

Cogmed is now easier to do in schools.

February, 2016

<http://www.cogmed.com/research>

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AGENDA

- Cogmed Distinctiveness
- new features: Trends Reporting for School-age Cogmed (RM)
 - Compliance
 - Motivation
 - Validity
- automated Start-up Sessions
- role of account management
- large scale implementations
- research overview
- demo

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Cogmed Distinctiveness

- Cogmed is Coach Mediated vs. Direct to Consumer approach.
 - Coach Qualification requirement.
- Cogmed Emphasizes the Accumulation of Quality Scientific evidence
 - Careful attention to the evidence.
 - Claims based upon evidence.
 - Claims & Evidence Document updated May, 2015
 - Refereed journal articles & book chapters
 - Marketing is based upon consideration of the evidence.
 - Marketing & Sales are directed toward professionals not consumers.
- Cogmed Training Web Provides resources
- Cogmed Customer Support includes Cogmed Onboarding & Account Management

New Features Intended to Address Previous Challenges in Schools

- Time: Previously Standard Protocol: 5 days/5 weeks.
40-50 minutes (children & adults),
15-20 minutes preschoolers.

NOW: Variable Protocol: 3 or 4 days a week.
25 or 35 minutes protocols. 7-10 weeks.
- Pricing: Same pricing for both schools & MHC.
Prices vary from \$82 per user (package of 60) to
\$980 (package of 4 or \$245 each) through 2016.

Critical Updates

- Variable Protocols
- Ipad/Tablet version of Cogmed (2014)
- New Training Data User Interface. (2014)
- Demo at login "Try Me" with new URL: mycogmed.com
- Cogmed Trends Reporting Targeted to schools specifically. (2015)
- CPI: Cogmed Progress Indicator
- Cogmed Progress Reports for each student
- Start Up Session Videos

The Customer Gets to Choose Variable Protocol

25 min. per session*	35 min. per session*	50 min. per session*
5 days per week for 8 weeks	5 days per week for 6 weeks	5 days per week for 5 weeks**
4 days per week for 10 weeks	4 days per week for 8 weeks	4 days per week for 7 weeks
3 days per week for 13 weeks	3 days per week for 10 weeks	3 days per week for 9 weeks

* Indicates total training time including breaks
 ** Standard protocol supported by published peer-reviewed research

ALWAYS LEARNING

PEARSON

Schedule for coach calls

	25 min	35 min	50 min
CPI Session	Training Day		
CPI baseline 1	1	1	1
CPI baseline 2	2	2	2
	5	5	5
	Coach Call 1	Coach Call 1	Coach Call 1
CPI Day 3	10	10	10
	Coach Call 2	Coach Call 2	Coach Call 2
CPI Day 4	20	17	15
	Coach Call 3	Coach Call 3	Coach Call 3
CPI Day 5	30	23	20
	Coach Call 4	Coach Call 4	Coach Call 4
CPI Day 6	40	30	25
	Coach Call 5	Coach Call 5	Coach Call 5

Basis for Variable Protocols: Analysis of 3,629 protocols of Beta Data

- Pilot results with 70 children training on the shorter versions were promising.
 - **Beta released:** 25 minutes per training block and one of approximately 35 minutes.
 - Data from 3,629 completed Cogmed trainings (**UK, USA, AU, NL**) of RM and QM were used.
- Note:** JM is already very short at only 15 or 20 minutes per training session.
- The data was analyzed to investigate the effects of the new training protocols.

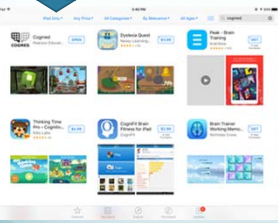
Results of Variable Protocols: Analysis of 3,629 protocols of Beta Data

- No significant differences on the CPI tasks (WM Odd one out, following instructions and math fluency). Measures of generalization.
- Improvements did not vary based upon number of training blocks per week.
- Self-rated improvements in everyday attention were equal across protocols.

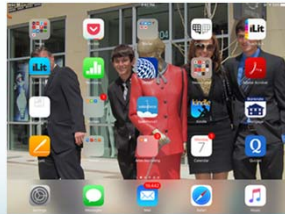
CONCLUSION: Shorter training protocols can be recommended with confidence to users.

UPDATES: iPad Version of Cogmed Downloadable from both the Apple App Store and on Android App on Google Play.

Cogmed on Apple App Store:

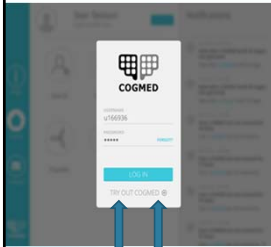


Cogmed on Ipad:



Cogmed on my.cogmed.com: Demo without password.

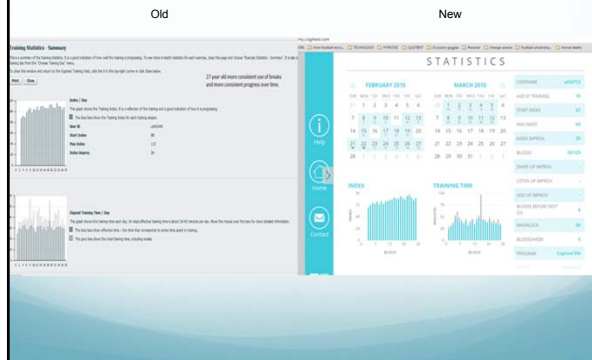
Demo at login by clicking on: "Try Out Cogmed"
No password required.
New Login URL: my.cogmed.com



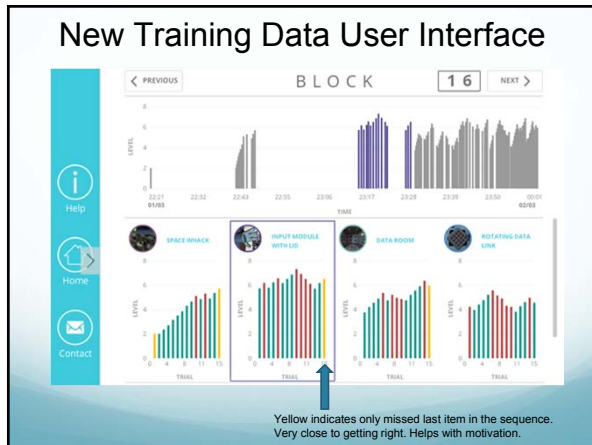
Demo Languages:



New Training Data User Interface

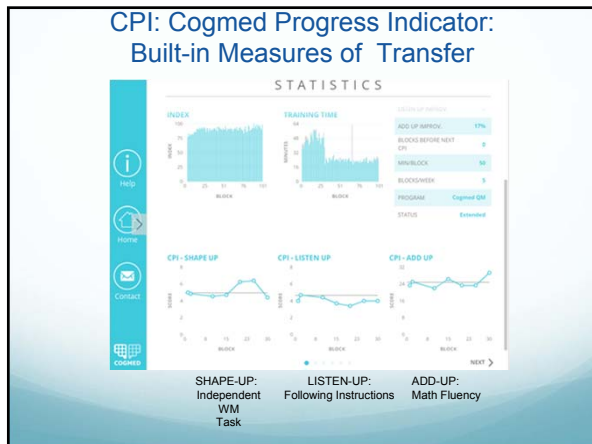


New Training Data User Interface



Yellow indicates only missed last item in the sequence. Very close to getting right. Helps with motivation.

CPI: Cogmed Progress Indicator: Built-in Measures of Transfer



SHAPE-UP: Independent WM Task
LISTEN-UP: Following Instructions
ADD-UP: Math Fluency



“Trends” Reporting Developed

- Communication: ***Fidelity metrics used during implementation***
- Track fidelity
 - Account level
 - Coach level
 - Individual trainings
- Communicate across accounts and schools
- Ease day-to-day coaching needs

Trends Metrics

- Compliance
 - Training according to Schedule
- Motivation
 - Training with high effort and quality
- Validity
 - Training without indications of disallowed strategies
 - AKA – The “cheating” score

Compliance

Compliance: The number of trainees and percentage of trainees that are following the selected protocol

- Measuring time per block (25, 35, or 50 minutes per bloc)
- Measuring blocks trained per week (3, 4, or 5 blocks completed per week)

Minutes Per Day	Total Number of Sessions/ Blocks	Number of weeks to complete
25 minutes per day	40 blocks	13 weeks to complete
35 minutes per day	30 blocks	10 weeks to complete
50 minutes per day	25 blocks	7-8 weeks to complete

Motivation

Motivation: The number of trainees and percentage of trainees that are motivated and completing the program at their capacity.

Based on effort and performance and breaks

- Are they giving the maximum effort?
- Is the student performing below capacity
- How many mandatory breaks are given during an exercise?

Validity

- Does a trainee appear to be using disallowed strategies?
- Discrepancies between highest level of tasks that are easy and difficult to cheat on.
- Unexpectedly steep index improvement.
- Unexpectedly high start index.



Cheating is easy.



Cheating is difficult.

Key Administrative Tools

- **Blocks Behind**
 - On average, how many blocks behind the selected protocol are the trainings within this account/coach account?
- **Trained Blocks**
 - On average, how many blocks have the trainings in this account completed?
- **Total Started**
 - How many trainings have been started within this account?
- **Total Created**
 - How many training IDs were created within this given account?
- **Account Hierarchy**
 - Toggle between accounts, subaccounts, coaches, and individual trainings

TRENDS: ACCOUNT

SHOW LATEST: 1 Month 3 Months 6 Months Custom

Goose Creek School...

Account	Compliant	Blocks Behind	Trained Blocks	Motivated	Valid	Total Started	Total Created
Goose Creek School DL...	104 (71.7%)	6.5	19.1	115 (79.3%)	139 (95.9%)	145	278
Alamo Elementary	1 (8.3%)	17.1	6.3	10 (83.3%)	10 (83.3%)	12	19
Ashbel Smith School	16 (100%)	3.6	23.9	10 (62.5%)	16 (100%)	16	18
Austin Elementary	13 (68.4%)	1.8	21.6	16 (84.2%)	19 (100%)	19	23
Banuelos Elementary	6 (100%)	4.4	23.7	5 (83.3%)	6 (100%)	6	6
Baytown Junior	-	-	-	-	-	0	33
Bonnie P. Hopper Prim...	-	-	-	-	-	0	1
Bowie Elementary	5 (62.5%)	1.9	23.1	3 (37.5%)	8 (100%)	8	9
Carver Elementary	13 (81.3%)	9.1	18.2	11 (68.8%)	16 (100%)	16	21
Cedar Bayou Junior	-	-	-	-	-	-	-
Crockett Elementary-1	3 (30%)	11.4	13.2	9 (90%)	10 (100%)	10	13
Crockett Elementary-2	-	-	-	-	-	-	-

CDGMED

Class Level Data on Trends Report

SHOW LATEST: 1 Month 3 Months 6 Months Custom

Goose Creek School ... > Horace Mann Junior

Coach	Compliant	Blocks behind	Average trained blocks	Motivated	Valid	Total Started	Total Created
[REDACTED]	10 (83.3%)	3.0	20.4	9 (75%)	11 (91.7%)	12	23

Student Level Data on Trends Report

Training	Compliant	Blocks behind	Trained blocks	Motivated	Valid	Status
gc03-88295	✓	1.4	22	✓	✓	Ongoing
gc03-91095	✓	1.4	22	✓	✓	Ongoing
gc03-3001747	✗	11.4	12	✓	✓	Ongoing
gc03-86697	✓	0.4	23	✓	✓	Ongoing
gc03-3009123	✓	0.4	23	✓	✓	Ongoing
gc03-91528	✓	0.4	23	✗	✓	Ongoing
gc03-91768	✓	2.4	21	✓	✓	Ongoing
gc03-84692	✓	0.4	23	✓	✓	Ongoing
gc03-87055	✓	2.4	21	✓	✓	Ongoing
gc03-615948	✗	9.4	14	✗	✗	Ongoing
gc03-90017	✓	3.4	35	✗	✓	Ongoing

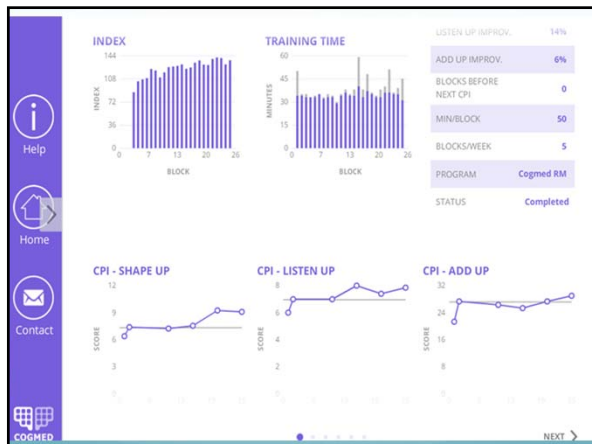
Validity Measures on Trends Report

Compliant Trainee seems to be training according to the plan in terms of time/block and blocks/week.

Motivated A large portion of the training is performed below the estimated capacity which may impact the effectiveness of the training. Check motivational status and remind them that training at their limits is what will strengthen their working memory!

Valid Trainee is progressing as expected on the exercises in terms of index improvement.

[View Details Training Info](#) [Close](#)



Cogmed Claims and Evidence Language

- 1) CWMT leads to sustained improvements in working memory, from childhood to adulthood, as seen in
 - a) preschoolers (6, 16, 41, 42)
 - b) children and adolescents (1, 3, 7, 13, 18, 25-27, 33, 34, 36, 45, 52, 53)
 - c) adults and old adults (5, 15, 22, 28, 37, 38, 46, 47)
- 2) CWMT leads to sustained improvements in attention seen in both
 - a) subjective measures of attention (3, 11, 14, 18, 26, 38, 31, 47)
 - b) and objective measures of attention (5, 6, 15, 22, 25, 28)
- 3) Improvements in working memory following CWMT are associated with changes in functional brain activity seen as changes in the neurochemistry (9), functional activity related to working memory (2, 4, 22), and functional connectivity at rest (52)
- 4) Learning outcomes in reading (13, 35, 45) and math (34, 43, 45) improves for many underperforming students following CWMT.
- 5) In clinical trials, CWMT has been shown to improve attentional problems in many with ADHD (3, 11, 25, 47)
 - a) as evident in rating scales (3, 11, 47)
 - b) or measured with objective measures (25)
- 6) Adult Cogmed users report improved functioning in daily life (5, 28, 47).

Understanding Science: Claims & Evidence

- **Understanding the scientific method**
 - Sample sizes
 - Type I & II errors.
 - Validity and reliability of outcome measures.
 - Study design.
- **Understanding of levels of evidence from lowest to highest:**
 - **Testimonials:** *Note: Often direct to consumer models emphasize testimonials to a much greater extent than higher levels of evidence because they "sell".*
 - Case studies
 - Peer reviewed journals

Claims Evidence Basis

Criteria for forming a claim are as follows (at least one out of the three must be fulfilled):

- An effect is observed in at least two RCTs.
- An effect is observed in at least three controlled studies.
- An effect is observed in one RCT and in two controlled studies

Case Study: Goose Creek, Texas

DISTRICT IMPLEMENTATION:


- Implemented Cogmed in two years across special education departments in 21 district schools.
- 251 students in the fall semester of 2014
- 408 students in the spring of 2015.
- In semester 1, 64% completion percentage.
- **After adding trends**, 94% percent of students completed Cogmed.

POSITIVE INSIGHTS FROM IMPLEMENTATION:

- Close Collaboration with district administration was key to a successful implementation as stated by administrators and teachers
- Variable protocols and Start Up Session Videos made implementation flow easier in the 2014-2015 school year

Goose Creek Consolidated ISD's Success with Cogmed®

Baytown, Texas



- Students trained throughout 21 Elementary and Middle Schools
- 35 minutes a day for 30 days
- Majority of students improved in areas of math, working memory and/or behavior according to Goose Creek Administrators

Dr. Tom Kelchner | Director of Special Education
Goose Creek Consolidated Independent School District | Baytown, Texas

Dr. Tom Kelchner - Director of Special Education
Goose Creek Consolidated Independent School District
| Baytown, TX

Case Study: Ladue School District, St. Louis, Missouri

- **Sample:** 59 students, ages 8 to 17 years (M =12.0, SD = 3.10), from six schools (four elementary, one middle, and one high school) and identified by the District School Psychologist as having a learning disability, executive function deficits, or as struggling academically.
- **Protocol:** 35 minutes per day, 4 to 5 days per week, for 6 to 8 weeks.
- **Fidelity:** 97% of students complied with the Cogmed intervention. 100% of students improved on the exercises practiced throughout the training.

**Case Study:
Ladue School District, St. Louis, Missouri**

Working Memory: 86% of students improved by 37% on the Cogmed Progress Indicator working memory task (Shape Up).

Students significantly improved both on tasks similar to those practiced during training and non-trained working memory tasks from the WOMBAT (Englund et al., 2014).

Following Instructions: 68% of students improved by 20% on the Cogmed Progress Indicator following instructions task (Listen Up).

Behavior: 76% of students improved by an average 43% on parent-rated symptoms of inattention (DSM-IV Rating Scale).

100% of students reported improvement on their own inattentive symptoms (Cogmed Questionnaire).

**Case Study:
Ladue School District, St. Louis, Missouri**

- Students significantly improved on math concepts and applications ($p < 0.05$) and on the math composite score ($p < 0.05$) of the KTEA-II.
- Students in 3rd and 4th grade improved by an average 18 percentage points in math compared to their peers across the state and by an average 23 percentage points compared to their peers nationwide.
- The majority of 3rd and 4th grade students improved on standardized reading assessment, gaining 20 and 23 percentage points compared to their peer across the state and nation respectively.

Take Home

- The findings from the current research suggest that Cogmed Working Memory Training is an efficacious classroom intervention for improving working memory and inattentive symptoms and may be a viable tool for improving academic performance, particularly in math, for students with cognitive deficits and/or struggling academically

**Case Study:
Ladue School District, St. Louis, Missouri**

- Students significantly improved their math performance on the KTEA-II and by an average of 16% on the CPI Add Up task after training.
- These gains on the Add Up task are consistent with the overall results of 2,147 Cogmed trainees who improved by 12%.

Whereas students with subjective report of poor WM and attention (Bergman-Nutley & Klingberg, 2014), demonstrated an improvement 14% on the Add Up task.

Case Study: Private Practice

- Practice with five Cogmed coaches.
- Practice was flagged by Cogmed Account Management for low fidelity and compliance.
- Looking further into Trends, it became clear that three coaches were above 90% compliant, but two coaches were below 33% compliant.
- Coaches retrained in Cogmed and compliance was upped back to 90% in all 5 coaches

Cogmed Claims & Evidence Claim #2 Updated May 2015

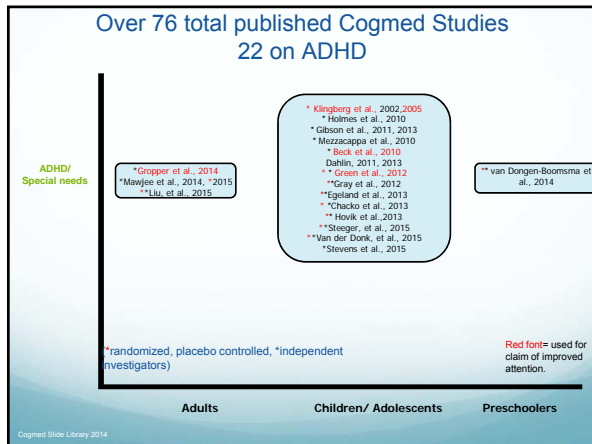
- CWMT leads to sustained improvements in attention seen in both subjective and objective measures.
- Various ages & presenting problems will be reviewed which are organized based upon areas with the most evidence.
 - **Subjective measures of attention:**
 - (Klingberg, et al., 2005; Beck, et al., 2010; Lohaugen, et al., 2011; Roughan & Hadwin, 2011; Hardy, et al., 2013; Bennett, et al., 2013; Akerlund, et al., 2013; Gropper, et al., 2014).
 - **Objective measures of attention:**
 - (Westerberg, et al., 2007; Thorell, et al., 2009; Lundqvist, et al., 2010; Brehmer, et al., 2011; Green, et al., 2012; Brehmer, et al., 2012).

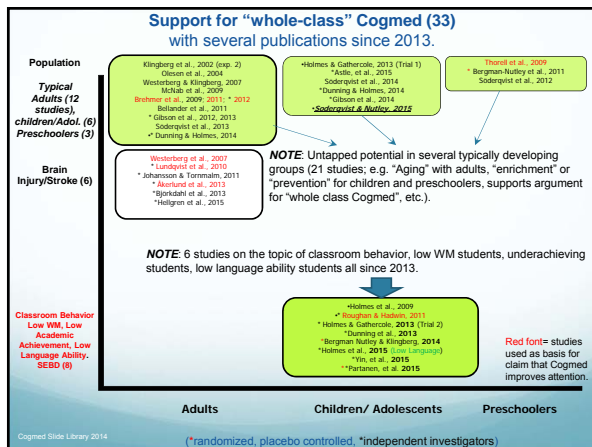
Cogmed Claims: 4) Learning Outcomes in Reading & Math

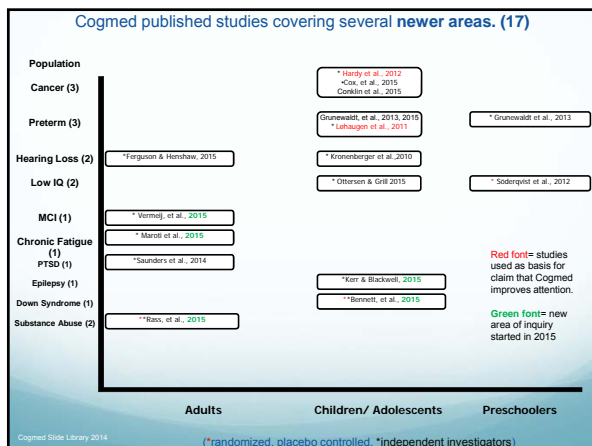
Learning outcomes in reading (13, 35, 45) (Dahlin (2011), Egeland, et al., (2013), Holmes & Gathercole (2014)

and math (34, 43, 45) (Dahlin (2013), Bergman-Nutley & Klingberg (2014), Holmes & Gathercole (2014) improve for many underperforming students following CWMT.









How much time does it take?

How many Cogmed sessions before you can see progress?

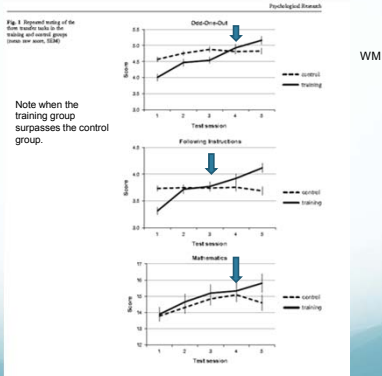
WM deficit Children: Transfer increased Linearly with amount of training time & Correlated with improvement on trained tasks. WM, FI & Math Improved (Bergman-Nutley & Klingberg, 2014)

Take note that changes begin to be registered at about 3 or more weeks into training.

As such the role of the coach in supporting the motivation of the trainee is very important.

Realize: "Transfer increased Linearly with amount of training time & Correlated with improvement on trained tasks."

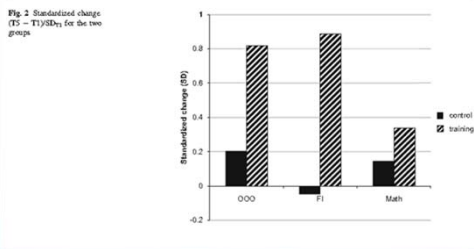
WM, FI & Math significantly Improved

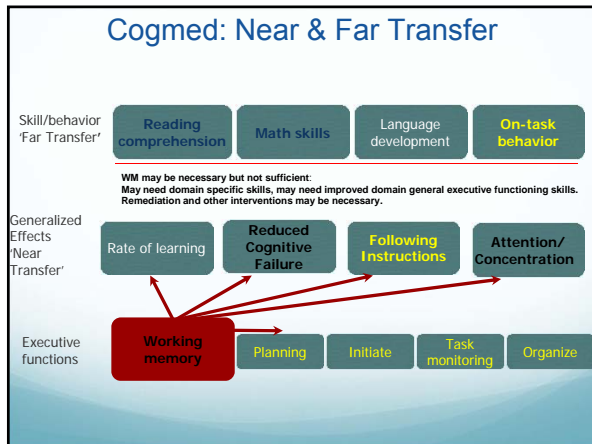


WM

WM deficit Children: Transfer increased Linearly with amount of training time & Correlated with improvement on trained tasks. WM, FI & Math Improved (Bergman-Nutley & Klingberg, 2014)

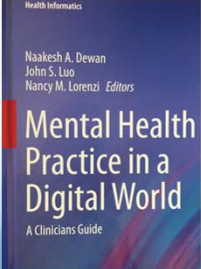
T5 (week 5)-T1 (week 1) showed the biggest difference between groups:





Book Chapter published by Charles & Peter in
"Mental Health Practice in a Digital World"
 Our chapter: "Computerized Cognitive Training Based upon Neuroplasticity."

Please [Click Here](http://www.springer.com/us/book/9783319141084#) or go to this URL:
<http://www.springer.com/us/book/9783319141084#>



This chapter puts into the larger perspective computerized cognitive training in the areas in which it has been most applied clinically: Schizophrenia, Traumatic Brain Injury & ADHD.

It is in this chapter where the "severity of disorder" argument is made.

Our Other Publications since 2013

Shinaver, C. S., III, Entwistle, P. C., Soderqvist, S. (2014). **Cogmed Working Memory Training: Reviewing the Reviews**. Applied Neuropsychology: Child.

Entwistle, P.C & Shinaver, C. S. III (2013). **Working Memory Training & Cogmed**. In S. Goldstein, & J. Naglieri (Eds.), *Handbook of Executive Functioning*. New York, NY: Springer.

Resources

Demo: <http://www.mycogmed.com/>
click on "TRY OUT COGMED"

Website: www.cogmed.com

Research: www.cogmed.com/research
Download Claims & Evidence here

Cogmed Customer Service: 1-800-627-7271

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Thank you!
