

**ADDITIONAL INFORMATION FOR:**

**PURRING WHEEL: THERMAL AND VIBROTACTILE NOTIFICATIONS ON THE STEERING WHEEL**

This document provides the results of the statistical analysis of the paper:

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**1 EXPERIMENT 1: DIFFERENT LEVELS OF URGENCY**

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**1.1 Subjective Urgency Rating of Part 1**

Table 1. Subjective Urgency Rating - Within Subjects Effects

	Sphericity Correction	Sum of Squares	df	Mean Square	F	p
Urgency	None	2297.859	2.000	1148.930	12.555	< .001
Residual	None	1830.174	20.000	91.509		
Modality <sup>1</sup>	Greenhouse-Geisser	62386.858	1.913	32611.076	36.001	< .001
Residual	Greenhouse-Geisser	17329.345	19.131	905.846		
Urgency * Modality <sup>1</sup>	Greenhouse-Geisser	2137.202	4.198	509.141	3.649	0.011
Residual	Greenhouse-Geisser	5857.506	41.977	139.542		

Table 2. Subjective Urgency Rating - Post Hoc Comparisons - Urgency

		Mean Difference	SE	t	<i>p</i> <sub>bonf</sub>
low	medium	-4.821	1.243	-3.879	0.009
	urgent	-9.136	2.274	-4.018	0.007
medium	urgent	-4.315	1.808	-2.387	0.114

<sup>1</sup>Mauchly's test of sphericity indicates that the assumption of sphericity is violated; Greenhouse-Geisser corrections were used

Table 3. Subjective Urgency Rating - Post Hoc Comparisons - Modality

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>
BimodalCold	BimodalWarm	-5.758	1.791	-3.215	0.093
	ThermalCold	39.747	4.691	8.473	< .001
	ThermalWarm	33.389	5.932	5.629	0.002
	Vibration	-2.444	2.391	-1.022	1.000
BimodalWarm	ThermalCold	45.505	5.910	7.700	< .001
	ThermalWarm	39.146	6.038	6.483	< .001
	Vibration	3.313	2.605	1.272	1.000
ThermalCold	ThermalWarm	-6.359	5.577	-1.140	1.000
	Vibration	-42.192	5.583	-7.558	< .001
ThermalWarm	Vibration	-35.833	7.484	-4.788	0.007

Table 4. Subjective Urgency Rating - Post Hoc Comparisons - Urgency \* Modality Part 1

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>	
low,BimodalCold	low,BimodalWarm	-4.061	5.927	-0.685	1.000	
	low,ThermalCold	46.439	5.927	7.835	< .001	
	low,ThermalWarm	43.576	5.927	7.352	< .001	
	low,Vibration	-2.303	5.927	-0.389	1.000	
	medium,BimodalCold	-0.788	3.739	-0.211	1.000	
	medium,BimodalWarm	-7.576	5.983	-1.266	1.000	
	medium,ThermalCold	36.364	5.983	6.078	< .001	
	medium,ThermalWarm	34.424	5.983	5.754	< .001	
	medium,Vibration	-2.879	5.983	-0.481	1.000	
	urgent,BimodalCold	-1.939	3.739	-0.519	1.000	
	urgent,BimodalWarm	-8.364	5.983	-1.398	1.000	
	urgent,ThermalCold	33.712	5.983	5.635	< .001	
	urgent,ThermalWarm	19.439	5.983	3.249	0.187	
	urgent,Vibration	-4.879	5.983	-0.815	1.000	
low,BimodalWarm	low,ThermalCold	50.500	5.927	8.520	< .001	
	low,ThermalWarm	47.636	5.927	8.037	< .001	
	low,Vibration	1.758	5.927	0.297	1.000	
	medium,BimodalCold	3.273	5.983	0.547	1.000	
	medium,BimodalWarm	-3.515	3.739	-0.940	1.000	
	medium,ThermalCold	40.424	5.983	6.756	< .001	
	medium,ThermalWarm	38.485	5.983	6.432	< .001	
	medium,Vibration	1.182	5.983	0.198	1.000	
	urgent,BimodalCold	2.121	5.983	0.355	1.000	
	urgent,BimodalWarm	-4.303	3.739	-1.151	1.000	
	urgent,ThermalCold	37.773	5.983	6.313	< .001	
	urgent,ThermalWarm	23.500	5.983	3.928	0.021	
	urgent,Vibration	-0.818	5.983	-0.137	1.000	
	low,ThermalCold	low,ThermalWarm	-2.864	5.927	-0.483	1.000
low,Vibration		-48.742	5.927	-8.224	< .001	
medium,BimodalCold		-47.227	5.983	-7.894	< .001	
medium,BimodalWarm		-54.015	5.983	-9.028	< .001	
medium,ThermalCold		-10.076	3.739	-2.695	0.868	
medium,ThermalWarm		-12.015	5.983	-2.008	1.000	
medium,Vibration		-49.318	5.983	-8.243	< .001	
urgent,BimodalCold		-48.379	5.983	-8.086	< .001	
urgent,BimodalWarm		-54.803	5.983	-9.160	< .001	
urgent,ThermalCold		-12.727	3.739	-3.404	0.101	
urgent,ThermalWarm		-27.000	5.983	-4.513	0.003	
urgent,Vibration		-51.318	5.983	-8.577	< .001	
low,ThermalWarm		low,Vibration	-45.879	5.927	-7.740	< .001
		medium,BimodalCold	-44.364	5.983	-7.415	< .001
	medium,BimodalWarm	-51.152	5.983	-8.549	< .001	
	medium,ThermalCold	-7.212	5.983	-1.205	1.000	
	medium,ThermalWarm	-9.152	3.739	-2.448	1.000	
	medium,Vibration	-46.455	5.983	-7.764	< .001	
	urgent,BimodalCold	-45.515	5.983	-7.607	< .001	
	urgent,BimodalWarm	-51.939	5.983	-8.681	< .001	
	urgent,ThermalCold	-9.864	5.983	-1.649	1.000	
	urgent,ThermalWarm <sup>3</sup>	-24.136	3.739	-6.456	< .001	
	urgent,Vibration	-48.455	5.983	-8.099	< .001	

Table 5. Subjective Urgency Rating - Post Hoc Comparisons - Urgency \* Modality Part 2

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>	
low,Vibration	medium,BimodalCold	1.515	5.983	0.253	1.000	
	medium,BimodalWarm	-5.273	5.983	-0.881	1.000	
	medium,ThermalCold	38.667	5.983	6.463	< .001	
	medium,ThermalWarm	36.727	5.983	6.139	< .001	
	medium,Vibration	-0.576	3.739	-0.154	1.000	
	urgent,BimodalCold	0.364	5.983	0.061	1.000	
	urgent,BimodalWarm	-6.061	5.983	-1.013	1.000	
	urgent,ThermalCold	36.015	5.983	6.020	< .001	
	urgent,ThermalWarm	21.742	5.983	3.634	0.055	
	urgent,Vibration	-2.576	3.739	-0.689	1.000	
medium,BimodalCold	medium,BimodalWarm	-6.788	5.927	-1.145	1.000	
	medium,ThermalCold	37.152	5.927	6.268	< .001	
	medium,ThermalWarm	35.212	5.927	5.941	< .001	
	medium,Vibration	-2.091	5.927	-0.353	1.000	
	urgent,BimodalCold	-1.152	3.739	-0.308	1.000	
	urgent,BimodalWarm	-7.576	5.983	-1.266	1.000	
	urgent,ThermalCold	34.500	5.983	5.766	< .001	
	urgent,ThermalWarm	20.227	5.983	3.381	0.124	
	urgent,Vibration	-4.091	5.983	-0.684	1.000	
	medium,BimodalWarm	medium,ThermalCold	43.939	5.927	7.413	< .001
medium,ThermalWarm		42.000	5.927	7.086	< .001	
medium,Vibration		4.697	5.927	0.792	1.000	
urgent,BimodalCold		5.636	5.983	0.942	1.000	
urgent,BimodalWarm		-0.788	3.739	-0.211	1.000	
urgent,ThermalCold		41.288	5.983	6.901	< .001	
urgent,ThermalWarm		27.015	5.983	4.515	0.003	
urgent,Vibration		2.697	5.983	0.451	1.000	
medium,ThermalCold		medium,ThermalWarm	-1.939	5.927	-0.327	1.000
		medium,Vibration	-39.242	5.927	-6.621	< .001
	urgent,BimodalCold	-38.303	5.983	-6.402	< .001	
	urgent,BimodalWarm	-44.727	5.983	-7.476	< .001	
	urgent,ThermalCold	-2.652	3.739	-0.709	1.000	
	urgent,ThermalWarm	-16.924	5.983	-2.829	0.639	
	urgent,Vibration	-41.242	5.983	-6.893	< .001	
	medium,ThermalWarm	medium,Vibration	-37.303	5.927	-6.294	< .001
		urgent,BimodalCold	-36.364	5.983	-6.078	< .001
		urgent,BimodalWarm	-42.788	5.983	-7.152	< .001
urgent,ThermalCold		-0.712	5.983	-0.119	1.000	
urgent,ThermalWarm		-14.985	3.739	-4.008	0.012	
urgent,Vibration		-39.303	5.983	-6.569	< .001	
medium,Vibration		urgent,BimodalCold	0.939	5.983	0.157	1.000
		urgent,BimodalWarm	-5.485	5.983	-0.917	1.000
		urgent,ThermalCold	36.591	5.983	6.116	< .001
		urgent,ThermalWarm	22.318	5.983	3.730	0.040
	urgent,Vibration	-2.000	3.739	-0.535	1.000	
	urgent,BimodalCold	urgent,BimodalWarm	-6.424	5.927	-1.084	1.000
		urgent,ThermalCold	35.652	5.927	6.015	< .001
		urgent,ThermalWarm	21.379	5.927	3.607	0.062
		urgent,Vibration <sup>4</sup>	-2.939	5.927	-0.496	1.000
	urgent,BimodalWarm	urgent,ThermalCold	42.076	5.927	7.099	< .001
urgent,ThermalWarm		27.803	5.927	4.691	0.001	
urgent,Vibration		3.485	5.927	0.588	1.000	
urgent,ThermalCold	urgent,ThermalWarm	-14.273	5.927	-2.408	1.000	
	urgent,Vibration	-38.591	5.927	-6.511	< .001	
urgent,ThermalWarm	urgent,Vibration	-24.318	5.927	-4.103	0.012	

## 1.2 Subjective Urgency Rating of Part 1: Missed Stimuli (Rated 0)

Table 6. Missed Stimuli - Within Subjects Effects

	Sphericity Correction	Sum of Squares	df	Mean Square	F	p
Urgency	None	4.022	2.000	2.011	13.206	< .001
Residual	None	5.178	34.000	0.152		
Modality	None	62.911	4.000	15.728	20.664	< .001
Residual	None	51.756	68.000	0.761		
Urgency * Modality	None	7.867	8.000	0.983	6.006	< .001
Residual	None	22.267	136.000	0.164		

Table 7. Missed Stimuli - Post Hoc Comparisons - Urgency

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>
Low	Medium	0.078	0.059	1.327	0.606
	Urgent	0.289	0.069	4.185	0.002
Medium	Urgent	0.211	0.044	4.776	< .001

Table 8. Missed Stimuli - Post Hoc Comparisons - Modality

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>
BimodalCold	BimodalWarm	-0.019	0.019	-1.000	1.000
	ThermalCold	-0.963	0.219	-4.402	0.004
	ThermalWarm	-1.019	0.199	-5.121	< .001
	Vibration	0.000	NaN	NaN	NaN
BimodalWarm	ThermalCold	-0.944	0.219	-4.306	0.004
	ThermalWarm	-1.000	0.196	-5.097	< .001
	Vibration	0.019	0.019	1.000	1.000
ThermalCold	ThermalWarm	-0.056	0.141	-0.395	1.000
	Vibration	0.963	0.219	4.402	0.004
ThermalWarm	Vibration	1.019	0.199	5.121	< .001

Table 9. Missed Stimuli - Post Hoc Comparisons - Urgency \* Modality Part 1

		Mean Difference	SE	t	P <sub>bonf</sub>	
Low,BimodalCold	Low,BimodalWarm	-0.056	0.201	-0.277	1.000	
	Low,ThermalCold	-1.278	0.201	-6.364	< .001	
	Low,ThermalWarm	-1.278	0.201	-6.364	< .001	
	Low,Vibration	-3.608e-16	0.201	-1.797e-15	1.000	
	Medium,BimodalCold	4.302e-16	0.134	3.212e-15	1.000	
	Medium,BimodalWarm	-6.384e-16	0.200	-3.189e-15	1.000	
	Medium,ThermalCold	-0.889	0.200	-4.441	0.002	
	Medium,ThermalWarm	-1.333	0.200	-6.661	< .001	
	Medium,Vibration	-6.106e-16	0.200	-3.051e-15	1.000	
	Urgent,BimodalCold	3.400e-16	0.134	2.539e-15	1.000	
	Urgent,BimodalWarm	6.939e-18	0.200	3.467e-17	1.000	
	Urgent,ThermalCold	-0.722	0.200	-3.608	0.046	
	Urgent,ThermalWarm	-0.444	0.200	-2.220	1.000	
	Urgent,Vibration	1.742e-15	0.200	8.701e-15	1.000	
Low,BimodalWarm	Low,ThermalCold	-1.222	0.201	-6.087	< .001	
	Low,ThermalWarm	-1.222	0.201	-6.087	< .001	
	Low,Vibration	0.056	0.201	0.277	1.000	
	Medium,BimodalCold	0.056	0.200	0.278	1.000	
	Medium,BimodalWarm	0.056	0.134	0.415	1.000	
	Medium,ThermalCold	-0.833	0.200	-4.163	0.006	
	Medium,ThermalWarm	-1.278	0.200	-6.384	< .001	
	Medium,Vibration	0.056	0.200	0.278	1.000	
	Urgent,BimodalCold	0.056	0.200	0.278	1.000	
	Urgent,BimodalWarm	0.056	0.134	0.415	1.000	
	Urgent,ThermalCold	-0.667	0.200	-3.331	0.119	
	Urgent,ThermalWarm	-0.389	0.200	-1.943	1.000	
	Urgent,Vibration	0.056	0.200	0.278	1.000	
	Low,ThermalCold	Low,ThermalWarm	2.207e-15	0.201	1.099e-14	1.000
Low,Vibration		1.278	0.201	6.364	< .001	
Medium,BimodalCold		1.278	0.200	6.384	< .001	
Medium,BimodalWarm		1.278	0.200	6.384	< .001	
Medium,ThermalCold		0.389	0.134	2.904	0.439	
Medium,ThermalWarm		-0.056	0.200	-0.278	1.000	
Medium,Vibration		1.278	0.200	6.384	< .001	
Urgent,BimodalCold		1.278	0.200	6.384	< .001	
Urgent,BimodalWarm		1.278	0.200	6.384	< .001	
Urgent,ThermalCold		0.556	0.134	4.148	0.006	
Urgent,ThermalWarm		0.833	0.200	4.163	0.006	
Urgent,Vibration		1.278	0.200	6.384	< .001	
Low,ThermalWarm		Low,Vibration	1.278	0.201	6.364	< .001
		Medium,BimodalCold	1.278	0.200	6.384	< .001
	Medium,BimodalWarm	1.278	0.200	6.384	< .001	
	Medium,ThermalCold	0.389	0.200	1.943	1.000	
	Medium,ThermalWarm	-0.056	0.134	-0.415	1.000	
	Medium,Vibration	1.278	0.200	6.384	< .001	
	Urgent,BimodalCold	1.278	0.200	6.384	< .001	
	Urgent,BimodalWarm	1.278	0.200	6.384	< .001	
	Urgent,ThermalCold	0.556	0.200	2.776	0.665	
	Urgent,ThermalWarm	0.833	0.134	6.222	< .001	
	Urgent,Vibration	1.278	0.200	6.384	< .001	

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Table 10. Missed Stimuli - Post Hoc Comparisons - Urgency \* Modality Part 2

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>	
Low,Vibration	Medium,BimodalCold	7.910e-16	0.200	3.952e-15	1.000	
	Medium,BimodalWarm	-2.776e-16	0.200	-1.387e-15	1.000	
	Medium,ThermalCold	-0.889	0.200	-4.441	0.002	
	Medium,ThermalWarm	-1.333	0.200	-6.661	< .001	
	Medium,Vibration	-2.498e-16	0.134	-1.865e-15	1.000	
	Urgent,BimodalCold	7.008e-16	0.200	3.501e-15	1.000	
	Urgent,BimodalWarm	3.678e-16	0.200	1.837e-15	1.000	
	Urgent,ThermalCold	-0.722	0.200	-3.608	0.046	
	Urgent,ThermalWarm	-0.444	0.200	-2.220	1.000	
	Urgent,Vibration	2.102e-15	0.134	1.570e-14	1.000	
Medium,BimodalCold	Medium,BimodalWarm	-1.069e-15	0.201	-5.322e-15	1.000	
	Medium,ThermalCold	-0.889	0.201	-4.427	0.002	
	Medium,ThermalWarm	-1.333	0.201	-6.640	< .001	
	Medium,Vibration	-1.041e-15	0.201	-5.184e-15	1.000	
	Urgent,BimodalCold	-9.021e-17	0.134	-6.735e-16	1.000	
	Urgent,BimodalWarm	-4.233e-16	0.200	-2.115e-15	1.000	
	Urgent,ThermalCold	-0.722	0.200	-3.608	0.046	
	Urgent,ThermalWarm	-0.444	0.200	-2.220	1.000	
	Urgent,Vibration	1.311e-15	0.200	6.552e-15	1.000	
	Medium,BimodalWarm	Medium,ThermalCold	-0.889	0.201	-4.427	0.002
Medium,ThermalWarm		-1.333	0.201	-6.640	< .001	
Medium,Vibration		2.776e-17	0.201	1.382e-16	1.000	
Urgent,BimodalCold		9.784e-16	0.200	4.888e-15	1.000	
Urgent,BimodalWarm		6.453e-16	0.134	4.818e-15	1.000	
Urgent,ThermalCold		-0.722	0.200	-3.608	0.046	
Urgent,ThermalWarm		-0.444	0.200	-2.220	1.000	
Urgent,Vibration		2.380e-15	0.200	1.189e-14	1.000	
Medium,ThermalCold		Medium,ThermalWarm	-0.444	0.201	-2.213	1.000
		Medium,Vibration	0.889	0.201	4.427	0.002
	Urgent,BimodalCold	0.889	0.200	4.441	0.002	
	Urgent,BimodalWarm	0.889	0.200	4.441	0.002	
	Urgent,ThermalCold	0.167	0.134	1.244	1.000	
	Urgent,ThermalWarm	0.444	0.200	2.220	1.000	
	Urgent,Vibration	0.889	0.200	4.441	0.002	
	Medium,ThermalWarm	Medium,Vibration	1.333	0.201	6.640	< .001
		Urgent,BimodalCold	1.333	0.200	6.661	< .001
		Urgent,BimodalWarm	1.333	0.200	6.661	< .001
Urgent,ThermalCold		0.611	0.200	3.053	0.289	
Urgent,ThermalWarm		0.889	0.134	6.637	< .001	
Urgent,Vibration		1.333	0.200	6.661	< .001	
Medium,Vibration	Urgent,BimodalCold	9.506e-16	0.200	4.749e-15	1.000	
	Urgent,BimodalWarm	6.176e-16	0.200	3.085e-15	1.000	
	Urgent,ThermalCold	-0.722	0.200	-3.608	0.046	
	Urgent,ThermalWarm	-0.444	0.200	-2.220	1.000	
	Urgent,Vibration	2.352e-15	0.134	1.756e-14	1.000	
Urgent,BimodalCold	Urgent,BimodalWarm	-3.331e-16	0.201	-1.659e-15	1.000	
	Urgent,ThermalCold	-0.722	0.201	-3.597	0.048	
	Urgent,ThermalWarm	-0.444	0.201	-2.213	1.000	
	Urgent,Vibration <sup>7</sup>	1.402e-15	0.201	6.981e-15	1.000	
Urgent,BimodalWarm	Urgent,ThermalCold	-0.722	0.201	-3.597	0.048	
	Urgent,ThermalWarm	-0.444	0.201	-2.213	1.000	
	Urgent,Vibration	1.735e-15	0.201	8.639e-15	1.000	
Urgent,ThermalCold	Urgent,ThermalWarm	0.278	0.201	1.383	1.000	
	Urgent,Vibration	0.722	0.201	3.597	0.048	
Urgent,ThermalWarm	Urgent,Vibration	0.444	0.201	2.213	1.000	

### 1.3 Urgency Identification of Part 2

Table 11. Urgency Identification - Within Subjects Effects

	Sphericity Correction	Sum of Squares	df	Mean Square	F	p
Urgency	None	4.230	2.000	2.115	2.482	0.099
Residual	None	28.970	34.000	0.852		
Modality <sup>1</sup>	Greenhouse-Geisser	105.237	2.043	51.519	21.409	< .001
Residual	Greenhouse-Geisser	83.563	34.725	2.406		
Urgency * Modality <sup>1</sup>	Greenhouse-Geisser	18.474	3.985	4.636	3.910	0.007
Residual	Greenhouse-Geisser	80.326	67.737	1.186		

Table 12. Urgency Identification - Post Hoc Comparisons - Modality

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>
bimodalCold	bimodalWarm	0.074	0.131	0.566	1.000
	thermalCold	1.241	0.254	4.886	0.001
	thermalWarm	1.463	0.260	5.625	< .001
	vibration	0.204	0.135	1.508	1.000
bimodalWarm	thermalCold	1.167	0.232	5.024	0.001
	thermalWarm	1.389	0.240	5.789	< .001
	vibration	0.130	0.124	1.046	1.000
thermalCold	thermalWarm	0.222	0.164	1.356	1.000
	vibration	-1.037	0.253	-4.105	0.007
thermalWarm	vibration	-1.259	0.265	-4.755	0.002



Table 13. Urgency Identification - Post Hoc Comparisons - Urgency \* Modality Part 1

		Mean Difference	SE	t	P <sub>bonf</sub>	
low,bimodalCold	low,bimodalWarm	0.333	0.299	1.116	1.000	
	low,thermalCold	0.778	0.299	2.603	1.000	
	low,thermalWarm	1.278	0.299	4.277	0.003	
	low,vibration	0.333	0.299	1.116	1.000	
	medium,bimodalCold	0.111	0.267	0.416	1.000	
	medium,bimodalWarm	0.222	0.308	0.721	1.000	
	medium,thermalCold	1.111	0.308	3.604	0.042	
	medium,thermalWarm	1.333	0.308	4.324	0.003	
	medium,vibration	0.222	0.308	0.721	1.000	
	urgent,bimodalCold	-0.444	0.267	-1.663	1.000	
	urgent,bimodalWarm	-0.667	0.308	-2.162	1.000	
	urgent,thermalCold	1.500	0.308	4.865	< .001	
	urgent,thermalWarm	1.444	0.308	4.685	< .001	
	urgent,vibration	-0.278	0.308	-0.901	1.000	
low,bimodalWarm	low,thermalCold	0.444	0.299	1.488	1.000	
	low,thermalWarm	0.944	0.299	3.161	0.194	
	low,vibration	-3.761e-15	0.299	-1.259e-14	1.000	
	medium,bimodalCold	-0.222	0.308	-0.721	1.000	
	medium,bimodalWarm	-0.111	0.267	-0.416	1.000	
	medium,thermalCold	0.778	0.308	2.522	1.000	
	medium,thermalWarm	1.000	0.308	3.243	0.147	
	medium,vibration	-0.111	0.308	-0.360	1.000	
	urgent,bimodalCold	-0.778	0.308	-2.522	1.000	
	urgent,bimodalWarm	-1.000	0.267	-3.741	0.026	
	urgent,thermalCold	1.167	0.308	3.784	0.022	
	urgent,thermalWarm	1.111	0.308	3.604	0.042	
	urgent,vibration	-0.611	0.308	-1.982	1.000	
	low,thermalCold	low,thermalWarm	0.500	0.299	1.674	1.000
low,vibration		-0.444	0.299	-1.488	1.000	
medium,bimodalCold		-0.667	0.308	-2.162	1.000	
medium,bimodalWarm		-0.556	0.308	-1.802	1.000	
medium,thermalCold		0.333	0.267	1.247	1.000	
medium,thermalWarm		0.556	0.308	1.802	1.000	
medium,vibration		-0.556	0.308	-1.802	1.000	
urgent,bimodalCold		-1.222	0.308	-3.964	0.011	
urgent,bimodalWarm		-1.444	0.308	-4.685	< .001	
urgent,thermalCold		0.722	0.267	2.702	0.799	
urgent,thermalWarm		0.667	0.308	2.162	1.000	
urgent,vibration		-1.056	0.308	-3.423	0.080	
low,thermalWarm		low,vibration	-0.944	0.299	-3.161	0.194
		medium,bimodalCold	-1.167	0.308	-3.784	0.022
	medium,bimodalWarm	-1.056	0.308	-3.423	0.080	
	medium,thermalCold	-0.167	0.308	-0.541	1.000	
	medium,thermalWarm	0.056	0.267	0.208	1.000	
	medium,vibration	-1.056	0.308	-3.423	0.080	
	urgent,bimodalCold	-1.722	0.308	-5.585	< .001	
	urgent,bimodalWarm	-1.944	0.308	-6.306	< .001	
	urgent,thermalCold	0.222	0.308	0.721	1.000	
	urgent,thermalWarm	0.167	0.267	0.624	1.000	
	urgent,vibration	-1.556	0.308	-5.045	< .001	

Table 14. Urgency Identification - Post Hoc Comparisons - Urgency \* Modality Part 2

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>		
low,vibration	medium,bimodalCold	-0.222	0.308	-0.721	1.000		
	medium,bimodalWarm	-0.111	0.308	-0.360	1.000		
	medium,thermalCold	0.778	0.308	2.522	1.000		
	medium,thermalWarm	1.000	0.308	3.243	0.147		
	medium,vibration	-0.111	0.267	-0.416	1.000		
	urgent,bimodalCold	-0.778	0.308	-2.522	1.000		
	urgent,bimodalWarm	-1.000	0.308	-3.243	0.147		
	urgent,thermalCold	1.167	0.308	3.784	0.022		
	urgent,thermalWarm	1.111	0.308	3.604	0.042		
	urgent,vibration	-0.611	0.267	-2.286	1.000		
medium,bimodalCold	medium,bimodalWarm	0.111	0.299	0.372	1.000		
	medium,thermalCold	1.000	0.299	3.347	0.105		
	medium,thermalWarm	1.222	0.299	4.091	0.007		
	medium,vibration	0.111	0.299	0.372	1.000		
	urgent,bimodalCold	-0.556	0.267	-2.079	1.000		
	urgent,bimodalWarm	-0.778	0.308	-2.522	1.000		
	urgent,thermalCold	1.389	0.308	4.504	0.001		
	urgent,thermalWarm	1.333	0.308	4.324	0.003		
	urgent,vibration	-0.389	0.308	-1.261	1.000		
	medium,bimodalWarm	medium,thermalCold	0.889	0.299	2.975	0.350	
medium,thermalWarm		1.111	0.299	3.719	0.028		
medium,vibration		1.929e-15	0.299	6.456e-15	1.000		
urgent,bimodalCold		-0.667	0.308	-2.162	1.000		
urgent,bimodalWarm		-0.889	0.267	-3.326	0.114		
urgent,thermalCold		1.278	0.308	4.144	0.005		
urgent,thermalWarm		1.222	0.308	3.964	0.011		
urgent,vibration		-0.500	0.308	-1.622	1.000		
medium,thermalCold		medium,thermalWarm	0.222	0.299	0.744	1.000	
		medium,vibration	-0.889	0.299	-2.975	0.350	
	urgent,bimodalCold	-1.556	0.308	-5.045	< .001		
	urgent,bimodalWarm	-1.778	0.308	-5.766	< .001		
	urgent,thermalCold	0.389	0.267	1.455	1.000		
	urgent,thermalWarm	0.333	0.308	1.081	1.000		
	urgent,vibration	-1.389	0.308	-4.504	0.001		
	medium,thermalWarm	medium,vibration	-1.111	0.299	-3.719	0.028	
		urgent,bimodalCold	-1.778	0.308	-5.766	< .001	
		urgent,bimodalWarm	-2.000	0.308	-6.486	< .001	
urgent,thermalCold		0.167	0.308	0.541	1.000		
urgent,thermalWarm		0.111	0.267	0.416	1.000		
urgent,vibration		-1.611	0.308	-5.225	< .001		
medium,vibration		urgent,bimodalCold	-0.667	0.308	-2.162	1.000	
		urgent,bimodalWarm	-0.889	0.308	-2.883	0.462	
		urgent,thermalCold	1.278	0.308	4.144	0.005	
		urgent,thermalWarm	1.222	0.308	3.964	0.011	
	urgent,vibration	-0.500	0.267	-1.871	1.000		
	urgent,bimodalCold	urgent,bimodalWarm	-0.222	0.299	-0.744	1.000	
		urgent,thermalCold	1.944	0.299	6.508	< .001	
		urgent,thermalWarm	1.889	0.299	6.322	< .001	
		urgent,vibration <sup>10</sup>	0.167	0.299	0.558	1.000	
		urgent,bimodalWarm	urgent,thermalCold	2.167	0.299	7.252	< .001
urgent,thermalWarm			2.111	0.299	7.066	< .001	
urgent,vibration			0.389	0.299	1.302	1.000	
urgent,thermalCold			urgent,thermalWarm	-0.056	0.299	-0.186	1.000
			urgent,vibration	-1.778	0.299	-5.950	< .001
			urgent,thermalWarm	urgent,vibration	-1.722	0.299	-5.764

## 1.4 Recognition Time

Table 15. Recognition Time - Within Subjects Effects

	Sphericity Correction	Sum of Squares	df	Mean Square	F	p
Urgency	None	1.558e+7	2.000	7.791e+6	12.327	< .001
Residual	None	1.390e+7	22.000	631975.503		
Modality <sup>1</sup>	Greenhouse-Geisser	1.327e+8	2.020	6.569e+7	18.797	< .001
Residual	Greenhouse-Geisser	7.765e+7	22.218	3.495e+6		
Urgency * Modality <sup>1</sup>	Greenhouse-Geisser	2.869e+6	4.164	688950.661	0.363	0.841
Residual	Greenhouse-Geisser	8.687e+7	45.805	1.897e+6		

Table 16. Recognition Time - Post Hoc Comparisons - Urgency

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>
urgent	medium	-527.617	143.379	-3.680	0.011
	low	-688.950	142.089	-4.849	0.002
medium	low	-161.333	149.836	-1.077	0.914

Table 17. Recognition Time - Post Hoc Comparisons - Modality

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>
BimodalWarm	BimodalCold	7.111	153.638	0.046	1.000
	ThermalWarm	-1558.694	338.229	-4.608	0.008
	ThermalCold	-837.250	317.481	-2.637	0.231
	Vibration	976.667	165.704	5.894	0.001
BimodalCold	ThermalWarm	-1565.806	397.085	-3.943	0.023
	ThermalCold	-844.361	351.542	-2.402	0.351
	Vibration	969.556	138.588	6.996	< .001
ThermalWarm	ThermalCold	721.444	313.557	2.301	0.420
	Vibration	2535.361	394.682	6.424	< .001
ThermalCold	Vibration	1813.917	399.461	4.541	0.008

## 2 EXPERIMENT 2: TWO TYPES OF INFORMATION FOR MESSAGE CLASSIFICATION

### 2.1 Recognition Rate

Table 18. Recognition Rate - Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Importance	0.234	1	0.234	17.939	< .001
Residual	0.221	17	0.013		
Nature	0.234	1	0.234	6.604	0.020
Residual	0.601	17	0.035		
Modality	0.062	1	0.062	0.444	0.514
Residual	2.393	17	0.141		
Importance * Nature	0.122	1	0.122	15.717	0.001
Residual	0.133	17	0.008		
Importance * Modality	0.267	1	0.267	18.295	< .001
Residual	0.248	17	0.015		
Nature * Modality	0.203	1	0.203	7.608	0.013
Residual	0.453	17	0.027		
Importance * Nature * Modality	0.147	1	0.147	8.672	0.009
Residual	0.288	17	0.017		

Table 19. Recognition Rate - Post Hoc Comparisons - Importance \* Nature

		Mean Difference	SE	t	<i>p</i> <sub>bonf</sub>
high,Private	high,Work	-0.022	0.035	-0.642	1.000
	low,Private	0.139	0.024	5.776	< .001
	low,Work	3.053e-16	0.037	8.327e-15	1.000
high,Work	low,Private	0.161	0.037	4.394	< .001
	low,Work	0.022	0.024	0.924	1.000
low,Private	low,Work	-0.139	0.035	-4.011	0.003

Table 20. Recognition Rate - Post Hoc Comparisons - Importance \* Modality

		Mean Difference	SE	t	<i>p</i> <sub>bonf</sub>
high,Bimodal	high,Thermal	-0.044	0.066	-0.677	1.000
	low,Bimodal	-0.006	0.028	-0.201	1.000
	low,Thermal	0.122	0.065	1.870	0.456
high,Thermal	low,Bimodal	0.039	0.065	0.595	1.000
	low,Thermal	0.167	0.028	6.018	< .001
low,Bimodal	low,Thermal	0.128	0.066	1.945	0.394

Table 21. Recognition Rate - Post Hoc Comparisons - Nature \* Modality

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>
Private,Bimodal	Private,Thermal	0.117	0.068	1.711	0.602
	Work,Bimodal	-0.006	0.041	-0.134	1.000
	Work,Thermal	-0.039	0.070	-0.556	1.000
Private,Thermal	Work,Bimodal	-0.122	0.070	-1.747	0.557
	Work,Thermal	-0.156	0.041	-3.749	0.004
Work,Bimodal	Work,Thermal	-0.033	0.068	-0.489	1.000

Table 22. Recognition Rate - Post Hoc Comparisons - Importance \* Nature \* Modality

		Mean Difference	SE	t	<i>P</i> <sub>bonf</sub>
high,Private,Bimodal	high,Private,Thermal	-0.033	0.074	-0.448	1.000
	high,Work,Bimodal	-0.011	0.049	-0.226	1.000
	high,Work,Thermal	-0.067	0.074	-0.898	1.000
	low,Private,Bimodal	-0.011	0.038	-0.291	1.000
	low,Private,Thermal	0.256	0.072	3.535	0.039
	low,Work,Bimodal	-0.011	0.050	-0.223	1.000
high,Private,Thermal	low,Work,Thermal	-0.022	0.076	-0.294	1.000
	high,Work,Bimodal	0.022	0.074	0.299	1.000
	high,Work,Thermal	-0.033	0.049	-0.679	1.000
	low,Private,Bimodal	0.022	0.072	0.307	1.000
	low,Private,Thermal	0.289	0.038	7.576	< .001
	low,Work,Bimodal	0.022	0.076	0.294	1.000
high,Work,Bimodal	low,Work,Thermal	0.011	0.050	0.223	1.000
	high,Work,Thermal	-0.056	0.074	-0.747	1.000
	low,Private,Bimodal	1.249e-16	0.050	2.503e-15	1.000
	low,Private,Thermal	0.267	0.076	3.525	0.035
	low,Work,Bimodal	-8.327e-17	0.038	-2.183e-15	1.000
	low,Work,Thermal	-0.011	0.072	-0.154	1.000
high,Work,Thermal	low,Private,Bimodal	0.056	0.076	0.734	1.000
	low,Private,Thermal	0.322	0.050	6.459	< .001
	low,Work,Bimodal	0.056	0.072	0.768	1.000
	low,Work,Thermal	0.044	0.038	1.165	1.000
low,Private,Bimodal	low,Private,Thermal	0.267	0.074	3.588	0.031
	low,Work,Bimodal	-2.082e-16	0.049	-4.241e-15	1.000
	low,Work,Thermal	-0.011	0.074	-0.150	1.000
low,Private,Thermal	low,Work,Bimodal	-0.267	0.074	-3.591	0.031
	low,Work,Thermal	-0.278	0.049	-5.659	< .001
low,Work,Bimodal	low,Work,Thermal	-0.011	0.074	-0.149	1.000

## 2.2 Subjective Feedback

Table 23. Subjective Feedback - Friedman Test

Factor	Chi-Squared	df	p	Kendall's W
Rating-Factor	27.745	2	< .001	0.326

Table 24. Subjective Feedback - Conover's Post Hoc Comparisons - Rating-Factor

		T-Stat	df	$W_i$	$W_j$	P	$P_{bonf}$	$P_{holm}$
V-Importance	T-Importance	5.100	34	47.000	20.500	< .001	< .001	< .001
	Nature	1.251	34	47.000	40.500	0.220	0.659	0.220
T-Importance	Nature	3.849	34	20.500	40.500	< .001	0.001	< .001