It’s About Time!

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HIGH INCIDENCE DISABILITIES CONFERENCE
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Changes in test administration procedure while keeping test content the same.

Purpose is to remove or reduce the impact of a disability so as to improve (equalize) access to a test.

Accommodations are designed to increase validity of inferences based on test scores
- Used well, they increase validity
- Used poorly or unnecessarily, they decrease validity
Types of test accommodations

Timing
- time and one-half; double time; unlimited time

Setting
- private room; small group

Presentation
- Braille; audiotape; reader; enlarged print

Response format
- no scantron; word processor; scribe; calculator

Scheduling
- time per day; number of days; extended/additional breaks
Accommodations are the #1 intervention applied to students with disabilities.

Extended time is by far the most requested and utilized accommodation.

There are more research studies on ADHD and medication than on test accommodations.

Research on test accommodations has had little to no bearing on practice.
Accommodation Requests on High-Stakes Tests

Accommodations requested by disability type

- Psychiatric: 4%
- Physical/sensory: 10%
- Other: 14%
- ADD/ADHD: 26%
- Learning disability: 46%

From a 2011 GAO report
It’s About Time!
Time is of the essence!

- Applicants frequently say that they are slow readers, take more time to finish, work harder than others to succeed, need an accommodation to reach their full potential.

- Extended time (ET) is the most common request no matter what the disorder

- Convention is to ask for/receive 50% or 100% ET. How is that determined?

- Evaluators seem to advocate for ET regardless of the data and history. Many do not follow DSM and some make up diagnoses. Processing Speed Disorder; Executive Dysfunction; Working Memory Disorder

- Clinicians tend to focus on Processing Speed & NDRT Reading Rate
I Need Extended Time, Don’t You
I. Who Wants Extended Time?
Which accommodations would college students with and without disabilities prefer?

(Lewandowski, Lambert, Lovett, Panahon & Sytsma, 2014)

We asked 612 college students (137 with Disabilities) to complete a preference survey on the extent to which they think various accommodations might benefit them on HSTs.

<table>
<thead>
<tr>
<th>Accommodation</th>
<th>Group</th>
<th>% Negative</th>
<th>% Neutral</th>
<th>% Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% extended time</td>
<td>D</td>
<td>2.9</td>
<td>8.8</td>
<td>88.3</td>
</tr>
<tr>
<td></td>
<td>ND</td>
<td>2.5</td>
<td>10.3</td>
<td>87.1</td>
</tr>
<tr>
<td>100% extended time</td>
<td>D</td>
<td>5.9</td>
<td>21.2</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>ND</td>
<td>4.6</td>
<td>13.5</td>
<td>81.9</td>
</tr>
<tr>
<td>Separate Room</td>
<td>D</td>
<td>13.8</td>
<td>21.9</td>
<td>64.2</td>
</tr>
<tr>
<td></td>
<td>ND</td>
<td>14.1</td>
<td>26.3</td>
<td>59.6</td>
</tr>
<tr>
<td>Extra Breaks</td>
<td>D</td>
<td>22.6</td>
<td>17.5</td>
<td>59.9</td>
</tr>
<tr>
<td></td>
<td>ND</td>
<td>16.6</td>
<td>20.0</td>
<td>63.4</td>
</tr>
<tr>
<td>Word Processor</td>
<td>D</td>
<td>26.2</td>
<td>26.3</td>
<td>47.4</td>
</tr>
<tr>
<td></td>
<td>ND</td>
<td>28.2</td>
<td>38.1</td>
<td>33.7</td>
</tr>
</tbody>
</table>
We all have Symptoms!

“We can’t find anything wrong with you, so we’re going to treat you for Symptom Deficit Disorder.”
We conducted a survey of 534 college students (38 ADHD, 44 LD, and 496 Typical)

We listed all 18 ADHD symptoms and common LD/Academic complaints

Then asked students to rate how the items pertained to them as either:

*often/always or rarely/never*
What We Found

Students with ADHD endorsed more ADHD items (9 of 18), however typical students also endorsed an average of 4.5 items.

<table>
<thead>
<tr>
<th>Items</th>
<th>%ADHD</th>
<th>%LD</th>
<th>%ND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read material over and over to understand it</td>
<td>80.6</td>
<td>48.8</td>
<td>52.5</td>
</tr>
<tr>
<td>Do not perform well on timed standardized tests</td>
<td>67.7</td>
<td>38.3</td>
<td>45.4</td>
</tr>
<tr>
<td>Work harder than other people to get good grades</td>
<td>56.8</td>
<td>42.6</td>
<td>47.5</td>
</tr>
<tr>
<td>Have trouble finishing timed tests</td>
<td>64.9</td>
<td>32.8</td>
<td>28.6</td>
</tr>
<tr>
<td>Takes me longer to complete assignments than others</td>
<td>78.4</td>
<td>33.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Rarely read in my spare time</td>
<td>73.0</td>
<td>61.4</td>
<td>58.9</td>
</tr>
<tr>
<td>Easily distracted</td>
<td>91.9</td>
<td>30.5</td>
<td>54.1</td>
</tr>
<tr>
<td>Fidget with hands or feet</td>
<td>89.2</td>
<td>31.6</td>
<td>54.8</td>
</tr>
<tr>
<td>Feel on the go or driven by a motor</td>
<td>59.5</td>
<td>29.1</td>
<td>38.0</td>
</tr>
</tbody>
</table>

So symptom complaints may be sensitive, but they are not specific to ADHD. Be careful with self-reported symptoms!!
Conclusions

1. Even typical college students have academic and attention complaints
2. Students with ADHD (vs. LD or Psychiatric) report the most problems
3. Majority of complaints involve reading and time to take tests or complete assignments
4. No surprise that folks want extra time on tests, especially time-sensitive high stakes tests.
II. What’s an Average Reading Speed

“Am I going too fast for you?”
Applicants claim to be slow readers

How does one know s/he reads slower than everyone else?

Clinicians vary widely in what they think normal reading speed is (200, 300, 400 wpm)
Reading Speeds from Several Studies

College Students

College students’ oral reading fluency = 189 wpm
College students’ Nelson Denny Reading Rate = 230 wpm; Reading Speed=237 wpm
LD College students’ Reading Rate wpm = 179; Reading Fluency SS = 88
ADHD College students’ Reading Speed = 219 wpm

High School Students

Typical students’ Reading Speed = 207 wpm
LD students’ Reading Speed = 170 wpm
ADHD students’ Reading Speed = 203 wpm

Conclusions

Typical reading speeds around 200-230 wpm
ADHD speeds close to average
Only LD reading speeds show impairment
III. Time to Test Completion

253 college students given…

- NDRT (RR & RC)
- WAIS Processing Speed Index (PSI)
- WJ III RF
- SEPTAR (Self Perception of Testing and Reading)

We measured how long it took to finish comprehension and #correct

Lovett, Lewandowski & Potts (in press)
What We Found

- 22% went beyond 20 minutes (standard time); Standardization of NDRT showed 32-56% did not finish the exam on time

- Time taken had nothing to do with performance ($r = .04$)

- Best predictors of ND Comprehension were WJ RF and Self Perception of Testing and Reading (SEPTAR)

- Processing speed was **not** a significant predictor of comprehension performance
What Predicts Time to Complete a Test?

Spenceley, Wood, Lewandowski & Fairchild (in progress)

Session A: College students with (n = 24) and without (n = 15) LD/ADHD (receiving accommodations) completed the NDRT Comprehension test without a time limit. We measured Time of Completion (ToC)

Session B: They also were administered:
- WJ IV Broad Reading Cluster
- Test Anxiety Scale
- Self-Evaluation of Performance on Timed Academic Reading (SEPTAR)
- Demographic questionnaire

Sessions A & B were counterbalanced
Results

1. Students with disabilities (ToC = 25 min) used an average of 30% more time than the standard 20 minutes to complete the test. Controls (ToC = 23 min) used 15% more than standard time.

2. The WJ IV Broad Reading score did not predict ToC.

3. NDRT items correct did not predict ToC.

4. TAI did not predict ToC.

5. SEPTAR (one’s self-perception of test taking) did predict ToC.
IV. Processing Speed

There is no DSM Processing Speed Disorder

No research showing PS to be sensitive and specific to a particular disorder/disability

PS as we measure it = rote visual-motor speed tasks

PS is not a good predictor of outcome measures like NDRT Comprehension and probably any high stakes test

PS does not relate to Sluggish Cognitive Tempo

PS does not predict need for or use of extended time

Clinicians should not rely on PS scores for accommodation decisions

Wood, Potts, Lewandowski, & Lovett (in press); Kleinmann & Lewandowski, 2005
V. Is Extended Time Valid?
Validity of Extended Time

**Maximum potential**
(Zuriff, 2000)

**Differential boost**
(Fuchs & Fuchs, 2001)

**Interaction hypothesis**
(Sireci, Li & Scarpati, 2003)
A. Effects of Extended Time on Math Scores for Middle School Students w/wo ADHD

We tested 54 boys and girls (27 ADHD), age 10-13, on a math fluency task.

We created sheets of 3-digit addition problems.

Students could not complete all items to avoid ceiling effects.

Students worked for 12 minutes, circled the last problem completed, and then worked for another 6 minutes (time and one-half).

Lewandowski, Lovett, Parolin, Gordon & Coddington, 2007
Differential Boost

Test Score

- Students with Disabilities
- Nondisabled Students

- Standard Test Administration
- Test with Accommodation
Math Performance: Items Correct

![Bar chart showing Math Performance of ADHD and Control groups with Standard and Extended conditions.](chart.png)
B. Effects of Extended Time on Reading Scores of High School Students w/wo LD?

We tested 32 LD and 32 Controls on…

- Raven IQ (LD 97.8 vs. Control = 98.7)
- WJ III RF (LD = 88.9 vs. Control = 107.1)
- NDRT Comprehension
  - standard time (13 min)
  - time and one-half (19.5 min)
  - items attempted, # correct, and % correct

Lewandowski, Lovett & Rogers, 2008
Comprehension # Correct Answers

LD-Rdg

Nondisabled

13 minutes

19.5 minutes
# Attempted Answers = Access

![Bar chart showing attempted answers for LD-Rdg and Nondisabled groups. The Nondisabled group has a significantly higher number of attempted answers.](chart.png)

- **LD-Rdg**: 13 minutes
- **Nondisabled**: 19.5 minutes
C. What are the effects of time and one-half and double time on comprehension of college students w/wo LD?

-- 26 students with LD and 50 Nondisabled

-- Students with LD had a current diagnosis as well as testing accommodations from a campus disability services office

Lewandowski, Cohen & Lovett (2013)
What We Did

- We combined forms G and H of the NDRT (76 items)
  - Standard time = 15 minute (red pencil)
  - Time + half = 22.5 minutes (blue pencil)
  - Double time + 30 minutes (green pencil)
- Students used a different colored pencil for each time condition.
- Participants were able to go back to any questions on the test.
- Students were instructed to approach the current assessment as though it was a high stakes test like the SAT or ACT.
Which one is correct?

The Interaction Hypothesis

Divergence Hypothesis
The graph illustrates the number of items attempted by typical students and students with LD under different time constraints: Standard Time, Time + Half, and Double Time.

- **Typical Students**
  - Standard Time: 29.94
  - Time + Half: 46.26
  - Double Time: 61.74

- **Students with LD**
  - Standard Time: 23.15
  - Time + Half: 36.88
  - Double Time: 50.23
Conclusions

1. LD group a bit lower at standard time
2. Both groups improve; Controls improve more
3. Data do not support Interaction Hypothesis
4. RD group at time and one-half catches and surpasses controls at standard time
5. RD group at double time outperforms controls at standard time; and accesses far more exam items
D. What is the effect of time + half and double time on the performance of college students w/wo ADHD?

- We tested 38 college students with ADHD and 38 peers on NDRT Comprehension
- Those with ADHD had a professional diagnosis; met DSM criteria on ADHD checklist and/or received test accommodations
- 18 on stimulant medication

Miller, Lewandowski & Antshel, 2013
What We Did

- We combined forms G and H of the NDRT (76 items)
  - Standard time = 15 minute (red pencil)
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  - Double time + 30 minutes (green pencil)
- Students used a different colored pencil for each time condition.
- Participants were able to go back to any questions on the test.
- Students were instructed to approach the current assessment as though it was a high stakes test like the SAT or ACT.
Study 4: Items Attempted

![Bar chart showing items attempted by ADHD and Nondisabled groups across different time periods.](image)
What We Found

1. Nothing! No differences between groups at Standard, Time+Half, or Double time
2. Same # of items attempted, accuracy, and # correct
3. Given Time+Half, the ADHD group answer 52% more items than peers
4. Given Double Time, the ADHD group answers 103% more items than peers
Conclusions

1. This ADHD sample is **not impaired** in timed comprehension

2. They do not warrant an accommodation for this test

3. Both groups improved equally with ET, meaning there is **no specificity**

4. The ADHD group got a large advantage with ET, especially when given double time
E. Effects of Extended Time for ESL College Students

- We tested 229 college students, 88 identified as ESL on the …
  - Woodcock-Munoz Language Survey-Revised
  - Nelson Denny Reading Test – Comprehension (Standard, 50%, 100%)
  - Self Perception of Performance on Timed Academic Reading
  - Author Recognition test

- High Proficiency ESL performed similar to Controls but Low Proficiency ESL performed inferior to all others

Miller & Lewandowski (in preparation)
Effects of Extended time on Comprehension Performance for College ESL Students

Figure 2. Items attempted & correct across 3 groups and 3 time conditions

Items Attempted

Items Correct
Extended Time: Conclusions

1. Almost everyone thinks they would benefit from ET.

2. Extended time improves timed test performance, especially for nondisabled. ET is not a valid accommodation.

3. Extended time only makes sense for persons who experience impairment (Bonafide LD).

4. Extended time amount should range from 25-50% for people with impairment; 100% is probably not a good idea.

5. High School and College students with ADHD show little if any impairment. They want extra time for reasons other than ability (daydreaming, refocus, reduce anxiety, replace lost time).
Grand Conclusions

College students read passages at approximately 200 words per minute.

Processing speed is over-rated, is not specific to a disability and does not predict much.

Many people view themselves as having symptoms, reading slowly, working harder than others, having to reread to understand, get distracted…Beware of self-report!

The amount of time one takes to complete a test is not related to how one performs.

Extended Time is probably not a valid test accommodation. It does not have specificity and unless the individual is impaired in fluency, ET gives them an actual advantage.

College students with ADHD tend to show little if any impairment and are not slower than peers on timed tests.

College students with LD tend to have lower mean scores on speeded tasks and could benefit from 25% ET. 100% ET gives them an advantage over peers.

And yes, the same proportion of people with and without disabilities would like to have the same test accommodations, especially, you guessed it, EXTENDED TIME.
Malingering

There may be incentives to have a diagnosis

There is concern about diagnosis hunting (ADHD, LD, anxiety) and accommodation seeking (extra time)

A number of researchers are examining “effort” (SVTs and PVTs) during assessment

(Potter, Lewandowski, Gardner, Reid, in progress)
Research in progress on malingering

- We conducted simulation studies of feigned ADHD and LD
- Both groups were easy to train to malingering
- Both groups malinger fairly well
- We have a malingering scale for ADHD that works pretty well
- We are working on a symptom validity scale for LD
- Best measure of effort in an LD assessment is the DASH (Harrison & et al.)
Need a New Approach

Universal Design of Assessment (UDA)

- Design test formats & procedures to be fair and accessible to everyone
- Reduce the need for extended time.
- Use technology to present tests with expanded vision, sound, and responding capabilities.
- Design learning and test environments that work for everyone, and use accommodations for extreme cases (Limited vision, nonreader, limited movement)
Dr. L., may I be excused my brain is full?
For Additional Information

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Thanks for your attention!