Quotient® ADHD test

Use the right tools to make the right diagnosis for Amanda.

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- This case illustrates the clinical value of objective assessment with the Quotient ADHD Test to help rule out ADHD when making a differential diagnosis.
- Because comorbidity rates are high and symptoms of ADHD overlap with other disorders, it is important to integrate quantitative data in addition to rating scales and clinical exam to guide treatment planning.

History: Amanda is a 9 year old in the 3rd grade. She has a progressive history over several years of difficulty focusing. She lives with her aunt and uncle. There is strong family history of ADHD, with some reports of possible generalized anxiety disorder and/or major depressive disorder. Teachers report that she is impulsive, she becomes frustrated easily and needs frequent re-direction in class. She is frequently distracted and tends to wander around the classroom during lessons.

Referral Complaint: Amanda's attention span in class has become worse. Her aunt was certain Amanda had ADHD and brought her in for an assessment.

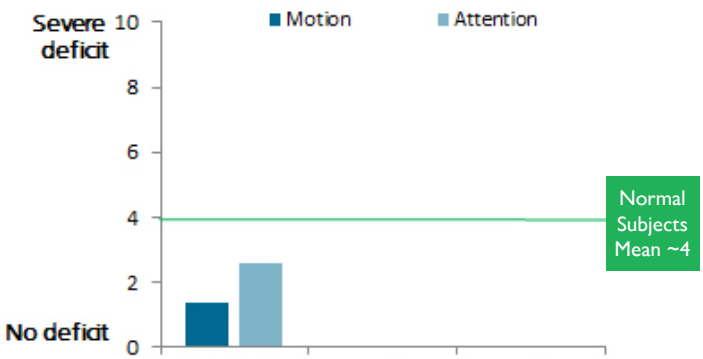
Plan of Action: The Quotient® ADHD Test showed high accuracy, good sustained attention and motion patterns that were not consistent with patterns of ADHD.

The Quotient ADHD Test helped to rule out ADHD as a likely candidate for the differential diagnosis. A direct interview with Amanda revealed significant daily worry about her own security. "Will my aunt and uncle leave me, like my mom? Will my friends leave me? Will my teachers always like me?" Clinical information led to a diagnosis of general anxiety state, with secondary symptoms of inattention. After reviewing results and potential adverse effects with her aunt, Amanda received a trial of an anxiolytic. Follow-up 4 weeks later revealed that she was sleeping better, she was much happier, comfortable and more visually engaged. Additionally, teachers reported higher test scores, improved peer interactions and improvement in all academic and social domains.

Scaled Scores

Higher Scaled Scores indicate weaker performance on those domains than the average performance expected for age and gender. The mean Scaled Score for typically developing children across both Motion and Attention domains is ~4 for all ages and genders.

Test Date	Day 1
Age	9.28
Medication	No medication
Scaled Scores	
Motion	1.37
Attention	2.60



Quotient ADHD test

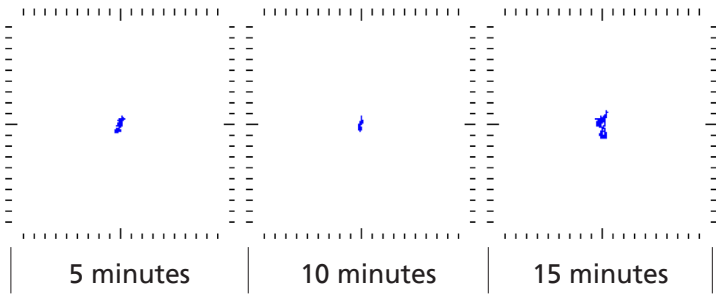
Day 1, No medication

Micro-Motion Analysis

	Day 1		
	Ref. Range	Results	%ile
Time Immobile	77-229	462 ms	97
# Movements	1273-3906	668	97
Displacement	1.63-6.01	0.74 m	99
Area	330-161 cm^2	14 cm^2	98
Spatial Complexity	1.067-1.225	1.472	99
Temporal Scaling	0.444-0.971	0.266	96

Micro-motion more than 1 millimeter is plotted on the graph. Look for a pattern of expanding area over time. Amanda had excellent motion control.

Head Motion

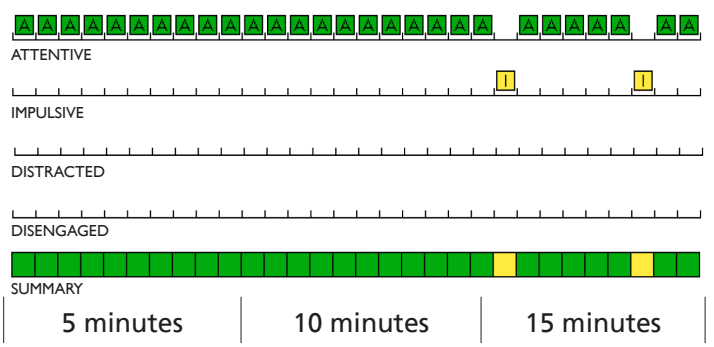


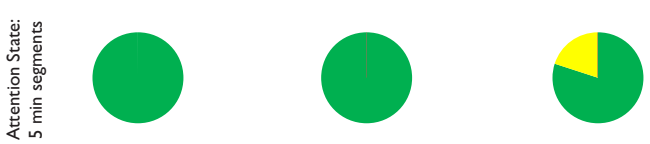
Attention Analysis

	Day 1		
	Ref. Range	Results	%ile
# Shifts	5-7	4	91
Attentive	16.7-90.0%	93.3%	88
Impulsive	16.7-53.3%	6.7%	88
Distracted	0.0-16.7%	0.0%	99
Disengaged			
Random	0.0-10.0%	0.0%	99
Minimal	0.0-0.0%	0.0%	99
Contrary	0.0-0.0%	0.0%	99

A high number of shifts in attention state and inconsistency in maintaining an attentive state are consistent with ADHD. Amanda had only 4 attention shifts and was in the Attentive state for 93.3% of the test. Her patterns are not consistent with ADHD.

Attention State Analysis for 30 Second Segments

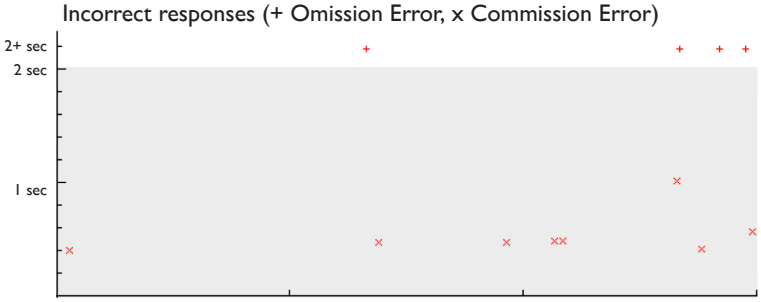




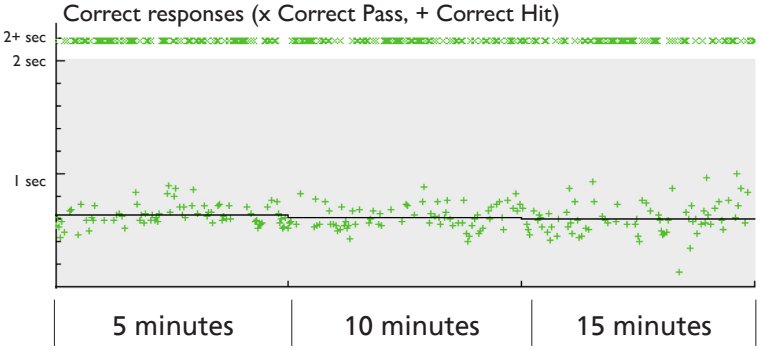
	Day 1		
	Ref. Range	Results	%ile
Accuracy	78.0-96.5%	97.3%	92
Omission Errors	0.4-8.8%	1.8%	53
Commission Errors	5.6-36.2%	3.6%	93
Response Time	452-624 ms	625 ms	84
Variability	104-185 ms	114 ms	73
COV	20-34	18	92

Response Time for correct hits that are too fast (≤16th percentile) or too slow (≥84th percentile) may be clinically significant. Amanda's correct responses show a repetitive pattern of periods of fast response followed by periods of slow response, which is atypical for ADHD. Response Time and Variability of correct responses increases in the last 5 minutes, which is often associated with increasing difficulty in attending to the task.

Incorrect responses (+ Omission Error, x Commission Error)



Correct responses (x Correct Pass, + Correct Hit)



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