

General Linear Model

Mauchly's Test of Sphericity^a

Measure: MovementTime1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon ^b Greenhouse-Geisser
Cursor	.763	6.943	5	.225	.854
Amp	.479	19.136	2	<.001	.657
Width	.488	18.646	2	<.001	.661
Cursor * Amp	.310	29.050	20	.089	.654
Cursor * Width	.484	17.995	20	.591	.819
Amp * Width	.328	28.343	9	<.001	.604
Cursor * Amp * Width	.002	139.141	77	<.001	.424

Mauchly's Test of Sphericity^a

Measure: MovementTime1

Within Subjects Effect	Epsilon ^b	
	Huynh-Feldt	Lower-bound
Cursor	.952	.333
Amp	.678	.500
Width	.682	.500
Cursor * Amp	.778	.167
Cursor * Width	1.000	.167
Amp * Width	.668	.250
Cursor * Amp * Width	.534	.083

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept

Within Subjects Design: Cursor + Amp + Width + Cursor * Amp + Cursor * Width + Amp * Width + Cursor * Amp * Width

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MovementTime1

Source		Type III Sum of Squares	df	Mean Square
Cursor	Sphericity Assumed	.712	3	.237
	Greenhouse-Geisser	.712	2.563	.278
	Huynh-Feldt	.712	2.855	.249
	Lower-bound	.712	1.000	.712
Error(Cursor)	Sphericity Assumed	.531	81	.007
	Greenhouse-Geisser	.531	69.211	.008
	Huynh-Feldt	.531	77.093	.007
	Lower-bound	.531	27.000	.020
Amp	Sphericity Assumed	8.349	2	4.175
	Greenhouse-Geisser	8.349	1.315	6.350
	Huynh-Feldt	8.349	1.356	6.159
	Lower-bound	8.349	1.000	8.349
Error(Amp)	Sphericity Assumed	.667	54	.012
	Greenhouse-Geisser	.667	35.504	.019
	Huynh-Feldt	.667	36.601	.018
	Lower-bound	.667	27.000	.025
Width	Sphericity Assumed	3.746	2	1.873
	Greenhouse-Geisser	3.746	1.323	2.832
	Huynh-Feldt	3.746	1.365	2.745
	Lower-bound	3.746	1.000	3.746
Error(Width)	Sphericity Assumed	.433	54	.008
	Greenhouse-Geisser	.433	35.718	.012
	Huynh-Feldt	.433	36.846	.012
	Lower-bound	.433	27.000	.016
Cursor * Amp	Sphericity Assumed	.706	6	.118
	Greenhouse-Geisser	.706	3.921	.180
	Huynh-Feldt	.706	4.671	.151
	Lower-bound	.706	1.000	.706
Error(Cursor*Amp)	Sphericity Assumed	.519	162	.003
	Greenhouse-Geisser	.519	105.871	.005
	Huynh-Feldt	.519	126.106	.004
	Lower-bound	.519	27.000	.019
Cursor * Width	Sphericity Assumed	.102	6	.017
	Greenhouse-Geisser	.102	4.912	.021
	Huynh-Feldt	.102	6.000	.017
	Lower-bound	.102	1.000	.102
Error(Cursor*Width)	Sphericity Assumed	.394	162	.002
	Greenhouse-Geisser	.394	132.628	.003
	Huynh-Feldt	.394	162.000	.002
	Lower-bound	.394	27.000	.015

Tests of Within-Subjects Effects

Measure: MovementTime1

Source		F	Sig.	Partial Eta Squared
Cursor	Sphericity Assumed	36.254	<.001	.573
	Greenhouse-Geisser	36.254	<.001	.573
	Huynh-Feldt	36.254	<.001	.573
	Lower-bound	36.254	<.001	.573
Error(Cursor)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
Amp	Sphericity Assumed	337.898	<.001	.926
	Greenhouse-Geisser	337.898	<.001	.926
	Huynh-Feldt	337.898	<.001	.926
	Lower-bound	337.898	<.001	.926
Error(Amp)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
Width	Sphericity Assumed	233.546	<.001	.896
	Greenhouse-Geisser	233.546	<.001	.896
	Huynh-Feldt	233.546	<.001	.896
	Lower-bound	233.546	<.001	.896
Error(Width)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
Cursor * Amp	Sphericity Assumed	36.750	<.001	.576
	Greenhouse-Geisser	36.750	<.001	.576
	Huynh-Feldt	36.750	<.001	.576
	Lower-bound	36.750	<.001	.576
Error(Cursor*Amp)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
Cursor * Width	Sphericity Assumed	7.007	<.001	.206
	Greenhouse-Geisser	7.007	<.001	.206
	Huynh-Feldt	7.007	<.001	.206
	Lower-bound	7.007	.013	.206
Error(Cursor*Width)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			

Tests of Within-Subjects Effects

Measure: MovementTime1

Source		Type III Sum of Squares	df	Mean Square
Amp * Width	Sphericity Assumed	.089	4	.022
	Greenhouse-Geisser	.089	2.416	.037
	Huynh-Feldt	.089	2.670	.033
	Lower-bound	.089	1.000	.089
Error(Amp*Width)	Sphericity Assumed	.283	108	.003
	Greenhouse-Geisser	.283	65.234	.004
	Huynh-Feldt	.283	72.102	.004
	Lower-bound	.283	27.000	.010
Cursor * Amp * Width	Sphericity Assumed	.047	12	.004
	Greenhouse-Geisser	.047	5.089	.009
	Huynh-Feldt	.047	6.412	.007
	Lower-bound	.047	1.000	.047
Error(Cursor*Amp*Width)	Sphericity Assumed	.876	324	.003
	Greenhouse-Geisser	.876	137.407	.006
	Huynh-Feldt	.876	173.129	.005
	Lower-bound	.876	27.000	.032

Tests of Within-Subjects Effects

Measure: MovementTime1

Source		F	Sig.	Partial Eta Squared
Amp * Width	Sphericity Assumed	8.518	<.001	.240
	Greenhouse-Geisser	8.518	<.001	.240
	Huynh-Feldt	8.518	<.001	.240
	Lower-bound	8.518	.007	.240
Error(Amp*Width)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
Cursor * Amp * Width	Sphericity Assumed	1.454	.140	.051
	Greenhouse-Geisser	1.454	.208	.051
	Huynh-Feldt	1.454	.192	.051
	Lower-bound	1.454	.238	.051
Error(Cursor*Amp*Width)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			

Estimated Marginal Means

2. Cursor

Estimates

Measure: MovementTime1

Cursor	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	.829	.013	.802	.856
2	.798	.012	.774	.821
3	.771	.011	.749	.794
4	.761	.015	.731	.790

Pairwise Comparisons

Measure: MovementTime1

(I) Cursor	(J) Cursor	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
					Lower Bound	Upper Bound
1	2	.032 [*]	.006	<.001	.014	.050
	3	.058 [*]	.007	<.001	.038	.078
	4	.069 [*]	.008	<.001	.047	.090
2	1	-.032 [*]	.006	<.001	-.050	-.014
	3	.026 [*]	.006	<.001	.010	.043
	4	.037 [*]	.009	.001	.012	.062
3	1	-.058 [*]	.007	<.001	-.078	-.038
	2	-.026 [*]	.006	<.001	-.043	-.010
	4	.011	.008	1.000	-.011	.033
4	1	-.069 [*]	.008	<.001	-.090	-.047
	2	-.037 [*]	.009	.001	-.062	-.012
	3	-.011	.008	1.000	-.033	.011

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

3. Amp

Estimates

Measure: MovementTime1

Amp	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	.666	.011	.643	.690
2	.820	.013	.795	.846
3	.883	.014	.853	.912

Pairwise Comparisons

Measure: MovementTime1

(I) Amp	(J) Amp	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
					Lower Bound	Upper Bound
1	2	-.154 [*]	.008	<.001	-.174	-.134
	3	-.217 [*]	.011	<.001	-.245	-.188
2	1	.154 [*]	.008	<.001	.134	.174
	3	-.062 [*]	.006	<.001	-.077	-.047
3	1	.217 [*]	.011	<.001	.188	.245
	2	.062 [*]	.006	<.001	.047	.077

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

4. Width

Estimates

Measure: MovementTime1

Width	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	.862	.014	.833	.890
2	.795	.012	.771	.818
3	.713	.012	.688	.737

Pairwise Comparisons

Measure: MovementTime1

(I) Width	(J) Width	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
					Lower Bound	Upper Bound
1	2	.067 [*]	.006	<.001	.052	.082
	3	.149 [*]	.009	<.001	.126	.172
2	1	-.067 [*]	.006	<.001	-.082	-.052
	3	.082 [*]	.005	<.001	.069	.095
3	1	-.149 [*]	.009	<.001	-.172	-.126
	2	-.082 [*]	.005	<.001	-.095	-.069

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

5. Cursor * Amp

Pairwise Comparisons

Measure: MovementTime1

Amp	(I) Cursor	(J) Cursor	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for ...
						Lower Bound
1	1	2	.004	.008	1.000	-.018
		3	-.014	.011	1.000	-.045
		4	-.015	.011	1.000	-.046
	2	1	-.004	.008	1.000	-.025
		3	-.018	.008	.242	-.042
		4	-.018	.011	.553	-.048
	3	1	.014	.011	1.000	-.016
		2	.018	.008	.242	-.006
		4	.000	.010	1.000	-.030
	4	1	.015	.011	1.000	-.016
		2	.018	.011	.553	-.012
		3	.000	.010	1.000	-.029
2	1	2	.035 [*]	.009	.003	.010
		3	.068 [*]	.009	<.001	.041
		4	.075 [*]	.010	<.001	.045
	2	1	-.035 [*]	.009	.003	-.060
		3	.032 [*]	.009	.006	.008
		4	.039 [*]	.010	.004	.010
	3	1	-.068 [*]	.009	<.001	-.094
		2	-.032 [*]	.009	.006	-.057
		4	.007	.009	1.000	-.017
	4	1	-.075 [*]	.010	<.001	-.104
		2	-.039 [*]	.010	.004	-.068
		3	-.007	.009	1.000	-.031
3	1	2	.056 [*]	.010	<.001	.027
		3	.121 [*]	.010	<.001	.092
		4	.147 [*]	.011	<.001	.116
	2	1	-.056 [*]	.010	<.001	-.085
		3	.065 [*]	.010	<.001	.036
		4	.090 [*]	.014	<.001	.050
	3	1	-.121 [*]	.010	<.001	-.151
		2	-.065 [*]	.010	<.001	-.094
		4	.026	.010	.128	-.004
	4	1	-.147 [*]	.011	<.001	-.178
		2	-.090 [*]	.014	<.001	-.131
		3	-.026	.010	.128	-.055

Pairwise Comparisons

Measure: MovementTime1

			95% Confidence Interval for ^b ...
Amp	(I) Cursor	(J) Cursor	Upper Bound
1	1	2	.025
		3	.016
		4	.016
	2	1	.018
		3	.006
		4	.012
	3	1	.045
		2	.042
		4	.029
	4	1	.046
		2	.048
		3	.030
2	1	2	.060
		3	.094
		4	.104
	2	1	-.010
		3	.057
		4	.068
	3	1	-.041
		2	-.008
		4	.031
	4	1	-.045
		2	-.010
		3	.017
3	1	2	.085
		3	.151
		4	.178
	2	1	-.027
		3	.094
		4	.131
	3	1	-.092
		2	-.036
		4	.055
	4	1	-.116
		2	-.050
		3	.004

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

7. Cursor * Width

Pairwise Comparisons

Measure: MovementTime1

Width	(I) Cursor	(J) Cursor	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for ... Lower Bound
1	1	2	.050 [*]	.010	<.001	.021
		3	.083 [*]	.009	<.001	.057
		4	.103 [*]	.012	<.001	.071
	2	1	-.050 [*]	.010	<.001	-.078
		3	.034 [*]	.008	.001	.012
		4	.054 [*]	.011	<.001	.023
	3	1	-.083 [*]	.009	<.001	-.110
		2	-.034 [*]	.008	.001	-.056
		4	.020	.010	.296	-.008
	4	1	-.103 [*]	.012	<.001	-.136
		2	-.054 [*]	.011	<.001	-.085
		3	-.020	.010	.296	-.047
2	1	2	.031 [*]	.009	.011	.006
		3	.054 [*]	.008	<.001	.031
		4	.068 [*]	.008	<.001	.044
	2	1	-.031 [*]	.009	.011	-.057
		3	.022 [*]	.008	.047	.000
		4	.036 [*]	.011	.022	.004
	3	1	-.054 [*]	.008	<.001	-.077
		2	-.022 [*]	.008	.047	-.044
		4	.014	.008	.486	-.008
	4	1	-.068 [*]	.008	<.001	-.091
		2	-.036 [*]	.011	.022	-.069
		3	-.014	.008	.486	-.036
3	1	2	.014	.009	.775	-.012
		3	.037 [*]	.010	.006	.008
		4	.036 [*]	.009	.004	.009
	2	1	-.014	.009	.775	-.040
		3	.023	.009	.115	-.003
		4	.021	.010	.278	-.008
	3	1	-.037 [*]	.010	.006	-.066
		2	-.023	.009	.115	-.049
		4	-.002	.011	1.000	-.032

Pairwise Comparisons

Measure: MovementTime1

			95% Confidence Interval for ^b ...
Width	(I) Cursor	(J) Cursor	Upper Bound
1	1	2	.078
		3	.110
		4	.136
	2	1	-.021
		3	.056
		4	.085
	3	1	-.057
		2	-.012
		4	.047
	4	1	-.071
		2	-.023
		3	.008
2	1	2	.057
		3	.077
		4	.091
	2	1	-.006
		3	.044
		4	.069
	3	1	-.031
		2	.000
		4	.036
	4	1	-.044
		2	-.004
		3	.008
3	1	2	.040
		3	.066
		4	.062
	2	1	.012
		3	.049
		4	.050
	3	1	-.008
		2	.003
		4	.029

Pairwise Comparisons

Measure: MovementTime1

Width	(I) Cursor	(J) Cursor	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for ^b ... Lower Bound
4	1	1	-.036 [*]	.009	.004	-.062
		2	-.021	.010	.278	-.050
		3	.002	.011	1.000	-.029

Pairwise Comparisons

Measure: MovementTime1

Width	(I) Cursor	(J) Cursor	95% Confidence Interval for ^b ... Upper Bound
4	1	1	-.009
		2	.008
		3	.032

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

9. Amp * Width

Pairwise Comparisons

Measure: MovementTime1

Width	(I) Amp	(J) Amp	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b Lower Bound Upper Bound	
1	1	2	-.139 [*]	.010	<.001	-.163	-.114
		3	-.190 [*]	.013	<.001	-.223	-.156
	2	1	.139 [*]	.010	<.001	.114	.163
		3	-.051 [*]	.009	<.001	-.073	-.029
	3	1	.190 [*]	.013	<.001	.156	.223
		2	.051 [*]	.009	<.001	.029	.073
2	1	2	-.164 [*]	.009	<.001	-.188	-.140
		3	-.217 [*]	.012	<.001	-.249	-.186
	2	1	.164 [*]	.009	<.001	.140	.188
		3	-.053 [*]	.006	<.001	-.070	-.037
	3	1	.217 [*]	.012	<.001	.186	.249
		2	.053 [*]	.006	<.001	.037	.070
3	1	2	-.160 [*]	.009	<.001	-.184	-.137
		3	-.243 [*]	.013	<.001	-.277	-.209
	2	1	.160 [*]	.009	<.001	.137	.184
		3	-.083 [*]	.008	<.001	-.102	-.063

Pairwise Comparisons

Measure: MovementTime1

Width	(I) Amp	(J) Amp	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
						Lower Bound	Upper Bound
3	1	1	.243 [*]	.013	<.001	.209	.277
		2	.083 [*]	.008	<.001	.063	.102

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Profile Plots





