

Supplementary Information

We employed Bayesian Mixed Models for our analyses. In the main text, we report the probabilities that the model parameter for modality is non-zero, and the odds that modality influenced our measures. This information was derived by fitting, for each dependent variable, a Markov Chain Monte Carlo model. Weakly informative priors from the Gaussian family were used that were scaled by the `rstanarm` package. We used random effects for the participant, the story and the trial number, and fixed effects for the modality, the modality order and the stimulus order, specified as:

Dependent variable ~ modality + modality order + stimulus order +
(1 | participant) + (1 | story) + (1 | trial number)

In the tables below, we report information on the priors and detailed statistics for each models' parameters, including the 95% credibility intervals that are depicted in figures 2 and 3.

We also report the results of 2 (modality) x2 (modality order) x2 (stimulus order) ANOVAs for readers who prefer frequentist analyses.

Analyses were run in R (v3.4.3) using the packages `afex`, `rstanarm` and `psycho`.

Makowski, D. (2017). Efficient and Publishing-Oriented Workflow for Psychological Science with the R Package 'psycho'. Available from <https://github.com/neuropsychology/psycho.R>

R Core Team (2017). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>

Singmann, H., Bolker, B., Westfall, J., & Aust, F. (2018). `afex`: Analysis of Factorial Experiments. R package version 0.19-1. <https://CRAN.R-project.org/package=afex>

Stan Development Team (2016). `rstanarm`: Bayesian applied regression modeling via Stan. R package version 2.13.1. <http://mc-stan.org/>.

Engagement Ratings Attention

Priors:

```

Intercept (after predictors centered)
~ normal(location = 0, scale = 10)
  **adjusted scale = 46.32

Coefficients
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])
  **adjusted scale = [11.58,11.58,11.58]

Auxiliary (sigma)
~ exponential(rate = 1)
  **adjusted scale = 4.63 (adjusted rate = 1/adjusted scale)

Covariance
~ decov(reg. = 1, conc. = 1, shape = 1, scale = 1)

```

Estimates of model parameters:

Variable	MPE	Median	MAD	Mean	SD	CI low	CI high
Intercept	100	12.47	0.63	12.47	0.64	11.15	13.67
modality	100	3.53	0.22	3.53	0.22	3.09	3.95
modality order	99.18	-1.29	0.55	-1.29	0.55	-2.32	-0.18
stimuli order	92.45	0.78	0.55	0.79	0.55	-0.26	1.89

Anova table:

Effect	df	MSE	F	p
stim_order	1,98	6.41	0.74	0.39
mod_order	1,98	6.41	2.33	0.13
stim_order:mod_order	1,98	6.41	0.08	0.78
modality	1,98	2.24	2.99	0.09
stim_order:modality	1,98	2.24	0.13	0.72
mod_order:modality	1,98	2.24	1.08	0.3
stim_order:mod_order:modality	1,98	2.24	6.89	0.01

Character

Priors:

Intercept (after predictors centered)

```
~ normal(location = 0, scale = 10)  
  **adjusted scale = 28.56
```

Coefficients

```
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])  
  **adjusted scale = [7.14,7.14,7.14]
```

Auxiliary (sigma)

```
~ exponential(rate = 1)  
  **adjusted scale = 2.86 (adjusted rate = 1/adjusted scale)
```

Covariance

```
~ decov(reg. = 1, conc. = 1, shape = 1, scale = 1)
```

Estimates of model parameters:

Variable	MPE	Median	MAD	Mean	SD	CI low	CI high
Intercept	100	11.34	0.38	11.35	0.39	10.58	12.1
modality	98.15	0.34	0.15	0.34	0.16	0.01	0.66
modality order	92.13	-0.48	0.34	-0.48	0.35	-1.21	0.14
stimuli order	78.73	-0.26	0.33	-0.26	0.34	-0.89	0.44

Anova table:

Effect	df	MSE	F	p
stim_order	1,98	15.69	3.7	0.06
mod_order	1,98	15.69	6.33	0.01
stim_order:mod_order	1,98	15.69	0.09	0.76
modality	1,98	6.13	107.07	<.0001
stim_order:modality	1,98	6.13	0.02	0.9
mod_order:modality	1,98	6.13	0.07	0.79
stim_order:mod_order:modality	1,98	6.13	0	0.96

Narrative

Priors:

Intercept (after predictors centered)

```
~ normal(location = 0, scale = 10)  
  **adjusted scale = 43.19
```

Coefficients

```
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])  
  **adjusted scale = [10.80,10.80,10.80]
```

Auxiliary (sigma)

```
~ exponential(rate = 1)  
  **adjusted scale = 4.32 (adjusted rate = 1/adjusted scale)
```

Covariance

```
~ decov(reg. = 1, conc. = 1, shape = 1, scale = 1)
```

Estimates of model parameters:

Variable	MPE	Median	MAD	Mean	SD	CI low	CI high
Intercept	100	14.03	0.58	14.03	0.59	12.82	15.13
modality	100	1.67	0.22	1.67	0.22	1.23	2.11
modality order	95.38	-0.93	0.56	-0.94	0.56	-1.99	0.16
stimuli order	96.8	1.06	0.57	1.05	0.56	-0.1	2.11

Anova table:

Effect	df	MSE	F	p
stim_order	1,98	15.5	6.42	0.01
mod_order	1,98	15.5	3.45	0.07
stim_order:mod_order	1,98	15.5	0.57	0.45
modality	1,98	5.14	28.94	<.0001
stim_order:modality	1,98	5.14	0.04	0.83
mod_order:modality	1,98	5.14	0.02	0.88
stim_order:mod_order:modality	1,98	5.14	0.12	0.73

Presence

Priors:

Intercept (after predictors centered)

```
~ normal(location = 0, scale = 10)  
  **adjusted scale = 41.96
```

Coefficients

```
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])  
  **adjusted scale = [10.49,10.49,10.49]
```

Auxiliary (sigma)

```
~ exponential(rate = 1)  
  **adjusted scale = 4.20 (adjusted rate = 1/adjusted scale)
```

Covariance

```
~ decov(reg. = 1, conc. = 1, shape = 1, scale = 1)
```

Estimates of model parameters:

Variable	MPE	Median	MAD	Mean	SD	CI low	CI high
Intercept	100	12.32	0.59	12.32	0.58	11.14	13.42
modality	100	1.88	0.19	1.88	0.19	1.51	2.26
modality order	88.45	-0.73	0.6	-0.72	0.6	-1.89	0.44
stimuli order	66.05	-0.24	0.6	-0.24	0.6	-1.41	0.94

Anova table:

Effect	df	MSE	F	p
stim_order	1,98	18.84	0.03	0.87
mod_order	1,98	18.84	1.4	0.24
stim_order:mod_order	1,98	18.84	1.51	0.22
modality	1,98	4.89	39.17	<.0001
stim_order:modality	1,98	4.89	0.58	0.45
mod_order:modality	1,98	4.89	4.29	0.04
stim_order:mod_order:modality	1,98	4.89	1.12	0.29

Physiological Measures Heart Rate

Priors:

Intercept (after predictors centered)

```
~ normal(location = 0, scale = 10)
  **adjusted scale = 6.73
```

Coefficients

```
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])
  **adjusted scale = [1.68,1.68,1.68]
```

Auxiliary (sigma)

```
~ exponential(rate = 1)
  **adjusted scale = 0.67 (adjusted rate = 1/adjusted scale)
```

Covariance

```
~ decov(reg. = 1, conc. = 1, shape = 1, scale = 1)
```

Estimates of model parameters:

Variable	MPE	Median	MAD	Mean	SD	CI low	CI high
Intercept	79.08	0.06	0.07	0.05	0.07	-0.09	0.2
modality	100	-0.17	0.05	-0.17	0.05	-0.27	-0.08
modality order	56	-0.01	0.05	-0.01	0.05	-0.1	0.09
stimuli order	75.05	0.03	0.05	0.03	0.05	-0.06	0.12

Anova table:

Effect	df	MSE	F	p
stim_order	1,91	0.02	0.02	0.9
mod_order	1,91	0.02	1.74	0.19
stim_order:mod_order	1,91	0.02	0.12	0.73
modality	1,91	0.2	9.16	0.003
stim_order:modality	1,91	0.2	1.85	0.18
mod_order:modality	1,91	0.2	13.87	0.0003
stim_order:mod_order:modality	1,91	0.2	0.87	0.35

Heart Rate Standard Deviation

Priors:

Intercept (after predictors centered)

```
~ normal(location = 0, scale = 10)  
  **adjusted scale = 3.78
```

Coefficients

```
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])  
  **adjusted scale = [0.95,0.95,0.95]
```

Auxiliary (sigma)

```
~ exponential(rate = 1)  
  **adjusted scale = 0.38 (adjusted rate = 1/adjusted scale)
```

Covariance

```
~ decov(reg. = 1, conc. = 1, shape = 1, scale = 1)
```

Estimates of model parameters:

Variable	MPE	Median	MAD	Mean	SD	CI low	CI high
Intercept	100	0.66	0.04	0.66	0.04	0.58	0.75
modality	99.95	-0.08	0.03	-0.08	0.03	-0.13	-0.03
modality order	99.73	0.08	0.03	0.08	0.03	0.02	0.13
stimuli order	55.78	0	0.03	0	0.03	-0.06	0.05

Anova table:

Effect	df	MSE	F	p
stim_order	1,91	0.03	0.11	0.74
mod_order	1,91	0.03	5.75	0.02
stim_order:mod_order	1,91	0.03	0.21	0.65
modality	1,91	0.04	7.7	0.007
stim_order:modality	1,91	0.04	0.63	0.43
mod_order:modality	1,91	0.04	8.19	0.005
stim_order:mod_order:modality	1,91	0.04	4.78	0.03

EDA

Priors:

Intercept (after predictors centered)

```
~ normal(location = 0, scale = 10)  
  **adjusted scale = 8.86
```

Coefficients

```
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])  
  **adjusted scale = [2.21,2.21,2.21]
```

Auxiliary (sigma)

```
~ exponential(rate = 1)  
  **adjusted scale = 0.89 (adjusted rate = 1/adjusted scale)
```

Covariance

```
~ decov(reg. = 1, conc. = 1, shape = 1, scale = 1)
```

Estimates of model parameters:

Variable	MPE	Median	MAD	Mean	SD	CI low	CI high
Intercept	80.03	0.12	0.15	0.13	0.15	-0.17	0.43
modality	100	-0.27	0.07	-0.27	0.07	-0.41	-0.12
modality order	68.55	-0.03	0.07	-0.03	0.07	-0.19	0.09
stimuli order	62.85	-0.02	0.08	-0.02	0.08	-0.17	0.13

Anova table:

Effect	df	MSE	F	p
stim_order	1,55	0.04	0.35	0.55
mod_order	1,55	0.04	0.89	0.35
stim_order:mod_order	1,55	0.04	0.06	0.81
modality	1,55	0.51	4.49	0.04
stim_order:modality	1,55	0.51	0.17	0.68
mod_order:modality	1,55	0.51	18.75	<.0001
stim_order:mod_order:modality	1,55	0.51	0.67	0.42

Temperature

Priors:

Intercept (after predictors centered)

```
~ normal(location = 0, scale = 10)  
  **adjusted scale = 9.48
```

Coefficients

```
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])  
  **adjusted scale = [2.37,2.37,2.37]
```

Auxiliary (sigma)

```
~ exponential(rate = 1)  
  **adjusted scale = 0.95 (adjusted rate = 1/adjusted scale)
```

Covariance

```
~ decov(reg. = 1, conc. = 1, shape = 1, scale = 1)
```

Estimates of model parameters:

Variable	MPE	Median	MAD	Mean	SD	CI low	CI high
Intercept	58.3	0.03	0.16	0.03	0.18	-0.38	0.34
modality	99.2	-0.17	0.07	-0.17	0.07	-0.3	-0.03
modality order	88.28	0.09	0.07	0.09	0.07	-0.06	0.23
stimuli order	64.63	-0.03	0.07	-0.03	0.07	-0.17	0.11

Anova table:

Effect	df	MSE	F	p
stim_order	1,72	0.05	0.55	0.46
mod_order	1,72	0.05	6.99	0.01
stim_order:mod_order	1,72	0.05	0.51	0.48
modality	1,72	0.74	1.87	0.18
stim_order:modality	1,72	0.74	0.00	0.95
mod_order:modality	1,72	0.74	13.01	0.0006
stim_order:mod_order:modality	1,72	0.74	0.02	0.9

Acceleration

Priors:

Intercept (after predictors centered)

```
~ normal(location = 0, scale = 10)  
  **adjusted scale = 3.20
```

Coefficients

```
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])  
  **adjusted scale = [0.80,0.80,0.80]
```

Auxiliary (sigma)

```
~ exponential(rate = 1)  
  **adjusted scale = 0.32 (adjusted rate = 1/adjusted scale)
```

Covariance

```
~ decov(reg. = 1, conc. = 1, shape = 1, scale = 1)
```

Estimates of model parameters:

Variable	MPE	Median	MAD	Mean	SD	CI low	CI high
Intercept	54.7	0	0.03	0	0.03	-0.05	0.05
modality	76.2	-0.02	0.02	-0.02	0.02	-0.06	0.03
modality order	55.68	0	0.02	0	0.02	-0.05	0.04
stimuli order	80.53	0.02	0.02	0.02	0.02	-0.02	0.06

Anova table:

Effect	df	MSE	F	p
stim_order	1,91	0.01	1.07	0.3
mod_order	1,91	0.01	0.03	0.87
stim_order:mod_order	1,91	0.01	2.19	0.14
modality	1,91	0.05	0.29	0.59
stim_order:modality	1,91	0.05	0.22	0.64
mod_order:modality	1,91	0.05	0	0.96
stim_order:mod_order:modality	1,91	0.05	0.04	0.85