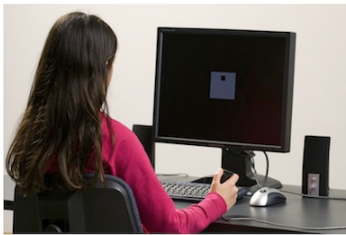


The Test Of Variables of Attention (T.O.V.A.®)

The **Test of Variables of Attention (T.O.V.A.)** is an FDA-cleared, state-of-the-art continuous performance test that provides healthcare professionals with objective measurements of attention and inhibitory control. The T.O.V.A. aids in the assessment of, and evaluation of treatment for, attention deficits, including attention-deficit/hyperactivity disorder (ADHD). T.O.V.A. results are available for children and adults (ages 4 - 80+) and should only be interpreted by qualified professionals.



The T.O.V.A. continuously measures performance during a 10.8-minute task or a 21.6-minute task, depending on age. It records speed, accuracy, and consistency of responses to a series of squares (in the visual T.O.V.A. test) or tones (in the auditory T.O.V.A. test) that are presented in two-second intervals. These measurements (accurate to ± 1 ms) are then compared by age and gender to a normative sample (a sample of people without attention problems). This comparison determines whether the test results are "within normal limits" or not. The T.O.V.A. also compares results to a group of people independently diagnosed with ADHD. The T.O.V.A. report is based on these two comparisons, as well as performance, session, and response validity measures.



If you have questions about this report, please contact the person who provided it to you. For more information about attention and the T.O.V.A., please visit our website at <https://www.tovatest.com/>. To contact us please email info@tovatest.com or call 800.PAY.ATTN (562.594.7700).

ID: 1 **Example Subject** (Jul 1, 2004)
Male - 12y 11m 0d
Visual T.O.V.A. (v9.0-71 sn30000)
 Jun 1, 2017 at 12:34 PM

Session, Response, and Performance Validity

This session meets session, response and performance validity criteria.

T.O.V.A. Interpretation

The results of this T.O.V.A. are not within normal limits, and may be suggestive of a possible attention deficit, including ADHD. Please see the Interpretation Notes page for additional information.

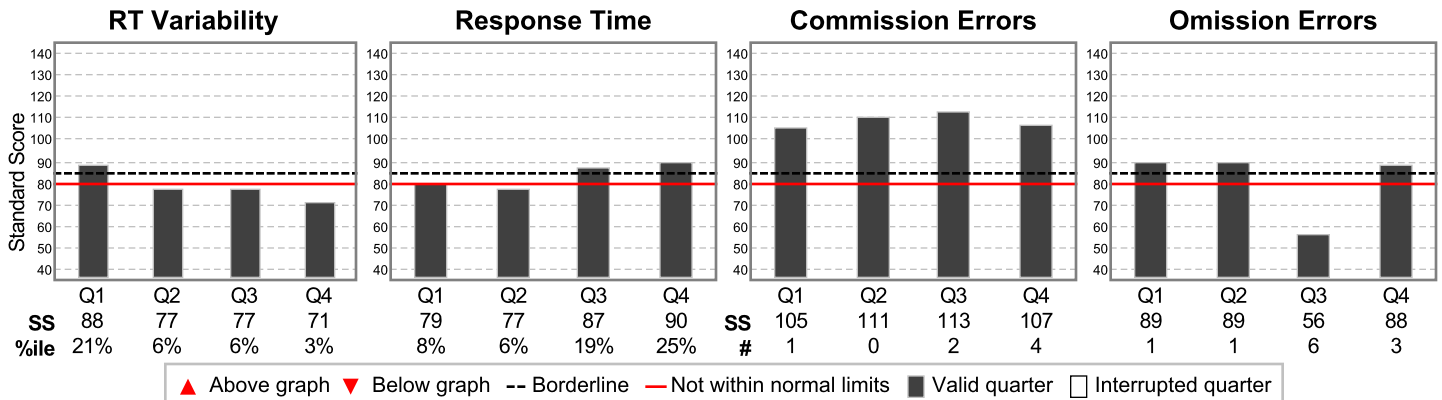
Treatment

No treatments entered.

Comparison to the Normative Sample

These scores compare this subject's performance to the performance of individuals of the same gender and age in the T.O.V.A. Normative Sample, a study of individuals who did not have attention problems.

Results are reported as standard scores (average standard = 100; standard deviation = 15). Standard scores above 85 are considered to be in the normal range, scores between 80 and 85 are considered borderline, and scores below 80 are considered not within normal limits. Scores less than 70 are considered significantly below normal range. Standard scores less than 40 are more than 4 standard deviations from normal, and are denoted as "<40".



Quarters, Halves and the Total are independently calculated and are not averages. Any Quarter, Half or Total that is Borderline or Not Within Normal Limits causes the Interpretation to be Borderline or Not Within Normal Limits. See the Interpretation Notes page for more information on these variables and on the subject's performance.

	Quarter				Half		Total
	1	2	3	4	1	2	
RT Variability	88	77	77	71	81	73	72
Response Time	79	77	87	90	77	88	85
Commission Errors	105	111	113	107	108	111	111
Omission Errors	89	89	56	88	79	72	72

Infrequent Frequent

Key: Borderline, Not within normal limits, Invalid

ID: 1 **Example Subject** (Jul 1, 2004)
Male - 12y 11m 0d

Visual T.O.V.A. (v9.0-71 sn30000)
Jun 1, 2017 at 12:34 PM

Session, Response, and Performance Validity

Performance Validity

Performance Validity is applicable only to ages 17 or above.

Notes on the Comparison to the Normative Sample

Variability is a precise measure of variations in correct response times, and measures the consistency of response times. **Variability was borderline in Half 1, and not within normal limits in Quarters 2, 3, and 4, Half 2, and Total.**

Response Time is the average speed of correct responses to targets, and is a measure of information processing speed. **Response Time was borderline in the Total, and not within normal limits in Quarters 1 and 2, and Half 1.**

Commission Errors occur when the subject incorrectly responds to a nontarget, and are a measure of inhibitory control. **Commission Errors were within normal limits.**

Omission Errors occur when the subject does not respond to a target, and are a measure of sustained attention. **Omission Errors were not within normal limits in Quarter 3, Half 1 and 2, and Total.**

Other Notes

Consider administering an Auditory T.O.V.A. to this subject for a more comprehensive assessment of attention. This is important because an individual can have markedly different results on one test versus the other.

ID: **1** **Example Subject** (Jul 1, 2004)
Male - 12y 11m 0d

Visual T.O.V.A. (v9.0-71 sn30000)
 Jun 1, 2017 at 12:34 PM

Treatment

No treatments entered.

Attention Comparison Score

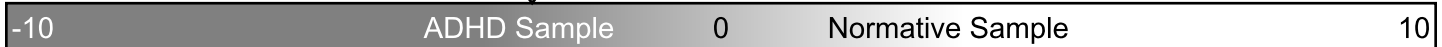
The Attention Comparison Score (ACS) is a subset of T.O.V.A. variables used to compare the subject's performance to a sample of individuals independently diagnosed with ADHD. Scores below 0 suggest a performance more similar to that of individuals with ADHD.

Note that the ACS does not include important variables from the Comparison to the Normative Sample. In order to understand the overall test results, the ACS should always be used with the Comparison to the Normative Sample, found on the Summary page. In particular, when the ACS is above zero and the Comparison to the Normative Sample is not within normal limits, the results should be considered not within normal limits.

The ACS is calculated by summing the following Z scores:

Response Time (Half 1)	-1.57
D Prime (Half 2)	-1.00
Variability (Total)	-1.86
Calibration constant	1.80
Attention Comparison Score	-2.62

-2.62

ID: **1 Example Subject** (Jul 1, 2004)
Male - 12y 11m 0d

Visual T.O.V.A. (v9.0-71 sn30000)
 Jun 1, 2017 at 12:34 PM

This page contains tabulated raw data and documents T.O.V.A. session parameters.

		Quarter				Half		Total
		1	2	3	4	1	2	
RT Variability	ms	115	154	155	188	139	172	171
Response Time	ms	492	550	426	409	521	417	441
Post-commission responses	#	0	0	2	2	0	4	4
Response Time	ms	0	0	479	428	0	454	454
Variability	ms	0	0	7	73	0	58	58
Commission Errors	#	1/126	0/126	2/36	4/36	1/252	6/72	7/324
Percentage	%	0.8	0	5.6	11.1	0.4	8.3	2.2
Response Time	ms	643	0	252	327	643	302	351
Omission Errors	#	1/36	1/36	6/126	3/126	2/72	9/252	11/324
Percentage	%	2.8	2.8	4.8	2.4	2.8	3.6	3.4
D Prime		4.33	6.18	3.26	3.2	4.57	3.19	3.85
Standard Score		78	93	84	86	83	85	84
Beta		2.93	1425.08	0.88	0.3	5.43	0.51	1.46
Anticipatory	%	0	0	0	0.6	0	0.3	0.2
To Nontargets	#	0	0	0	1	0	1	1
To Targets	#	0	0	0	0	0	0	0
Multiple Responses	#	0	1	0	0	1	0	1
Total Correct	#	160/162	161/162	154/162	154/162	321/324	308/324	629/648
Percentage	%	98.8	99.4	95.1	95.1	99.1	95.1	97.1
Skew	ms	-14	115	78	51	88	59	83
User Interrupts	#	0	0	0	0	0	0	0
Hardware errors	#	0	0	0	0	0	0	0
		Infrequent		Frequent				

Session parameters

Format: 1 (standard)
 ISI: 2000 ms
 Stimulus On Time: 200 ms
 Stimulus Off Time: 300 ms
 Anticipatory Cutoff: 150 ms

Session information

Tester:
 Import Filename: example-subject.tova
 Import Date: Jun 8, 2017 12:00:00 AM
 Errors/Warnings:

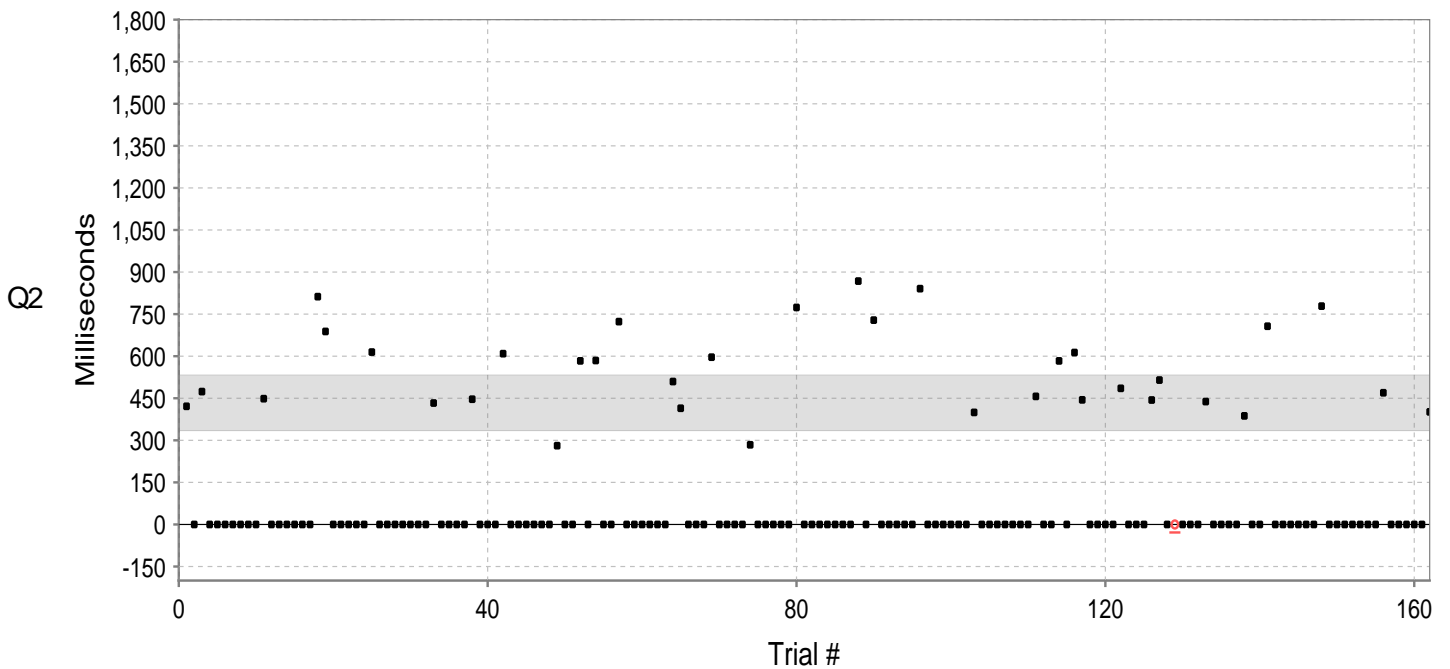
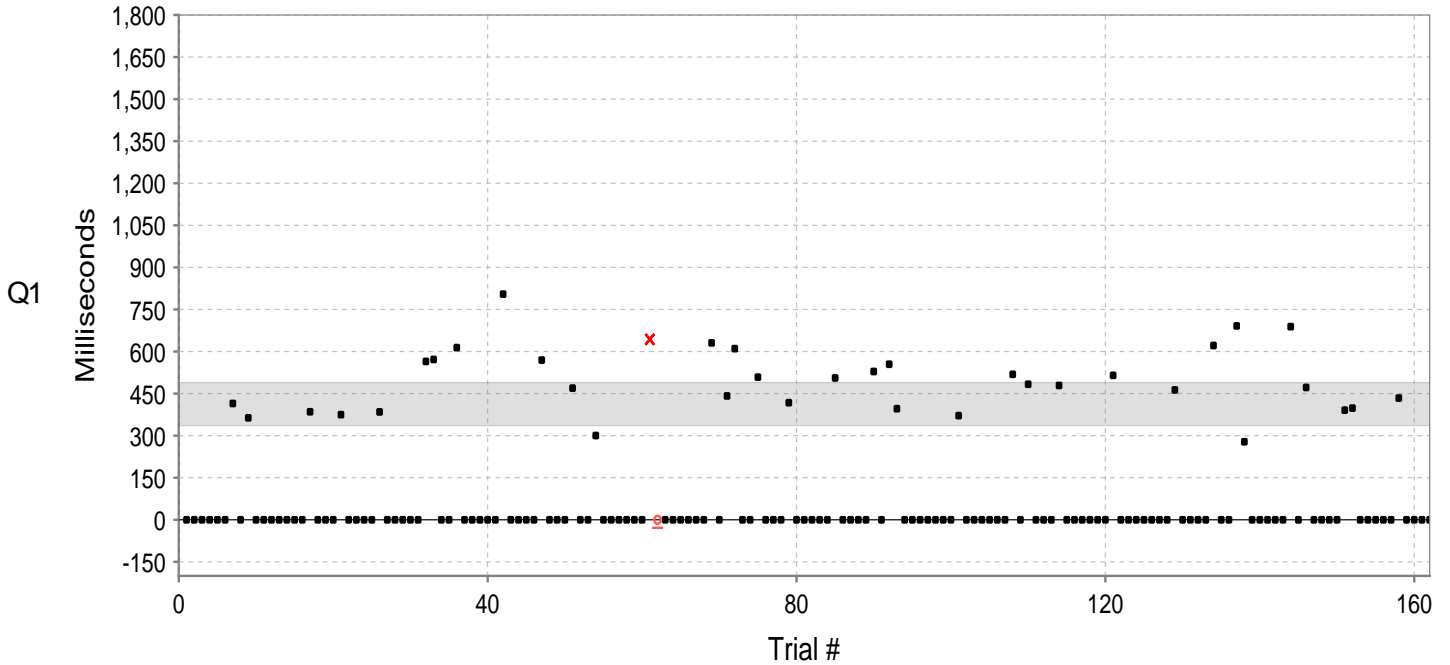
Hardware information

Session mode: PTE
 USB device: HW 3, BD 0, FW 1.1-89-g664fc9a
 Microswitch: HW 3, BD 0, FW 4
 Monitor calibration: 15487, 15039, 15904, 15168, 15744, 15263, 15776, 14976, 15807, 15328, 15744, 15072, 15839, 14976, 15104, 15007, 15359, 15200, 15168, 15168, 15231, 15168, 15200, 15007, 16160, 15359, 14976, 15200, 15231, 15328

ID: 1 **Example Subject** (Jul 1, 2004)
Male - 12y 11m 0d

Visual T.O.V.A. (v9.0-71 sn30000)
 Jun 1, 2017 at 12:34 PM

This page graphically displays the subject's responses. Black squares mark correct responses and correct nonresponses. Red 'X's mark commission errors, red squares mark anticipatory responses, and underlined red circles mark omission errors. The light gray region represents the normative range of responses. Commission errors followed by a correct response are linked by a line: an upward slope (light gray) indicates slowing down following an error (typical), and a downward slope (black) indicates speeding up after making an error (unusual). Red numbers above the zero line indicate the number of missed targets (if three or more in a row), and the red number below the zero line indicates the number of seconds elapsed between correct target responses.

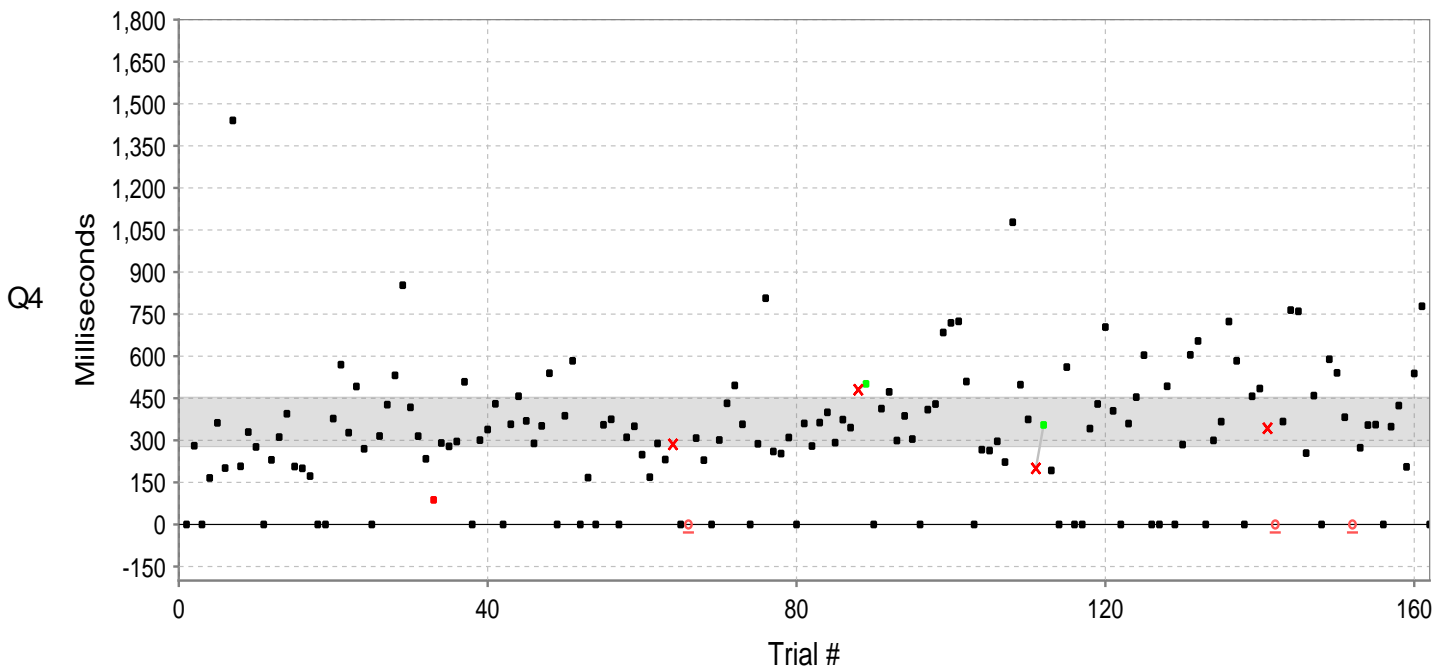
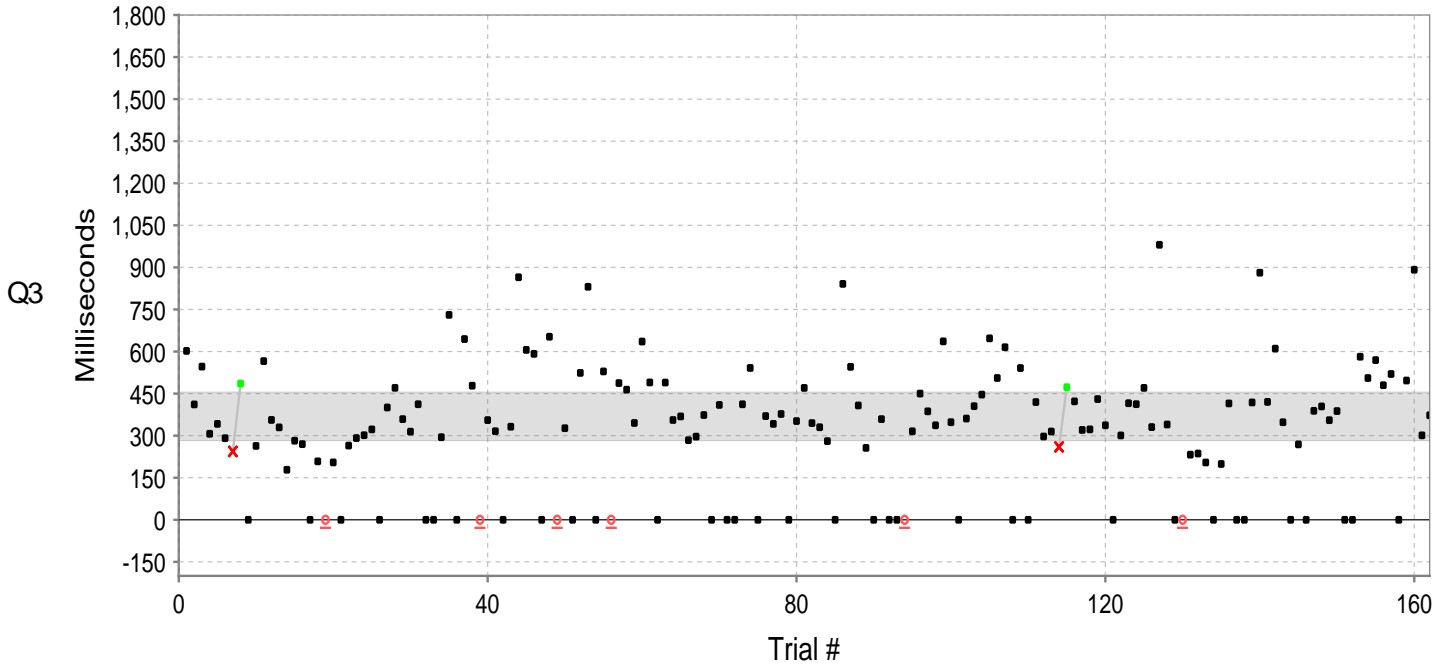


■ Correct response	■ Correct non-response	× Commission error	○ Omission error	■ Anticipatory response
■ Post-commission error correct response	— Slower post-commission RT	— Faster post-commission RT		
▲△ Off-scale resp./error	■ Normative range	Interruption	3 10s Response gap (# Targets and Sec)	

ID: 1 **Example Subject** (Jul 1, 2004)
Male - 12y 11m 0d

Visual T.O.V.A. (v9.0-71 sn30000)
 Jun 1, 2017 at 12:34 PM

This page graphically displays the subject's responses. Black squares mark correct responses and correct nonresponses. Red 'X's mark commission errors, red squares mark anticipatory responses, and underlined red circles mark omission errors. The light gray region represents the normative range of responses. Commission errors followed by a correct response are linked by a line: an upward slope (light gray) indicates slowing down following an error (typical), and a downward slope (black) indicates speeding up after making an error (unusual). Red numbers above the zero line indicate the number of missed targets (if three or more in a row), and the red number below the zero line indicates the number of seconds elapsed between correct target responses.



- Correct response ■ Correct non-response ✕ Commission error ○ Omission error ■ Anticipatory response
- Post-commission error correct response / Slower post-commission RT \ Faster post-commission RT
- ▲△ Off-scale resp./error ■ Normative range | Interruption 3 10s Response gap (# Targets and Sec)

ID: **1** **Example Subject** (Jul 1, 2004)
Male - 12y 11m 0d

Visual T.O.V.A. (v9.0-71 sn30000)
 Jun 1, 2017 at 12:34 PM

This page shows a trial-by-trial view of T.O.V.A. test data. Each entry in the table indicates the stimulus type (target or nontarget) and the subject's response to that stimulus. Error responses are shown in red, and response times are in milliseconds. A negative response time indicates a response that was made before the stimulus was presented.

1-27	28-54	55-81	82-108	109-135	136-162
N	N	N	N	N	N
N	N	N	N	T 483	T 691
N	N	N	N	N	T 278
N	N	N	T 505	N	N
N	T 564	N	N	N	N
N	T 571	N	N	T 479	N
T 414	N	C 643	N	N	N
N	N	O	N	N	N
T 363	T 613	N	T 528	N	T 688
N	N	N	N	N	N
N	N	N	T 554	N	T 471
N	N	N	T 396	N	N
N	N	N	N	T 515	N
N	N	N	N	N	N
N	T 804	T 630	N	N	N
N	N	N	N	N	T 390
T 385	N	T 441	N	N	T 398
N	N	T 610	N	N	N
N	N	N	N	N	N
N	T 569	N	T 371	N	N
T 374	N	T 508	N	T 463	N
N	N	N	N	N	N
N	N	N	N	N	T 433
N	T 469	N	N	N	N
N	N	T 417	N	N	N
T 384	N	N	N	T 621	N
N	T 300	N	T 518	N	N

163-189	190-216	217-243	244-270	271-297	298-324
T 421	N	N	N	N	N
N	N	N	N	N	N
T 473	N	T 723	N	T 456	T 387
N	N	N	N	N	N
N	N	N	N	N	N
N	T 433	N	N	T 583	T 706
N	N	N	T 867	N	N
N	N	N	N	T 613	N
N	N	N	T 728	T 444	N
N	N	T 509	N	N	N
T 448	T 446	T 414	N	N	N
N	N	N	N	N	N
N	N	N	N	N	T 778
N	N	N	N	T 485	N
N	T 608	T 596	T 840	N	N
N	N	N	N	N	N
N	N	N	N	N	N
T 812	N	N	N	T 443	N
T 688	N	N	N	T 514	N
N	N	T 284	N	N	N
N	N	N	N	O	T 469
N	T 280	N	T 399	N	N
N	N	N	N	N	N
N	N	N	N	N	N
T 614	T 583M	N	N	T 438	N
N	N	T 773	N	N	N
N	T 584	N	N	N	T 401

325-351	352-378	379-405	406-432	433-459	460-486
T 602	T 470	T 529	T 344	T 541	T 414
T 411	T 359	O	T 329	N	N
T 546	T 314	T 487	T 280	T 419	N
T 306	T 412	T 464	N	T 297	T 418
T 342	N	T 345	T 841	T 314	T 881
T 290	N	T 635	T 545	C 259	T 420
C 243	T 294	T 489	T 407	T 472	T 610
T 485	T 730	N	T 256	T 422	T 347
N	N	T 489	N	T 320	N
T 263	T 644	T 355	T 358	T 322	T 268
T 565	T 478	T 368	N	T 430	N
T 356	O	T 283	N	T 337	T 388
T 329	T 355	T 296	O	N	T 404
T 178	T 315	T 373	T 315	T 300	T 355
T 281	N	N	T 450	T 415	T 387
T 269	T 331	T 409	T 386	T 412	N
N	T 864	N	T 336	T 470	N
T 208	T 605	N	T 636	T 330	T 581
O	T 591	T 411	T 347	T 980	T 505
T 204	N	T 541	N	T 339	T 569
N	T 652	N	T 361	N	T 479
T 264	O	T 369	T 405	O	T 519
T 291	T 326	T 342	T 446	T 232	N
T 301	N	T 377	T 646	T 236	T 496
T 322	T 523	N	T 505	T 204	T 891
N	T 830	T 352	T 615	N	T 301
T 400	N	T 470	N	T 199	T 372

487-513	514-540	541-567	568-594	595-621	622-648
N	T 531	T 355	T 279	T 498	T 723
T 280	T 853	T 375	T 363	T 374	T 583
N	T 417	N	T 399	C 199	N
T 165	T 314	T 310	T 291	T 354	T 457
T 362	T 234	T 350	T 373	T 192	T 484
T 201	NA 87	T 248	T 345	N	C 342
T 1440	T 290	T 168	C 480	T 561	O
T 207	T 278	T 288	T 501	N	T 367
T 329	T 295	T 231	N	N	T 764
T 276	T 508	C 285	T 413	T 341	T 760
N	N	N	T 472	T 429	T 254
T 230	T 300	O	T 299	T 703	T 459
T 311	T 338	T 307	T 387	T 405	N
T 394	T 430	T 229	T 304	N	T 589
T 206	N	N	N	T 359	T 540
T 200	T 357	T 301	T 409	T 454	T 382
T 172	T 457	T 431	T 429	T 603	O
N	T 369	T 495	T 684	N	T 273
N	T 289	T 357	T 718	N	T 354
T 377	T 351	N	T 724	T 492	T 356
T 569	T 539	T 287	T 509	N	N
T 327	N	T 806	N	T 284	T 348
T 491	T 387	T 260	T 266	T 604	T 423
T 269	T 583	T 252	T 263	T 654	T 205
N	N	T 310	T 296	N	T 538
T 315	T 167	N	T 222	T 299	T 778
T 427	N	T 360	T 1077	T 366	N

T = Correct response to target O = Omission error A = Anticipatory response
 N = Correct nonresponse to nontarget C = Commission error M = Multiple response
 Green = Post-Commission-error correct response U = User interrupt H = Hardware interrupt