



CONNERS CPT 3™

Continuous Performance Test 3rd Edition™

C. Keith Conners, Ph.D.

Assessment Report

Name/ID: Alexandra Sample
Age: 16
Gender: Female
Birth Date: February 16, 1998
Grade: 11
Administration Date: February 26, 2014
Normative Option: Gender Specific norms
Input Device: Keyboard
Assessor's Name: Dr. Smith
Medication/Notes:

This Assessment Report is intended for use by qualified assessors only, and is not to be shown or presented to the respondent or any other unqualified individuals or used as the sole basis for clinical diagnosis or intervention. Administrators are cautioned against drawing unsupported interpretations. To obtain a comprehensive view of the individual, information from this report should be combined with information gathered from other psychometric measures, interviews, observations, and available records. This report is based on an algorithm that produces the most common interpretations of the obtained scores. Additional interpretive information is found in the *Conners CPT 3 Manual* (published by MHS).



Copyright © 2014 Multi-Health Systems Inc. All rights reserved.
P.O. Box 950, North Tonawanda, NY 14120-0950
3770 Victoria Park Ave., Toronto, ON M2H 3M6

The Conners Continuous Performance Test 3rd Edition (Conners CPT 3TM) assesses attention-related problems in individuals aged 8 years and older. During the 14-minute, 360-trial administration, respondents are required to respond when any letter appears, except the non-target letter “X.” By indexing the respondent’s performance in areas of inattentiveness, impulsivity, sustained attention, and vigilance, the Conners CPT 3 can be a useful adjunct to the process of diagnosing Attention-Deficit/Hyperactivity Disorder (ADHD), as well as other psychological and neurological conditions related to attention.

Validity of Administration

The Conners CPT 3 performs a validity check based on the number of hits and omission errors committed, as well as a self-diagnostic check of the accuracy of the timing of each administration. If there is an insufficient number of hits to compute scores, and/or if the omission error rate exceeds 25%, these issues will be noted. Also, the program will issue a warning message noting that the administration was invalid if a timing issue is detected.

There was no indication of any validity issues; the current administration should be considered valid.

Response Style Analysis

The variable **C** represents an individual’s natural response style in tasks that involve a speed-accuracy trade-off. Based on his or her score on this variable, a respondent can be classified as having one of the following three response styles: a **conservative** style (T-score ≥ 60) of responding that emphasizes accuracy over speed; a **liberal** style (T-score ≤ 40) of responding that emphasizes speed over accuracy; or a **balanced** style (T-score = 41-59) of responding that is sensitive to both speed and accuracy. Based on Alexandra’s responses, **she has a balanced style of responding that is sensitive to both speed and accuracy (T-score = 48; 90% Confidence Interval = 42-54)**. This response style is not likely to bias other Conners CPT 3 scores.

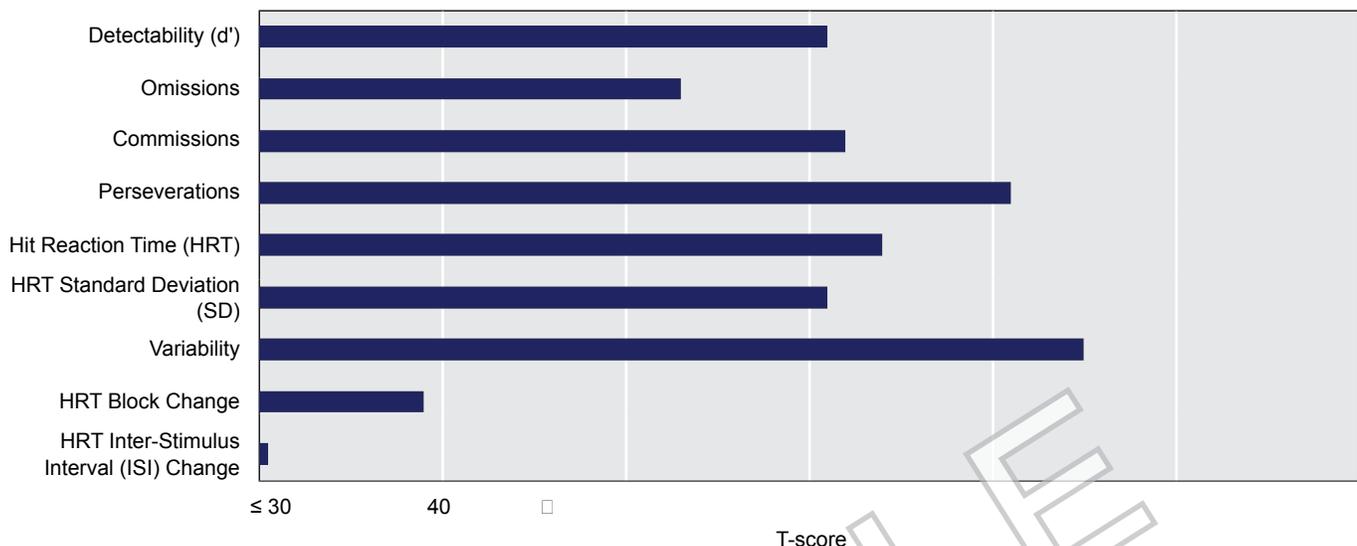
T-score Guidelines

The guidelines in the following table apply to all T-scores in this report.

Guidelines			
T-score	For Hit Reaction Time (HRT)	T-score	For all other variables
70+	Atypically Slow	70+	Very Elevated
60-69	Slow	60-69	Elevated
55-59	A Little Slow	55-59	High Average
45-54	Average	45-54	Average
40-44	A Little Fast	< 45	Low
< 40	Atypically Fast		

Overview of Conners CPT 3 Scores

This section provides an overview of Alexandra's Conners CPT 3 scores.



Variable Type	Measure	T-score (CI)	Percentile	Guideline	Interpretation
Detectability	d'	61 (57-65)	85th	Elevated	Difficulty differentiating targets from non-targets.
Error Type	Omissions	53 (50-56)	78th	Average	Average rate of missed targets.
	Commissions	62 (58-66)	90th	Elevated	High rate of incorrect responses to non-targets.
	Perseverations	71 (64-78)	94th	Very Elevated	Very high rate of random, repetitive, or anticipatory responses.
Reaction Time Statistics	HRT	64 (62-66)	91st	Slow	Slow mean response speed.
	HRT SD	61 (57-65)	88th	Elevated	High inconsistency in reaction times.
	Variability	75 (67-83)	97th	Very Elevated	Very high variability in reaction time consistency.
	HRT Block Change	39 (34-44)	9th	Low	Showed a good ability to sustain or increase response speed in later blocks.
	HRT ISI Change	25 (19-31)	1st	Low	Showed a good ability to sustain or increase response speed at longer ISIs.

Note. CI = Confidence Interval.

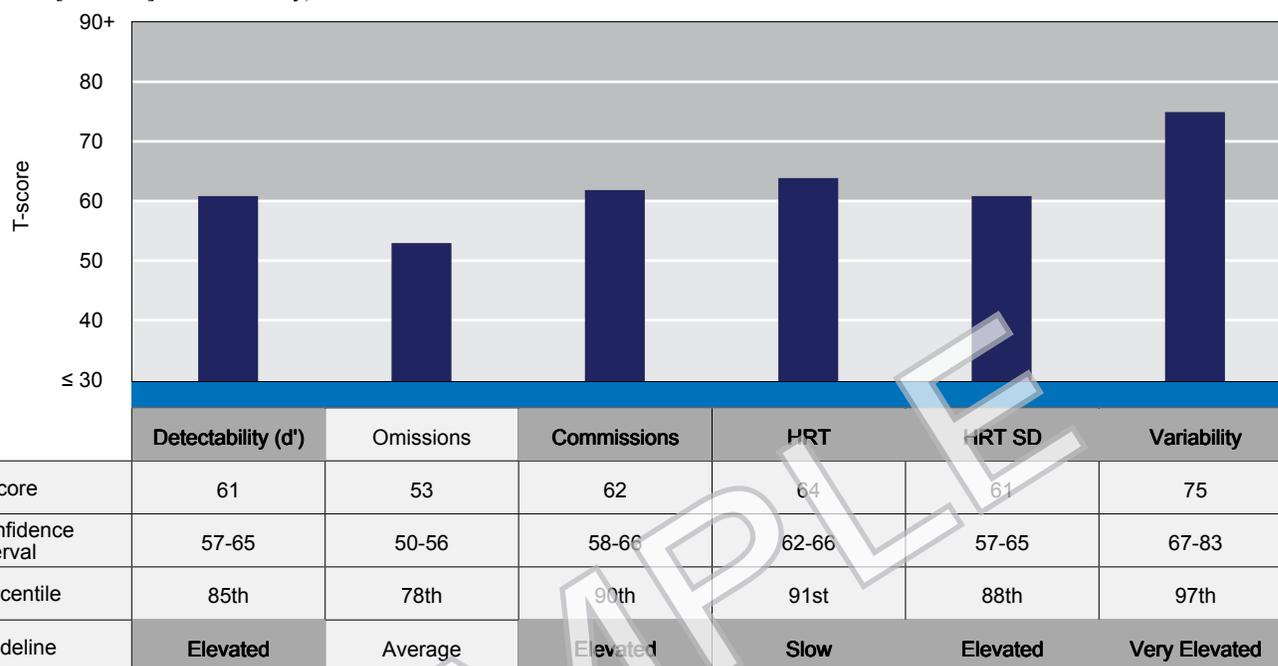
Summary: Relative to the normative sample, Alexandra was less able to differentiate targets from non-targets, made more commission errors, made more perseverative errors, responded more slowly, displayed less consistency in response speed and displayed more variability in response speed.

Overall, Alexandra has a total of 6 atypical T-scores, which is associated with a high likelihood of having a disorder characterized by attention deficits, such as ADHD. Note that other psychological and/or neurological conditions with symptoms of impaired attention can also lead to atypical scores on the Conners CPT 3.

Alexandra's profile of scores and response pattern indicates that she may have issues related to:

- **Inattentiveness (Strong Indication)**
- **Vigilance (Some Indication)**

This section summarizes Alexandra’s scores on the inattentiveness measures and provides information about how she compares to the normative group. Indicators of inattentiveness on the Conners CPT 3 are poor Detectability (d’), a high percentage of Omissions and Commissions, a slow Hit Reaction Time (HRT), as well as high levels of inconsistency in response speed (Hit Reaction Time Standard Deviation [HRT SD] and Variability).



Detectability (d') measures the respondent’s ability to differentiate non-targets (i.e., the letter X) from targets (i.e., all other letters). Alexandra’s T-score is 61 (90% CI = 57-65), which is ranked at the 85th percentile, and falls in the **Elevated** range. This result means that her ability to discriminate non-targets from targets was poor when compared to the normative group. Poor ability to differentiate non-targets from targets is an indicator of inattentiveness.

Omissions result from a failure to respond to targets. Alexandra’s T-score is 53 (90% CI = 50-56), which is ranked at the 78th percentile, and falls in the **Average** range. This result means that she missed an average percentage of targets when compared to the normative group.

Commissions are made when responses are given to non-targets. Alexandra’s T-score is 62 (90% CI = 58-66), which is ranked at the 90th percentile, and falls in the **Elevated** range. This result means that she responded to a higher percentage of non-targets when compared to the normative group. A high level of commission errors may be related to inattentiveness and/or impulsivity. The combination of Alexandra’s slow response times (see HRT, below) and high commission errors is an indicator of inattentiveness.

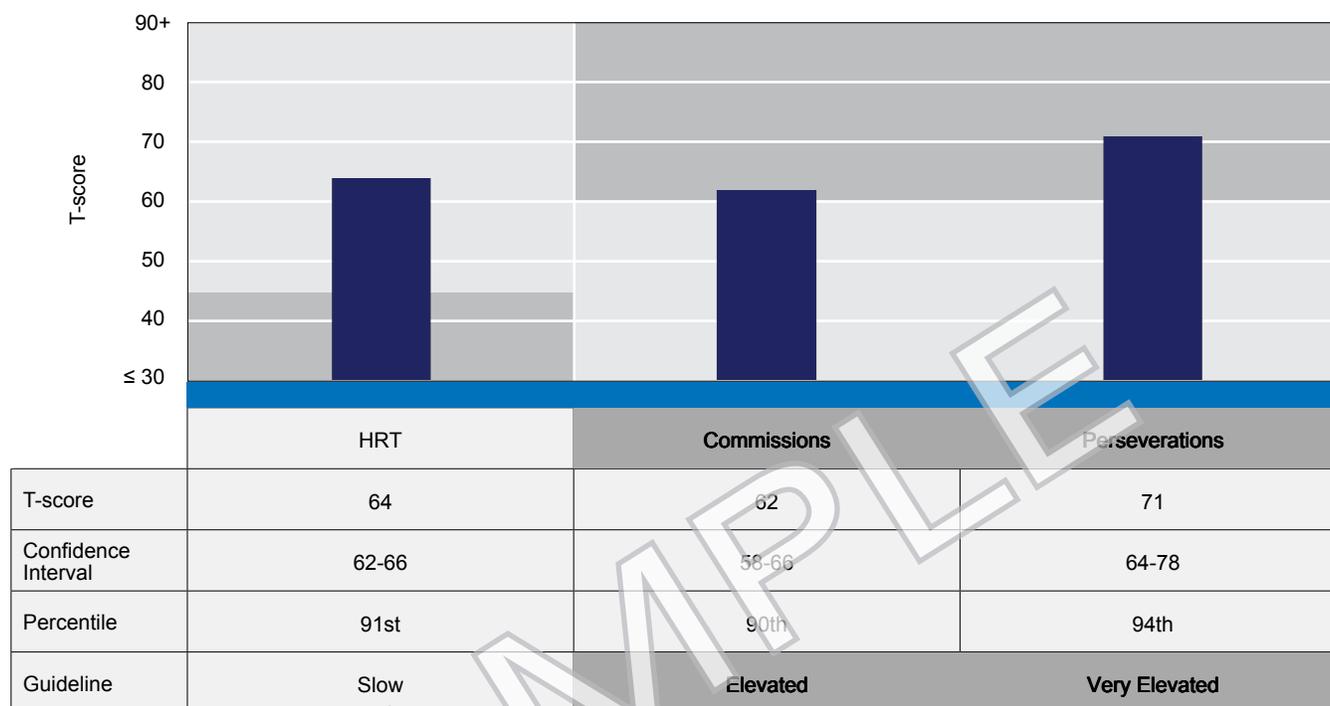
HRT is the mean response speed of correct responses for the whole administration. Alexandra’s T-score is 64 (90% CI = 62-66), which is ranked at the 91st percentile, and falls in the **Slow** range. This result means that her response speed was slower than the normative group’s response speed. This may indicate that Alexandra was not processing targets efficiently.

HRT SD is a measure of response speed consistency during the entire administration. Alexandra’s T-score is 61 (90% CI = 57-65), which is ranked at the 88th percentile, and falls in the **Elevated** range. This result means that her response speed was less consistent than the normative group. This suggests that Alexandra was more inattentive and processed stimuli less efficiently during some portions of the administration.

Variability, like HRT SD, is a measure of response speed consistency; however, Variability is a “within respondent” measure; that is, the amount of variability that Alexandra showed in 18 separate segments of the administration in relation to her own overall HRT SD. Alexandra’s T-score is 75 (90% CI = 67-83), which is ranked at the 97th percentile, and falls in the **Very Elevated** range. This result means her response speed variability was much higher when compared to the normative group. High response speed variability indicates that Alexandra’s attention and information processing efficiency varied throughout the administration.

Alexandra’s scores on these measures strongly suggest that she may have problems with inattentiveness.

This section summarizes Alexandra's scores on the impulsivity measures and provides information about how she compares to the normative group. Indicators of impulsivity on the Conners CPT 3 include a faster than normal Hit Reaction Time (HRT) in addition to a higher than average rate of Commissions and/or Perseverations.



HRT is the mean response speed of correct responses for the whole administration. Alexandra's T-score is 64 (90% CI = 62-66), which is ranked at the 91st percentile, and falls in the **Slow** range. This result means that her response speed was slower than the normative group's response speed. This may indicate that Alexandra was not processing targets efficiently. A slower than normal HRT is often related to inattentiveness rather than impulsivity. See the *Measures of Inattentiveness* section of this report for more interpretative information.

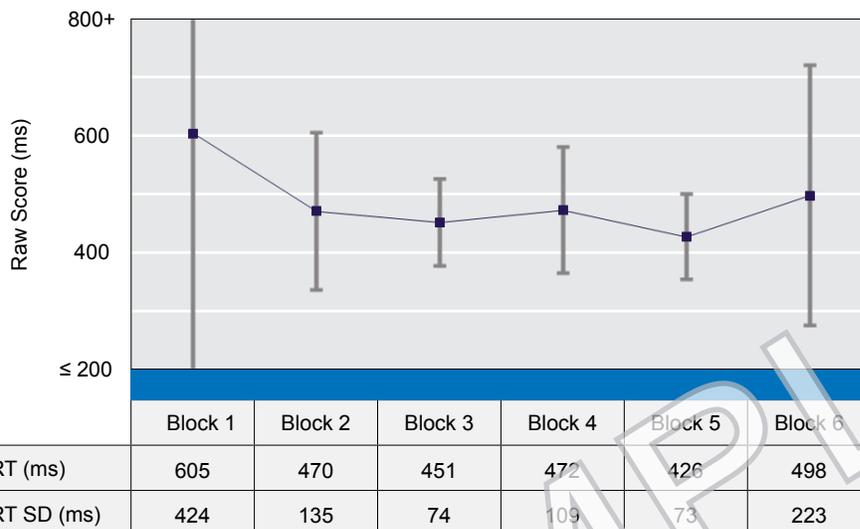
Commissions are made when responses are given to non-targets. Alexandra's T-score is 62 (90% CI = 58-66), which is ranked at the 90th percentile, and falls in the **Elevated** range. This result means that she responded to a higher percentage of non-targets when compared to the normative group. Commission errors may be related to impulsivity and/or inattentiveness. The combination of Alexandra's slow response times (see HRT, above) and high commission errors is an indicator of inattentiveness rather than impulsivity.

Perseverations are random or anticipatory responses. Alexandra's T-score is 71 (90% CI = 64-78), which is ranked at the 94th percentile, and falls in the **Very Elevated** range. This result means that she made many more perseverative errors when compared to the normative group. Because Alexandra's response speed (see HRT, above) was slow, her perseverations are unlikely to be related to impulsivity.

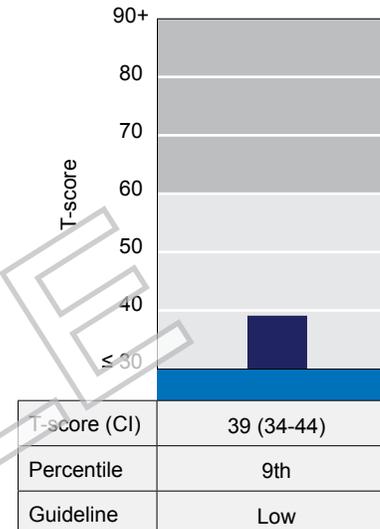
Alexandra's scores on these measures do not indicate a problem with impulsivity.

This section summarizes Alexandra's scores on the sustained attention measures. Sustained attention is defined as the respondent's ability to maintain attention as the administration progresses. A decrease in sustained attention across time is captured by atypical slowing in the respondent's Hit Reaction Times (HRT; as indicated by the variable HRT Block Change), as well as by increases in Omissions and Commissions in later blocks of the administration.

Hit Reaction Time by Block

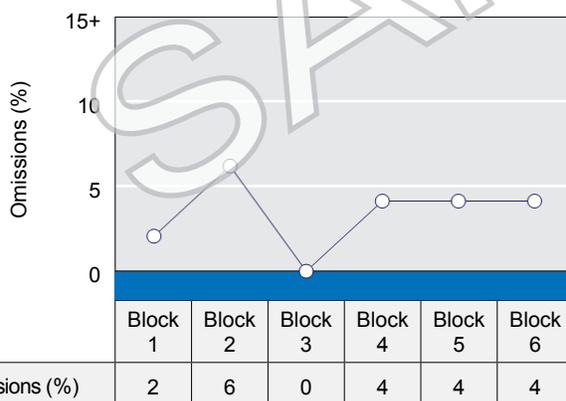


HRT Block Change

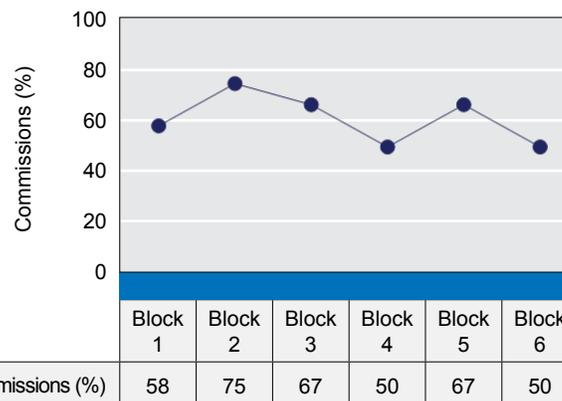


Note. ms = milliseconds; SD = Standard Deviation; CI = Confidence Interval.

Omissions by Block



Commissions by Block

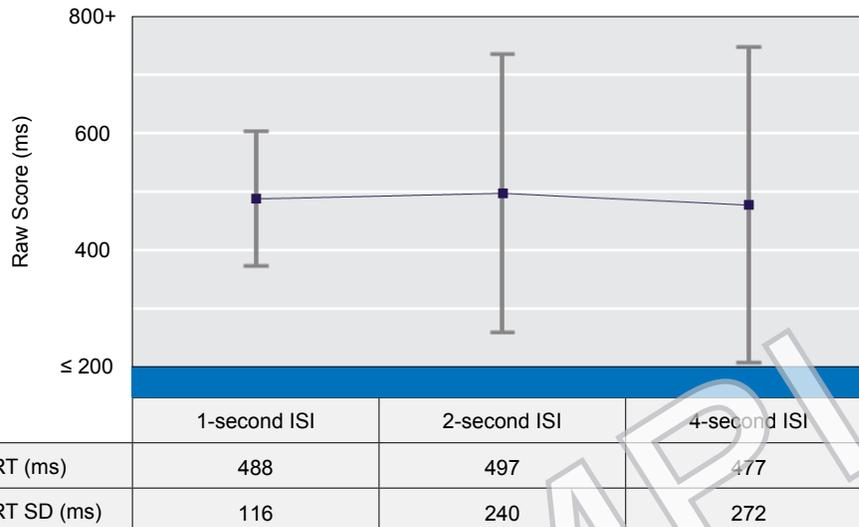


Note. No statistically significant differences were found in error rates between blocks.

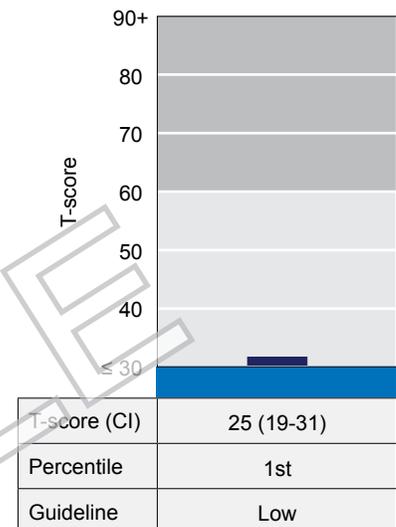
HRT Block Change indicates the change in mean response speed across blocks. Alexandra's T-score is 39 (90% CI = 34-44), which is ranked at the 9th percentile, and falls in the **Low** range. This result means that she sustained or increased response speed in later blocks. In terms of error rates, Alexandra's omission and commission errors did not increase significantly across multiple adjacent blocks. **Alexandra's profile of scores on these measures does not indicate a problem with sustained attention.**

This section summarizes Alexandra's scores on the vigilance measures. Vigilance relates to the respondent's performance at varying levels of stimulus frequency (inter-stimulus intervals; ISIs), and is defined by the respondent's ability to maintain performance level even when the task rate is slow. This construct is captured by changes in the respondent's Hit Reaction Times (HRT), as indicated by the variable HRT ISI Change, as well as the observed pattern of Omissions and Commissions at various ISIs.

Hit Reaction Time by ISI

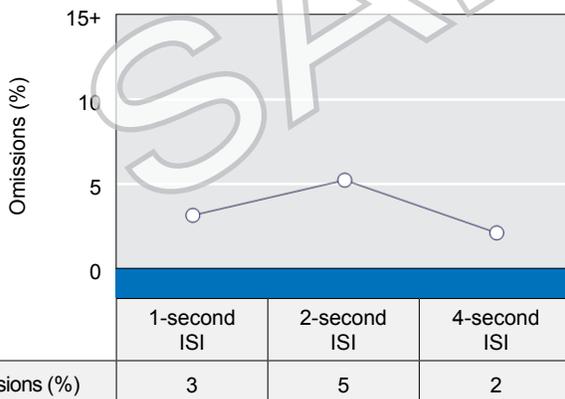


HRT ISI Change

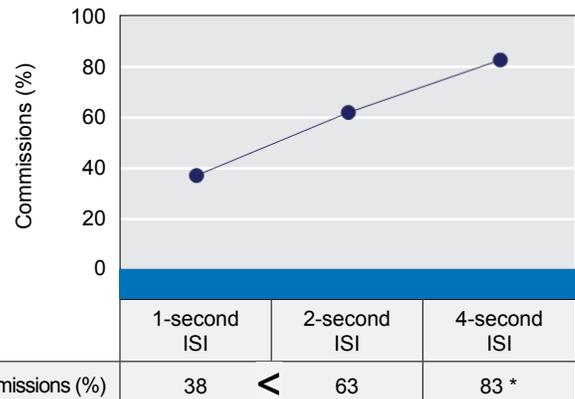


Note. ms = milliseconds; SD = Standard Deviation; CI = Confidence Interval.

Omissions by ISI



Commissions by ISI



Note. The < symbol indicates that the error rate of the longer ISI is significantly ($p < .10$) higher than the error rate of the shorter ISI. The * symbol indicates that the error rate in the 4-second ISI is significantly ($p < .10$) higher than the error rate in 1-second ISI.

HRT ISI Change indicates the change in mean response speed at various ISIs. Alexandra's T-score is 25 (90% CI = 19-31), which is ranked at the 1st percentile, and falls in the **Low** range. This result means that she sustained or increased response speed at longer ISIs. In terms of error rates, Alexandra's commission errors increased significantly ($p < .10$) at longer ISIs, but her omission errors did not. **Alexandra's profile of scores on these measures indicates some support for a problem with maintaining vigilance; that is, she had some problems with performance on trials with longer intervals between stimuli.**

Variable Type	Measure	Raw Score
Detectability	d'	-1.44
Error Type	Omissions	3%
	Commissions	61%
	Perseverations	1%
Reaction Time Statistics	Hit Reaction Time (HRT)	487.04
	HRT Standard Deviation (SD)	219.84 (0.311)
	Variability	145.66 (0.162)
	HRT Block Change	-18.47 (-0.020)
	HRT Inter-Stimulus Interval (ISI) Change	-4.52 (-0.025)

Note. The values in parentheses in the Raw Score column are based on the natural logarithm of the Hit Reaction Times. These logged values were used in the computations of the T-scores. For d', HRT Block Change, and HRT ISI change, negative raw score values are possible. See the *Conners CPT 3 Manual* for more information.

SAMPLE

Response Style

C is a signal detection statistic that measures an individual's natural response style in tasks involving a speed-versus-accuracy trade-off. Based on his or her score on this variable, a respondent can be classified as having one of the following three response styles: a *conservative* style that emphasizes accuracy over speed; a *liberal* style that emphasizes speed over accuracy; or a *balanced* style that is biased neither to speed nor accuracy. Response style can affect scores such as Commissions and Hit Reaction Time (HRT), and should be taken into consideration during interpretation.

Detectability (d')

d-prime (d') is a measure of how well the respondent discriminates non-targets (i.e., the letter X) from targets (i.e., all other letters). This variable is also a signal detection statistic that measures the difference between the signal (targets) and noise (non-targets) distributions. In general, the greater the difference between the signal and noise distributions, the better the ability to distinguish non-targets and targets. On the Conners CPT 3, d' is reverse-scored so that higher raw score and T -score values indicate worse performance (i.e., poorer discrimination).

Omissions (%)

Omissions are missed targets. High omission error rates indicate that the respondent was not responding to the target stimuli due to a specific reason (e.g., difficulty focusing). Omission errors are generally an indicator of inattentiveness.

Commissions (%)

Commissions are incorrect responses to non-targets. Depending on the respondent's HRT, high commission error rates may indicate either inattentiveness or impulsivity. If high commission error rates are coupled with slow reaction times, then the respondent was likely inattentive to the stimulus type being presented and thus responded to a high rate of non-targets. If high commission error rates are combined with fast reaction times, the respondent was likely rushing to respond and failed to control his or her impulses when responding to the non-targets. In the latter case, high commission error rates would reflect impulsivity rather than inattentiveness.

Perseverations (%)

Perseverations are responses that are made in less than 100 milliseconds following the presentation of a stimulus. Normal expectations of physiological ability to respond make it virtually impossible for a respondent to perceive and react to a stimulus so quickly. Perseverations are usually either slow responses to a preceding stimulus, a random response, an anticipatory response, or a repeated response without consideration of the task requirements. Perseverations may be related to impulsivity or an extremely liberal response style. Perseverations are, therefore, likely the result of anticipatory, repetitive, or impulsive responding.

Hit Reaction Time (HRT)

HRT is the mean response speed, measured in milliseconds, for all non-perseverative responses made during the entire administration. An atypically slow HRT may indicate inattentiveness (especially when error rates are high), but it may also be the results of a very conservative response style. Alternatively, a very fast HRT, when combined with high commission error rates, may indicate impulsivity.

Hit Reaction Time Standard Deviation (HRT SD)

HRT SD measures the consistency of response speed to targets for the entire administration. A high HRT SD indicates greater inconsistency in

response speed. Response speed inconsistency is sometimes indicative of inattentiveness, suggesting that the respondent was less engaged and processed stimuli less efficiently during some parts of the administration.

Variability

Variability, like HRT SD, is a measure of response speed consistency; however, Variability is a "within respondent" measure (i.e., the amount of variability the respondent showed in 18 separate sub-blocks of the administration in relation to his or her overall HRT SD score). Although Variability is a different measure than HRT SD, the two measures typically produce comparable results and are both related to inattentiveness. High response speed variability indicates that the respondent's attention and processing efficiency varied throughout the administration.

Hit Reaction Time Block Change (HRT Block Change)

HRT Block Change is the slope of change in HRT across the six blocks of the administration. A positive slope indicates decelerating reaction times as the administration progressed, while a negative slope indicates accelerating reaction times. If reaction times slow down, as indicated by a higher HRT Block Change score, the respondent's information processing efficiency declines, and a loss of sustained attention is indicated.

Omissions by Block

Omissions by Block (raw score only) is the rate of the respondent's missed targets in each of the six blocks. An increase in omission error rate in later blocks indicates a loss of sustained attention.

Commissions by Block

Commissions by Block (raw score only) is the rate of the respondent's incorrect responses to non-targets in each of the six blocks. An increase in commission error rate in later blocks indicates a loss of sustained attention.

Hit Reaction Time Inter-Stimulus Intervals Change (HRT ISI Change)

HRT ISI Change is the slope of change in reaction time across the three ISIs (1, 2, and 4 seconds). A positive slope indicates decelerating HRT at longer intervals; whereas, a negative slope indicates accelerating HRT at longer intervals. A higher HRT ISI Change score means that the respondent's information processing efficiency declined with longer pauses between stimuli, and a loss of vigilance is indicated. A significant change in response speed at the different ISIs may indicate that the respondent was having trouble adjusting to changing task demands. Sometimes, this finding relates to activation/arousal needs; some respondents may be more efficient in a busier/more stimulating environment (e.g., during the 1-second ISI) than in a less active environment where the stimuli are presented less frequently (e.g., during the 4-second ISI), or vice-versa.

Omissions by ISI

Omissions by ISI (raw score only) is the rate of missed targets in each of the three ISI trial types. An increase in omission error rate on trials with longer ISIs indicates a loss of vigilance.

Commissions by ISI

Commissions by ISI (raw score only) is the rate of incorrect responses to non-targets in each of the three ISI trial types. An increase in commission error rates on trials with longer ISI indicates a loss of vigilance.