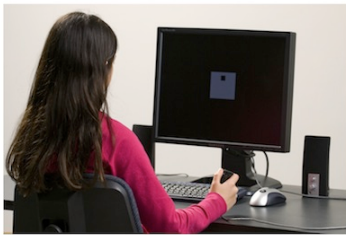


## The Test Of Variables of Attention (T.O.V.A.®)

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  $\pm 1$  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](mailto:info@tovatest.com) or call 800.PAY.ATTN (562.594.7700).

ID: **1 Example Subject** (Oct 1, 2000)  
**Female - 16y 9m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
 Jul 1, 2017 at 8:33 AM

## 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.

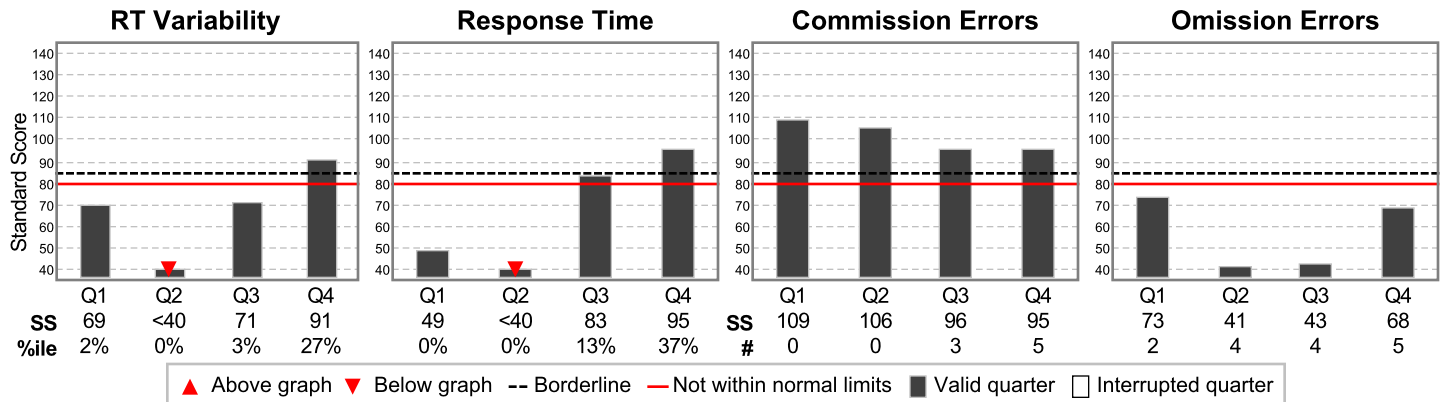
## Treatment

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	
<b>RT Variability</b>	69	<40	71	91	<40	80	54
<b>Response Time</b>	49	<40	83	95	<40	89	79
<b>Commission Errors</b>	109	106	96	95	111	95	98
<b>Omission Errors</b>	73	41	43	68	<40	47	<40

Infrequent Frequent

Key: Borderline, Not within normal limits, Invalid

ID: **1 Example Subject** (Oct 1, 2000)  
**Female - 16y 9m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
Jul 1, 2017 at 8:33 AM

## Session comments

Baseline.

## 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 2, and not within normal limits in Quarters 1, 2, and 3, Half 1, 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 Quarter 3, and not within normal limits in Quarters 1 and 2, Half 1, and Total.**

**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 Quarters 1, 2, 3, and 4, 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** (Oct 1, 2000)  
**Female - 16y 9m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
 Jul 1, 2017 at 8:33 AM

### Treatment

No treatments entered.

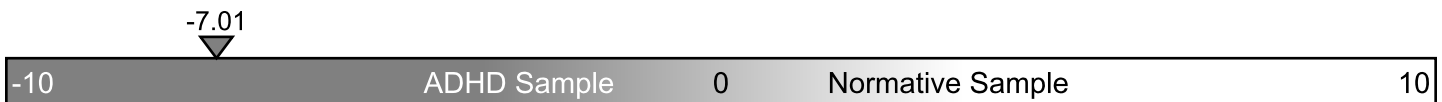
### Attention Comparison Score

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)	-4.07
D Prime (Half 2)	-1.64
Variability (Total)	-3.09
Calibration constant	1.80
<b>Attention Comparison Score</b>	<b>-7.01</b>



ID: **1 Example Subject** (Oct 1, 2000)  
**Female - 16y 9m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
 Jul 1, 2017 at 8:33 AM

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	133	179	127	109	161	121	151
Response Time	ms	561	626	428	383	593	406	446
Post-commission responses	#	0	0	3	3	0	6	6
Response Time	ms	0	0	503	327	0	415	415
Variability	ms	0	0	149	69	0	146	146
Commission Errors	#	0/126	0/126	3/36	5/36	0/252	8/72	8/324
Percentage	%	0	0	8.3	13.9	0	11.1	2.5
Response Time	ms	0	0	233	245	0	241	241
Omission Errors	#	2/36	4/36	4/126	5/126	6/72	9/252	15/324
Percentage	%	5.6	11.1	3.2	4	8.3	3.6	4.6
D Prime		5.86	5.49	3.24	2.84	5.65	3.02	3.65
Standard Score		86	65	73	77	83	75	69
Beta		2503.57	4228.77	0.47	0.39	3423.13	0.41	1.68
Anticipatory	%	0	0	0	3.7	0	1.9	0.9
To Nontargets	#	0	0	0	2	0	2	2
To Targets	#	0	0	0	4	0	4	4
Multiple Responses	#	0	0	0	0	0	0	0
Total Correct	#	160/162	158/162	155/162	146/162	318/324	301/324	619/648
Percentage	%	98.8	97.5	95.7	90.1	98.1	92.9	95.5
Skew	ms	169	61	26	52	-20	7	44
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

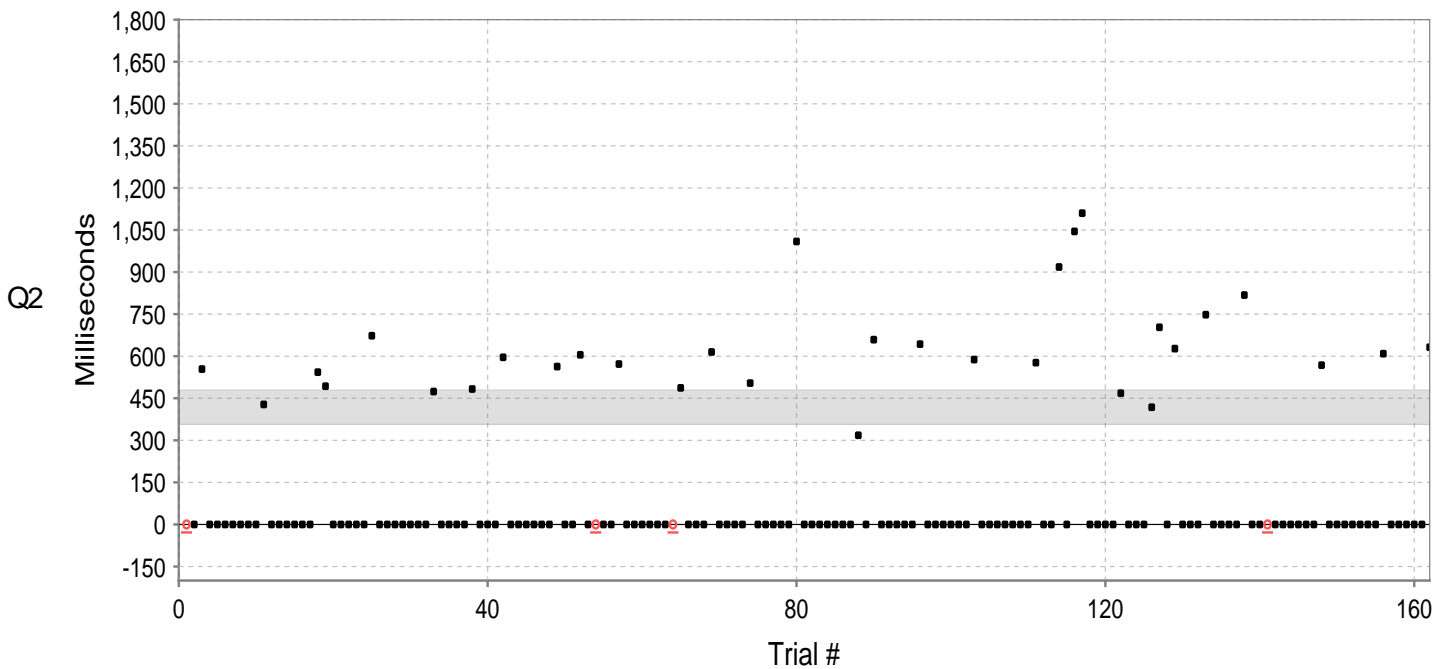
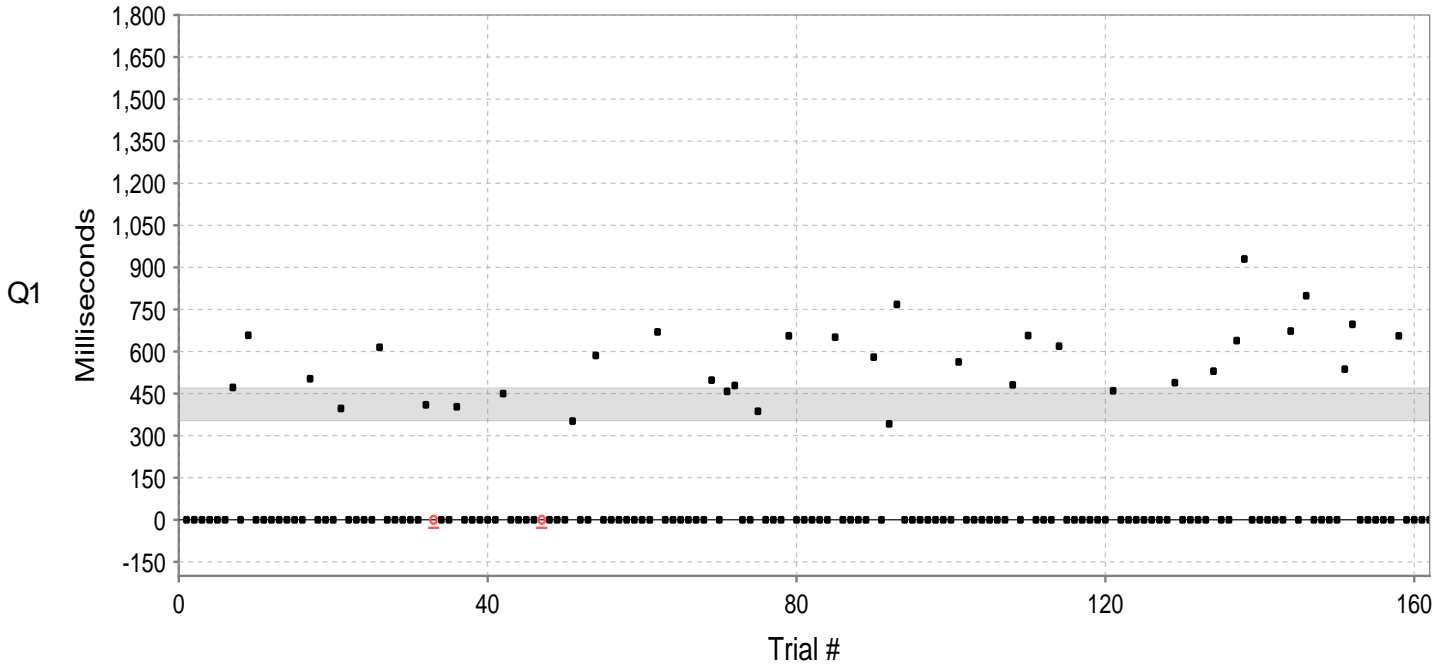
**Session information**

Tester:  
 Import Filename: example-treatment-female-16.tova (3 / 3)  
 Import Date: Aug 23, 2022 10:51:01 AM  
 Errors/Warnings:

ID: 1 **Example Subject** (Oct 1, 2000)  
**Female - 16y 9m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
 Jul 1, 2017 at 8:33 AM

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.

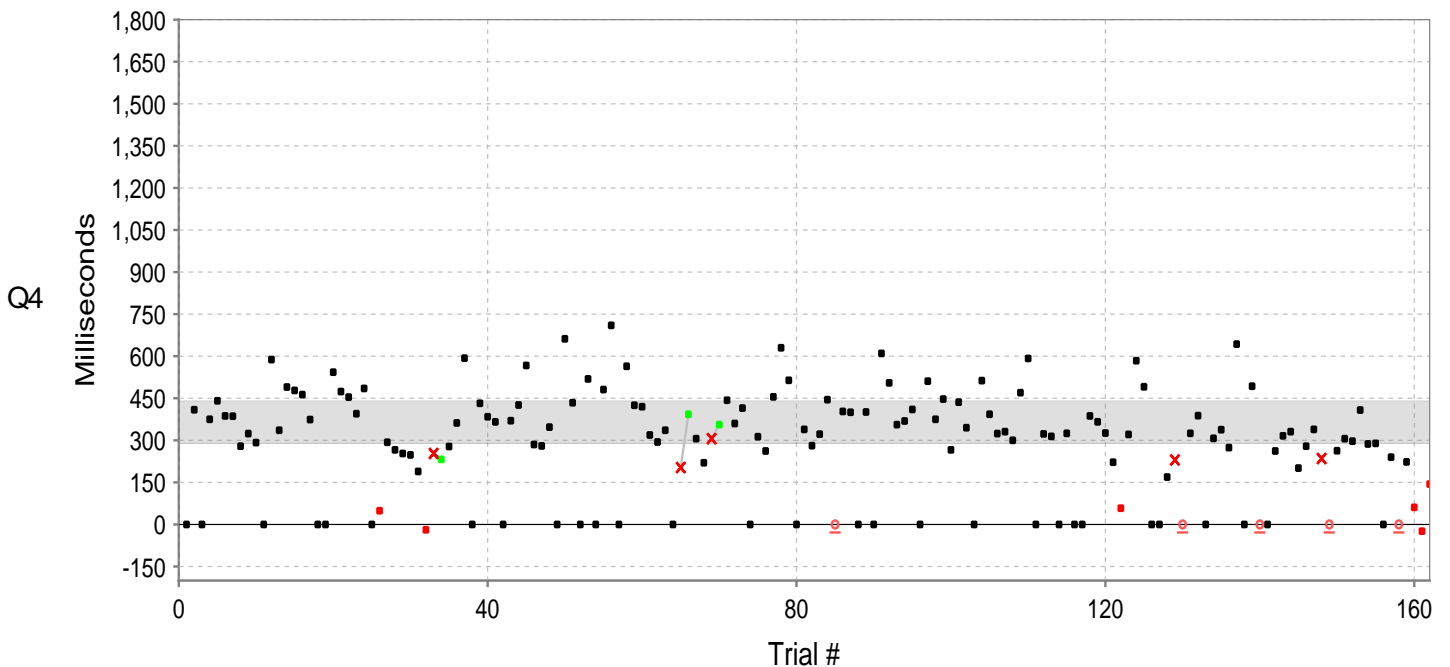
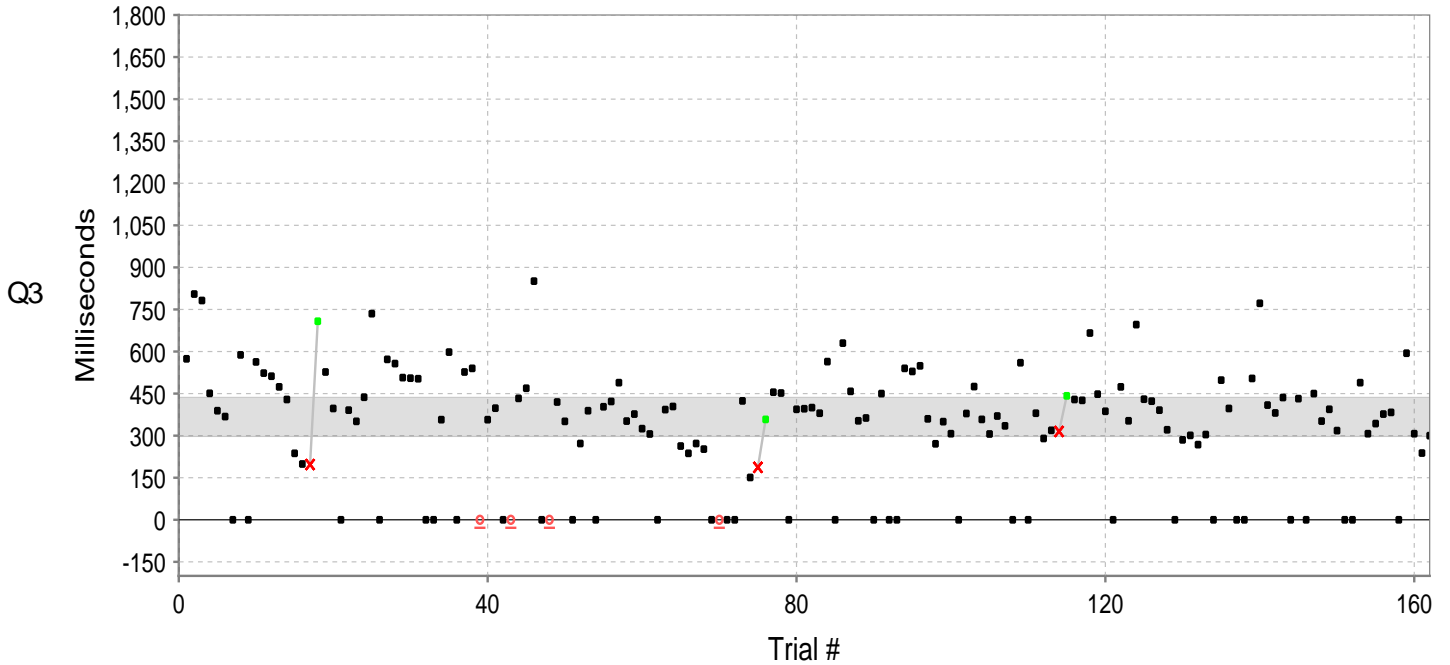


- Correct response    - Correct non-response    × Commission error    ◌ Omission error    ▪ Anticipatory response
- Post-commission error correct response    / Slower post-commission RT    \ Faster post-commission RT
- ▲△ Off-scale resp./error    ■ Normative range    | Interruption    3 10s Response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

ID: 1 **Example Subject** (Oct 1, 2000)  
**Female - 16y 9m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
 Jul 1, 2017 at 8:33 AM

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** (Oct 1, 2000)  
**Female - 16y 9m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
 Jul 1, 2017 at 8:33 AM

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 657	T 639
N	N	N	N	N	T 930
N	N	N	T 651	N	N
N	T 410	N	N	N	N
N	N	N	N	T 619	N
T 472	N	N	N	N	N
N	N	T 670	N	N	N
T 658	T 403	N	T 580	N	T 673
N	N	N	N	N	N
N	N	N	T 342	N	T 799
N	N	N	T 768	N	N
N	N	N	N	T 460	N
N	N	N	N	N	N
N	T 450	T 498	N	N	N
N	N	N	N	N	T 537
T 503	N	T 458	N	N	T 697
N	N	T 479	N	N	N
N	N	N	N	N	N
N	N	N	T 563	N	N
T 397	N	T 387	N	T 489	N
N	N	N	N	N	N
N	N	N	N	N	T 656
N	T 352	N	N	N	N
N	N	T 656	N	N	N
T 615	N	N	N	T 530	N
N	T 586	N	T 481	N	N

163-189	190-216	217-243	244-270	271-297	298-324
O	N	N	N	N	N
N	N	N	N	N	N
T 554	N	T 572	N	T 577	T 818
N	N	N	N	N	N
N	N	N	N	N	N
N	T 474	N	N	T 918	O
N	N	N	T 318	N	N
N	N	N	N	T 1045	N
N	N	N	T 659	T 1110	N
N	N	O	N	N	N
T 428	T 483	T 487	N	N	N
N	N	N	N	N	N
N	N	N	N	N	N
N	N	N	N	T 468	N
N	T 596	T 615	T 643	N	N
N	N	N	N	N	N
N	N	N	N	N	N
T 543	N	N	N	T 418	N
T 493	N	N	N	T 703	N
N	N	T 504	N	N	N
N	N	N	N	T 627	T 609
N	T 563	N	T 588	N	N
N	N	N	N	N	N
N	N	N	N	N	N
T 673	T 605	N	N	T 748	N
N	N	T 1009	N	N	N
N	O	N	N	N	T 632

325-351	352-378	379-405	406-432	433-459	460-486
T 574	T 557	T 403	T 400	T 560	T 397
T 805	T 507	T 422	T 380	N	N
T 782	T 505	T 489	T 564	T 380	N
T 451	T 503	T 352	N	T 290	T 504
T 389	N	T 377	T 630	T 319	T 772
T 368	N	T 325	T 458	C 315	T 409
N	T 357	T 306	T 353	T 442	T 381
T 588	T 598	N	T 363	T 429	T 436
N	N	T 393	N	T 426	N
T 563	T 527	T 404	T 450	T 666	T 432
T 523	T 540	T 263	N	T 448	N
T 512	O	T 237	N	T 387	T 450
T 474	T 357	T 272	T 540	N	T 352
T 429	T 398	T 252	T 529	T 474	T 394
T 237	N	N	T 549	T 353	T 318
T 199	O	O	T 360	T 696	N
C 197	T 433	N	T 271	T 430	N
T 708	T 469	N	T 350	T 423	T 489
T 527	T 851	T 424	T 307	T 391	T 307
T 397	N	T 151	N	T 321	T 343
N	O	C 187	T 379	N	T 377
T 391	T 420	T 358	T 475	T 285	T 383
T 351	T 351	T 455	T 358	T 301	N
T 437	N	T 452	T 306	T 268	T 594
T 735	T 272	N	T 370	T 304	T 307
N	T 389	T 394	T 335	N	T 238
T 572	N	T 396	N	T 498	T 300

487-513	514-540	541-567	568-594	595-621	622-648
N	T 266	T 481	T 281	T 470	T 274
T 409	T 253	T 710	T 322	T 592	T 643
N	T 248	N	T 445	N	N
T 375	T 189	T 564	O	T 323	T 493
T 441	TA -19	T 425	T 403	T 314	O
T 387	C 253	T 420	T 400	N	N
T 386	T 232	T 319	N	T 325	T 262
T 279	T 278	T 294	T 401	N	T 316
T 324	T 362	T 336	N	N	T 331
T 292	T 593	N	T 610	T 387	T 201
N	N	C 203	T 505	T 366	T 279
T 588	T 432	T 393	T 356	T 326	T 339
T 336	T 384	T 306	T 369	T 222	C 235
T 490	T 366	T 220	T 410	NA 58	O
T 478	N	C 306	N	T 321	T 263
T 463	T 370	T 356	T 511	T 584	T 306
T 374	T 426	T 443	T 375	T 491	T 297
N	T 567	T 360	T 447	N	T 408
N	T 285	T 415	T 266	N	T 287
T 543	T 280	N	T 436	T 169	T 289
T 474	T 347	T 313	T 345	C 230	N
T 454	N	T 262	N	O	T 240
T 395	T 662	T 455	T 513	T 325	O
T 485	T 434	T 630	T 393	T 388	T 223
N	N	T 514	T 324	N	TA 61
TA 49	T 519	N	T 331	T 307	TA -24
T 293	N	T 339	T 300	T 338	NA 144

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

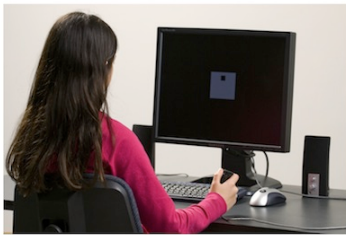


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The T.O.V.A. continuously measures performance during a 10.8-minute task or a 21.6-minute task, depending on age. It records speed, accuracy, and consistency of responses to a series of squares (in the visual T.O.V.A. test) or tones (in the auditory T.O.V.A. test) that are presented in two-second intervals. These measurements (accurate to  $\pm 1$  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](mailto:info@tovatest.com) or call 800.PAY.ATTN (562.594.7700).

ID: **1** **Example Subject** (Oct 1, 2000)  
**Female - 16y 10m 0d**

**Auditory T.O.V.A.** (v9.0-78 sn30000)  
 Aug 1, 2017 at 9:08 AM

## Session and Response Validity

This session meets session and response validity criteria.

## T.O.V.A. Interpretation

The results of this T.O.V.A. are borderline, and may be suggestive of a possible attention deficit, including ADHD. Please see the Interpretation Notes page for additional information.

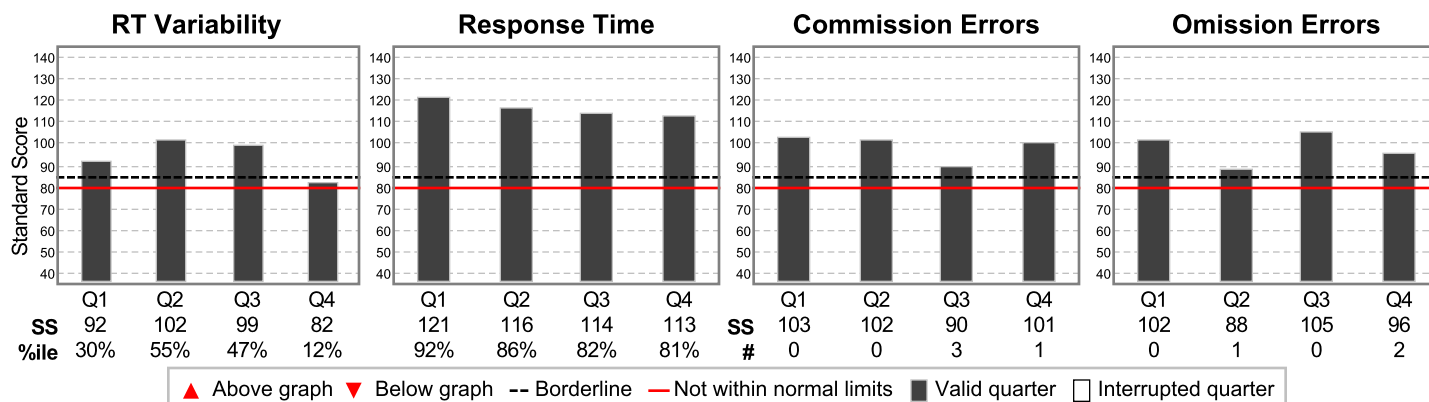
## Treatment

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	92	102	99	82	98	90	92
Response Time	121	116	114	113	118	114	115
Commission Errors	103	102	90	101	102	96	99
Omission Errors	102	88	105	96	90	101	100

Infrequent Frequent

Key: Borderline, Not within normal limits, Invalid

ID: **1** **Example Subject** (Oct 1, 2000)  
**Female - 16y 10m 0d**

**Auditory T.O.V.A.** (v9.0-78 sn30000)  
Aug 1, 2017 at 9:08 AM

## Session comments

Auditory baseline.

## 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 Quarter 4.**

**Response Time** is the average speed of correct responses to targets, and is a measure of information processing speed. **Response Time was within normal limits.**

**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 within normal limits.**

## Response Patterns

Only Quarter 4 is borderline. This may represent difficulty maintaining performance during conditions of high arousal and/or a decline in performance after 15 minutes of a task.

Since only one quarter in this test is borderline, this may represent the consequence of an external distraction. The test administrator should record the occurrence of significant distractions during the T.O.V.A. test.

## Other Notes

Consider administering a Visual 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** (Oct 1, 2000)  
**Female - 16y 10m 0d**

**Auditory T.O.V.A.** (v9.0-78 sn30000)  
 Aug 1, 2017 at 9:08 AM

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	109	95	122	206	105	169	157
Response Time	ms	353	401	383	381	377	382	381
Post-commission responses	#	0	0	2	1	0	3	3
Response Time	ms	0	0	578	537	0	564	564
Variability	ms	0	0	94	0	0	79	79
Commission Errors	#	0/126	0/126	3/36	1/36	0/252	4/72	4/324
Percentage	%	0	0	8.3	2.8	0	5.6	1.2
Response Time	ms	0	0	235	195	0	225	225
Omission Errors	#	0/36	1/36	0/126	2/126	1/72	2/252	3/324
Percentage	%	0	2.8	0	1.6	1.4	0.8	0.9
D Prime		8.53	6.18	5.65	4.06	6.47	4.01	4.6
Standard Score		107	78	89	79	85	80	82
Beta		1	1425.08	0	0.62	791.35	0.19	0.78
Anticipatory	%	0	0	1.2	1.9	0	1.5	0.8
To Nontargets	#	0	0	0	0	0	0	0
To Targets	#	0	0	2	3	0	5	5
Multiple Responses	#	0	0	0	0	0	0	0
Total Correct	#	162/162	161/162	157/162	156/162	323/324	313/324	636/648
Percentage	%	100	99.4	96.9	96.3	99.7	96.6	98.1
Skew	ms	-3	65	-6	102	36	100	84
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

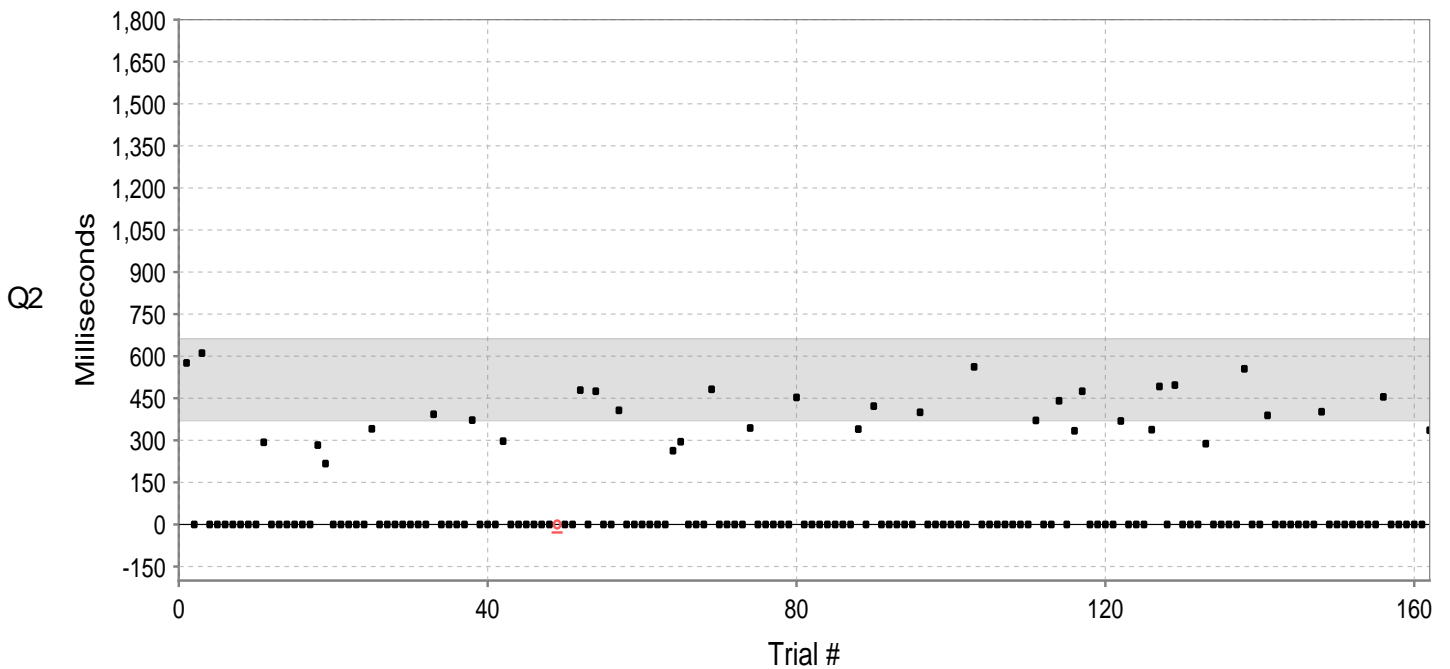
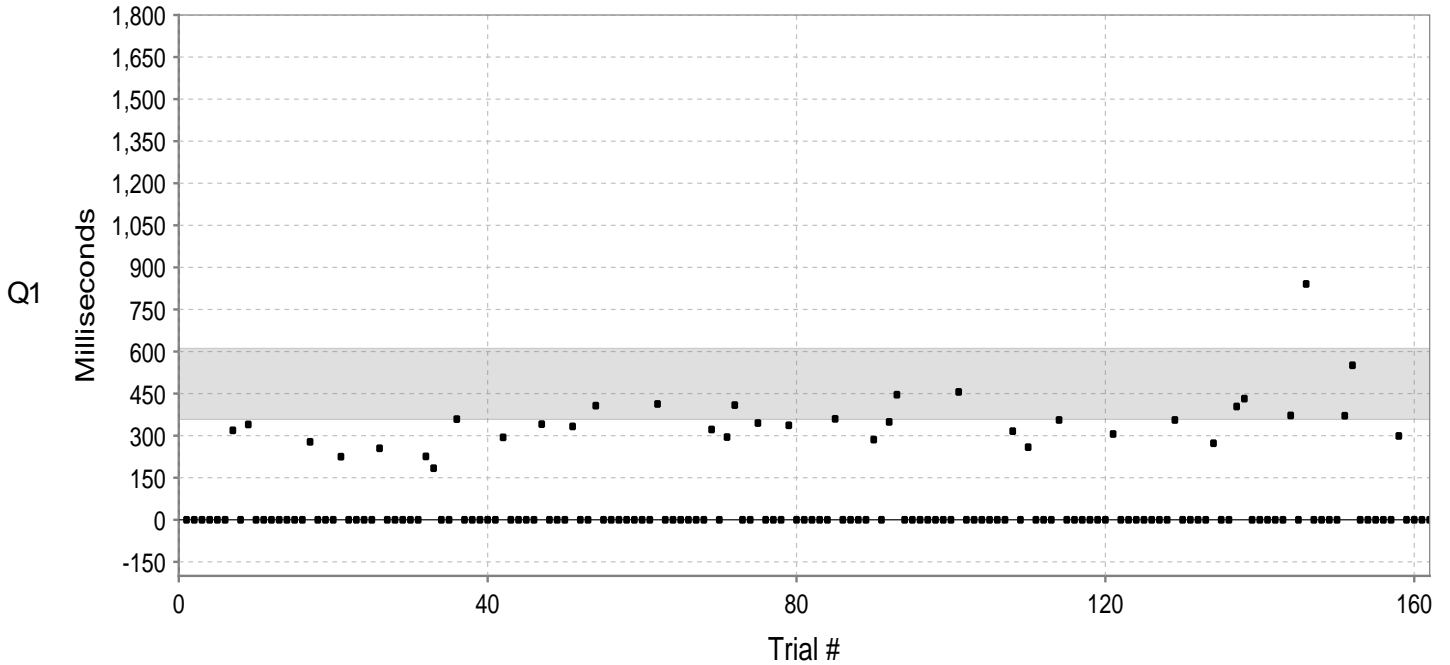
**Session information**

Tester:  
 Import Filename: example-treatment-female-16.tova (2 / 3)  
 Import Date: Aug 23, 2022 10:51:00 AM  
 Errors/Warnings:

ID: 1 **Example Subject** (Oct 1, 2000)  
**Female - 16y 10m 0d**

**Auditory T.O.V.A.** (v9.0-78 sn30000)  
 Aug 1, 2017 at 9:08 AM

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.

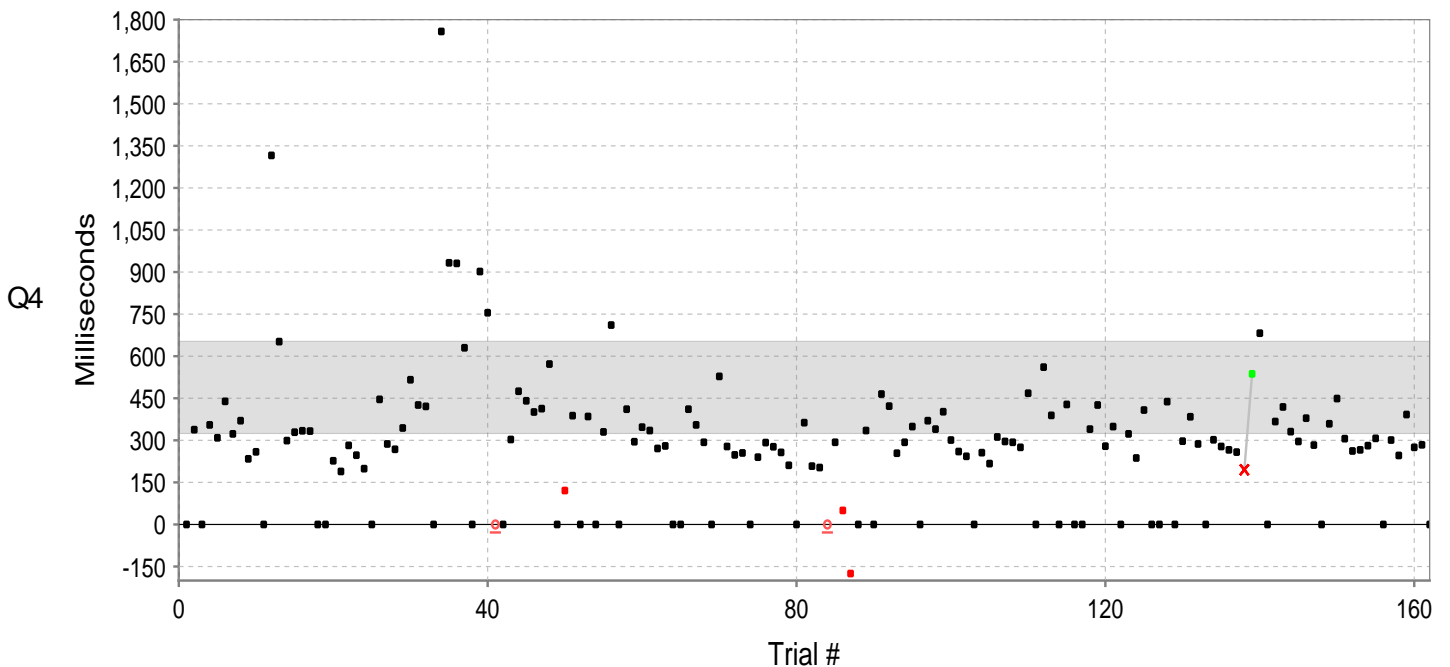
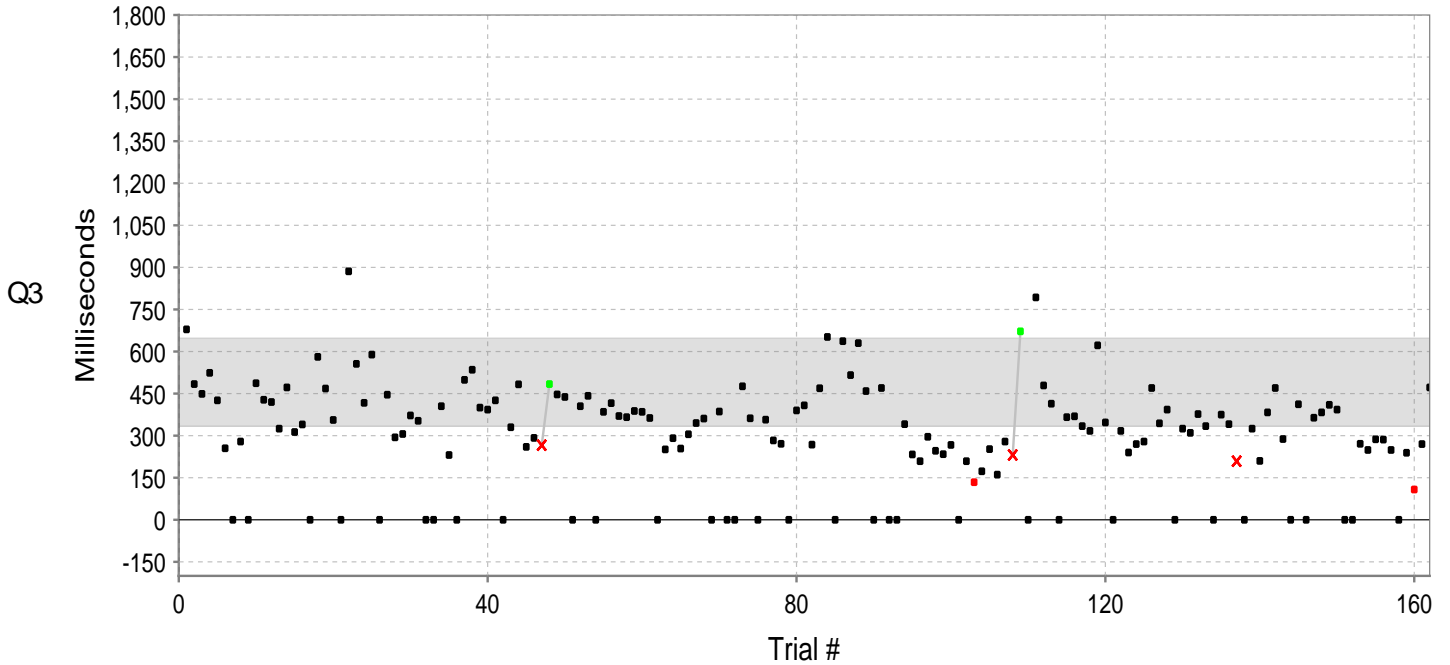


- Correct response    - Correct non-response    × Commission error    ◌ Omission error    ▪ Anticipatory response
- Post-commission error correct response    / Slower post-commission RT    \ Faster post-commission RT
- ▲△ Off-scale resp./error    ■ Normative range    | Interruption    3 10s Response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

ID: 1 **Example Subject** (Oct 1, 2000)  
**Female - 16y 10m 0d**

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- Correct response    - Correct non-response    × Commission error    ○ Omission error    ▪ Anticipatory response
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ID: **1** **Example Subject** (Oct 1, 2000)  
**Female - 16y 10m 0d**

**Auditory T.O.V.A.** (v9.0-78 sn30000)  
 Aug 1, 2017 at 9:08 AM

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 259	T 404
N	N	N	N	N	T 432
N	N	N	T 360	N	N
N	T 226	N	N	N	N
N	T 184	N	N	T 356	N
T 319	N	N	N	N	N
N	N	T 413	N	N	N
T 340	T 359	N	T 286	N	T 372
N	N	N	N	N	N
N	N	N	T 349	N	T 841
N	N	N	T 446	N	N
N	N	N	N	T 306	N
N	N	N	N	N	N
N	T 294	T 322	N	N	N
N	N	N	N	N	T 371
T 278	N	T 295	N	N	T 551
N	N	T 409	N	N	N
N	N	N	N	N	N
N	T 341	N	T 456	N	N
T 225	N	T 345	N	T 356	N
N	N	N	N	N	T 299
N	T 333	N	N	N	N
N	N	T 337	N	N	N
T 255	N	N	N	T 273	N
N	T 407	N	T 316	N	N

163-189	190-216	217-243	244-270	271-297	298-324
T 576	N	N	N	N	N
N	N	N	N	N	N
T 611	N	T 407	N	T 371	T 555
N	N	N	N	N	N
N	N	N	N	N	N
N	T 393	N	N	T 441	T 389
N	N	N	T 340	N	N
N	N	N	N	T 334	N
N	N	T 263	T 422	T 475	N
T 293	T 372	T 295	N	N	N
N	N	N	N	N	N
N	N	N	N	N	T 402
N	N	N	N	T 369	N
N	T 297	T 482	T 400	N	N
N	N	N	N	N	N
N	N	N	N	N	N
T 283	N	N	N	T 338	N
T 217	N	N	N	T 492	N
N	N	T 344	N	N	N
N	N	N	N	T 497	T 455
N	O	N	T 562	N	N
N	N	N	N	N	N
N	N	N	N	N	N
T 341	T 479	N	N	T 288	N
N	N	T 453	N	N	N
N	T 475	N	N	N	T 336

325-351	352-378	379-405	406-432	433-459	460-486
T 679	T 294	T 385	T 268	T 672	T 341
T 484	T 306	T 416	T 469	N	C 209
T 449	T 372	T 370	T 652	T 793	N
T 524	T 353	T 366	N	T 479	T 325
T 426	N	T 388	T 637	T 414	T 210
T 255	N	T 385	T 516	N	T 383
N	T 405	T 363	T 630	T 366	T 470
T 279	T 231	N	T 459	T 369	T 288
N	N	T 251	N	T 334	N
T 487	T 499	T 291	T 470	T 317	T 412
T 428	T 535	T 254	N	T 622	N
T 420	T 400	T 305	N	T 347	T 364
T 325	T 393	T 345	T 341	N	T 383
T 472	T 426	T 361	T 233	T 317	T 410
T 313	N	N	T 209	T 240	T 393
T 340	T 330	T 386	T 296	T 270	N
N	T 483	N	T 246	T 279	N
T 581	T 260	N	T 234	T 470	T 271
T 468	T 292	T 476	T 267	T 344	T 249
T 356	C 266	T 362	N	T 393	T 287
N	T 484	N	T 209	N	T 286
T 886	T 447	T 357	TA 134	T 325	T 249
T 556	T 438	T 283	T 173	T 310	N
T 417	N	T 271	T 252	T 377	T 239
T 589	T 405	N	T 161	T 334	TA 108
N	T 442	T 390	T 279	N	T 270
T 446	N	T 408	C 231	T 375	T 472

487-513	514-540	541-567	568-594	595-621	622-648
N	T 268	T 330	T 208	T 275	T 266
T 338	T 344	T 711	T 203	T 468	T 258
N	T 516	N	O	N	C 195
T 355	T 426	T 411	T 293	T 561	T 537
T 309	T 421	T 295	TA 50	T 389	T 682
T 439	N	T 347	TA -175	N	N
T 323	T 1758	T 335	N	T 428	T 367
T 370	T 933	T 271	T 335	N	T 419
T 234	T 931	T 280	N	N	T 331
T 259	T 630	N	T 465	T 340	T 296
N	N	N	T 422	T 426	T 379
T 1316	T 902	T 411	T 254	T 279	T 283
T 652	T 755	T 355	T 293	T 349	N
T 299	O	T 293	T 349	N	T 359
T 329	N	N	N	T 323	T 449
T 334	T 303	T 528	T 370	T 237	T 306
T 333	T 475	T 278	T 340	T 408	T 262
N	T 441	T 248	T 402	N	T 266
N	T 401	T 255	T 301	N	T 281
T 227	T 413	N	T 260	T 438	T 307
T 189	T 572	T 240	T 243	N	N
T 282	N	T 292	N	T 297	T 301
T 247	TA 121	T 277	T 256	T 384	T 246
T 199	T 388	T 257	T 217	T 287	T 392
N	N	T 211	T 312	N	T 275
T 446	T 385	N	T 296	T 302	T 284
T 287	N	T 363	T 293	T 278	N

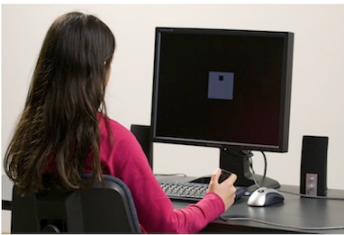
T = Correct response to target      O = Omission error      A = Anticipatory response  
 N = Correct nonresponse to nontarget      C = Commission error      M = Multiple response  
 Green = Post-Commission-error correct response      U = User interrupt      H = Hardware interrupt

## 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  $\pm 1$  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](mailto:info@tovatest.com) or call 800.PAY.ATTN (562.594.7700).



ID: 1 **Example Subject** (Oct 1, 2000)  
**Female - 16y 11m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
 Sep 1, 2017 at 9:16 AM

### 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 within normal limits. Please see the Interpretation Notes page for additional information.

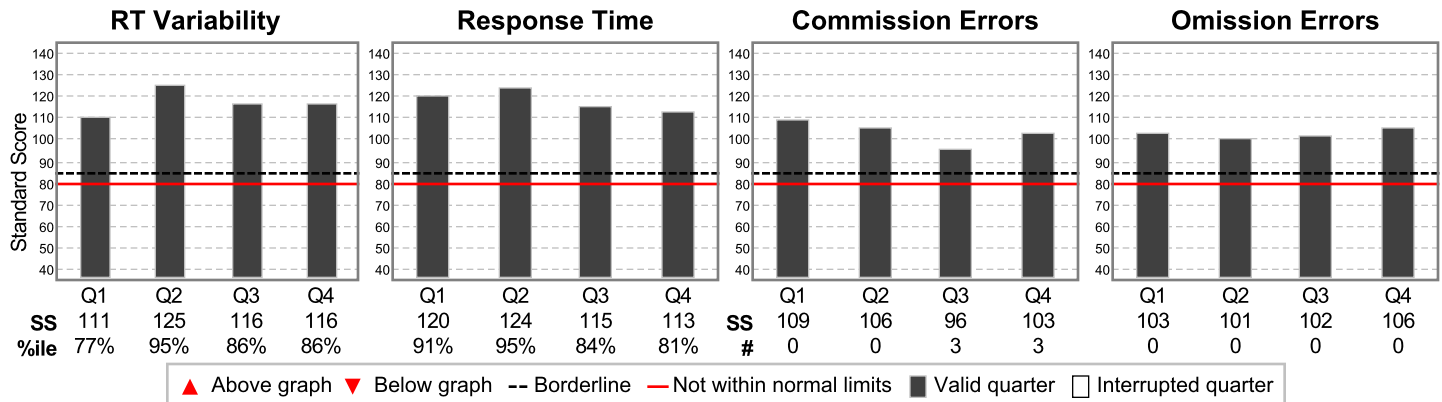
### Treatment

10.0mg dose of Adderall XR taken 2.0 hours before testing.

### 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	111	125	116	116	118	120	125
Response Time	120	124	115	113	122	115	117
Commission Errors	109	106	96	103	111	100	102
Omission Errors	103	101	102	106	104	106	108

Infrequent Frequent

Key: Borderline, Not within normal limits, Invalid

ID: 1 **Example Subject** (Oct 1, 2000)  
**Female - 16y 11m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
Sep 1, 2017 at 9:16 AM

## Session comments

Test to compare to baseline.

## 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 within normal limits.**

**Response Time** is the average speed of correct responses to targets, and is a measure of information processing speed. **Response Time was within normal limits.**

**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 within normal limits.**

The overall test performance is within normal limits. However, the clinician must take into account other factors that may produce a false negative result, including use of medication, caffeine, nicotine, strong motivation, or other possible compensations.

## 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 a within normal limits result on one test, and a not within normal limits result on the other.

ID: **1 Example Subject** (Oct 1, 2000)  
**Female - 16y 11m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
 Sep 1, 2017 at 9:16 AM

### Treatment

10.0mg dose of Adderall XR taken 2.0 hours before testing.

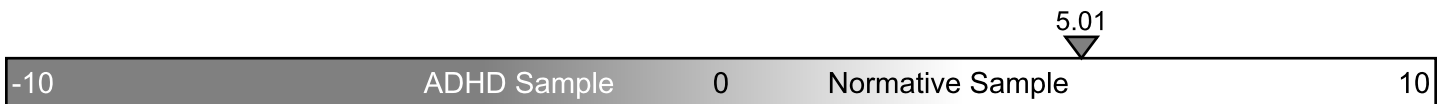
### Attention Comparison Score

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)	1.50
D Prime (Half 2)	0.03
Variability (Total)	1.68
Calibration constant	1.80
<b>Attention Comparison Score</b>	<b>5.01</b>



ID: **1 Example Subject** (Oct 1, 2000)  
**Female - 16y 11m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
 Sep 1, 2017 at 9:16 AM

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	54	34	58	54	45	56	56
Response Time	ms	354	346	313	315	350	314	322
Post-commission responses	#	0	0	3	2	0	5	5
Response Time	ms	0	0	426	256	0	358	358
Variability	ms	0	0	185	6	0	166	166
Commission Errors	#	0/126	0/126	3/36	3/36	0/252	6/72	6/324
Percentage	%	0	0	8.3	8.3	0	8.3	1.9
Response Time	ms	0	0	307	281	0	294	294
Omission Errors	#	0/36	0/36	0/126	0/126	0/72	0/252	0/324
Percentage	%	0	0	0	0	0	0	0
D Prime		8.53	8.53	5.65	5.65	8.53	5.65	6.35
Standard Score		113	112	96	102	117	100	107
Beta		1	1	0	0	1	0	0
Anticipatory	%	0	0	0	0	0	0	0
To Nontargets	#	0	0	0	0	0	0	0
To Targets	#	0	0	0	0	0	0	0
Multiple Responses	#	0	0	0	0	0	0	0
Total Correct	#	162/162	162/162	159/162	159/162	324/324	318/324	642/648
Percentage	%	100	100	98.1	98.1	100	98.1	99.1
Skew	ms	5	-0	30	10	1	31	39
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

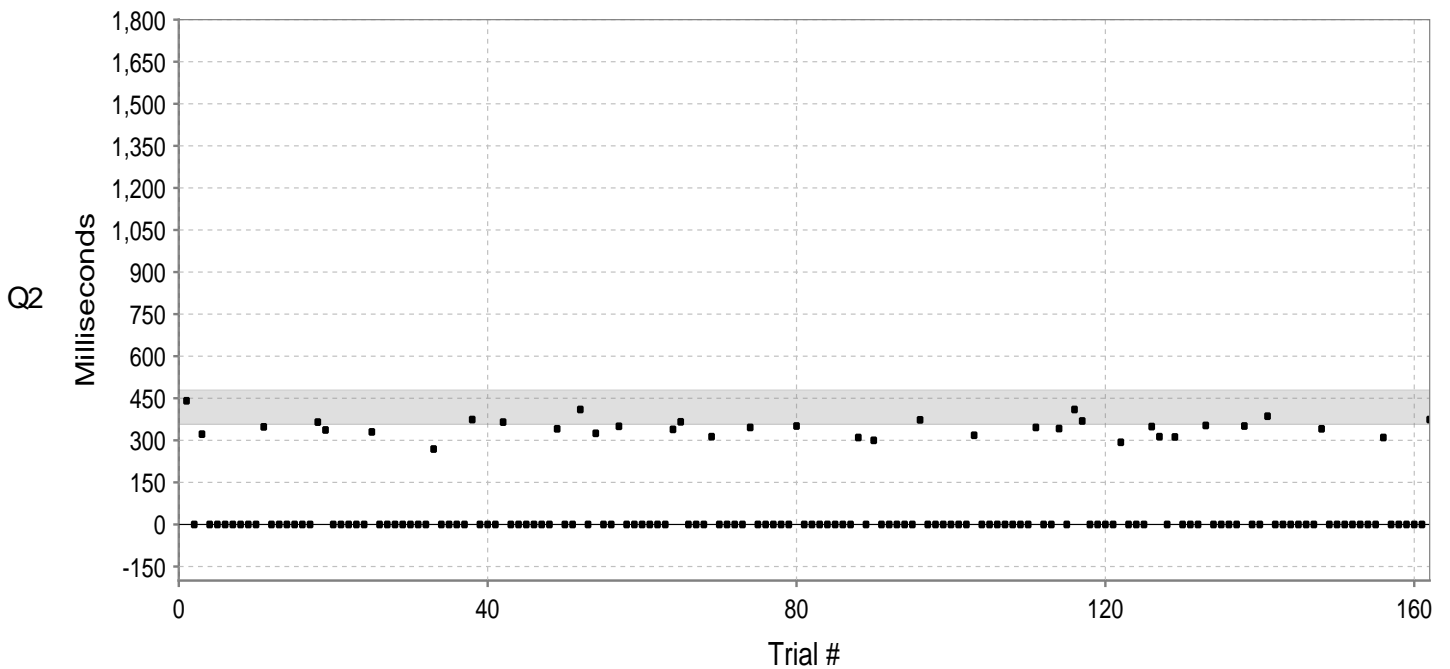
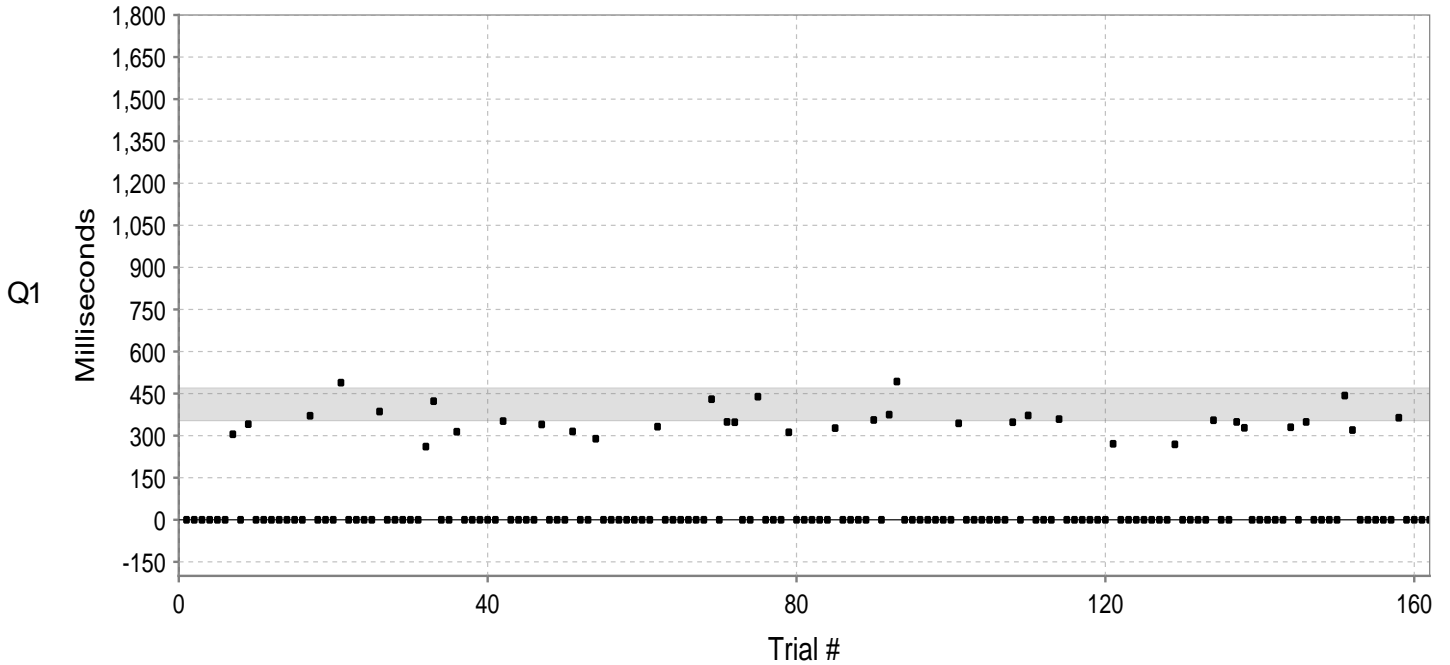
**Session information**

Tester:  
 Import Filename: example-treatment-female-16.tova (1 / 3)  
 Import Date: Aug 23, 2022 10:51:00 AM  
 Errors/Warnings:

ID: 1 **Example Subject** (Oct 1, 2000)  
**Female - 16y 11m 0d**

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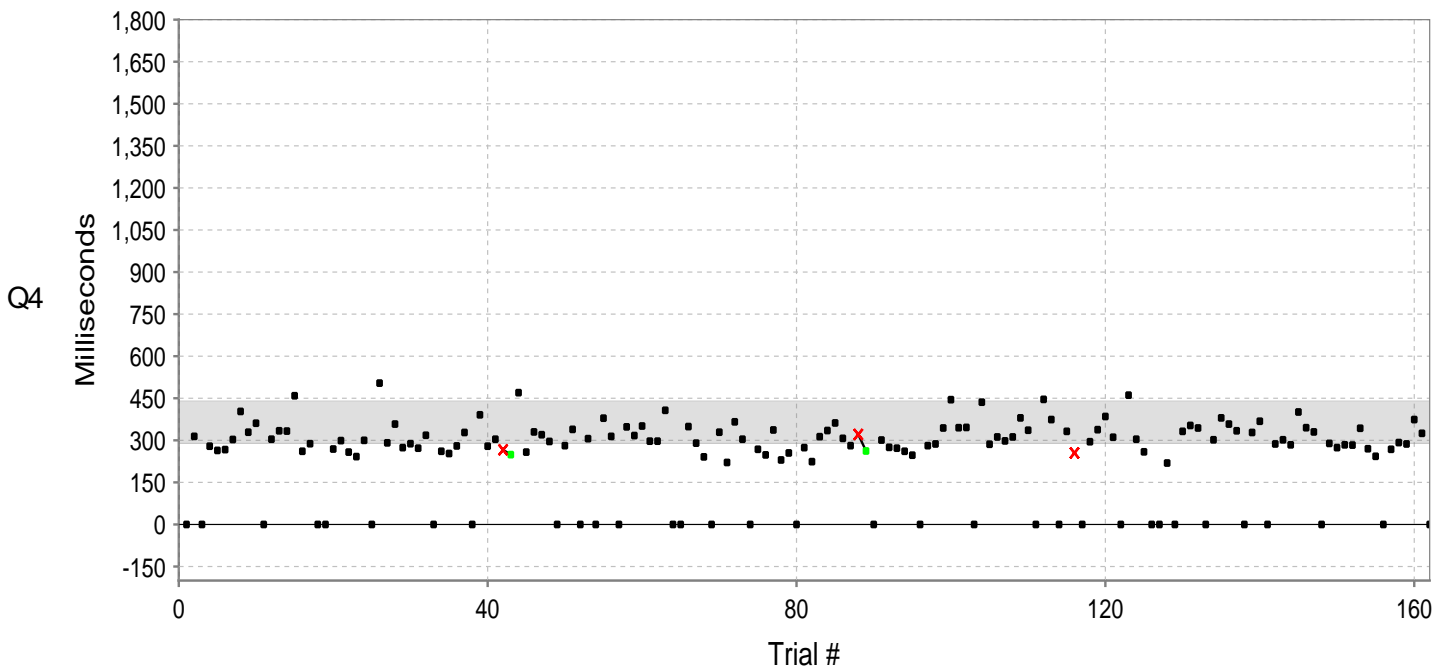
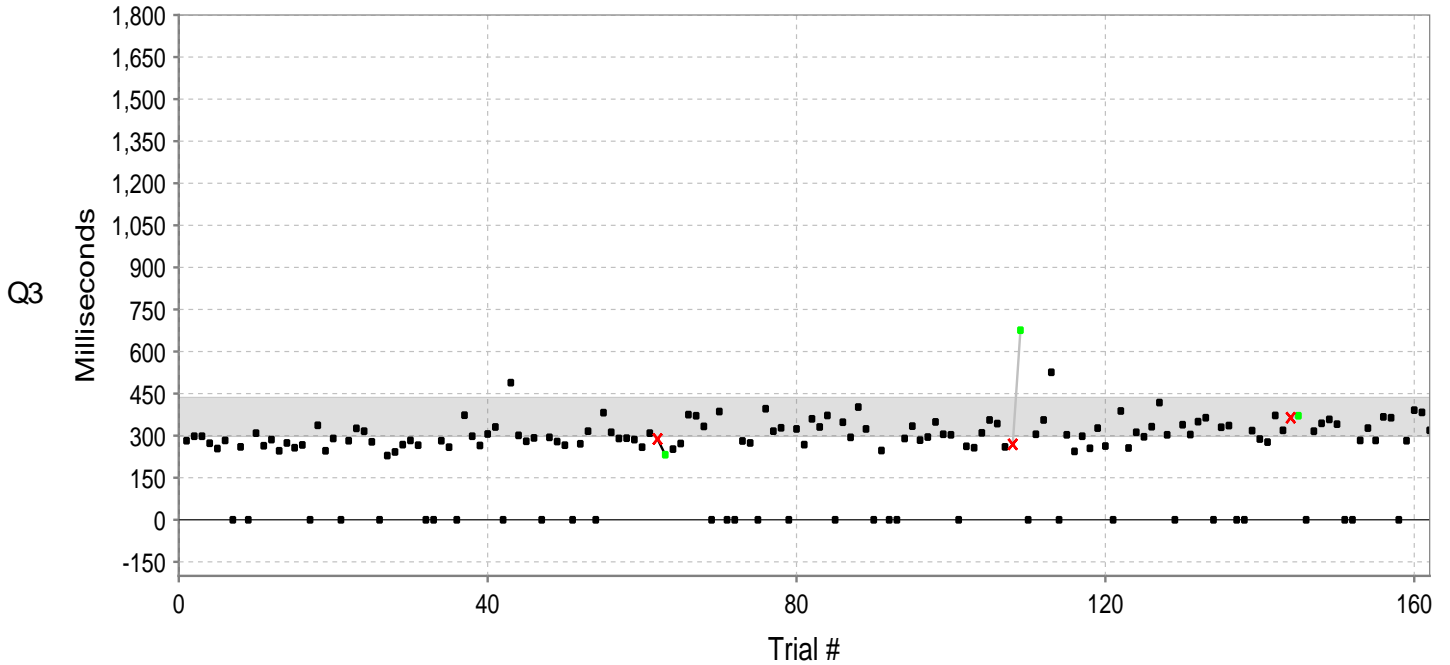


- Correct response    ■ Correct non-response    × Commission error    ○ Omission error    ■ Anticipatory response
- Post-commission error correct response    / Slower post-commission RT    \ Faster post-commission RT
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**Female - 16y 11m 0d**

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- Correct response    ■ Correct non-response    ✕ Commission error    ○ Omission error    ■ Anticipatory response
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ID: **1** **Example Subject** (Oct 1, 2000)  
**Female - 16y 11m 0d**

**Visual T.O.V.A.** (v9.0-78 sn30000)  
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1-27	28-54	55-81	82-108	109-135	136-162
N	N	N	N	N	N
N	N	N	N	T 372	T 349
N	N	N	N	N	T 328
N	N	N	T 327	N	N
N	T 261	N	N	N	N
N	T 423	N	N	T 359	N
T 305	N	N	N	N	N
N	N	T 332	N	N	N
T 341	T 314	N	T 356	N	T 330
N	N	N	N	N	N
N	N	N	T 375	N	T 349
N	N	N	T 493	N	N
N	N	N	N	T 271	N
N	N	N	N	N	N
N	T 352	T 430	N	N	N
N	N	N	N	N	T 443
T 371	N	T 349	N	N	T 320
N	N	T 348	N	N	N
N	N	N	N	N	N
N	T 340	N	T 344	N	N
T 489	N	T 439	N	T 269	N
N	N	N	N	N	N
N	N	N	N	N	T 364
N	T 315	N	N	N	N
N	N	T 312	N	N	N
T 386	N	N	N	T 355	N
N	T 289	N	T 348	N	N

163-189	190-216	217-243	244-270	271-297	298-324
T 441	N	N	N	N	N
N	N	N	N	N	N
T 322	N	T 350	N	T 346	T 351
N	N	N	N	N	N
N	N	N	N	N	N
N	T 269	N	N	T 342	T 386
N	N	N	T 310	N	N
N	N	N	N	T 410	N
N	N	N	T 300	T 369	N
N	N	T 339	N	N	N
T 348	T 374	T 366	N	N	N
N	N	N	N	N	N
N	N	N	N	N	T 341
N	N	N	N	T 293	N
N	T 365	T 313	T 373	N	N
N	N	N	N	N	N
N	N	N	N	N	N
T 365	N	N	N	T 349	N
T 337	N	N	N	T 313	N
N	N	T 346	N	N	N
N	N	N	N	T 312	T 310
N	T 341	N	T 318	N	N
N	N	N	N	N	N
N	N	N	N	N	N
T 330	T 410	N	N	T 353	N
N	N	T 351	N	N	N
N	T 325	N	N	N	T 374

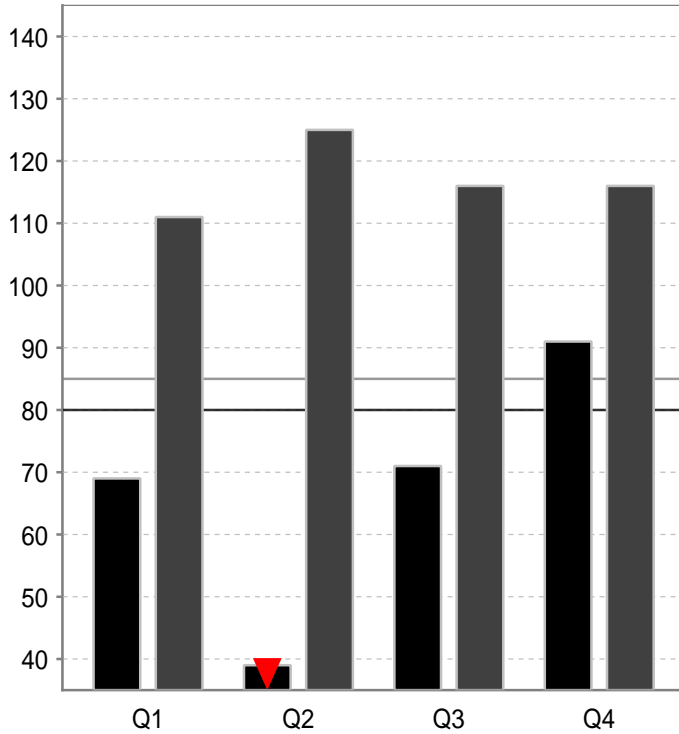
325-351	352-378	379-405	406-432	433-459	460-486
T 282	T 242	T 382	T 360	T 676	T 336
T 298	T 268	T 312	T 331	N	N
T 298	T 283	T 290	T 372	T 305	N
T 273	T 266	T 291	N	T 356	T 318
T 254	N	T 286	T 348	T 526	T 288
T 283	N	T 259	T 294	N	T 277
N	T 282	T 309	T 402	T 303	T 372
T 260	T 259	C 288	T 324	T 244	T 319
N	N	T 232	N	T 298	C 364
T 309	T 373	T 252	T 247	T 255	T 371
T 264	T 298	T 272	N	T 327	N
T 286	T 265	T 375	N	T 263	T 316
T 246	T 306	T 371	T 290	N	T 344
T 274	T 331	T 333	T 334	T 388	T 358
T 257	N	N	T 284	T 256	T 341
T 267	T 489	T 386	T 295	T 312	N
N	T 301	N	T 349	T 296	N
T 337	T 280	N	T 305	T 332	T 283
T 246	T 292	T 281	T 303	T 418	T 327
T 290	N	T 274	N	T 303	T 283
N	T 294	N	T 262	N	T 367
T 282	T 279	T 396	T 257	T 339	T 364
T 326	T 266	T 316	T 310	T 304	N
T 316	N	T 328	T 356	T 350	T 282
T 278	T 271	N	T 343	T 364	T 391
N	T 316	T 324	T 260	N	T 383
T 229	N	T 268	C 269	T 330	T 319

487-513	514-540	541-567	568-594	595-621	622-648
N	T 358	T 379	T 224	T 380	T 358
T 314	T 274	T 314	T 313	T 336	T 334
N	T 288	N	T 335	N	N
T 279	T 272	T 348	T 362	T 446	T 328
T 264	T 318	T 317	T 307	T 374	T 368
T 267	N	T 351	T 281	N	N
T 303	T 261	T 297	C 321	T 332	T 287
T 403	T 253	T 297	T 262	C 255	T 302
T 329	T 280	T 407	N	N	T 284
T 361	T 328	N	T 301	T 295	T 401
N	N	N	T 275	T 338	T 345
T 304	T 391	T 349	T 272	T 385	T 330
T 334	T 279	T 290	T 261	T 311	N
T 333	T 304	T 241	T 247	N	T 289
T 459	C 266	N	N	T 461	T 274
T 261	T 249	T 329	T 281	T 304	T 284
T 288	T 470	T 221	T 287	T 259	T 283
N	T 258	T 366	T 344	N	T 343
N	T 330	T 304	T 445	N	T 270
T 269	T 320	N	T 345	T 219	T 243
T 299	T 296	T 268	T 346	N	N
T 258	N	T 248	N	T 332	T 268
T 242	T 281	T 337	T 436	T 353	T 292
T 300	T 339	T 230	T 286	T 344	T 287
N	N	T 255	T 312	N	T 374
T 504	T 306	N	T 298	T 302	T 325
T 291	N	T 274	T 312	T 380	N

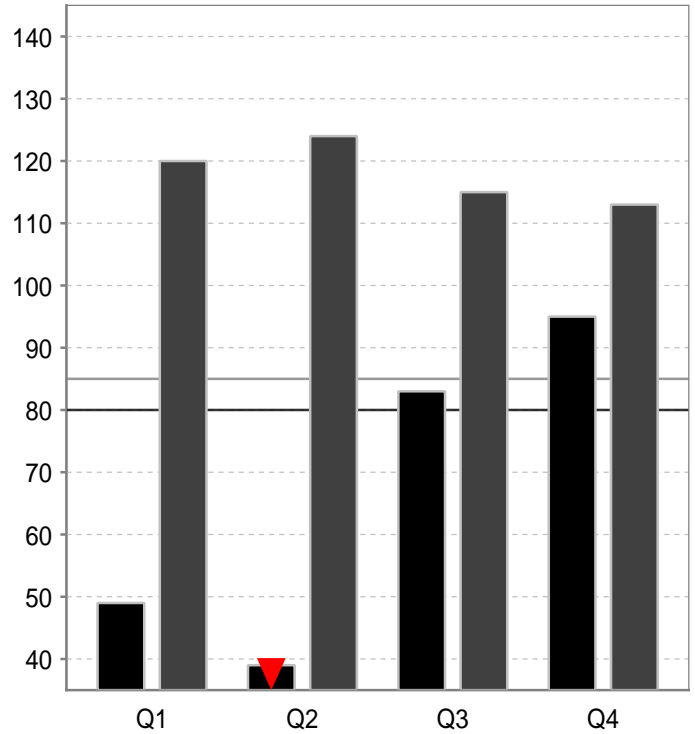
T = Correct response to target      O = Omission error      A = Anticipatory response  
 N = Correct nonresponse to nontarget      C = Commission error      M = Multiple response  
 Green = Post-Commission-error correct response      U = User interrupt      H = Hardware interrupt

■ Example Subject, 16.75 y, Jul 1, 2017 8:33 AM, Visual  
■ Example Subject, 16.92 y, Sep 1, 2017 9:16 AM, Visual, Adderall XR(10.0mg)

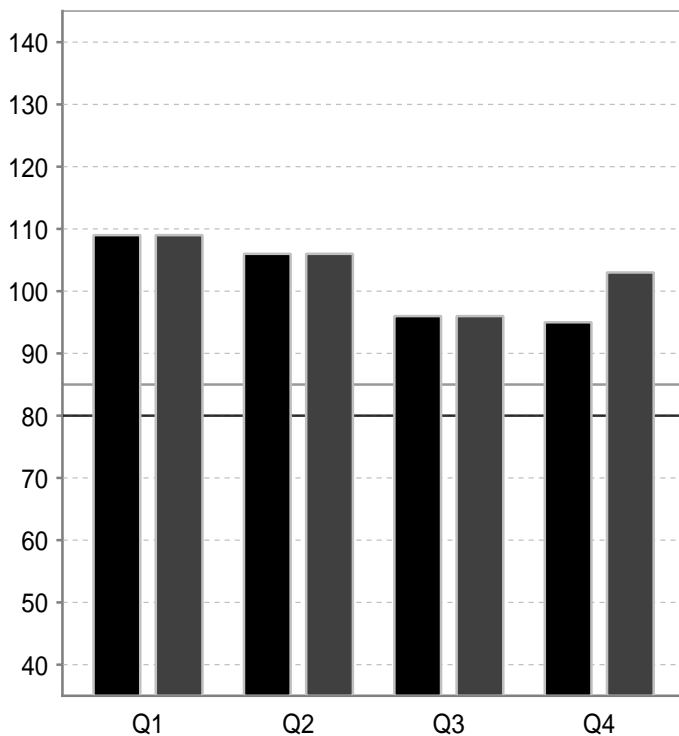
## RT Variability



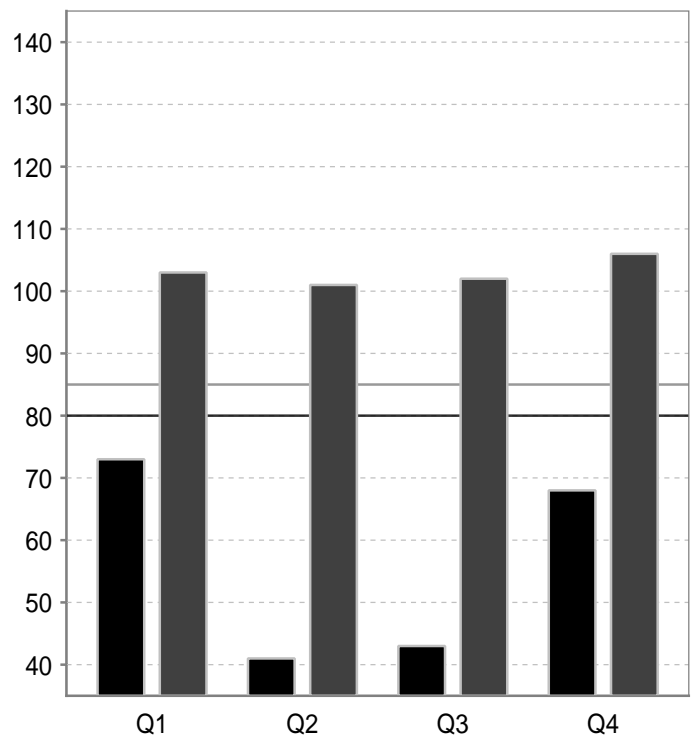
## Response Time



## Commission Errors



## Omission Errors

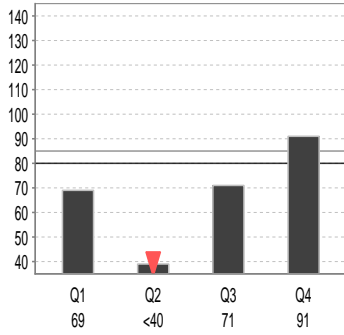




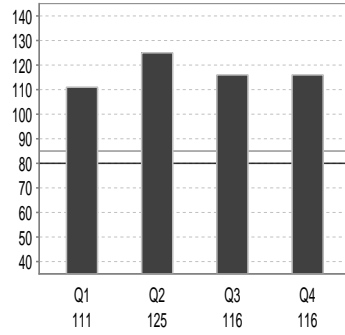
Example Subject  
16.75 y, 7/1/17 8:33 AM  
Visual  
No challenge

Example Subject  
16.92 y, 9/1/17 9:16 AM  
Visual  
Adderall XR(10.0mg)

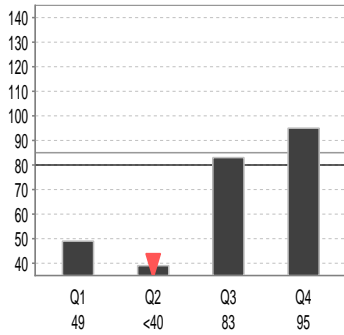
### RT Variability



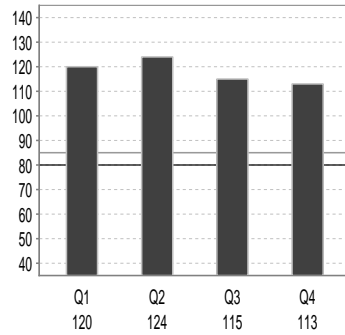
### RT Variability



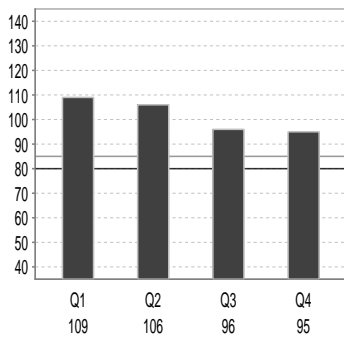
### Response Time



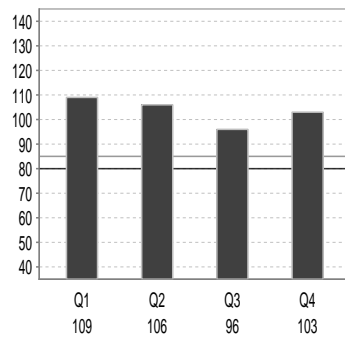
### Response Time



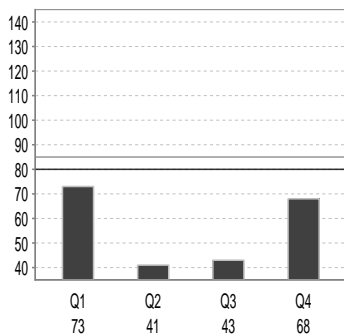
### Commission Errors



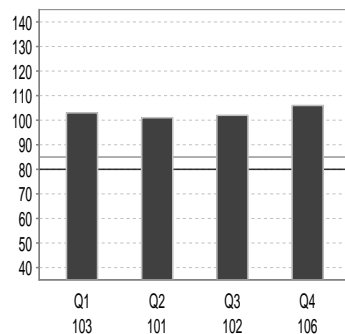
### Commission Errors



### Omission Errors



### Omission Errors



**A:** Example Subject, 16.75 y, 7/1/17 8:33 AM, Visual, No challenge

**B:** Example Subject, 16.92 y, 9/1/17 9:16 AM, Visual, Adderall XR(10.0mg)

