Jamovi statistical tables for

Different response measures of conditioned magazine activity can tell different stories about brain function

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This PDF file contains statistical tables.

Section 2: Number of Entries Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	Number ~ 1 + SessBlk + Cue + SessBlk:Cue+(1 | Subj)
AIC	1057.652
BIC	1096.276
LogLikel.	-520.412
R-squared Marginal	0.280
R-squared Conditional	0.612
Converged	yes
Optimizer	bobyqa

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
SessBlk	3.15	3	217	0.026
Cue	140.78	1	217	< .001
SessBlk ✻ Cue	11.15	3	217	< .001

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
(Intercept)	(Intercept)	3.372	0.287	2.8095	3.93	31.0	11.75	< .001
SessBlk1	2 - 1	0.812	0.290	0.2439	1.38	217.0	2.80	0.006
SessBlk2	3 - 1	0.696	0.290	0.1273	1.26	217.0	2.40	0.017
SessBlk3	4 - 1	0.629	0.290	0.0611	1.20	217.0	2.17	0.031
Cue1	B- - A+	-2.433	0.205	-2.8348	-2.03	217.0	-11.87	< .001
SessBlk1 ✻ Cue1	2 - 1 ✻ B- - A+	-2.355	0.580	-3.4912	-1.22	217.0	-4.06	< .001
SessBlk2 ✻ Cue1	3 - 1 ✻ B- - A+	-2.657	0.580	-3.7941	-1.52	217.0	-4.58	< .001
SessBlk3 ✻ Cue1	4 - 1 ✻ B- - A+	-3.035	0.580	-4.1714	-1.90	217.0	-5.23	< .001

Random Components

Groups	Name	SD	Variance	ICC
Subj	(Intercept)	1.52	2.30	0.461
Residual		1.64	2.69	

Note. Number of Obs: 256 , groups: Subj 32

Simple Effects

Simple effects of Cue : Omnibus Tests

Moderator levels			
SessBlk	F	Num df	Den df	p
1	1.05	1.00	217	0.305
2	45.81	1.00	217	< .001
3	56.36	1.00	217	< .001
4	71.02	1.00	217	< .001

Simple effects of Cue : Parameter estimates

Moderator levels				95% Confidence Interval				
SessBlk	contrast	Estimate	SE	Lower	Upper	df	t	p
1	B- - A+	-0.421	0.410	-1.23	0.387	217	-1.03	0.305
2	B- - A+	-2.776	0.410	-3.58	-1.967	217	-6.77	< .001
3	B- - A+	-3.079	0.410	-3.89	-2.270	217	-7.51	< .001
4	B- - A+	-3.456	0.410	-4.26	-2.648	217	-8.43	< .001

Section 2: Percent Time Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	Percent ~ 1 + SessBlk + Cue + SessBlk:Cue+(1 | Subj)
AIC	2092.644
BIC	2098.925
LogLikel.	-1021.737
R-squared Marginal	0.412
R-squared Conditional	0.722
Converged	yes
Optimizer	bobyqa

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
SessBlk	13.7	3	217	< .001
Cue	292.4	1	217	< .001
SessBlk ✻ Cue	15.0	3	217	< .001

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
(Intercept)	(Intercept)	49.07	2.40	44.4	53.78	31.0	20.42	< .001
SessBlk1	2 - 1	-6.67	2.16	-10.9	-2.44	217.0	-3.09	0.002
SessBlk2	3 - 1	-10.79	2.16	-15.0	-6.56	217.0	-5.00	< .001
SessBlk3	4 - 1	-12.78	2.16	-17.0	-8.55	217.0	-5.93	< .001
Cue1	B- - A+	-26.08	1.53	-29.1	-23.09	217.0	-17.10	< .001
SessBlk1 ✻ Cue1	2 - 1 ✻ B- - A+	-16.94	4.31	-25.4	-8.48	217.0	-3.93	< .001
SessBlk2 ✻ Cue1	3 - 1 ✻ B- - A+	-21.67	4.31	-30.1	-13.22	217.0	-5.02	< .001
SessBlk3 ✻ Cue1	4 - 1 ✻ B- - A+	-27.45	4.31	-35.9	-18.99	217.0	-6.36	< .001

Random Components

Groups	Name	SD	Variance	ICC
Subj	(Intercept)	12.9	166	0.527
Residual		12.2	149	

Note. Number of Obs: 256 , groups: Subj 32

Simple Effects

Simple effects of Cue : Omnibus Tests

Moderator levels			
SessBlk	F	Num df	Den df	p
1	9.84	1.00	217	0.002
2	75.50	1.00	217	< .001
3	104.88	1.00	217	< .001
4	147.24	1.00	217	< .001

Simple effects of Cue : Parameter estimates

Moderator levels				95% Confidence Interval				
SessBlk	contrast	Estimate	SE	Lower	Upper	df	t	p
1	B- - A+	-9.57	3.05	-15.6	-3.56	217	-3.14	0.002
2	B- - A+	-26.51	3.05	-32.5	-20.49	217	-8.69	< .001
3	B- - A+	-31.24	3.05	-37.3	-25.23	217	-10.24	< .001
4	B- - A+	-37.02	3.05	-43.0	-31.00	217	-12.13	< .001

Section 2: Latency Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	Latency ~ 1 + SessBlk + Cue + SessBlk:Cue+(1 | Subj)
AIC	753.042
BIC	801.186
LogLikel.	-372.867
R-squared Marginal	0.474
R-squared Conditional	0.767
Converged	yes
Optimizer	bobyqa

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
SessBlk	19.4	3	217	< .001
Cue	337.8	1	217	< .001
SessBlk ✻ Cue	41.3	3	217	< .001

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
(Intercept)	(Intercept)	7.082	0.184	6.721	7.4435	31.0	38.45	< .001
SessBlk1	2 - 1	-0.238	0.157	-0.544	0.0692	217.0	-1.52	0.131
SessBlk2	3 - 1	-0.804	0.157	-1.111	-0.4977	217.0	-5.14	< .001
SessBlk3	4 - 1	-1.051	0.157	-1.358	-0.7446	217.0	-6.72	< .001
Cue1	B- - A+	-2.034	0.111	-2.251	-1.8173	217.0	-18.38	< .001
SessBlk1 ✻ Cue1	2 - 1 ✻ B- - A+	-1.808	0.313	-2.422	-1.1948	217.0	-5.78	< .001
SessBlk2 ✻ Cue1	3 - 1 ✻ B- - A+	-2.641	0.313	-3.255	-2.0277	217.0	-8.44	< .001
SessBlk3 ✻ Cue1	4 - 1 ✻ B- - A+	-3.284	0.313	-3.898	-2.6704	217.0	-10.49	< .001

Random Components

Groups	Name	SD	Variance	ICC
Subj	(Intercept)	0.994	0.988	0.557
Residual		0.885	0.784	

Note. Number of Obs: 256 , groups: Subj 32

Simple Effects

Simple effects of Cue : Omnibus Tests

Moderator levels			
SessBlk	F	Num df	Den df	p
1	0.208	1.00	217	0.649
2	74.385	1.00	217	< .001
3	153.445	1.00	217	< .001
4	233.798	1.00	217	< .001

Simple effects of Cue : Parameter estimates

Moderator levels				95% Confidence Interval				
SessBlk	contrast	Estimate	SE	Lower	Upper	df	t	p
1	B- - A+	-0.101	0.221	-0.537	0.335	217	-0.456	0.649
2	B- - A+	-1.909	0.221	-2.346	-1.473	217	-8.625	< .001
3	B- - A+	-2.742	0.221	-3.178	-2.306	217	-12.387	< .001
4	B- - A+	-3.385	0.221	-3.821	-2.948	217	-15.290	< .001

Section 2: PC1 Results

Mixed Model

Model Info

	Info
Estimate	Linear mixed model fit by REML
Call	PC1 ~ 1 + SessBlk + Cue + SessBlk:Cue+(1 | Subj)
AIC	338.133
BIC	399.243
LogLikel.	-171.895
R-squared Marginal	0.748
R-squared Conditional	0.748
Converged	yes
Optimizer	bobyqa

Note. (Almost) singular fit. Maybe random coefficients variances are too small or correlations among them too large.

Note. boundary (singular) fit: see ?isSingular

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
SessBlk	11.0	3	248	< .001
Cue	579.1	1	248	< .001
SessBlk ✻ Cue	47.9	3	248	< .001

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
(Intercept)	(Intercept)	0.00143	0.0286	-0.0546	0.0575	248	0.0498	0.960
SessBlk1	2 - 1	-0.06589	0.0809	-0.2244	0.0927	248	-0.8144	0.416
SessBlk2	3 - 1	-0.27984	0.0809	-0.4384	-0.1213	248	-3.4592	< .001
SessBlk3	4 - 1	-0.41022	0.0809	-0.5688	-0.2517	248	-5.0709	< .001
Cue1	B- - A+	-1.37656	0.0572	-1.4887	-1.2644	248	-24.0645	< .001
SessBlk1 ✻ Cue1	2 - 1 ✻ B- - A+	-1.14759	0.1618	-1.4647	-0.8305	248	-7.0929	< .001
SessBlk2 ✻ Cue1	3 - 1 ✻ B- - A+	-1.49699	0.1618	-1.8141	-1.1799	248	-9.2525	< .001
SessBlk3 ✻ Cue1	4 - 1 ✻ B- - A+	-1.81516	0.1618	-2.1323	-1.4980	248	-11.2189	< .001

Random Components

Groups	Name	SD	Variance	ICC
Subj	(Intercept)	0.000	0.000	0.00
Residual		0.458	0.209	

Note. Number of Obs: 256 , groups: Subj 32

Simple Effects

Simple effects of Cue : Omnibus Tests

Moderator levels				
SessBlk	**F**	**Num df**	**Den df**	**p**
1	5.23	1.00	248	0.023
2	151.73	1.00	248	< .001
3	236.29	1.00	248	< .001
4	329.52	1.00	248	< .001

Simple effects of Cue : Parameter estimates

Moderator levels				95% Confidence Interval				
SessBlk	**contrast**	**Estimate**	**SE**	**Lower**	**Upper**	**df**	**t**	**p**
1	B- - A+	-0.262	0.114	-0.487	-0.0363	248	-2.29	0.023
2	B- - A+	-1.409	0.114	-1.635	-1.1839	248	-12.32	< .001
3	B- - A+	-1.759	0.114	-1.984	-1.5333	248	-15.37	< .001
4	B- - A+	-2.077	0.114	-2.302	-1.8514	248	-18.15	< .001

Section 4: Number of Entries Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	Number ~ 1 + Group + SessBlk + Cue + Group:SessBlk + Group:Cue + SessBlk:Cue + Group:SessBlk:Cue+(1 | Rat)
AIC	1672.146
BIC	1817.839
LogLikel.	-760.154
R-squared Marginal	0.237
R-squared Conditional	0.407

Model Info

Info	
Converged	yes
Optimizer	bobyqa

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group	14.842	1	329	< .001
SessBlk	1.199	7	329	0.303
Cue	52.120	2	329	< .001
Group ✻ SessBlk	0.566	7	329	0.783
Group ✻ Cue	2.086	2	329	0.126
SessBlk ✻ Cue	0.860	14	329	0.603
Group ✻ SessBlk ✻ Cue	0.376	14	329	0.981

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

				95% Confidence Interval				
Names	Effect	Estimate	SE	Lower	Upper	df	t	p
(Intercept)	(Intercept)	4.53379	0.382	3.785	5.2826	7.00	11.86675	< .001

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1	Rep2 - Rep1	0.76599	0.199	0.376	1.1557	329.00	3.85257	< .001
SessBlk1	2 - 1	0.54064	0.398	-0.239	1.3200	329.00	1.35959	0.175
SessBlk2	3 - 1	0.33205	0.398	-0.447	1.1114	329.00	0.83504	0.404
SessBlk3	4 - 1	0.08485	0.398	-0.695	0.8642	329.00	0.21337	0.831
SessBlk4	5 - 1	-0.30436	0.398	-1.084	0.4750	329.00	-0.76540	0.445
SessBlk5	6 - 1	-0.31567	0.398	-1.095	0.4637	329.00	-0.79385	0.428
SessBlk6	7 - 1	-0.11387	0.398	-0.893	0.6655	329.00	-0.28635	0.775
SessBlk7	8 - 1	-0.22036	0.398	-1.000	0.5590	329.00	-0.55416	0.580
Cue1	AB+ - A-	2.25797	0.244	1.781	2.7352	329.00	9.27258	< .001
Cue2	B- - A-	0.22786	0.244	-0.249	0.7051	329.00	0.93571	0.350
Group1 ✻ SessBlk1	Rep2 - Rep1 ✻ 2 - 1	0.00524	0.795	-1.554	1.5640	329.00	0.00659	0.995
Group1 ✻ SessBlk2	Rep2 - Rep1 ✻ 3 - 1	-0.05777	0.795	-1.617	1.5010	329.00	-0.07263	0.942
Group1 ✻ SessBlk3	Rep2 - Rep1 ✻ 4 - 1	-0.58447	0.795	-2.143	0.9743	329.00	-0.73491	0.463
Group1 ✻ SessBlk4	Rep2 - Rep1 ✻ 5 - 1	-0.66844	0.795	-2.227	0.8903	329.00	-0.84049	0.401
Group1 ✻ SessBlk5	Rep2 - Rep1 ✻ 6 - 1	-0.80427	0.795	-2.363	0.7545	329.00	-1.01127	0.313
Group1 ✻ SessBlk6	Rep2 - Rep1 ✻ 7 - 1	-0.60059	0.795	-2.159	0.9582	329.00	-0.75517	0.451

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ SessBlk7	Rep2 - Rep1 ✻ 8 - 1	-1.14593	0.795	-2.705	0.4128	329.00	-1.44088	0.151
Group1 ✻ Cue1	Rep2 - Rep1 ✻ AB+ - A-	-0.91490	0.487	-1.869	0.0396	329.00	-1.87857	0.061
Group1 ✻ Cue2	Rep2 - Rep1 ✻ B- - A-	-0.79548	0.487	-1.750	0.1591	329.00	-1.63336	0.103
SessBlk1 ✻ Cue1	2 - 1 ✻ AB+ - A-	0.54785	0.974	-1.361	2.4569	329.00	0.56246	0.574
SessBlk2 ✻ Cue1	3 - 1 ✻ AB+ - A-	1.17991	0.974	-0.729	3.0890	329.00	1.21135	0.227
SessBlk3 ✻ Cue1	4 - 1 ✻ AB+ - A-	1.00469	0.974	-0.904	2.9138	329.00	1.03146	0.303
SessBlk4 ✻ Cue1	5 - 1 ✻ AB+ - A-	1.13758	0.974	-0.771	3.0467	329.00	1.16790	0.244
SessBlk5 ✻ Cue1	6 - 1 ✻ AB+ - A-	1.45938	0.974	-0.450	3.3685	329.00	1.49827	0.135
SessBlk6 ✻ Cue1	7 - 1 ✻ AB+ - A-	2.13354	0.974	0.224	4.0426	329.00	2.19041	0.029
SessBlk7 ✻ Cue1	8 - 1 ✻ AB+ - A-	1.63828	0.974	-0.271	3.5474	329.00	1.68195	0.094
SessBlk1 ✻ Cue2	2 - 1 ✻ B- - A-	-0.20796	0.974	-2.117	1.7011	329.00	-0.21350	0.831
SessBlk2 ✻ Cue2	3 - 1 ✻ B- - A-	0.00610	0.974	-1.903	1.9152	329.00	0.00626	0.995
SessBlk3 ✻ Cue2	4 - 1 ✻ B- - A-	-0.37280	0.974	-2.282	1.5363	329.00	-0.38274	0.702
SessBlk4 ✻ Cue2	5 - 1 ✻ B- - A-	-0.46886	0.974	-2.378	1.4402	329.00	-0.48136	0.631

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
SessBlk5 ✻ Cue2	6 - 1 ✻ B- - A-	-0.63218	0.974	-2.541	1.2769	329.00	-0.64903	0.517
SessBlk6 ✻ Cue2	7 - 1 ✻ B- - A-	-0.41265	0.974	-2.322	1.4964	329.00	-0.42365	0.672
SessBlk7 ✻ Cue2	8 - 1 ✻ B- - A-	-0.69624	0.974	-2.605	1.2128	329.00	-0.71480	0.475
Group1 ✻ SessBlk1 ✻ Cue1	Rep2 - Rep1 ✻ 2 - 1 ✻ AB+ - A-	0.61446	1.948	-3.204	4.4326	329.00	0.31542	0.753
Group1 ✻ SessBlk2 ✻ Cue1	Rep2 - Rep1 ✻ 3 - 1 ✻ AB+ - A-	0.66919	1.948	-3.149	4.4874	329.00	0.34351	0.731
Group1 ✻ SessBlk3 ✻ Cue1	Rep2 - Rep1 ✻ 4 - 1 ✻ AB+ - A-	0.81250	1.948	-3.006	4.6307	329.00	0.41708	0.677
Group1 ✻ SessBlk4 ✻ Cue1	Rep2 - Rep1 ✻ 5 - 1 ✻ AB+ - A-	1.06269	1.948	-2.755	4.8809	329.00	0.54551	0.586
Group1 ✻ SessBlk5 ✻ Cue1	Rep2 - Rep1 ✻ 6 - 1 ✻ AB+ - A-	0.85313	1.948	-2.965	4.6713	329.00	0.43793	0.662
Group1 ✻ SessBlk6 ✻ Cue1	Rep2 - Rep1 ✻ 7 - 1 ✻ AB+ - A-	0.90166	1.948	-2.917	4.7198	329.00	0.46285	0.644
Group1 ✻ SessBlk7 ✻ Cue1	Rep2 - Rep1 ✻ 8 - 1 ✻ AB+ - A-	2.99219	1.948	-0.826	6.8104	329.00	1.53597	0.126
Group1 ✻ SessBlk1 ✻ Cue2	Rep2 - Rep1 ✻ 2 - 1 ✻ B- - A-	0.60595	1.948	-3.212	4.4241	329.00	0.31105	0.756

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ SessBlk2 ✻ Cue2	Rep2 - Rep1 ✻ 3 - 1 ✻ B- - A-	1.80595	1.948	-2.012	5.6241	329.00	0.92704	0.355
Group1 ✻ SessBlk3 ✻ Cue2	Rep2 - Rep1 ✻ 4 - 1 ✻ B- - A-	2.47314	1.948	-1.345	6.2913	329.00	1.26953	0.205
Group1 ✻ SessBlk4 ✻ Cue2	Rep2 - Rep1 ✻ 5 - 1 ✻ B- - A-	2.25276	1.948	-1.565	6.0709	329.00	1.15640	0.248
Group1 ✻ SessBlk5 ✻ Cue2	Rep2 - Rep1 ✻ 6 - 1 ✻ B- - A-	1.56689	1.948	-2.251	5.3851	329.00	0.80433	0.422
Group1 ✻ SessBlk6 ✻ Cue2	Rep2 - Rep1 ✻ 7 - 1 ✻ B- - A-	1.39345	1.948	-2.425	5.2116	329.00	0.71530	0.475
Group1 ✻ SessBlk7 ✻ Cue2	Rep2 - Rep1 ✻ 8 - 1 ✻ B- - A-	3.04814	1.948	-0.770	6.8663	329.00	1.56469	0.119

Random Components

Groups	Name	SD	Variance	ICC
Rat	(Intercept)	1.04	1.09	0.223
Residual		1.95	3.80	

Note. Number of Obs: 384 , groups: Rat 8

Post Hoc Tests

Post Hoc Comparisons - Cue

Comparison								
Cue		Cue	Difference	SE	t	df	p	p_{holm}
A-	-	B-	-0.228	0.244	-0.936	329	0.350	0.350
A-	-	AB+	-2.258	0.244	-9.273	329	< .001	< .001
AB+	-	B-	2.030	0.244	8.337	329	< .001	< .001

Section 4: Percent Time Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	Percent ~ 1 + Group + SessBlk + Cue + Group:SessBlk + Group:Cue + SessBlk:Cue + Group:SessBlk:Cue+(1 | Rat)
AIC	3302.315
BIC	3244.238
LogLikel.	-1473.353
R-squared Marginal	0.167
R-squared Conditional	0.553
Converged	yes
Optimizer	bobyqa

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group	45.514	1	329	< .001
SessBlk	0.673	7	329	0.695
Cue	24.291	2	329	< .001
Group ✻ SessBlk	0.451	7	329	0.869
Group ✻ Cue	16.788	2	329	< .001
SessBlk ✻ Cue	0.398	14	329	0.975
Group ✻ SessBlk ✻ Cue	0.112	14	329	1.000

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

				95% Confidence Interval				
Names	Effect	Estimate	SE	Lower	Upper	df	t	p
(Intercept)	(Intercept)	48.003	5.35	37.522	58.485	7.00	8.9760	< .001
Group1	Rep2 - Rep1	-11.082	1.64	-14.301	-7.862	329.00	-6.7464	< .001
SessBlk1	2 - 1	2.140	3.29	-4.299	8.579	329.00	0.6515	0.515
SessBlk2	3 - 1	4.124	3.29	-2.315	10.563	329.00	1.2554	0.210
SessBlk3	4 - 1	5.755	3.29	-0.684	12.194	329.00	1.7518	0.081
SessBlk4	5 - 1	5.454	3.29	-0.985	11.893	329.00	1.6600	0.098
SessBlk5	6 - 1	4.309	3.29	-2.130	10.748	329.00	1.3117	0.191

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
SessBlk6	7 - 1	4.922	3.29	-1.517	11.361	329.00	1.4983	0.135
SessBlk7	8 - 1	4.056	3.29	-2.383	10.495	329.00	1.2346	0.218
Cue1	AB+ - A-	13.999	2.01	10.056	17.942	329.00	6.9584	< .001
Cue2	B- - A-	7.702	2.01	3.759	11.645	329.00	3.8284	< .001
Group1 ✻ SessBlk1	Rep2 - Rep1 ✻ 2 - 1	-4.431	6.57	-17.309	8.447	329.00	-0.6744	0.501
Group1 ✻ SessBlk2	Rep2 - Rep1 ✻ 3 - 1	-2.844	6.57	-15.722	10.034	329.00	-0.4328	0.665
Group1 ✻ SessBlk3	Rep2 - Rep1 ✻ 4 - 1	1.575	6.57	-11.303	14.453	329.00	0.2397	0.811
Group1 ✻ SessBlk4	Rep2 - Rep1 ✻ 5 - 1	3.941	6.57	-8.937	16.819	329.00	0.5998	0.549
Group1 ✻ SessBlk5	Rep2 - Rep1 ✻ 6 - 1	-0.734	6.57	-13.612	12.144	329.00	-0.1118	0.911
Group1 ✻ SessBlk6	Rep2 - Rep1 ✻ 7 - 1	3.879	6.57	-8.999	16.757	329.00	0.5904	0.555
Group1 ✻ SessBlk7	Rep2 - Rep1 ✻ 8 - 1	3.045	6.57	-9.833	15.923	329.00	0.4635	0.643
Group1 ✻ Cue1	Rep2 - Rep1 ✻ AB+ - A-	-22.743	4.02	-30.629	-14.857	329.00	-5.6524	< .001
Group1 ✻ Cue2	Rep2 - Rep1 ✻ B- - A-	-6.928	4.02	-14.814	0.958	329.00	-1.7218	0.086
SessBlk1 ✻ Cue1	2 - 1 ✻ AB+ - A-	1.737	8.05	-14.036	17.509	329.00	0.2158	0.829
SessBlk2 ✻ Cue1	3 - 1 ✻ AB+ - A-	3.965	8.05	-11.807	19.737	329.00	0.4927	0.623

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
SessBlk3 ✻ Cue1	4 - 1 ✻ AB+ - A-	1.156	8.05	-14.617	16.928	329.00	0.1436	0.886
SessBlk4 ✻ Cue1	5 - 1 ✻ AB+ - A-	1.203	8.05	-14.570	16.975	329.00	0.1494	0.881
SessBlk5 ✻ Cue1	6 - 1 ✻ AB+ - A-	1.163	8.05	-14.609	16.936	329.00	0.1446	0.885
SessBlk6 ✻ Cue1	7 - 1 ✻ AB+ - A-	0.480	8.05	-15.292	16.253	329.00	0.0597	0.952
SessBlk7 ✻ Cue1	8 - 1 ✻ AB+ - A-	2.192	8.05	-13.580	17.964	329.00	0.2724	0.785
SessBlk1 ✻ Cue2	2 - 1 ✻ B- - A-	1.542	8.05	-14.230	17.314	329.00	0.1916	0.848
SessBlk2 ✻ Cue2	3 - 1 ✻ B- - A-	1.634	8.05	-14.139	17.406	329.00	0.2030	0.839
SessBlk3 ✻ Cue2	4 - 1 ✻ B- - A-	-5.189	8.05	-20.961	10.583	329.00	-0.6448	0.519
SessBlk4 ✻ Cue2	5 - 1 ✻ B- - A-	-5.398	8.05	-21.170	10.375	329.00	-0.6707	0.503
SessBlk5 ✻ Cue2	6 - 1 ✻ B- - A-	-8.978	8.05	-24.750	6.795	329.00	-1.1156	0.265
SessBlk6 ✻ Cue2	7 - 1 ✻ B- - A-	-8.629	8.05	-24.401	7.143	329.00	-1.0723	0.284
SessBlk7 ✻ Cue2	8 - 1 ✻ B- - A-	-7.358	8.05	-23.131	8.414	329.00	-0.9144	0.361
Group1 ✻ SessBlk1 ✻ Cue1	Rep2 - Rep1 ✻ 2 - 1 ✻ AB+ - A-	-1.902	16.09	-33.447	29.642	329.00	-0.1182	0.906

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ SessBlk2 ✻ Cue1	Rep2 - Rep1 ✻ 3 - 1 ✻ AB+ - A-	-4.607	16.09	-36.152	26.937	329.00	-0.2863	0.775
Group1 ✻ SessBlk3 ✻ Cue1	Rep2 - Rep1 ✻ 4 - 1 ✻ AB+ - A-	-1.011	16.09	-32.556	30.533	329.00	-0.0628	0.950
Group1 ✻ SessBlk4 ✻ Cue1	Rep2 - Rep1 ✻ 5 - 1 ✻ AB+ - A-	-2.540	16.09	-34.084	29.005	329.00	-0.1578	0.875
Group1 ✻ SessBlk5 ✻ Cue1	Rep2 - Rep1 ✻ 6 - 1 ✻ AB+ - A-	2.089	16.09	-29.456	33.633	329.00	0.1298	0.897
Group1 ✻ SessBlk6 ✻ Cue1	Rep2 - Rep1 ✻ 7 - 1 ✻ AB+ - A-	-5.265	16.09	-36.809	26.280	329.00	-0.3271	0.744
Group1 ✻ SessBlk7 ✻ Cue1	Rep2 - Rep1 ✻ 8 - 1 ✻ AB+ - A-	-1.006	16.09	-32.551	30.539	329.00	-0.0625	0.950
Group1 ✻ SessBlk1 ✻ Cue2	Rep2 - Rep1 ✻ 2 - 1 ✻ B- - A-	-2.697	16.09	-34.241	28.848	329.00	-0.1676	0.867
Group1 ✻ SessBlk2 ✻ Cue2	Rep2 - Rep1 ✻ 3 - 1 ✻ B- - A-	-1.750	16.09	-33.295	29.795	329.00	-0.1087	0.913
Group1 ✻ SessBlk3 ✻ Cue2	Rep2 - Rep1 ✻ 4 - 1 ✻ B- - A-	5.205	16.09	-26.339	36.750	329.00	0.3234	0.747
Group1 ✻ SessBlk4 ✻ Cue2	Rep2 - Rep1 ✻ 5 - 1 ✻ B- - A-	4.551	16.09	-26.994	36.096	329.00	0.2828	0.778

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ SessBlk5 ✻ Cue2	Rep2 - Rep1 ✻ 6 - 1 ✻ B- - A-	8.661	16.09	-22.883	40.206	329.00	0.5382	0.591
Group1 ✻ SessBlk6 ✻ Cue2	Rep2 - Rep1 ✻ 7 - 1 ✻ B- - A-	4.008	16.09	-27.537	35.553	329.00	0.2490	0.803
Group1 ✻ SessBlk7 ✻ Cue2	Rep2 - Rep1 ✻ 8 - 1 ✻ B- - A-	9.516	16.09	-22.029	41.060	329.00	0.5912	0.555

Random Components

Groups	Name	SD	Variance	ICC
Rat	(Intercept)	14.9	223	0.463
Residual		16.1	259	

Note. Number of Obs: 384 , groups: Rat 8

Post Hoc Tests

Post Hoc Comparisons - Group ✻ Cue

Comparison				Difference	SE	t	df	p	p_{holm}
Group	Cue	Group	Cue						
Rep2	A-	Rep2	B-	-4.24	2.85	-1.490	329	0.137	0.824

Post Hoc Comparisons - Group ✻ Cue

Comparison					Difference	SE	t	df	p	p_{holm}
Group	**Cue**		**Group**	**Cue**						
Rep2	A-	-	Rep2	AB+	-2.63	2.85	-0.923	329	0.356	1.000
Rep2	A-	-	Rep1	B-	-12.36	2.85	-4.343	329	< .001	< .001
Rep2	A-	-	Rep1	AB+	-26.56	2.85	-9.336	329	< .001	< .001
Rep2	AB+	-	Rep2	B-	-1.61	2.85	-0.566	329	0.572	1.000
Rep2	AB+	-	Rep1	B-	-9.73	2.85	-3.420	329	< .001	0.006
Rep1	B-	-	Rep2	B-	8.12	2.85	2.854	329	0.005	0.032
Rep1	A-	-	Rep2	B-	-3.05	2.85	-1.071	329	0.285	1.000
Rep1	A-	-	Rep2	A-	1.19	2.85	0.419	329	0.676	1.000
Rep1	A-	-	Rep2	AB+	-1.44	2.85	-0.505	329	0.614	1.000
Rep1	A-	-	Rep1	B-	-11.17	2.85	-3.925	329	< .001	< .001
Rep1	A-	-	Rep1	AB+	-25.37	2.85	-8.917	329	< .001	< .001
Rep1	AB+	-	Rep2	B-	22.32	2.85	7.846	329	< .001	< .001
Rep1	AB+	-	Rep2	AB+	23.93	2.85	8.412	329	< .001	< .001
Rep1	AB+	-	Rep1	B-	14.20	2.85	4.993	329	< .001	< .001

Section 4: Latency Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	Latency ~ 1 + Group + SessBlk + Cue + Group:SessBlk + Group:Cue + SessBlk:Cue + Group:SessBlk:Cue+(1 | Rat)
AIC	1220.266
BIC	1422.444
LogLikel.	-562.456
R-squared Marginal	0.195
R-squared Conditional	0.407
Converged	yes
Optimizer	bobyqa

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group	86.681	1	329	< .001
SessBlk	0.930	7	329	0.484
Cue	7.976	2	329	< .001

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group ✻ SessBlk	1.040	7	329	0.403
Group ✻ Cue	0.589	2	329	0.555
SessBlk ✻ Cue	0.409	14	329	0.972
Group ✻ SessBlk ✻ Cue	0.173	14	329	1.000

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

				95% Confidence Interval				
Names	**Effect**	**Estimate**	**SE**	**Lower**	**Upper**	**df**	**t**	**p**
(Intercept)	(Intercept)	7.90796	0.235	7.44710	8.369	7.00	33.63166	< .001
Group1	Rep2 - Rep1	-1.02553	0.110	-1.24142	-0.810	329.00	-9.31024	< .001
SessBlk1	2 - 1	0.23663	0.220	-0.19515	0.668	329.00	1.07414	0.284
SessBlk2	3 - 1	0.44914	0.220	0.01736	0.881	329.00	2.03875	0.042
SessBlk3	4 - 1	0.43414	0.220	0.00236	0.866	329.00	1.97067	0.050
SessBlk4	5 - 1	0.28241	0.220	-0.14937	0.714	329.00	1.28195	0.201
SessBlk5	6 - 1	0.28621	0.220	-0.14557	0.718	329.00	1.29918	0.195
SessBlk6	7 - 1	0.42327	0.220	-0.00851	0.855	329.00	1.92131	0.056

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
SessBlk7	8 - 1	0.39718	0.220	-0.03460	0.829	329.00	1.80291	0.072
Cue1	AB+ - A-	0.53685	0.135	0.27244	0.801	329.00	3.97940	< .001
Cue2	B- - A-	0.30842	0.135	0.04400	0.573	329.00	2.28615	0.023
Group1 ✻ SessBlk1	Rep2 - Rep1 ✻ 2 - 1	0.22823	0.441	-0.63534	1.092	329.00	0.51799	0.605
Group1 ✻ SessBlk2	Rep2 - Rep1 ✻ 3 - 1	-0.23863	0.441	-1.10220	0.625	329.00	-0.54160	0.588
Group1 ✻ SessBlk3	Rep2 - Rep1 ✻ 4 - 1	-0.27930	0.441	-1.14286	0.584	329.00	-0.63390	0.527
Group1 ✻ SessBlk4	Rep2 - Rep1 ✻ 5 - 1	-0.40342	0.441	-1.26699	0.460	329.00	-0.91562	0.361
Group1 ✻ SessBlk5	Rep2 - Rep1 ✻ 6 - 1	-0.86354	0.441	-1.72711	2.46e-5	329.00	-1.95991	0.051
Group1 ✻ SessBlk6	Rep2 - Rep1 ✻ 7 - 1	-0.12632	0.441	-0.98988	0.737	329.00	-0.28669	0.775
Group1 ✻ SessBlk7	Rep2 - Rep1 ✻ 8 - 1	-0.23094	0.441	-1.09451	0.633	329.00	-0.52415	0.601
Group1 ✻ Cue1	Rep2 - Rep1 ✻ AB+ - A-	-0.14903	0.270	-0.67785	0.380	329.00	-0.55233	0.581
Group1 ✻ Cue2	Rep2 - Rep1 ✻ B- - A-	-0.29287	0.270	-0.82170	0.236	329.00	-1.08547	0.279
SessBlk1 ✻ Cue1	2 - 1 ✻ AB+ - A-	-0.08260	0.540	-1.14025	0.975	329.00	-0.15308	0.878
SessBlk2 ✻ Cue1	3 - 1 ✻ AB+ - A-	-0.06492	0.540	-1.12257	0.993	329.00	-0.12030	0.904

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
SessBlk3 ✻ Cue1	4 - 1 ✻ AB+ - A-	-0.15539	0.540	-1.21304	0.902	329.00	-0.28797	0.774
SessBlk4 ✻ Cue1	5 - 1 ✻ AB+ - A-	-0.16335	0.540	-1.22100	0.894	329.00	-0.30272	0.762
SessBlk5 ✻ Cue1	6 - 1 ✻ AB+ - A-	-0.00195	0.540	-1.05960	1.056	329.00	-0.00362	0.997
SessBlk6 ✻ Cue1	7 - 1 ✻ AB+ - A-	0.09575	0.540	-0.96189	1.153	329.00	0.17744	0.859
SessBlk7 ✻ Cue1	8 - 1 ✻ AB+ - A-	0.20817	0.540	-0.84948	1.266	329.00	0.38576	0.700
SessBlk1 ✻ Cue2	2 - 1 ✻ B- - A-	-0.20609	0.540	-1.26374	0.852	329.00	-0.38192	0.703
SessBlk2 ✻ Cue2	3 - 1 ✻ B- - A-	-0.15612	0.540	-1.21377	0.902	329.00	-0.28931	0.773
SessBlk3 ✻ Cue2	4 - 1 ✻ B- - A-	-0.42759	0.540	-1.48523	0.630	329.00	-0.79237	0.429
SessBlk4 ✻ Cue2	5 - 1 ✻ B- - A-	-0.60655	0.540	-1.66420	0.451	329.00	-1.12402	0.262
SessBlk5 ✻ Cue2	6 - 1 ✻ B- - A-	-0.58365	0.540	-1.64130	0.474	329.00	-1.08158	0.280
SessBlk6 ✻ Cue2	7 - 1 ✻ B- - A-	-0.68422	0.540	-1.74187	0.373	329.00	-1.26796	0.206
SessBlk7 ✻ Cue2	8 - 1 ✻ B- - A-	-0.59392	0.540	-1.65157	0.464	329.00	-1.10062	0.272
Group1 ✻ SessBlk1 ✻ Cue1	Rep2 - Rep1 ✻ 2 - 1 ✻ AB+ - A-	0.10466	1.079	-2.01064	2.220	329.00	0.09697	0.923

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ SessBlk2 ✻ Cue1	Rep2 - Rep1 ✻ 3 - 1 ✻ AB+ - A-	0.10679	1.079	-2.00850	2.222	329.00	0.09895	0.921
Group1 ✻ SessBlk3 ✻ Cue1	Rep2 - Rep1 ✻ 4 - 1 ✻ AB+ - A-	0.21626	1.079	-1.89903	2.332	329.00	0.20038	0.841
Group1 ✻ SessBlk4 ✻ Cue1	Rep2 - Rep1 ✻ 5 - 1 ✻ AB+ - A-	0.72452	1.079	-1.39078	2.840	329.00	0.67132	0.502
Group1 ✻ SessBlk5 ✻ Cue1	Rep2 - Rep1 ✻ 6 - 1 ✻ AB+ - A-	0.70716	1.079	-1.40813	2.822	329.00	0.65523	0.513
Group1 ✻ SessBlk6 ✻ Cue1	Rep2 - Rep1 ✻ 7 - 1 ✻ AB+ - A-	0.54643	1.079	-1.56886	2.662	329.00	0.50630	0.613
Group1 ✻ SessBlk7 ✻ Cue1	Rep2 - Rep1 ✻ 8 - 1 ✻ AB+ - A-	0.86361	1.079	-1.25169	2.979	329.00	0.80019	0.424
Group1 ✻ SessBlk1 ✻ Cue2	Rep2 - Rep1 ✻ 2 - 1 ✻ B- - A-	0.22207	1.079	-1.89323	2.337	329.00	0.20576	0.837
Group1 ✻ SessBlk2 ✻ Cue2	Rep2 - Rep1 ✻ 3 - 1 ✻ B- - A-	0.48720	1.079	-1.62810	2.602	329.00	0.45142	0.652
Group1 ✻ SessBlk3 ✻ Cue2	Rep2 - Rep1 ✻ 4 - 1 ✻ B- - A-	0.53656	1.079	-1.57873	2.652	329.00	0.49716	0.619
Group1 ✻ SessBlk4 ✻ Cue2	Rep2 - Rep1 ✻ 5 - 1 ✻ B- - A-	1.20719	1.079	-0.90810	3.322	329.00	1.11854	0.264

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ SessBlk5 ✻ Cue2	Rep2 - Rep1 ✻ 6 - 1 ✻ B- - A-	0.95401	1.079	-1.16129	3.069	329.00	0.88395	0.377
Group1 ✻ SessBlk6 ✻ Cue2	Rep2 - Rep1 ✻ 7 - 1 ✻ B- - A-	0.62665	1.079	-1.48865	2.742	329.00	0.58063	0.562
Group1 ✻ SessBlk7 ✻ Cue2	Rep2 - Rep1 ✻ 8 - 1 ✻ B- - A-	0.78380	1.079	-1.33150	2.899	329.00	0.72624	0.468

Random Components

Groups	Name	SD	Variance	ICC
Rat	(Intercept)	0.647	0.418	0.264
Residual		1.079	1.165	

Note. Number of Obs: 384 , groups: Rat 8

Post Hoc Tests

Post Hoc Comparisons - Cue

Comparison								
Cue		**Cue**	**Difference**	**SE**	**t**	**df**	**p**	**p_{holm}**
A-	-	B-	-0.308	0.135	-2.29	329	0.023	0.046
A-	-	AB+	-0.537	0.135	-3.98	329	< .001	< .001
AB+	-	B-	0.228	0.135	1.69	329	0.091	0.091

Section 4: PC1 Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	PC1 ~ 1 + Group + SessBlk + Cue + Group:SessBlk + Group:Cue + SessBlk:Cue + Group:SessBlk:Cue+(1 | Rat)
AIC	630.888
BIC	906.739
LogLikel.	-304.603
R-squared Marginal	0.348
R-squared Conditional	0.348
Converged	yes
Optimizer	bobyqa

Note. (Almost) singular fit. Maybe random coefficients variances are too small or correlations among them too large.

Note. boundary (singular) fit: see ?isSingular

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group	2.46e-4	1	336	0.987
SessBlk	1.065	7	336	0.386
Cue	66.192	2	336	< .001
Group ✻ SessBlk	0.917	7	336	0.493

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group ✻ Cue	15.914	2	336	< .001
SessBlk ✻ Cue	1.329	14	336	0.188
Group ✻ SessBlk ✻ Cue	0.565	14	336	0.892

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

				95% Confidence Interval				
Names	Effect	Estimate	SE	Lower	Upper	df	t	p
(Intercept)	(Intercept)	-7.74e−5	0.0264	-0.05173	0.0516	336	-0.00294	0.998
Group1	Rep2 - Rep1	4.05e-4	0.0527	-0.10289	0.1037	336	0.00768	0.994
SessBlk1	2 - 1	0.1768	0.1054	-0.02978	0.3834	336	1.67744	0.094
SessBlk2	3 - 1	0.2313	0.1054	0.02468	0.4379	336	2.19413	0.029
SessBlk3	4 - 1	0.2166	0.1054	0.00996	0.4231	336	2.05445	0.041
SessBlk4	5 - 1	0.1139	0.1054	-0.09266	0.3205	336	1.08084	0.281
SessBlk5	6 - 1	0.1071	0.1054	-0.09949	0.3137	336	1.01609	0.310
SessBlk6	7 - 1	0.1246	0.1054	-0.08196	0.3312	336	1.18240	0.238
SessBlk7	8 - 1	0.0685	0.1054	-0.13809	0.2751	336	0.64988	0.516

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Cue1	AB+ - A-	0.7311	0.0645	0.60457	0.8576	336	11.32629	< .001
Cue2	B- - A-	0.2524	0.0645	0.12585	0.3789	336	3.90965	< .001
Group1 ✻ SessBlk1	Rep2 - Rep1 ✻ 2 - 1	-0.0774	0.2108	-0.49060	0.3358	336	-0.36723	0.714
Group1 ✻ SessBlk2	Rep2 - Rep1 ✻ 3 - 1	-0.2476	0.2108	-0.66078	0.1656	336	-1.17449	0.241
Group1 ✻ SessBlk3	Rep2 - Rep1 ✻ 4 - 1	-0.2602	0.2108	-0.67335	0.1530	336	-1.23413	0.218
Group1 ✻ SessBlk4	Rep2 - Rep1 ✻ 5 - 1	-0.2929	0.2108	-0.70606	0.1203	336	-1.38929	0.166
Group1 ✻ SessBlk5	Rep2 - Rep1 ✻ 6 - 1	-0.4513	0.2108	-0.86447	-0.0381	336	-2.14072	0.033
Group1 ✻ SessBlk6	Rep2 - Rep1 ✻ 7 - 1	-0.2171	0.2108	-0.63024	0.1961	336	-1.02961	0.304
Group1 ✻ SessBlk7	Rep2 - Rep1 ✻ 8 - 1	-0.3417	0.2108	-0.75485	0.0715	336	-1.62072	0.106
Group1 ✻ Cue1	Rep2 - Rep1 ✻ AB+ - A-	-0.7257	0.1291	-0.97871	-0.4727	336	-5.62134	< .001
Group1 ✻ Cue2	Rep2 - Rep1 ✻ B- - A-	-0.4163	0.1291	-0.66930	-0.1633	336	-3.22459	0.001
SessBlk1 ✻ Cue1	2 - 1 ✻ AB+ - A-	0.1013	0.2582	-0.40476	0.6073	336	0.39228	0.695
SessBlk2 ✻ Cue1	3 - 1 ✻ AB+ - A-	0.2450	0.2582	-0.26103	0.7511	336	0.94896	0.343
SessBlk3 ✻ Cue1	4 - 1 ✻ AB+ - A-	0.1106	0.2582	-0.39547	0.6166	336	0.42828	0.669

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
SessBlk4 ✻ Cue1	5 - 1 ✻ AB+ - A-	0.1373	0.2582	-0.36877	0.6433	336	0.53167	0.595
SessBlk5 ✻ Cue1	6 - 1 ✻ AB+ - A-	0.1660	0.2582	-0.34005	0.6720	336	0.64290	0.521
SessBlk6 ✻ Cue1	7 - 1 ✻ AB+ - A-	0.2952	0.2582	-0.21087	0.8012	336	1.14324	0.254
SessBlk7 ✻ Cue1	8 - 1 ✻ AB+ - A-	0.3549	0.2582	-0.15113	0.8610	336	1.37463	0.170
SessBlk1 ✻ Cue2	2 - 1 ✻ B- - A-	-0.0308	0.2582	-0.53680	0.4753	336	-0.11913	0.905
SessBlk2 ✻ Cue2	3 - 1 ✻ B- - A-	0.0175	0.2582	-0.48857	0.5235	336	0.06767	0.946
SessBlk3 ✻ Cue2	4 - 1 ✻ B- - A-	-0.2672	0.2582	-0.77321	0.2389	336	-1.03477	0.302
SessBlk4 ✻ Cue2	5 - 1 ✻ B- - A-	-0.3428	0.2582	-0.84880	0.1633	336	-1.32755	0.185
SessBlk5 ✻ Cue2	6 - 1 ✻ B- - A-	-0.4723	0.2582	-0.97838	0.0337	336	-1.82943	0.068
SessBlk6 ✻ Cue2	7 - 1 ✻ B- - A-	-0.4340	0.2582	-0.94002	0.0721	336	-1.68085	0.094
SessBlk7 ✻ Cue2	8 - 1 ✻ B- - A-	-0.3830	0.2582	-0.88908	0.1230	336	-1.48355	0.139
Group1 ✻ SessBlk1 ✻ Cue1	Rep2 - Rep1 ✻ 2 - 1 ✻ AB+ - A-	0.0578	0.5164	-0.95431	1.0699	336	0.11189	0.911
Group1 ✻ SessBlk2 ✻ Cue1	Rep2 - Rep1 ✻ 3 - 1 ✻ AB+ - A-	-0.0731	0.5164	-1.08519	0.9390	336	-0.14158	0.888

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ SessBlk3 ✻ Cue1	Rep2 - Rep1 ✻ 4 - 1 ✻ AB+ - A-	0.0340	0.5164	-0.97807	1.0461	336	0.06586	0.948
Group1 ✻ SessBlk4 ✻ Cue1	Rep2 - Rep1 ✻ 5 - 1 ✻ AB+ - A-	0.2030	0.5164	-0.80913	1.2150	336	0.39304	0.695
Group1 ✻ SessBlk5 ✻ Cue1	Rep2 - Rep1 ✻ 6 - 1 ✻ AB+ - A-	0.3001	0.5164	-0.71202	1.3121	336	0.58109	0.562
Group1 ✻ SessBlk6 ✻ Cue1	Rep2 - Rep1 ✻ 7 - 1 ✻ AB+ - A-	0.2003	0.5164	-0.81182	1.2124	336	0.38784	0.698
Group1 ✻ SessBlk7 ✻ Cue1	Rep2 - Rep1 ✻ 8 - 1 ✻ AB+ - A-	0.7137	0.5164	-0.29836	1.7258	336	1.38217	0.168
Group1 ✻ SessBlk1 ✻ Cue2	Rep2 - Rep1 ✻ 2 - 1 ✻ B- - A-	0.1350	0.5164	-0.87713	1.1470	336	0.26136	0.794
Group1 ✻ SessBlk2 ✻ Cue2	Rep2 - Rep1 ✻ 3 - 1 ✻ B- - A-	0.3968	0.5164	-0.61533	1.4088	336	0.76834	0.443
Group1 ✻ SessBlk3 ✻ Cue2	Rep2 - Rep1 ✻ 4 - 1 ✻ B- - A-	0.6811	0.5164	-0.33096	1.6932	336	1.31904	0.188
Group1 ✻ SessBlk4 ✻ Cue2	Rep2 - Rep1 ✻ 5 - 1 ✻ B- - A-	0.8173	0.5164	-0.19482	1.8294	336	1.58269	0.114
Group1 ✻ SessBlk5 ✻ Cue2	Rep2 - Rep1 ✻ 6 - 1 ✻ B- - A-	0.6844	0.5164	-0.32764	1.6965	336	1.32546	0.186

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ SessBlk6 ✻ Cue2	Rep2 - Rep1 ✻ 7 - 1 ✻ B- - A-	0.5178	0.5164	-0.49428	1.5299	336	1.00276	0.317
Group1 ✻ SessBlk7 ✻ Cue2	Rep2 - Rep1 ✻ 8 - 1 ✻ B- - A-	0.9551	0.5164	-0.05694	1.9672	336	1.84969	0.065

Random Components

Groups	Name	SD	Variance	ICC
Rat	(Intercept)	0.000	0.000	0.00
Residual		0.516	0.267	

Note. Number of Obs: 384 , groups: Rat 16

Post Hoc Tests

Post Hoc Comparisons - Group ✻ Cue

Comparison				Difference	SE	t	df	p_{holm}
Group	Cue	Group	Cue					
Rep1	A-	Rep1	AB+	-1.0939	0.0913	-11.984	322	< .001

Post Hoc Comparisons - Group ✻ Cue

Comparison									
Group	Cue		Group	Cue	Difference	SE	t	df	p_{holm}
Rep1	A-	-	Rep1	B-	-0.4605	0.0913	-5.045	322	< .001
Rep1	A-	-	Rep2	A-	-0.3811	0.0913	-4.174	107	< .001
Rep1	A-	-	Rep2	AB+	-0.7493	0.0913	-8.208	107	< .001
Rep1	A-	-	Rep2	B-	-0.4253	0.0913	-4.659	107	< .001
Rep1	AB+	-	Rep1	B-	0.6334	0.0913	6.939	322	< .001
Rep1	AB+	-	Rep2	AB+	0.3446	0.0913	3.775	107	0.002
Rep1	AB+	-	Rep2	B-	0.6686	0.0913	7.325	107	< .001
Rep1	B-	-	Rep2	B-	0.0352	0.0913	0.386	107	1.000
Rep2	A-	-	Rep1	AB+	-0.7129	0.0913	-7.809	107	< .001
Rep2	A-	-	Rep1	B-	-0.0794	0.0913	-0.870	107	1.000
Rep2	A-	-	Rep2	AB+	-0.3682	0.0913	-4.034	322	< .001
Rep2	A-	-	Rep2	B-	-0.0442	0.0913	-0.484	322	1.000
Rep2	AB+	-	Rep1	B-	0.2888	0.0913	3.164	107	0.008
Rep2	AB+	-	Rep2	B-	0.3240	0.0913	3.550	322	0.002

Section 5: Number of Entries Results

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group	0.0268	1	16.0	0.872
Session	0.5983	17	848.0	0.895
Cue	21.6534	2	848.0	< .001
Group ✻ Session	0.9002	17	848.0	0.574
Group ✻ Cue	20.6672	2	848.0	< .001
Session ✻ Cue	0.3760	34	848.0	1.000
Group ✻ Session ✻ Cue	0.3843	34	848.0	0.999

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

				95% Confidence Interval				
Names	Effect	Estimate	SE	Lower	Upper	df	t	p
(Intercept)	(Intercept)	4.04507	0.496	3.072	5.0181	16.0	8.14791	< .001
Group1	2 - 1	0.16268	0.993	-1.783	2.1087	16.0	0.16384	0.872
Session1	2 - 1	-0.23727	0.351	-0.925	0.4501	848.0	-0.67655	0.499
Session2	3 - 1	-0.64818	0.351	-1.336	0.0392	848.0	-1.84821	0.065
Session3	4 - 1	0.04745	0.351	-0.640	0.7348	848.0	0.13531	0.892
Session4	5 - 1	-0.19792	0.351	-0.885	0.4895	848.0	-0.56434	0.573

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session5	6 - 1	0.01042	0.351	-0.677	0.6978	848.0	0.02970	0.976
Session6	7 - 1	-0.05787	0.351	-0.745	0.6295	848.0	-0.16501	0.869
Session7	8 - 1	-0.31597	0.351	-1.003	0.3714	848.0	-0.90096	0.368
Session8	9 - 1	-0.20718	0.351	-0.895	0.4802	848.0	-0.59074	0.555
Session9	10 - 1	-0.24884	0.351	-0.936	0.4385	848.0	-0.70955	0.478
Session10	11 - 1	-0.47801	0.351	-1.165	0.2094	848.0	-1.36299	0.173
Session11	12 - 1	-0.44097	0.351	-1.128	0.2464	848.0	-1.25739	0.209
Session12	13 - 1	-0.36227	0.351	-1.050	0.3251	848.0	-1.03297	0.302
Session13	14 - 1	-0.48380	0.351	-1.171	0.2036	848.0	-1.37949	0.168
Session14	15 - 1	-0.39468	0.351	-1.082	0.2927	848.0	-1.12538	0.261
Session15	16 - 1	-0.18403	0.351	-0.871	0.5033	848.0	-0.52474	0.600
Session16	17 - 1	-0.22222	0.351	-0.910	0.4651	848.0	-0.63364	0.526
Session17	18 - 1	-0.41319	0.351	-1.101	0.2742	848.0	-1.17818	0.239
Cue1	AB+ - A-	0.94154	0.143	0.661	1.2222	848.0	6.57617	< .001
Cue2	B- - A-	0.50137	0.143	0.221	0.7820	848.0	3.50179	< .001

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session1	2 - 1 ✻ 2 - 1	0.48843	0.701	-0.886	1.8632	848.0	0.69635	0.486
Group1 ✻ Session2	2 - 1 ✻ 3 - 1	0.12494	0.701	-1.250	1.4997	848.0	0.17813	0.859
Group1 ✻ Session3	2 - 1 ✻ 4 - 1	0.09954	0.701	-1.275	1.4743	848.0	0.14191	0.887
Group1 ✻ Session4	2 - 1 ✻ 5 - 1	0.08102	0.701	-1.294	1.4558	848.0	0.11551	0.908
Group1 ✻ Session5	2 - 1 ✻ 6 - 1	-0.37731	0.701	-1.752	0.9974	848.0	-0.53794	0.591
Group1 ✻ Session6	2 - 1 ✻ 7 - 1	-0.89352	0.701	-2.268	0.4812	848.0	-1.27389	0.203
Group1 ✻ Session7	2 - 1 ✻ 8 - 1	-0.70139	0.701	-2.076	0.6734	848.0	-0.99997	0.318
Group1 ✻ Session8	2 - 1 ✻ 9 - 1	-0.87731	0.701	-2.252	0.4974	848.0	-1.25079	0.211
Group1 ✻ Session9	2 - 1 ✻ 10 - 1	-0.63657	0.701	-2.011	0.7382	848.0	-0.90756	0.364
Group1 ✻ Session10	2 - 1 ✻ 11 - 1	-0.90972	0.701	-2.284	0.4650	848.0	-1.29699	0.195
Group1 ✻ Session11	2 - 1 ✻ 12 - 1	-0.62731	0.701	-2.002	0.7474	848.0	-0.89436	0.371
Group1 ✻ Session12	2 - 1 ✻ 13 - 1	-0.74769	0.701	-2.122	0.6271	848.0	-1.06597	0.287
Group1 ✻ Session13	2 - 1 ✻ 14 - 1	-0.36111	0.701	-1.736	1.0136	848.0	-0.51484	0.607
Group1 ✻ Session14	2 - 1 ✻ 15 - 1	-0.60880	0.701	-1.984	0.7659	848.0	-0.86796	0.386

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session15	2 - 1 ✻ 16 - 1	-0.72454	0.701	-2.099	0.6502	848.0	-1.03297	0.302
Group1 ✻ Session16	2 - 1 ✻ 17 - 1	-1.24074	0.701	-2.615	0.1340	848.0	-1.76892	0.077
Group1 ✻ Session17	2 - 1 ✻ 18 - 1	-0.95139	0.701	-2.326	0.4234	848.0	-1.35639	0.175
Group1 ✻ Cue1	2 - 1 ✻ AB+ - A-	-1.06830	0.286	-1.630	-0.5071	848.0	-3.73076	< .001
Group1 ✻ Cue2	2 - 1 ✻ B- - A-	0.76431	0.286	0.203	1.3255	848.0	2.66915	0.008
Session1 ✻ Cue1	2 - 1 ✻ AB+ - A-	0.39583	0.859	-1.288	2.0795	848.0	0.46078	0.645
Session2 ✻ Cue1	3 - 1 ✻ AB+ - A-	0.04152	0.859	-1.642	1.7252	848.0	0.04834	0.961
Session3 ✻ Cue1	4 - 1 ✻ AB+ - A-	-0.47569	0.859	-2.159	1.2080	848.0	-0.55374	0.580
Session4 ✻ Cue1	5 - 1 ✻ AB+ - A-	-0.82986	0.859	-2.514	0.8538	848.0	-0.96602	0.334
Session5 ✻ Cue1	6 - 1 ✻ AB+ - A-	-0.58681	0.859	-2.271	1.0969	848.0	-0.68309	0.495
Session6 ✻ Cue1	7 - 1 ✻ AB+ - A-	-0.64931	0.859	-2.333	1.0344	848.0	-0.75584	0.450
Session7 ✻ Cue1	8 - 1 ✻ AB+ - A-	0.04514	0.859	-1.639	1.7288	848.0	0.05255	0.958
Session8 ✻ Cue1	9 - 1 ✻ AB+ - A-	-0.10417	0.859	-1.788	1.5795	848.0	-0.12126	0.904
Session9 ✻ Cue1	10 - 1 ✻ AB+ - A-	0.18056	0.859	-1.503	1.8643	848.0	0.21018	0.834

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session10 ✻ Cue1	11 - 1 ✻ AB+ - A-	-0.31250	0.859	-1.996	1.3712	848.0	-0.36377	0.716
Session11 ✻ Cue1	12 - 1 ✻ AB+ - A-	0.23264	0.859	-1.451	1.9163	848.0	0.27081	0.787
Session12 ✻ Cue1	13 - 1 ✻ AB+ - A-	0.12153	0.859	-1.562	1.8052	848.0	0.14147	0.888
Session13 ✻ Cue1	14 - 1 ✻ AB+ - A-	0.10069	0.859	-1.583	1.7844	848.0	0.11722	0.907
Session14 ✻ Cue1	15 - 1 ✻ AB+ - A-	-0.23611	0.859	-1.920	1.4476	848.0	-0.27485	0.783
Session15 ✻ Cue1	16 - 1 ✻ AB+ - A-	-0.30208	0.859	-1.986	1.3816	848.0	-0.35165	0.725
Session16 ✻ Cue1	17 - 1 ✻ AB+ - A-	-0.00347	0.859	-1.687	1.6802	848.0	-0.00404	0.997
Session17 ✻ Cue1	18 - 1 ✻ AB+ - A-	-0.04514	0.859	-1.729	1.6386	848.0	-0.05255	0.958
Session1 ✻ Cue2	2 - 1 ✻ B- - A-	-0.05556	0.859	-1.739	1.6282	848.0	-0.06467	0.948
Session2 ✻ Cue2	3 - 1 ✻ B- - A-	-0.70801	0.859	-2.392	0.9757	848.0	-0.82418	0.410
Session3 ✻ Cue2	4 - 1 ✻ B- - A-	-1.44444	0.859	-3.128	0.2393	848.0	-1.68144	0.093
Session4 ✻ Cue2	5 - 1 ✻ B- - A-	-1.22222	0.859	-2.906	0.4615	848.0	-1.42276	0.155
Session5 ✻ Cue2	6 - 1 ✻ B- - A-	-1.41319	0.859	-3.097	0.2705	848.0	-1.64507	0.100
Session6 ✻ Cue2	7 - 1 ✻ B- - A-	-1.15972	0.859	-2.843	0.5240	848.0	-1.35001	0.177

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session7 ✻ Cue2	8 - 1 ✻ B- - A-	-0.79514	0.859	-2.479	0.8886	848.0	-0.92560	0.355
Session8 ✻ Cue2	9 - 1 ✻ B- - A-	-0.90278	0.859	-2.586	0.7809	848.0	-1.05090	0.294
Session9 ✻ Cue2	10 - 1 ✻ B- - A-	-1.03125	0.859	-2.715	0.6525	848.0	-1.20045	0.230
Session10 ✻ Cue2	11 - 1 ✻ B- - A-	-1.13194	0.859	-2.816	0.5518	848.0	-1.31767	0.188
Session11 ✻ Cue2	12 - 1 ✻ B- - A-	-0.92014	0.859	-2.604	0.7636	848.0	-1.07111	0.284
Session12 ✻ Cue2	13 - 1 ✻ B- - A-	-0.75000	0.859	-2.434	0.9337	848.0	-0.87306	0.383
Session13 ✻ Cue2	14 - 1 ✻ B- - A-	-1.04167	0.859	-2.725	0.6420	848.0	-1.21258	0.226
Session14 ✻ Cue2	15 - 1 ✻ B- - A-	-1.28125	0.859	-2.965	0.4025	848.0	-1.49147	0.136
Session15 ✻ Cue2	16 - 1 ✻ B- - A-	-1.35417	0.859	-3.038	0.3295	848.0	-1.57635	0.115
Session16 ✻ Cue2	17 - 1 ✻ B- - A-	-1.36111	0.859	-3.045	0.3226	848.0	-1.58444	0.113
Session17 ✻ Cue2	18 - 1 ✻ B- - A-	-1.40278	0.859	-3.086	0.2809	848.0	-1.63294	0.103
Group1 ✻ Session1 ✻ Cue1	2 - 1 ✻ 2 - 1 ✻ AB+ - A-	0.37500	1.718	-2.992	3.7424	848.0	0.21826	0.827
Group1 ✻ Session2 ✻ Cue1	2 - 1 ✻ 3 - 1 ✻ AB+ - A-	-0.66695	1.718	-4.034	2.7005	848.0	-0.38819	0.698

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session3 ✻ Cue1	2 - 1 ✻ 4 - 1 ✻ AB+ - A-	-0.07639	1.718	-3.444	3.2910	848.0	-0.04446	0.965
Group1 ✻ Session4 ✻ Cue1	2 - 1 ✻ 5 - 1 ✻ AB+ - A-	-1.21528	1.718	-4.583	2.1521	848.0	-0.70734	0.480
Group1 ✻ Session5 ✻ Cue1	2 - 1 ✻ 6 - 1 ✻ AB+ - A-	-1.70139	1.718	-5.069	1.6660	848.0	-0.99027	0.322
Group1 ✻ Session6 ✻ Cue1	2 - 1 ✻ 7 - 1 ✻ AB+ - A-	-0.49306	1.718	-3.860	2.8744	848.0	-0.28698	0.774
Group1 ✻ Session7 ✻ Cue1	2 - 1 ✻ 8 - 1 ✻ AB+ - A-	-1.78472	1.718	-5.152	1.5827	848.0	-1.03878	0.299
Group1 ✻ Session8 ✻ Cue1	2 - 1 ✻ 9 - 1 ✻ AB+ - A-	-1.33333	1.718	-4.701	2.0341	848.0	-0.77605	0.438
Group1 ✻ Session9 ✻ Cue1	2 - 1 ✻ 10 - 1 ✻ AB+ - A-	-2.45833	1.718	-5.826	0.9091	848.0	-1.43084	0.153
Group1 ✻ Session10 ✻ Cue1	2 - 1 ✻ 11 - 1 ✻ AB+ - A-	-0.76389	1.718	-4.131	2.6035	848.0	-0.44461	0.657
Group1 ✻ Session11 ✻ Cue1	2 - 1 ✻ 12 - 1 ✻ AB+ - A-	-1.71528	1.718	-5.083	1.6521	848.0	-0.99836	0.318
Group1 ✻ Session12 ✻ Cue1	2 - 1 ✻ 13 - 1 ✻ AB+ - A-	-1.03472	1.718	-4.402	2.3327	848.0	-0.60225	0.547

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session13 ✻ Cue1	2 - 1 ✻ 14 - 1 ✻ AB+ - A-	-2.03472	1.718	-5.402	1.3327	848.0	-1.18429	0.237
Group1 ✻ Session14 ✻ Cue1	2 - 1 ✻ 15 - 1 ✻ AB+ - A-	-1.47222	1.718	-4.840	1.8952	848.0	-0.85689	0.392
Group1 ✻ Session15 ✻ Cue1	2 - 1 ✻ 16 - 1 ✻ AB+ - A-	-0.61806	1.718	-3.985	2.7494	848.0	-0.35973	0.719
Group1 ✻ Session16 ✻ Cue1	2 - 1 ✻ 17 - 1 ✻ AB+ - A-	-0.24306	1.718	-3.610	3.1244	848.0	-0.14147	0.888
Group1 ✻ Session17 ✻ Cue1	2 - 1 ✻ 18 - 1 ✻ AB+ - A-	-0.49306	1.718	-3.860	2.8744	848.0	-0.28698	0.774
Group1 ✻ Session1 ✻ Cue2	2 - 1 ✻ 2 - 1 ✻ B- - A-	0.48611	1.718	-2.881	3.8535	848.0	0.28294	0.777
Group1 ✻ Session2 ✻ Cue2	2 - 1 ✻ 3 - 1 ✻ B- - A-	-0.65214	1.718	-4.020	2.7153	848.0	-0.37957	0.704
Group1 ✻ Session3 ✻ Cue2	2 - 1 ✻ 4 - 1 ✻ B- - A-	0.16667	1.718	-3.201	3.5341	848.0	0.09701	0.923
Group1 ✻ Session4 ✻ Cue2	2 - 1 ✻ 5 - 1 ✻ B- - A-	-0.04167	1.718	-3.409	3.3257	848.0	-0.02425	0.981
Group1 ✻ Session5 ✻ Cue2	2 - 1 ✻ 6 - 1 ✻ B- - A-	-0.03472	1.718	-3.402	3.3327	848.0	-0.02021	0.984

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session6 ✻ Cue2	2 - 1 ✻ 7 - 1 ✻ B- - A-	-0.04167	1.718	-3.409	3.3257	848.0	-0.02425	0.981
Group1 ✻ Session7 ✻ Cue2	2 - 1 ✻ 8 - 1 ✻ B- - A-	-1.13194	1.718	-4.499	2.2355	848.0	-0.65884	0.510
Group1 ✻ Session8 ✻ Cue2	2 - 1 ✻ 9 - 1 ✻ B- - A-	0.01389	1.718	-3.354	3.3813	848.0	0.00808	0.994
Group1 ✻ Session9 ✻ Cue2	2 - 1 ✻ 10 - 1 ✻ B- - A-	-0.20139	1.718	-3.569	3.1660	848.0	-0.11722	0.907
Group1 ✻ Session10 ✻ Cue2	2 - 1 ✻ 11 - 1 ✻ B- - A-	0.05556	1.718	-3.312	3.4230	848.0	0.03234	0.974
Group1 ✻ Session11 ✻ Cue2	2 - 1 ✻ 12 - 1 ✻ B- - A-	1.39583	1.718	-1.972	4.7632	848.0	0.81243	0.417
Group1 ✻ Session12 ✻ Cue2	2 - 1 ✻ 13 - 1 ✻ B- - A-	0.12500	1.718	-3.242	3.4924	848.0	0.07275	0.942
Group1 ✻ Session13 ✻ Cue2	2 - 1 ✻ 14 - 1 ✻ B- - A-	-0.69444	1.718	-4.062	2.6730	848.0	-0.40419	0.686
Group1 ✻ Session14 ✻ Cue2	2 - 1 ✻ 15 - 1 ✻ B- - A-	0.56250	1.718	-2.805	3.9299	848.0	0.32740	0.743
Group1 ✻ Session15 ✻ Cue2	2 - 1 ✻ 16 - 1 ✻ B- - A-	1.19444	1.718	-2.173	4.5619	848.0	0.69521	0.487

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session16 ✻ Cue2	2 - 1 ✻ 17 - 1 ✻ B- - A-	0.37500	1.718	-2.992	3.7424	848.0	0.21826	0.827
Group1 ✻ Session17 ✻ Cue2	2 - 1 ✻ 18 - 1 ✻ B- - A-	0.43056	1.718	-2.937	3.7980	848.0	0.25060	0.802

Random Components

Groups	Name	SD	Variance	ICC
Rat	(Intercept)	2.09	4.37	0.568
Residual		1.82	3.32	

Note. Number of Obs: 972 , groups: Rat 18

Section 5: Percent Time Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	Percent ~ 1 + Group + Session + Cue + Group:Session + Group:Cue + Session:Cue + Group:Session:Cue+(1 | Rat)
AIC	7412.900
BIC	7489.483
LogLikel.	-3366.377
R-squared Marginal	0.781
R-squared Conditional	0.889
Converged	yes
Optimizer	bobyqa

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group	109.333	1	16.0	< .001
Session	1.743	17	848.0	0.031
Cue	244.079	2	848.0	< .001
Group ✻ Session	1.025	17	848.0	0.428
Group ✻ Cue	218.631	2	848.0	< .001
Session ✻ Cue	0.650	34	848.0	0.940

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group ✻ Session ✻ Cue	0.345	34	848.0	1.000

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

				95% Confidence Interval				
Names	**Effect**	**Estimate**	**SE**	**Lower**	**Upper**	**df**	**t**	**p**
(Intercept)	(Intercept)	40.8862	2.342	36.295	45.477	16.0	17.4542	< .001
Group1	2 - 1	48.9873	4.685	39.805	58.170	16.0	10.4563	< .001
Session1	2 - 1	-1.7554	1.926	-5.530	2.019	848.0	-0.9116	0.362
Session2	3 - 1	-2.5349	1.926	-6.309	1.239	848.0	-1.3164	0.188
Session3	4 - 1	2.2851	1.926	-1.489	6.059	848.0	1.1866	0.236
Session4	5 - 1	3.3794	1.926	-0.395	7.154	848.0	1.7549	0.080
Session5	6 - 1	4.0512	1.926	0.277	7.825	848.0	2.1038	0.036
Session6	7 - 1	2.9333	1.926	-0.841	6.708	848.0	1.5233	0.128
Session7	8 - 1	0.7754	1.926	-2.999	4.550	848.0	0.4027	0.687
Session8	9 - 1	3.0875	1.926	-0.687	6.862	848.0	1.6033	0.109
Session9	10 - 1	2.5212	1.926	-1.253	6.295	848.0	1.3093	0.191
Session10	11 - 1	1.6559	1.926	-2.118	5.430	848.0	0.8599	0.390
Session11	12 - 1	0.7674	1.926	-3.007	4.542	848.0	0.3985	0.690
Session12	13 - 1	-0.1469	1.926	-3.921	3.627	848.0	-0.0763	0.939

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session13	14 - 1	1.0057	1.926	-2.769	4.780	848.0	0.5223	0.602
Session14	15 - 1	2.7979	1.926	-0.976	6.572	848.0	1.4530	0.147
Session15	16 - 1	2.0265	1.926	-1.748	5.801	848.0	1.0524	0.293
Session16	17 - 1	2.6953	1.926	-1.079	6.470	848.0	1.3997	0.162
Session17	18 - 1	2.9993	1.926	-0.775	6.774	848.0	1.5575	0.120
Cue1	AB+ - A-	17.3170	0.786	15.776	18.858	848.0	22.0275	< .001
Cue2	B- - A-	9.8276	0.786	8.287	11.368	848.0	12.5009	< .001
Group1 ✻ Session1	2 - 1 ✻ 2 - 1	-1.2271	3.851	-8.776	6.321	848.0	-0.3186	0.750
Group1 ✻ Session2	2 - 1 ✻ 3 - 1	-1.5387	3.851	-9.087	6.010	848.0	-0.3995	0.690
Group1 ✻ Session3	2 - 1 ✻ 4 - 1	2.9144	3.851	-4.634	10.463	848.0	0.7567	0.449
Group1 ✻ Session4	2 - 1 ✻ 5 - 1	7.1791	3.851	-0.369	14.728	848.0	1.8640	0.063
Group1 ✻ Session5	2 - 1 ✻ 6 - 1	3.6029	3.851	-3.946	11.151	848.0	0.9355	0.350
Group1 ✻ Session6	2 - 1 ✻ 7 - 1	3.7000	3.851	-3.848	11.249	848.0	0.9607	0.337
Group1 ✻ Session7	2 - 1 ✻ 8 - 1	0.6895	3.851	-6.859	8.238	848.0	0.1790	0.858
Group1 ✻ Session8	2 - 1 ✻ 9 - 1	-0.1345	3.851	-7.683	7.414	848.0	-0.0349	0.972
Group1 ✻ Session9	2 - 1 ✻ 10 - 1	0.9546	3.851	-6.594	8.503	848.0	0.2479	0.804

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session10	2 - 1 ✻ 11 - 1	0.8667	3.851	-6.682	8.415	848.0	0.2250	0.822
Group1 ✻ Session11	2 - 1 ✻ 12 - 1	0.8193	3.851	-6.729	8.368	848.0	0.2127	0.832
Group1 ✻ Session12	2 - 1 ✻ 13 - 1	-5.7095	3.851	-13.258	1.839	848.0	-1.4825	0.139
Group1 ✻ Session13	2 - 1 ✻ 14 - 1	-1.9908	3.851	-9.539	5.558	848.0	-0.5169	0.605
Group1 ✻ Session14	2 - 1 ✻ 15 - 1	1.2280	3.851	-6.320	8.777	848.0	0.3189	0.750
Group1 ✻ Session15	2 - 1 ✻ 16 - 1	-1.5930	3.851	-9.141	5.956	848.0	-0.4136	0.679
Group1 ✻ Session16	2 - 1 ✻ 17 - 1	-0.3207	3.851	-7.869	7.228	848.0	-0.0833	0.934
Group1 ✻ Session17	2 - 1 ✻ 18 - 1	1.1771	3.851	-6.371	8.726	848.0	0.3056	0.760
Group1 ✻ Cue1	2 - 1 ✻ AB+ - A-	32.8559	1.572	29.774	35.938	848.0	20.8966	< .001
Group1 ✻ Cue2	2 - 1 ✻ B- - A-	17.4771	1.572	14.395	20.559	848.0	11.1156	< .001
Session1 ✻ Cue1	2 - 1 ✻ AB+ - A-	1.3033	4.717	-7.942	10.548	848.0	0.2763	0.782
Session2 ✻ Cue1	3 - 1 ✻ AB+ - A-	-1.7022	4.717	-10.947	7.543	848.0	-0.3609	0.718
Session3 ✻ Cue1	4 - 1 ✻ AB+ - A-	-8.6116	4.717	-17.857	0.633	848.0	-1.8257	0.068
Session4 ✻ Cue1	5 - 1 ✻ AB+ - A-	-7.2673	4.717	-16.512	1.978	848.0	-1.5407	0.124

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session5 ✻ Cue1	6 - 1 ✻ AB+ - A-	-7.3732	4.717	-16.618	1.872	848.0	-1.5631	0.118
Session6 ✻ Cue1	7 - 1 ✻ AB+ - A-	-7.0418	4.717	-16.287	2.203	848.0	-1.4929	0.136
Session7 ✻ Cue1	8 - 1 ✻ AB+ - A-	-0.9241	4.717	-10.169	8.321	848.0	-0.1959	0.845
Session8 ✻ Cue1	9 - 1 ✻ AB+ - A-	-3.7655	4.717	-13.010	5.480	848.0	-0.7983	0.425
Session9 ✻ Cue1	10 - 1 ✻ AB+ - A-	0.0983	4.717	-9.147	9.343	848.0	0.0208	0.983
Session10 ✻ Cue1	11 - 1 ✻ AB+ - A-	-2.9602	4.717	-12.205	6.285	848.0	-0.6276	0.530
Session11 ✻ Cue1	12 - 1 ✻ AB+ - A-	-2.9273	4.717	-12.172	6.318	848.0	-0.6206	0.535
Session12 ✻ Cue1	13 - 1 ✻ AB+ - A-	0.0775	4.717	-9.168	9.322	848.0	0.0164	0.987
Session13 ✻ Cue1	14 - 1 ✻ AB+ - A-	-2.7179	4.717	-11.963	6.527	848.0	-0.5762	0.565
Session14 ✻ Cue1	15 - 1 ✻ AB+ - A-	-2.5218	4.717	-11.767	6.723	848.0	-0.5346	0.593
Session15 ✻ Cue1	16 - 1 ✻ AB+ - A-	-2.1219	4.717	-11.367	7.123	848.0	-0.4499	0.653
Session16 ✻ Cue1	17 - 1 ✻ AB+ - A-	-5.2055	4.717	-14.450	4.040	848.0	-1.1036	0.270
Session17 ✻ Cue1	18 - 1 ✻ AB+ - A-	-3.8895	4.717	-13.134	5.356	848.0	-0.8246	0.410
Session1 ✻ Cue2	2 - 1 ✻ B- - A-	-2.1754	4.717	-11.420	7.070	848.0	-0.4612	0.645

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session2 ✻ Cue2	3 - 1 ✻ B- - A-	-3.6976	4.717	-12.943	5.547	848.0	-0.7839	0.433
Session3 ✻ Cue2	4 - 1 ✻ B- - A-	-11.0377	4.717	-20.283	-1.793	848.0	-2.3400	0.020
Session4 ✻ Cue2	5 - 1 ✻ B- - A-	-8.2826	4.717	-17.528	0.962	848.0	-1.7559	0.079
Session5 ✻ Cue2	6 - 1 ✻ B- - A-	-8.9702	4.717	-18.215	0.275	848.0	-1.9017	0.058
Session6 ✻ Cue2	7 - 1 ✻ B- - A-	-9.0624	4.717	-18.307	0.183	848.0	-1.9212	0.055
Session7 ✻ Cue2	8 - 1 ✻ B- - A-	-4.7874	4.717	-14.032	4.458	848.0	-1.0149	0.310
Session8 ✻ Cue2	9 - 1 ✻ B- - A-	-7.1360	4.717	-16.381	2.109	848.0	-1.5129	0.131
Session9 ✻ Cue2	10 - 1 ✻ B- - A-	-6.6278	4.717	-15.873	2.617	848.0	-1.4051	0.160
Session10 ✻ Cue2	11 - 1 ✻ B- - A-	-7.7990	4.717	-17.044	1.446	848.0	-1.6534	0.099
Session11 ✻ Cue2	12 - 1 ✻ B- - A-	-10.5257	4.717	-19.771	-1.281	848.0	-2.2315	0.026
Session12 ✻ Cue2	13 - 1 ✻ B- - A-	-6.3665	4.717	-15.611	2.879	848.0	-1.3497	0.177
Session13 ✻ Cue2	14 - 1 ✻ B- - A-	-9.4281	4.717	-18.673	-0.183	848.0	-1.9988	0.046
Session14 ✻ Cue2	15 - 1 ✻ B- - A-	-6.6403	4.717	-15.885	2.605	848.0	-1.4078	0.160
Session15 ✻ Cue2	16 - 1 ✻ B- - A-	-5.2568	4.717	-14.502	3.988	848.0	-1.1144	0.265

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session16 ✻ Cue2	17 - 1 ✻ B- - A-	-7.2623	4.717	-16.507	1.983	848.0	-1.5396	0.124
Session17 ✻ Cue2	18 - 1 ✻ B- - A-	-4.8314	4.717	-14.076	4.414	848.0	-1.0243	0.306
Group1 ✻ Session1 ✻ Cue1	2 - 1 ✻ 2 - 1 ✻ AB+ - A-	-2.9653	9.434	-21.455	15.525	848.0	-0.3143	0.753
Group1 ✻ Session2 ✻ Cue1	2 - 1 ✻ 3 - 1 ✻ AB+ - A-	-7.8815	9.434	-26.372	10.608	848.0	-0.8355	0.404
Group1 ✻ Session3 ✻ Cue1	2 - 1 ✻ 4 - 1 ✻ AB+ - A-	-9.1503	9.434	-27.640	9.340	848.0	-0.9699	0.332
Group1 ✻ Session4 ✻ Cue1	2 - 1 ✻ 5 - 1 ✻ AB+ - A-	-13.3173	9.434	-31.807	5.173	848.0	-1.4117	0.158
Group1 ✻ Session5 ✻ Cue1	2 - 1 ✻ 6 - 1 ✻ AB+ - A-	-12.3475	9.434	-30.837	6.142	848.0	-1.3089	0.191
Group1 ✻ Session6 ✻ Cue1	2 - 1 ✻ 7 - 1 ✻ AB+ - A-	-14.0924	9.434	-32.582	4.398	848.0	-1.4938	0.136
Group1 ✻ Session7 ✻ Cue1	2 - 1 ✻ 8 - 1 ✻ AB+ - A-	-9.7028	9.434	-28.193	8.787	848.0	-1.0285	0.304
Group1 ✻ Session8 ✻ Cue1	2 - 1 ✻ 9 - 1 ✻ AB+ - A-	-7.0380	9.434	-25.528	11.452	848.0	-0.7460	0.456
Group1 ✻ Session9 ✻ Cue1	2 - 1 ✻ 10 - 1 ✻ AB+ - A-	-11.8350	9.434	-30.325	6.655	848.0	-1.2545	0.210

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session10 ✻ Cue1	2 - 1 ✻ 11 - 1 ✻ AB+ - A-	-6.6526	9.434	-25.143	11.837	848.0	-0.7052	0.481
Group1 ✻ Session11 ✻ Cue1	2 - 1 ✻ 12 - 1 ✻ AB+ - A-	-13.2128	9.434	-31.703	5.277	848.0	-1.4006	0.162
Group1 ✻ Session12 ✻ Cue1	2 - 1 ✻ 13 - 1 ✻ AB+ - A-	-3.3197	9.434	-21.810	15.170	848.0	-0.3519	0.725
Group1 ✻ Session13 ✻ Cue1	2 - 1 ✻ 14 - 1 ✻ AB+ - A-	-8.3140	9.434	-26.804	10.176	848.0	-0.8813	0.378
Group1 ✻ Session14 ✻ Cue1	2 - 1 ✻ 15 - 1 ✻ AB+ - A-	-10.1797	9.434	-28.670	8.310	848.0	-1.0791	0.281
Group1 ✻ Session15 ✻ Cue1	2 - 1 ✻ 16 - 1 ✻ AB+ - A-	-4.5405	9.434	-23.030	13.950	848.0	-0.4813	0.630
Group1 ✻ Session16 ✻ Cue1	2 - 1 ✻ 17 - 1 ✻ AB+ - A-	-12.1962	9.434	-30.686	6.294	848.0	-1.2928	0.196
Group1 ✻ Session17 ✻ Cue1	2 - 1 ✻ 18 - 1 ✻ AB+ - A-	-7.2831	9.434	-25.773	11.207	848.0	-0.7720	0.440
Group1 ✻ Session1 ✻ Cue2	2 - 1 ✻ 2 - 1 ✻ B- - A-	0.8853	9.434	-17.605	19.375	848.0	0.0938	0.925
Group1 ✻ Session2 ✻ Cue2	2 - 1 ✻ 3 - 1 ✻ B- - A-	-4.1905	9.434	-22.681	14.299	848.0	-0.4442	0.657

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session3 ✻ Cue2	2 - 1 ✻ 4 - 1 ✻ B- - A-	-5.3674	9.434	-23.857	13.123	848.0	-0.5689	0.570
Group1 ✻ Session4 ✻ Cue2	2 - 1 ✻ 5 - 1 ✻ B- - A-	-11.9265	9.434	-30.417	6.563	848.0	-1.2642	0.206
Group1 ✻ Session5 ✻ Cue2	2 - 1 ✻ 6 - 1 ✻ B- - A-	-11.0456	9.434	-29.536	7.444	848.0	-1.1708	0.242
Group1 ✻ Session6 ✻ Cue2	2 - 1 ✻ 7 - 1 ✻ B- - A-	-9.2192	9.434	-27.709	9.271	848.0	-0.9772	0.329
Group1 ✻ Session7 ✻ Cue2	2 - 1 ✻ 8 - 1 ✻ B- - A-	-6.1106	9.434	-24.601	12.379	848.0	-0.6477	0.517
Group1 ✻ Session8 ✻ Cue2	2 - 1 ✻ 9 - 1 ✻ B- - A-	-7.5897	9.434	-26.080	10.900	848.0	-0.8045	0.421
Group1 ✻ Session9 ✻ Cue2	2 - 1 ✻ 10 - 1 ✻ B- - A-	-9.9977	9.434	-28.488	8.492	848.0	-1.0598	0.290
Group1 ✻ Session10 ✻ Cue2	2 - 1 ✻ 11 - 1 ✻ B- - A-	-7.8019	9.434	-26.292	10.688	848.0	-0.8270	0.408
Group1 ✻ Session11 ✻ Cue2	2 - 1 ✻ 12 - 1 ✻ B- - A-	-11.1227	9.434	-29.613	7.367	848.0	-1.1790	0.239
Group1 ✻ Session12 ✻ Cue2	2 - 1 ✻ 13 - 1 ✻ B- - A-	-7.5224	9.434	-26.012	10.968	848.0	-0.7974	0.425

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session13 ✻ Cue2	2 - 1 ✻ 14 - 1 ✻ B- - A-	-12.4117	9.434	-30.902	6.078	848.0	-1.3157	0.189
Group1 ✻ Session14 ✻ Cue2	2 - 1 ✻ 15 - 1 ✻ B- - A-	-6.9267	9.434	-25.417	11.563	848.0	-0.7342	0.463
Group1 ✻ Session15 ✻ Cue2	2 - 1 ✻ 16 - 1 ✻ B- - A-	-0.2253	9.434	-18.715	18.265	848.0	-0.0239	0.981
Group1 ✻ Session16 ✻ Cue2	2 - 1 ✻ 17 - 1 ✻ B- - A-	-8.3103	9.434	-26.800	10.180	848.0	-0.8809	0.379
Group1 ✻ Session17 ✻ Cue2	2 - 1 ✻ 18 - 1 ✻ B- - A-	1.3073	9.434	-17.183	19.797	848.0	0.1386	0.890

Random Components

Groups	Name	SD	Variance	ICC
Rat	(Intercept)	9.84	96.9	0.492
Residual		10.01	100.1	

Note. Number of Obs: 972 , groups: Rat 18

Post Hoc Tests

Post Hoc Comparisons - Group ✻ Cue

Comparison										
Group	**Cue**		**Group**	**Cue**	**Difference**	**SE**	**t**	**df**	**p**	**p_{holm}**
2	A-	-	2	B-	-18.566	1.11	-16.699	848.0	< .001	< .001
2	A-	-	2	AB+	-33.745	1.11	-30.352	848.0	< .001	< .001
2	A-	-	1	B-	31.121	4.77	6.521	17.2	< .001	< .001
2	A-	-	1	AB+	31.321	4.77	6.563	17.2	< .001	< .001
2	AB+	-	2	B-	15.179	1.11	13.653	848.0	< .001	< .001
2	AB+	-	1	B-	64.865	4.77	13.593	17.2	< .001	< .001
1	B-	-	2	B-	-49.687	4.77	-10.412	17.2	< .001	< .001
1	A-	-	2	B-	-50.776	4.77	-10.640	17.2	< .001	< .001
1	A-	-	2	A-	-32.210	4.77	-6.750	17.2	< .001	< .001
1	A-	-	2	AB+	-65.955	4.77	-13.821	17.2	< .001	< .001
1	A-	-	1	B-	-1.089	1.11	-0.980	848.0	0.328	0.983
1	A-	-	1	AB+	-0.889	1.11	-0.800	848.0	0.424	0.983
1	AB+	-	2	B-	-49.887	4.77	-10.454	17.2	< .001	< .001
1	AB+	-	2	AB+	-65.066	4.77	-13.635	17.2	< .001	< .001
1	AB+	-	1	B-	-0.200	1.11	-0.180	848.0	0.857	0.983

Section 5: Latency Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	Latency ~ 1 + Group + Session + Cue + Group:Session + Group:Cue + Session:Cue + Group:Session:Cue+(1 | Rat)
AIC	3247.997
BIC	3787.347
LogLikel.	-1515.309
R-squared Marginal	0.238
R-squared Conditional	0.752

Model Info

Info	
Converged	yes
Optimizer	bobyqa

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group	7.129	1	16.0	0.017
Session	0.876	17	848.0	0.603
Cue	33.243	2	848.0	< .001
Group ✻ Session	0.518	17	848.0	0.945
Group ✻ Cue	10.010	2	848.0	< .001
Session ✻ Cue	0.305	34	848.0	1.000
Group ✻ Session ✻ Cue	0.261	34	848.0	1.000

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

				95% Confidence Interval				
Names	Effect	Estimate	SE	Lower	Upper	df	t	p
(Intercept)	(Intercept)	7.60899	0.3970	6.8309	8.387	16.0	19.16647	< .001

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1	2 - 1	2.11990	0.7940	0.5637	3.676	16.0	2.66993	0.017
Session1	2 - 1	-0.18379	0.2245	-0.6237	0.256	848.0	-0.81884	0.413
Session2	3 - 1	-0.18232	0.2245	-0.6222	0.258	848.0	-0.81227	0.417
Session3	4 - 1	0.09939	0.2245	-0.3405	0.539	848.0	0.44281	0.658
Session4	5 - 1	0.18922	0.2245	-0.2507	0.629	848.0	0.84305	0.399
Session5	6 - 1	0.07987	0.2245	-0.3600	0.520	848.0	0.35585	0.722
Session6	7 - 1	0.03199	0.2245	-0.4079	0.472	848.0	0.14252	0.887
Session7	8 - 1	-0.16428	0.2245	-0.6042	0.276	848.0	-0.73190	0.464
Session8	9 - 1	-0.00926	0.2245	-0.4492	0.431	848.0	-0.04126	0.967
Session9	10 - 1	-0.16940	0.2245	-0.6093	0.271	848.0	-0.75473	0.451
Session10	11 - 1	-0.22813	0.2245	-0.6680	0.212	848.0	-1.01637	0.310
Session11	12 - 1	-0.18386	0.2245	-0.6238	0.256	848.0	-0.81917	0.413
Session12	13 - 1	-0.15987	0.2245	-0.5998	0.280	848.0	-0.71226	0.476
Session13	14 - 1	-0.30095	0.2245	-0.7409	0.139	848.0	-1.34080	0.180
Session14	15 - 1	-0.16113	0.2245	-0.6010	0.279	848.0	-0.71786	0.473

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session15	16 - 1	-0.31665	0.2245	-0.7566	0.123	848.0	-1.41077	0.159
Session16	17 - 1	-0.26316	0.2245	-0.7031	0.177	848.0	-1.17247	0.241
Session17	18 - 1	-0.25544	0.2245	-0.6954	0.184	848.0	-1.13808	0.255
Cue1	AB+ - A-	0.66790	0.0916	0.4883	0.847	848.0	7.28891	< .001
Cue2	B- - A-	0.62398	0.0916	0.4444	0.804	848.0	6.80965	< .001
Group1 ✻ Session1	2 - 1 ✻ 2 - 1	-0.00747	0.4489	-0.8873	0.872	848.0	-0.01665	0.987
Group1 ✻ Session2	2 - 1 ✻ 3 - 1	-0.41066	0.4489	-1.2905	0.469	848.0	-0.91482	0.361
Group1 ✻ Session3	2 - 1 ✻ 4 - 1	-0.31570	0.4489	-1.1955	0.564	848.0	-0.70327	0.482
Group1 ✻ Session4	2 - 1 ✻ 5 - 1	-0.18891	0.4489	-1.0687	0.691	848.0	-0.42083	0.674
Group1 ✻ Session5	2 - 1 ✻ 6 - 1	-0.33898	0.4489	-1.2188	0.541	848.0	-0.75513	0.450
Group1 ✻ Session6	2 - 1 ✻ 7 - 1	-0.03141	0.4489	-0.9112	0.848	848.0	-0.06998	0.944
Group1 ✻ Session7	2 - 1 ✻ 8 - 1	-0.02201	0.4489	-0.9018	0.858	848.0	-0.04903	0.961
Group1 ✻ Session8	2 - 1 ✻ 9 - 1	0.01772	0.4489	-0.8621	0.898	848.0	0.03947	0.969
Group1 ✻ Session9	2 - 1 ✻ 10 - 1	0.39473	0.4489	-0.4851	1.275	848.0	0.87932	0.379

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session10	2 - 1 ✻ 11 - 1	-0.00193	0.4489	-0.8818	0.878	848.0	-0.00430	0.997
Group1 ✻ Session11	2 - 1 ✻ 12 - 1	-0.06949	0.4489	-0.9493	0.810	848.0	-0.15480	0.877
Group1 ✻ Session12	2 - 1 ✻ 13 - 1	-0.17662	0.4489	-1.0565	0.703	848.0	-0.39345	0.694
Group1 ✻ Session13	2 - 1 ✻ 14 - 1	0.12429	0.4489	-0.7555	1.004	848.0	0.27687	0.782
Group1 ✻ Session14	2 - 1 ✻ 15 - 1	0.18818	0.4489	-0.6917	1.068	848.0	0.41920	0.675
Group1 ✻ Session15	2 - 1 ✻ 16 - 1	0.31062	0.4489	-0.5692	1.190	848.0	0.69195	0.489
Group1 ✻ Session16	2 - 1 ✻ 17 - 1	0.32496	0.4489	-0.5549	1.205	848.0	0.72389	0.469
Group1 ✻ Session17	2 - 1 ✻ 18 - 1	0.15019	0.4489	-0.7296	1.030	848.0	0.33458	0.738
Group1 ✻ Cue1	2 - 1 ✻ AB+ - A-	0.81992	0.1833	0.4607	1.179	848.0	4.47397	< .001
Group1 ✻ Cue2	2 - 1 ✻ B- - A-	0.40133	0.1833	0.0421	0.761	848.0	2.18991	0.029
Session1 ✻ Cue1	2 - 1 ✻ AB+ - A-	0.48986	0.5498	-0.5877	1.567	848.0	0.89099	0.373
Session2 ✻ Cue1	3 - 1 ✻ AB+ - A-	0.60177	0.5498	-0.4758	1.679	848.0	1.09454	0.274
Session3 ✻ Cue1	4 - 1 ✻ AB+ - A-	-0.11972	0.5498	-1.1973	0.958	848.0	-0.21776	0.828
Session4 ✻ Cue1	5 - 1 ✻ AB+ - A-	0.12187	0.5498	-0.9557	1.199	848.0	0.22166	0.825

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session5 ✻ Cue1	6 - 1 ✻ AB+ - A-	0.08622	0.5498	-0.9914	1.164	848.0	0.15681	0.875
Session6 ✻ Cue1	7 - 1 ✻ AB+ - A-	0.03424	0.5498	-1.0433	1.112	848.0	0.06228	0.950
Session7 ✻ Cue1	8 - 1 ✻ AB+ - A-	0.34233	0.5498	-0.7352	1.420	848.0	0.62265	0.534
Session8 ✻ Cue1	9 - 1 ✻ AB+ - A-	-0.11999	0.5498	-1.1976	0.958	848.0	-0.21825	0.827
Session9 ✻ Cue1	10 - 1 ✻ AB+ - A-	0.00278	0.5498	-1.0748	1.080	848.0	0.00505	0.996
Session10 ✻ Cue1	11 - 1 ✻ AB+ - A-	0.30184	0.5498	-0.7757	1.379	848.0	0.54901	0.583
Session11 ✻ Cue1	12 - 1 ✻ AB+ - A-	0.31520	0.5498	-0.7624	1.393	848.0	0.57330	0.567
Session12 ✻ Cue1	13 - 1 ✻ AB+ - A-	0.10513	0.5498	-0.9724	1.183	848.0	0.19122	0.848
Session13 ✻ Cue1	14 - 1 ✻ AB+ - A-	-0.00350	0.5498	-1.0811	1.074	848.0	-0.00637	0.995
Session14 ✻ Cue1	15 - 1 ✻ AB+ - A-	-0.11277	0.5498	-1.1903	0.965	848.0	-0.20511	0.838
Session15 ✻ Cue1	16 - 1 ✻ AB+ - A-	-0.22736	0.5498	-1.3049	0.850	848.0	-0.41353	0.679
Session16 ✻ Cue1	17 - 1 ✻ AB+ - A-	0.05953	0.5498	-1.0180	1.137	848.0	0.10827	0.914
Session17 ✻ Cue1	18 - 1 ✻ AB+ - A-	-0.20796	0.5498	-1.2855	0.870	848.0	-0.37825	0.705
Session1 ✻ Cue2	2 - 1 ✻ B- - A-	0.23052	0.5498	-0.8471	1.308	848.0	0.41929	0.675

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session2 ✻ Cue2	3 - 1 ✻ B- - A-	0.66045	0.5498	-0.4171	1.738	848.0	1.20128	0.230
Session3 ✻ Cue2	4 - 1 ✻ B- - A-	-0.22157	0.5498	-1.2991	0.856	848.0	-0.40301	0.687
Session4 ✻ Cue2	5 - 1 ✻ B- - A-	-0.16867	0.5498	-1.2462	0.909	848.0	-0.30678	0.759
Session5 ✻ Cue2	6 - 1 ✻ B- - A-	-0.12669	0.5498	-1.2043	0.951	848.0	-0.23043	0.818
Session6 ✻ Cue2	7 - 1 ✻ B- - A-	-0.15417	0.5498	-1.2317	0.923	848.0	-0.28042	0.779
Session7 ✻ Cue2	8 - 1 ✻ B- - A-	0.16600	0.5498	-0.9116	1.244	848.0	0.30193	0.763
Session8 ✻ Cue2	9 - 1 ✻ B- - A-	0.06415	0.5498	-1.0134	1.142	848.0	0.11667	0.907
Session9 ✻ Cue2	10 - 1 ✻ B- - A-	-0.04627	0.5498	-1.1238	1.031	848.0	-0.08415	0.933
Session10 ✻ Cue2	11 - 1 ✻ B- - A-	-0.00298	0.5498	-1.0806	1.075	848.0	-0.00542	0.996
Session11 ✻ Cue2	12 - 1 ✻ B- - A-	-0.16653	0.5498	-1.2441	0.911	848.0	-0.30289	0.762
Session12 ✻ Cue2	13 - 1 ✻ B- - A-	-0.04504	0.5498	-1.1226	1.033	848.0	-0.08192	0.935
Session13 ✻ Cue2	14 - 1 ✻ B- - A-	-0.12224	0.5498	-1.1998	0.955	848.0	-0.22234	0.824
Session14 ✻ Cue2	15 - 1 ✻ B- - A-	-0.30972	0.5498	-1.3873	0.768	848.0	-0.56334	0.573
Session15 ✻ Cue2	16 - 1 ✻ B- - A-	-0.43412	0.5498	-1.5117	0.643	848.0	-0.78962	0.430

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session16 ✻ Cue2	17 - 1 ✻ B- - A-	-0.24987	0.5498	-1.3274	0.828	848.0	-0.45448	0.650
Session17 ✻ Cue2	18 - 1 ✻ B- - A-	-0.16633	0.5498	-1.2439	0.911	848.0	-0.30253	0.762
Group1 ✻ Session1 ✻ Cue1	2 - 1 ✻ 2 - 1 ✻ AB+ - A-	-0.34201	1.0996	-2.4972	1.813	848.0	-0.31103	0.756
Group1 ✻ Session2 ✻ Cue1	2 - 1 ✻ 3 - 1 ✻ AB+ - A-	-0.15607	1.0996	-2.3112	1.999	848.0	-0.14194	0.887
Group1 ✻ Session3 ✻ Cue1	2 - 1 ✻ 4 - 1 ✻ AB+ - A-	0.52421	1.0996	-1.6309	2.679	848.0	0.47673	0.634
Group1 ✻ Session4 ✻ Cue1	2 - 1 ✻ 5 - 1 ✻ AB+ - A-	-0.71575	1.0996	-2.8709	1.439	848.0	-0.65093	0.515
Group1 ✻ Session5 ✻ Cue1	2 - 1 ✻ 6 - 1 ✻ AB+ - A-	-0.12914	1.0996	-2.2843	2.026	848.0	-0.11744	0.907
Group1 ✻ Session6 ✻ Cue1	2 - 1 ✻ 7 - 1 ✻ AB+ - A-	-0.25717	1.0996	-2.4123	1.898	848.0	-0.23388	0.815
Group1 ✻ Session7 ✻ Cue1	2 - 1 ✻ 8 - 1 ✻ AB+ - A-	0.01816	1.0996	-2.1370	2.173	848.0	0.01652	0.987
Group1 ✻ Session8 ✻ Cue1	2 - 1 ✻ 9 - 1 ✻ AB+ - A-	0.19878	1.0996	-1.9564	2.354	848.0	0.18078	0.857
Group1 ✻ Session9 ✻ Cue1	2 - 1 ✻ 10 - 1 ✻ AB+ - A-	0.03207	1.0996	-2.1231	2.187	848.0	0.02917	0.977

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session10 ✻ Cue1	2 - 1 ✻ 11 - 1 ✻ AB+ - A-	0.53492	1.0996	-1.6202	2.690	848.0	0.48647	0.627
Group1 ✻ Session11 ✻ Cue1	2 - 1 ✻ 12 - 1 ✻ AB+ - A-	-0.00103	1.0996	-2.1562	2.154	848.0	-9.41e−4	0.999
Group1 ✻ Session12 ✻ Cue1	2 - 1 ✻ 13 - 1 ✻ AB+ - A-	0.38744	1.0996	-1.7677	2.543	848.0	0.35236	0.725
Group1 ✻ Session13 ✻ Cue1	2 - 1 ✻ 14 - 1 ✻ AB+ - A-	0.44228	1.0996	-1.7129	2.597	848.0	0.40222	0.688
Group1 ✻ Session14 ✻ Cue1	2 - 1 ✻ 15 - 1 ✻ AB+ - A-	0.09349	1.0996	-2.0617	2.249	848.0	0.08503	0.932
Group1 ✻ Session15 ✻ Cue1	2 - 1 ✻ 16 - 1 ✻ AB+ - A-	0.75249	1.0996	-1.4027	2.908	848.0	0.68434	0.494
Group1 ✻ Session16 ✻ Cue1	2 - 1 ✻ 17 - 1 ✻ AB+ - A-	-0.46237	1.0996	-2.6175	1.693	848.0	-0.42050	0.674
Group1 ✻ Session17 ✻ Cue1	2 - 1 ✻ 18 - 1 ✻ AB+ - A-	0.55136	1.0996	-1.6038	2.707	848.0	0.50143	0.616
Group1 ✻ Session1 ✻ Cue2	2 - 1 ✻ 2 - 1 ✻ B- - A-	0.08371	1.0996	-2.0714	2.239	848.0	0.07613	0.939
Group1 ✻ Session2 ✻ Cue2	2 - 1 ✻ 3 - 1 ✻ B- - A-	-0.32104	1.0996	-2.4762	1.834	848.0	-0.29196	0.770

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session3 ✻ Cue2	2 - 1 ✻ 4 - 1 ✻ B- - A-	0.69519	1.0996	-1.4600	2.850	848.0	0.63223	0.527
Group1 ✻ Session4 ✻ Cue2	2 - 1 ✻ 5 - 1 ✻ B- - A-	-0.42887	1.0996	-2.5840	1.726	848.0	-0.39003	0.697
Group1 ✻ Session5 ✻ Cue2	2 - 1 ✻ 6 - 1 ✻ B- - A-	0.07715	1.0996	-2.0780	2.232	848.0	0.07017	0.944
Group1 ✻ Session6 ✻ Cue2	2 - 1 ✻ 7 - 1 ✻ B- - A-	-0.17415	1.0996	-2.3293	1.981	848.0	-0.15837	0.874
Group1 ✻ Session7 ✻ Cue2	2 - 1 ✻ 8 - 1 ✻ B- - A-	0.32654	1.0996	-1.8286	2.482	848.0	0.29697	0.767
Group1 ✻ Session8 ✻ Cue2	2 - 1 ✻ 9 - 1 ✻ B- - A-	-0.46600	1.0996	-2.6211	1.689	848.0	-0.42380	0.672
Group1 ✻ Session9 ✻ Cue2	2 - 1 ✻ 10 - 1 ✻ B- - A-	-0.10226	1.0996	-2.2574	2.053	848.0	-0.09300	0.926
Group1 ✻ Session10 ✻ Cue2	2 - 1 ✻ 11 - 1 ✻ B- - A-	0.64132	1.0996	-1.5138	2.796	848.0	0.58324	0.560
Group1 ✻ Session11 ✻ Cue2	2 - 1 ✻ 12 - 1 ✻ B- - A-	0.60254	1.0996	-1.5526	2.758	848.0	0.54797	0.584
Group1 ✻ Session12 ✻ Cue2	2 - 1 ✻ 13 - 1 ✻ B- - A-	-0.02812	1.0996	-2.1833	2.127	848.0	-0.02557	0.980

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session13 ✻ Cue2	2 - 1 ✻ 14 - 1 ✻ B- - A-	-0.23339	1.0996	-2.3885	1.922	848.0	-0.21225	0.832
Group1 ✻ Session14 ✻ Cue2	2 - 1 ✻ 15 - 1 ✻ B- - A-	0.18307	1.0996	-1.9721	2.338	848.0	0.16649	0.868
Group1 ✻ Session15 ✻ Cue2	2 - 1 ✻ 16 - 1 ✻ B- - A-	1.09089	1.0996	-1.0643	3.246	848.0	0.99209	0.321
Group1 ✻ Session16 ✻ Cue2	2 - 1 ✻ 17 - 1 ✻ B- - A-	-0.35854	1.0996	-2.5137	1.797	848.0	-0.32607	0.744
Group1 ✻ Session17 ✻ Cue2	2 - 1 ✻ 18 - 1 ✻ B- - A-	0.15692	1.0996	-1.9982	2.312	848.0	0.14271	0.887

Random Components

Groups	Name	SD	Variance	ICC
Rat	(Intercept)	1.68	2.81	0.674
Residual		1.17	1.36	

Note. Number of Obs: 972 , groups: Rat 18

Post Hoc Tests

Post Hoc Comparisons - Group ✻ Cue

Comparison										
Group	**Cue**		**Group**	**Cue**	**Difference**	**SE**	**t**	**df**	**p**	**p_{holm}**
2	A-	-	2	B-	-0.825	0.130	-6.36	848.0	< .001	< .001
2	A-	-	2	AB+	-1.078	0.130	-8.32	848.0	< .001	< .001
2	A-	-	1	B-	1.289	0.801	1.61	16.6	0.126	0.281
2	A-	-	1	AB+	1.455	0.801	1.82	16.6	0.087	0.281
2	AB+	-	2	B-	0.253	0.130	1.95	848.0	0.051	0.281
2	AB+	-	1	B-	2.367	0.801	2.96	16.6	0.009	0.081
1	B-	-	2	B-	-2.114	0.801	-2.64	16.6	0.017	0.122
1	A-	-	2	B-	-2.537	0.801	-3.17	16.6	0.006	0.063
1	A-	-	2	A-	-1.713	0.801	-2.14	16.6	0.048	0.281
1	A-	-	2	AB+	-2.791	0.801	-3.48	16.6	0.003	0.035
1	A-	-	1	B-	-0.423	0.130	-3.27	848.0	0.001	0.015
1	A-	-	1	AB+	-0.258	0.130	-1.99	848.0	0.047	0.281
1	AB+	-	2	B-	-2.280	0.801	-2.85	16.6	0.011	0.091
1	AB+	-	2	AB+	-2.533	0.801	-3.16	16.6	0.006	0.063
1	AB+	-	1	B-	-0.165	0.130	-1.28	848.0	0.202	0.281

Section 5: PC1 Results

Mixed Model

Model Info

Info	
Estimate	Linear mixed model fit by REML
Call	PC1 ~ 1 + Group + Session + Cue + Group:Session + Group:Cue + Session:Cue + Group:Session:Cue+(1 | Rat)
AIC	2059.483
BIC	2730.890
LogLikel.	-987.080
R-squared Marginal	0.320
R-squared Conditional	0.320
Converged	yes
Optimizer	bobyqa

Note. (Almost) singular fit. Maybe random coefficients variances are too small or correlations among them too large.

Note. boundary (singular) fit: see ?isSingular

Model Results

Fixed Effect Omnibus tests

	F	Num df	Den df	p
Group	6.75e-4	1	864	0.979
Session	1.067	17	864	0.382
Cue	142.836	2	864	< .001
Group ✻ Session	0.345	17	864	0.994
Group ✻ Cue	58.604	2	864	< .001
Session ✻ Cue	0.599	34	864	0.967
Group ✻ Session ✻ Cue	0.286	34	864	1.000

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

				95% Confidence Interval				
Names	**Effect**	**Estimate**	**SE**	**Lower**	**Upper**	**df**	**t**	**p**
(Intercept)	(Intercept)	-5.51e−4	0.0212	-0.0421	0.0410	864	-0.0260	0.979
Group1	2 - 1	-0.00110	0.0424	-0.0842	0.0820	864	-0.0260	0.979
Session1	2 - 1	-0.10369	0.1272	-0.3531	0.1457	864	-0.8150	0.415
Session2	3 - 1	-0.24962	0.1272	-0.4990	-2.50e−4	864	-1.9619	0.050
Session3	4 - 1	0.11401	0.1272	-0.1354	0.3634	864	0.8960	0.370

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session4	5 - 1	0.07688	0.1272	-0.1725	0.3263	864	0.6042	0.546
Session5	6 - 1	0.13490	0.1272	-0.1145	0.3843	864	1.0603	0.289
Session6	7 - 1	0.08104	0.1272	-0.1683	0.3304	864	0.6369	0.524
Session7	8 - 1	-0.05803	0.1272	-0.3074	0.1913	864	-0.4561	0.648
Session8	9 - 1	0.09350	0.1272	-0.1559	0.3429	864	0.7349	0.463
Session9	10 - 1	0.02067	0.1272	-0.2287	0.2700	864	0.1625	0.871
Session10	11 - 1	-0.02628	0.1272	-0.2757	0.2231	864	-0.2065	0.836
Session11	12 - 1	-0.07056	0.1272	-0.3199	0.1788	864	-0.5545	0.579
Session12	13 - 1	-0.07535	0.1272	-0.3247	0.1740	864	-0.5922	0.554
Session13	14 - 1	-0.06287	0.1272	-0.3122	0.1865	864	-0.4941	0.621
Session14	15 - 1	0.01249	0.1272	-0.2369	0.2619	864	0.0982	0.922
Session15	16 - 1	0.02433	0.1272	-0.2250	0.2737	864	0.1913	0.848
Session16	17 - 1	0.03000	0.1272	-0.2194	0.2794	864	0.2358	0.814
Session17	18 - 1	0.02673	0.1272	-0.2226	0.2761	864	0.2101	0.834

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Cue1	AB+ - A-	0.87019	0.0519	0.7684	0.9720	864	16.7527	< .001
Cue2	B- - A-	0.53587	0.0519	0.4341	0.6377	864	10.3165	< .001
Group1 ✻ Session1	2 - 1 ✻ 2 - 1	0.09361	0.2545	-0.4051	0.5924	864	0.3679	0.713
Group1 ✻ Session2	2 - 1 ✻ 3 - 1	-0.28313	0.2545	-0.7819	0.2156	864	-1.1127	0.266
Group1 ✻ Session3	2 - 1 ✻ 4 - 1	0.01466	0.2545	-0.4841	0.5134	864	0.0576	0.954
Group1 ✻ Session4	2 - 1 ✻ 5 - 1	0.12189	0.2545	-0.3769	0.6206	864	0.4790	0.632
Group1 ✻ Session5	2 - 1 ✻ 6 - 1	-0.09505	0.2545	-0.5938	0.4037	864	-0.3735	0.709
Group1 ✻ Session6	2 - 1 ✻ 7 - 1	-0.09231	0.2545	-0.5911	0.4064	864	-0.3628	0.717
Group1 ✻ Session7	2 - 1 ✻ 8 - 1	-0.08176	0.2545	-0.5805	0.4170	864	-0.3213	0.748
Group1 ✻ Session8	2 - 1 ✻ 9 - 1	-0.19633	0.2545	-0.6951	0.3024	864	-0.7715	0.441
Group1 ✻ Session9	2 - 1 ✻ 10 - 1	-0.02949	0.2545	-0.5282	0.4693	864	-0.1159	0.908
Group1 ✻ Session10	2 - 1 ✻ 11 - 1	-0.07243	0.2545	-0.5712	0.4263	864	-0.2846	0.776
Group1 ✻ Session11	2 - 1 ✻ 12 - 1	-0.04417	0.2545	-0.5429	0.4546	864	-0.1736	0.862
Group1 ✻ Session12	2 - 1 ✻ 13 - 1	-0.25319	0.2545	-0.7519	0.2456	864	-0.9950	0.320

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session13	2 - 1 ✻ 14 - 1	-0.02273	0.2545	-0.5215	0.4760	864	-0.0893	0.929
Group1 ✻ Session14	2 - 1 ✻ 15 - 1	0.03602	0.2545	-0.4627	0.5348	864	0.1416	0.887
Group1 ✻ Session15	2 - 1 ✻ 16 - 1	-0.04040	0.2545	-0.5391	0.4583	864	-0.1588	0.874
Group1 ✻ Session16	2 - 1 ✻ 17 - 1	-0.02933	0.2545	-0.5281	0.4694	864	-0.1152	0.908
Group1 ✻ Session17	2 - 1 ✻ 18 - 1	-0.00556	0.2545	-0.5043	0.4932	864	-0.0219	0.983
Group1 ✻ Cue1	2 - 1 ✻ AB+ - A-	1.08960	0.1039	0.8860	1.2932	864	10.4884	< .001
Group1 ✻ Cue2	2 - 1 ✻ B- - A-	0.78621	0.1039	0.5826	0.9898	864	7.5680	< .001
Session1 ✻ Cue1	2 - 1 ✻ AB+ - A-	0.15510	0.3117	-0.4557	0.7659	864	0.4977	0.619
Session2 ✻ Cue1	3 - 1 ✻ AB+ - A-	0.30924	0.3117	-0.3016	0.9201	864	0.9922	0.321
Session3 ✻ Cue1	4 - 1 ✻ AB+ - A-	-0.40539	0.3117	-1.0162	0.2054	864	-1.3008	0.194
Session4 ✻ Cue1	5 - 1 ✻ AB+ - A-	-0.30695	0.3117	-0.9178	0.3039	864	-0.9849	0.325
Session5 ✻ Cue1	6 - 1 ✻ AB+ - A-	-0.28532	0.3117	-0.8962	0.3255	864	-0.9155	0.360
Session6 ✻ Cue1	7 - 1 ✻ AB+ - A-	-0.26621	0.3117	-0.8770	0.3446	864	-0.8542	0.393
Session7 ✻ Cue1	8 - 1 ✻ AB+ - A-	0.10054	0.3117	-0.5103	0.7114	864	0.3226	0.747

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session8 ✻ Cue1	9 - 1 ✻ AB+ - A-	-0.13467	0.3117	-0.7455	0.4762	864	-0.4321	0.666
Session9 ✻ Cue1	10 - 1 ✻ AB+ - A-	0.11141	0.3117	-0.4994	0.7222	864	0.3575	0.721
Session10 ✻ Cue1	11 - 1 ✻ AB+ - A-	-0.09400	0.3117	-0.7048	0.5168	864	-0.3016	0.763
Session11 ✻ Cue1	12 - 1 ✻ AB+ - A-	0.00456	0.3117	-0.6063	0.6154	864	0.0146	0.988
Session12 ✻ Cue1	13 - 1 ✻ AB+ - A-	0.05812	0.3117	-0.5527	0.6690	864	0.1865	0.852
Session13 ✻ Cue1	14 - 1 ✻ AB+ - A-	-0.08773	0.3117	-0.6986	0.5231	864	-0.2815	0.778
Session14 ✻ Cue1	15 - 1 ✻ AB+ - A-	-0.15952	0.3117	-0.7704	0.4513	864	-0.5118	0.609
Session15 ✻ Cue1	16 - 1 ✻ AB+ - A-	-0.13830	0.3117	-0.7491	0.4725	864	-0.4438	0.657
Session16 ✻ Cue1	17 - 1 ✻ AB+ - A-	-0.09857	0.3117	-0.7094	0.5123	864	-0.3163	0.752
Session17 ✻ Cue1	18 - 1 ✻ AB+ - A-	-0.11514	0.3117	-0.7260	0.4957	864	-0.3694	0.712
Session1 ✻ Cue2	2 - 1 ✻ B- - A-	-0.07515	0.3117	-0.6860	0.5357	864	-0.2411	0.810
Session2 ✻ Cue2	3 - 1 ✻ B- - A-	0.11724	0.3117	-0.4936	0.7281	864	0.3762	0.707
Session3 ✻ Cue2	4 - 1 ✻ B- - A-	-0.62561	0.3117	-1.2365	-0.0148	864	-2.0074	0.045
Session4 ✻ Cue2	5 - 1 ✻ B- - A-	-0.48705	0.3117	-1.0979	0.1238	864	-1.5628	0.118

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Session5 ✻ Cue2	6 - 1 ✻ B- - A-	-0.53258	0.3117	-1.1434	0.0783	864	-1.7089	0.088
Session6 ✻ Cue2	7 - 1 ✻ B- - A-	-0.49121	0.3117	-1.1020	0.1196	864	-1.5761	0.115
Session7 ✻ Cue2	8 - 1 ✻ B- - A-	-0.22041	0.3117	-0.8312	0.3904	864	-0.7072	0.480
Session8 ✻ Cue2	9 - 1 ✻ B- - A-	-0.30309	0.3117	-0.9139	0.3077	864	-0.9725	0.331
Session9 ✻ Cue2	10 - 1 ✻ B- - A-	-0.25466	0.3117	-0.8655	0.3562	864	-0.8171	0.414
Session10 ✻ Cue2	11 - 1 ✻ B- - A-	-0.41583	0.3117	-1.0267	0.1950	864	-1.3342	0.182
Session11 ✻ Cue2	12 - 1 ✻ B- - A-	-0.52531	0.3117	-1.1361	0.0855	864	-1.6855	0.092
Session12 ✻ Cue2	13 - 1 ✻ B- - A-	-0.35099	0.3117	-0.9618	0.2598	864	-1.1262	0.260
Session13 ✻ Cue2	14 - 1 ✻ B- - A-	-0.47719	0.3117	-1.0880	0.1336	864	-1.5311	0.126
Session14 ✻ Cue2	15 - 1 ✻ B- - A-	-0.49827	0.3117	-1.1091	0.1126	864	-1.5988	0.110
Session15 ✻ Cue2	16 - 1 ✻ B- - A-	-0.48508	0.3117	-1.0959	0.1258	864	-1.5564	0.120
Session16 ✻ Cue2	17 - 1 ✻ B- - A-	-0.43695	0.3117	-1.0478	0.1739	864	-1.4020	0.161
Session17 ✻ Cue2	18 - 1 ✻ B- - A-	-0.41364	0.3117	-1.0245	0.1972	864	-1.3272	0.185

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session1 ✻ Cue1	2 - 1 ✻ 2 - 1 ✻ AB+ - A-	-0.06302	0.6233	-1.2847	1.1587	864	-0.1011	0.919
Group1 ✻ Session2 ✻ Cue1	2 - 1 ✻ 3 - 1 ✻ AB+ - A-	-0.04563	0.6233	-1.2673	1.1760	864	-0.0732	0.942
Group1 ✻ Session3 ✻ Cue1	2 - 1 ✻ 4 - 1 ✻ AB+ - A-	-0.03972	0.6233	-1.2614	1.1820	864	-0.0637	0.949
Group1 ✻ Session4 ✻ Cue1	2 - 1 ✻ 5 - 1 ✻ AB+ - A-	-0.68295	0.6233	-1.9046	0.5387	864	-1.0957	0.274
Group1 ✻ Session5 ✻ Cue1	2 - 1 ✻ 6 - 1 ✻ AB+ - A-	-0.45641	0.6233	-1.6781	0.7653	864	-0.7322	0.464
Group1 ✻ Session6 ✻ Cue1	2 - 1 ✻ 7 - 1 ✻ AB+ - A-	-0.50417	0.6233	-1.7258	0.7175	864	-0.8089	0.419
Group1 ✻ Session7 ✻ Cue1	2 - 1 ✻ 8 - 1 ✻ AB+ - A-	-0.46926	0.6233	-1.6909	0.7524	864	-0.7528	0.452
Group1 ✻ Session8 ✻ Cue1	2 - 1 ✻ 9 - 1 ✻ AB+ - A-	-0.26085	0.6233	-1.4825	0.9608	864	-0.4185	0.676
Group1 ✻ Session9 ✻ Cue1	2 - 1 ✻ 10 - 1 ✻ AB+ - A-	-0.63161	0.6233	-1.8533	0.5901	864	-1.0133	0.311
Group1 ✻ Session10 ✻ Cue1	2 - 1 ✻ 11 - 1 ✻ AB+ - A-	-0.11360	0.6233	-1.3353	1.1081	864	-0.1823	0.855

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session11 ✻ Cue1	2 - 1 ✻ 12 - 1 ✻ AB+ - A-	-0.54866	0.6233	-1.7703	0.6730	864	-0.8802	0.379
Group1 ✻ Session12 ✻ Cue1	2 - 1 ✻ 13 - 1 ✻ AB+ - A-	-0.18427	0.6233	-1.4059	1.0374	864	-0.2956	0.768
Group1 ✻ Session13 ✻ Cue1	2 - 1 ✻ 14 - 1 ✻ AB+ - A-	-0.47376	0.6233	-1.6954	0.7479	864	-0.7601	0.447
Group1 ✻ Session14 ✻ Cue1	2 - 1 ✻ 15 - 1 ✻ AB+ - A-	-0.55663	0.6233	-1.7783	0.6650	864	-0.8930	0.372
Group1 ✻ Session15 ✻ Cue1	2 - 1 ✻ 16 - 1 ✻ AB+ - A-	-0.11637	0.6233	-1.3380	1.1053	864	-0.1867	0.852
Group1 ✻ Session16 ✻ Cue1	2 - 1 ✻ 17 - 1 ✻ AB+ - A-	-0.50365	0.6233	-1.7253	0.7180	864	-0.8080	0.419
Group1 ✻ Session17 ✻ Cue1	2 - 1 ✻ 18 - 1 ✻ AB+ - A-	-0.15630	0.6233	-1.3780	1.0654	864	-0.2507	0.802
Group1 ✻ Session1 ✻ Cue2	2 - 1 ✻ 2 - 1 ✻ B- - A-	0.27662	0.6233	-0.9451	1.4983	864	0.4438	0.657
Group1 ✻ Session2 ✻ Cue2	2 - 1 ✻ 3 - 1 ✻ B- - A-	0.11613	0.6233	-1.1055	1.3378	864	0.1863	0.852
Group1 ✻ Session3 ✻ Cue2	2 - 1 ✻ 4 - 1 ✻ B- - A-	0.34697	0.6233	-0.8747	1.5686	864	0.5567	0.578

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session4 ✻ Cue2	2 - 1 ✻ 5 - 1 ✻ B- - A-	-0.30367	0.6233	-1.5254	0.9180	864	-0.4872	0.626
Group1 ✻ Session5 ✻ Cue2	2 - 1 ✻ 6 - 1 ✻ B- - A-	0.00666	0.6233	-1.2150	1.2283	864	0.0107	0.991
Group1 ✻ Session6 ✻ Cue2	2 - 1 ✻ 7 - 1 ✻ B- - A-	-0.23235	0.6233	-1.4540	0.9893	864	-0.3728	0.709
Group1 ✻ Session7 ✻ Cue2	2 - 1 ✻ 8 - 1 ✻ B- - A-	0.04552	0.6233	-1.1762	1.2672	864	0.0730	0.942
Group1 ✻ Session8 ✻ Cue2	2 - 1 ✻ 9 - 1 ✻ B- - A-	-0.08446	0.6233	-1.3061	1.1372	864	-0.1355	0.892
Group1 ✻ Session9 ✻ Cue2	2 - 1 ✻ 10 - 1 ✻ B- - A-	-0.09893	0.6233	-1.3206	1.1228	864	-0.1587	0.874
Group1 ✻ Session10 ✻ Cue2	2 - 1 ✻ 11 - 1 ✻ B- - A-	0.21696	0.6233	-1.0047	1.4386	864	0.3481	0.728
Group1 ✻ Session11 ✻ Cue2	2 - 1 ✻ 12 - 1 ✻ B- - A-	0.26466	0.6233	-0.9570	1.4863	864	0.4246	0.671
Group1 ✻ Session12 ✻ Cue2	2 - 1 ✻ 13 - 1 ✻ B- - A-	-0.18099	0.6233	-1.4027	1.0407	864	-0.2904	0.772
Group1 ✻ Session13 ✻ Cue2	2 - 1 ✻ 14 - 1 ✻ B- - A-	-0.38928	0.6233	-1.6110	0.8324	864	-0.6245	0.532

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		df	t	p
				Lower	Upper			
Group1 ✻ Session14 ✻ Cue2	2 - 1 ✻ 15 - 1 ✻ B- - A-	0.02560	0.6233	-1.1961	1.2473	864	0.0411	0.967
Group1 ✻ Session15 ✻ Cue2	2 - 1 ✻ 16 - 1 ✻ B- - A-	0.50851	0.6233	-0.7132	1.7302	864	0.8158	0.415
Group1 ✻ Session16 ✻ Cue2	2 - 1 ✻ 17 - 1 ✻ B- - A-	-0.18121	0.6233	-1.4029	1.0405	864	-0.2907	0.771
Group1 ✻ Session17 ✻ Cue2	2 - 1 ✻ 18 - 1 ✻ B- - A-	0.36895	0.6233	-0.8527	1.5906	864	0.5919	0.554

Random Components

Groups	Name	SD	Variance	ICC
Rat	(Intercept)	0.000	0.000	0.00
Residual		0.661	0.437	

Note. Number of Obs: 972 , groups: Rat 18

Post Hoc Tests

Post Hoc Comparisons - Group ✻ Cue

Comparison										
Group	Cue		Group	Cue	Difference	SE	t	df	p	p_{holm}
2	A-	-	2	B-	-0.9290	0.0735	-12.646	848	< .001	< .001
2	A-	-	2	AB+	-1.4150	0.0735	-19.262	848	< .001	< .001
2	A-	-	1	B-	-0.7691	0.0735	-10.470	134	< .001	< .001
2	A-	-	1	AB+	-0.9518	0.0735	-12.956	134	< .001	< .001
2	AB+	-	2	B-	0.4860	0.0735	6.616	848	< .001	< .001
2	AB+	-	1	B-	0.6459	0.0735	8.792	134	< .001	< .001
1	B-	-	2	B-	-0.1598	0.0735	-2.176	134	0.031	0.094
1	A-	-	2	B-	-0.3026	0.0735	-4.119	134	< .001	< .001
1	A-	-	2	A-	0.6264	0.0735	8.527	134	< .001	< .001
1	A-	-	2	AB+	-0.7886	0.0735	-10.736	134	< .001	< .001
1	A-	-	1	B-	-0.1428	0.0735	-1.943	848	0.052	0.105
1	A-	-	1	AB+	-0.3254	0.0735	-4.430	848	< .001	< .001
1	AB+	-	2	B-	0.0228	0.0735	0.310	134	0.757	0.757
1	AB+	-	2	AB+	-0.4632	0.0735	-6.306	134	< .001	< .001
1	AB+	-	1	B-	0.1826	0.0735	2.486	848	0.013	0.052

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