87) | 2.5 (0.59) | 16.93 (5.56) | 369.17 (44.07) | 1.58 (0.32) |
| UCM | -9.48 (6.77) | 258.5 (22.21) | 3.63 (0.86) | 14.61 (8.76) | 353.47 (53.37) | 2.83 (1.33) |
| UGE | -8.13 (4.38) | 258.85 (33.61) | 3.3 (1.37) | 15.55 (7.17) | 365.89 (57.01) | 2.42 (0.89) |
| UHH | -9.22 (3.91) | 262.36 (31.09) | 3.24 (0.67) | 16.48 (7.18) | 346.00 (41.95) | 2.47 (0.50) |
| UIB | -8.29 (3.78) | 260.85 (25.15) | 2.5 (0.43) | 13.07 (4.73) | 318.11 (51.05) | 1.66 (0.34) |
| UNL | -8.55 (4.16) | 280.52 (27.87) | 3.09 (0.58) | 13.62 (5.58) | 365.54 (41.29) | 2.30 (0.43) |
| URE | -8.5 (3.33) | 264.33 (25.44) | 2.6 (0.65) | 12.96 (5.48) | 348.18 (56.65) | 1.88 (0.46) |

Note. Mean ERP (in μV), Latency (in ms) and SME across Expectancy/Valence/Electrode Levels, with *sd* in parenthesis, for the direct replication (original preprocessing, peak quantification, difference waves for FRN).

ANU = Australian National University, Australia. BON = Bond University, Australia. CIM = Central Institute of Mental Health Mannheim, Germany. ERA = Erasmus University Rotterdam, The Netherlands. GUF = Goethe University Frankfurt am Main, Germany. MSH = Medical School Hamburg, Germany. TUD = Technical University Dresden, Germany. UCM = CINPSI Neurocog UC Maule, Chile. UGE = Ghent University, Belgium. UHH = University Hamburg, Germany. UIB = University of Bergen, Norway. UNL = Leiden University, The Netherlands. URE = University of Regensburg, Germany

Supplementary Table 7. *Overview of EEG set-up and recording details at each replicating lab*

| Lab | Amplifier System | Electrode/Cap Model, Number EEG + external electrodes | Sampling Rate | Reference, Ground | acquisition filter bandwidth | operating system (e.g., Windows, Linux, MacOS) | Screen Type, Size, Ratio, Refresh Rate | Stimulus Presentation, Language | Buttons for task | Recording of Resting |
|--|-------------------------|---|---------------|-------------------|---|--|--|---------------------------------|-------------------------------|----------------------|
| Australian National University, Australia | Biosemi | Biosemi, active, 64 + 6 | 1024 | CMS/DRL | LP filter: 5th order CIC at 204 Hz -3dB | Windows 10 | LCD, 24 in, 1920:1080, 60 Hz | Presentation (23.1), English | ZCBM on QWERTY keyboard | no |
| Bond University, Australia | Biosemi | Biosemi, active, 32 + 6 | 2048 | CMS/DRL | LP filter: 5th order CIC - 3dB, at 1/5 of sample rate | Windows 10 | LCD, 23 in, 1980:1080, 120 Hz | PsychoPy (21.2.3), English | ZCBM on QWERTY keyboard | yes |
| Central Institute of Mental Health Mannheim, Germany | BrainProducts actiCHamp | BrainProducts actiCap slim/snap, active, 64 + 4 | 500 | Cz, AFz | High and low pass filter 0.1 - 100Hz | Windows 10 | LCD, 24 in, 1980:1080, 60 Hz | Psychopy (22.1.3), German | YCBM on QWERTZ keyboard | yes |
| CINPSI Neurocog UC Maule, Chile | Biosemi | Biosemi, active, 64 + 6 | 2048 | CMS/DRL | LP filter: 5th order CIC at 102 Hz -3dB | Windows 7 | LCD, 24 in, 1920:1080, 75 Hz | Psychopy (22.1.3), Spanish | left/right Ctrl/Alt on QWERTZ | yes |

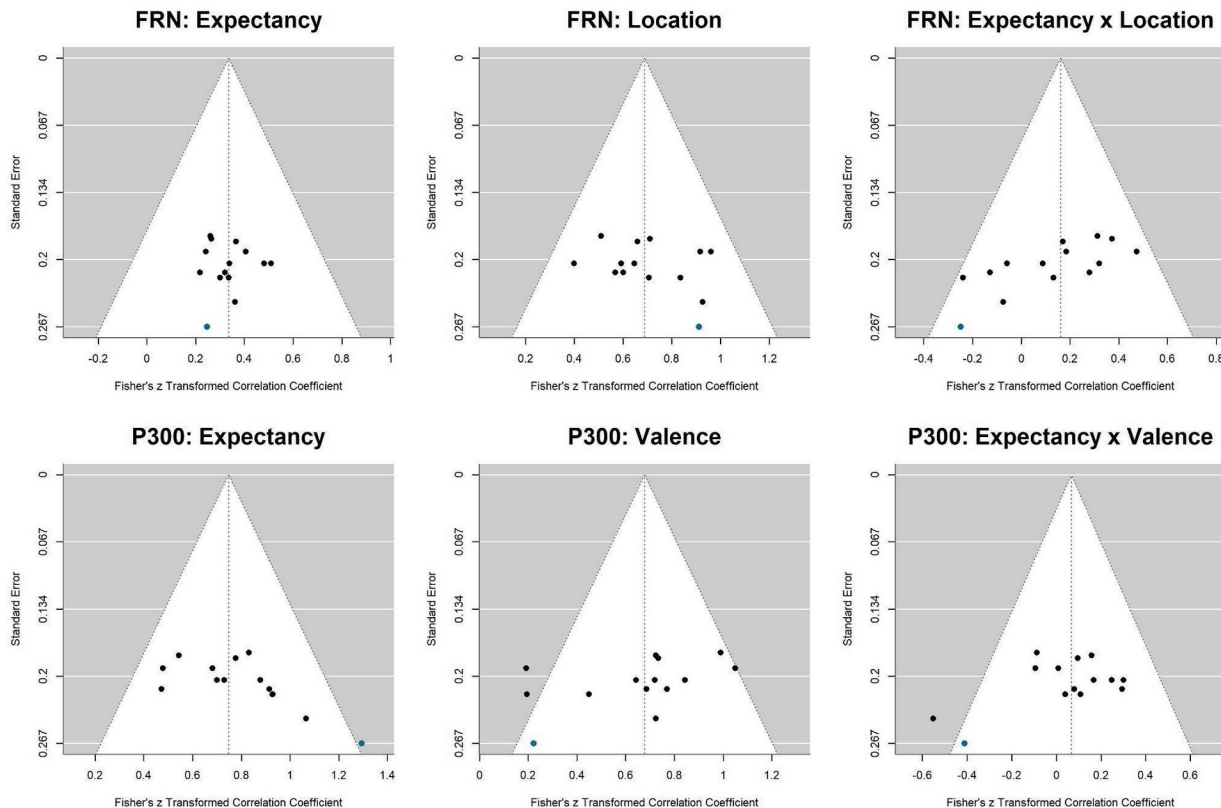
| | | | | | | | | | | |
|---|-------------------------------------|---|------|----------|--|---------------|-------------------------------------|---|--|-----|
| | | | | | | | | | keyboar d | |
| Erasmus University Rotterdam, The Netherlands | Biosemi | Biosemi, active, 64+ 6 | 512 | CMS/DRL | LP filter: 5th order CIC at 102Hz -3dB | Windows 10 | LED, 24 in, 1920:1080, 120 Hz | Presentation (23), Dutch | ZCBM on QWERT Y keyboar d | yes |
| Ghent University, Belgium | Biosemi | Biosemi, active, 64+6 | 512 | CMS/DRL | LP filter: 5th order CIC at 102Hz -3dB | Windows 10 | CRT, 19 in, 1024:768, 75 Hz | Presentation (23), Dutch | ZCBM on QWERT Y keyboar d | yes |
| Goethe University Frankfurt am Main and DIPF, Germany | BrainProduct s actiCHamp Plus | EasyCap, Custom, actiCap snap, active, 64 | 500 | Cz, FCz | Low cutoff (s) 10, High cutoff (Hz) 100 | Windows 10 | LCD, 24 in, 1920: 1080, 60 Hz | PsychoPy (22.1.3), German | left/right Ctrl/Alt on QWERT Z keyboar d | yes |
| Leiden University, The Netherlands | Biosemi | Biosemi, active, 64+6 | 1024 | CMS/DRL | LP filter: 5th order CIC at 102Hz -3dB | Windows 10 | LCD, 24 in, 1680:1050, 60 Hz | Psychopy (22.1.1), Dutch & English | ZCBM on QWERT Y keyboar d | yes |
| Medical School Hamburg, | BrainProduct s BrainAmp | BrainProducts actiCap snap | 1000 | FCz, AFz | Low cutoff (s): 10, High | Windows 10 | LCD (LED backlight), 23 | Presentation 20.1 (Doors | YCBM on | yes |

| | | | | | | | | | | |
|--|---------------------------------------|---|------|-----------------|---|---------------|-------------------------------------|--|--|-----|
| Germany | DC | active, 32 | | | cutoff (Hz): 1000 | | in, 1920:1080, 60 Hz | task), Resting-state (Psychopy (22.1.3)), German | QWERT Z keyboar d | |
| Technical University Dresden, Germany | BrainProduct s BrainAmp MR Plus | EasyCap, BrainCap with Multitrodes passive, 64 | 500 | AFF1h, AFF2h | Low cutoff (s): 10, High cutoff (Hz): 1000 | Windows 10 | LED, 24 in, 1920:1080, 144 Hz | Presentation (19.0), German | YCBM on QWERT Z keyboar d | yes |
| University Hamburg, Germany | Biosemi | Biosemi, active, 64+6 | 512 | CMS/DRL | LP filter: 5th order CIC at 102Hz -3dB | Windows 7 | LCD, 24 in, 16:19, 60 Hz | Psychopy (22.1.3), German | left/right Ctrl/Alt on QWERT Z keyboar d | yes |
| University of Bergen, Norway | BrainProduct s BrainAmp MR Plus | EasyCap M24 for multitrodes, passive, 32 | 500 | FCz, AFz | Low cutoff (s): 10, High cutoff (Hz): 250 | Windows 10 | LED, 24 in, 1920:1080,12 0 Hz | Psychopy (22.1.3), Norwegian | left/right Ctrl/Alt on QWERT Y keyboar d | no |
| University of Regensburg, Germany | Bittium NeuroOne Tesla | EasyCap (32 Ch BrainCap for TMS with Multitrodes), passive, | 1000 | FCz, AFz | High cutoff: 250 Hz | Windows 10 | LCD, 24 in, 16:19, 60 Hz | Doors task: Psychopy (22.1.3); Resting State: | left/right Ctrl/Alt on QWERT Z | yes |

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Presentation,
German keyboard

1.6. Meta Analysis - Funnel Plots



Supplementary Figure 4. Funnel plot of the meta-analysis. Each plotted point represents the standard error and standardized Fisher's z Transformed Correlation Coefficient for a single lab. The white triangle represents the region where 95% of the data points would lie in the absence of a publication bias. The vertical line represents the average standardized mean effect. The blue dot represents the effects from the original study.

1.7. Sample Size Recommendations

Our large sample allowed us to determine precisely the effect sizes for the FRN/RewP and P300 components in a way that could not be achieved in previous EEG studies focused on them, because smaller sample sizes were used. Hence, this information could be extremely valuable as it could guide sample size estimations in future EEG studies on them. However, it is important that we aimed to replicate the ERP effects of Hajcak et al. (2005) using the same experimental procedure, pre-processing and quantification method, and hence adjustments are needed depending on the specific methodology, needs and goals of these future studies.

Supplementary Table 8. *Sample size Recommendation for future use*

FRN

Difference Reward – NoReward
Expectancy (3) x Location (3)

| <i>Effect</i> | η_p^2 | <i>N recom.</i> |
|----------------------------------|------------------------------|---------------------------|
| Expectancy | 0.12 [0.08, 0.17] | 38 [58 – 26] |
| Location | 0.29 [0.23, 0.34] | 14 [18 - 12] |
| Location x Expectancy | 0.01 [\leq 0.01, 0.03] | 298 [n.a. - 98] |

FRN at Fz

Valence (2) x Expectancy (3)

| <i>Effect</i> | η_p^2 | <i>N recom.</i> |
|---------------------------------|------------------------------|---------------------------|
| Valence | 0.66, [0.6, 0.71] | 6 [8 – 6] |
| Expectancy | 0.02 [\leq 0.01, 0.05] | 238 [n.a. - 94] |
| Valence x Expectancy | 0.04 [0.01, 0.07] | 118 [480 - 66] |

P300

Valence (2) x Expectancy (3)

| <i>Effect</i> | η_p^2 | <i>N recom.</i> |
|---------------------------------|--------------------------------------|------------------------|
| Valence | 0.35 [0.27, 0.42] | 18 [24 – 14] |
| Expectancy | 0.4 [0.34, 0.44] | 10 [12 - 8] |
| Valence x Expectancy | \leq 0.001 [\leq 0.01, 0.02] | n.a. [n.a. - 238] |

Note: η_p^2 from the direct replication (original preprocessing, peak measures) including 95% CI. For a conservative approach, the lower bound of the confidence interval should be used. *N recom* = recommended sample size based on a-priori power analysis in MorePower for $\alpha = .05$ and $\beta = 80$. MorePower returns n.a. if sample size would exceed 2500 participants.