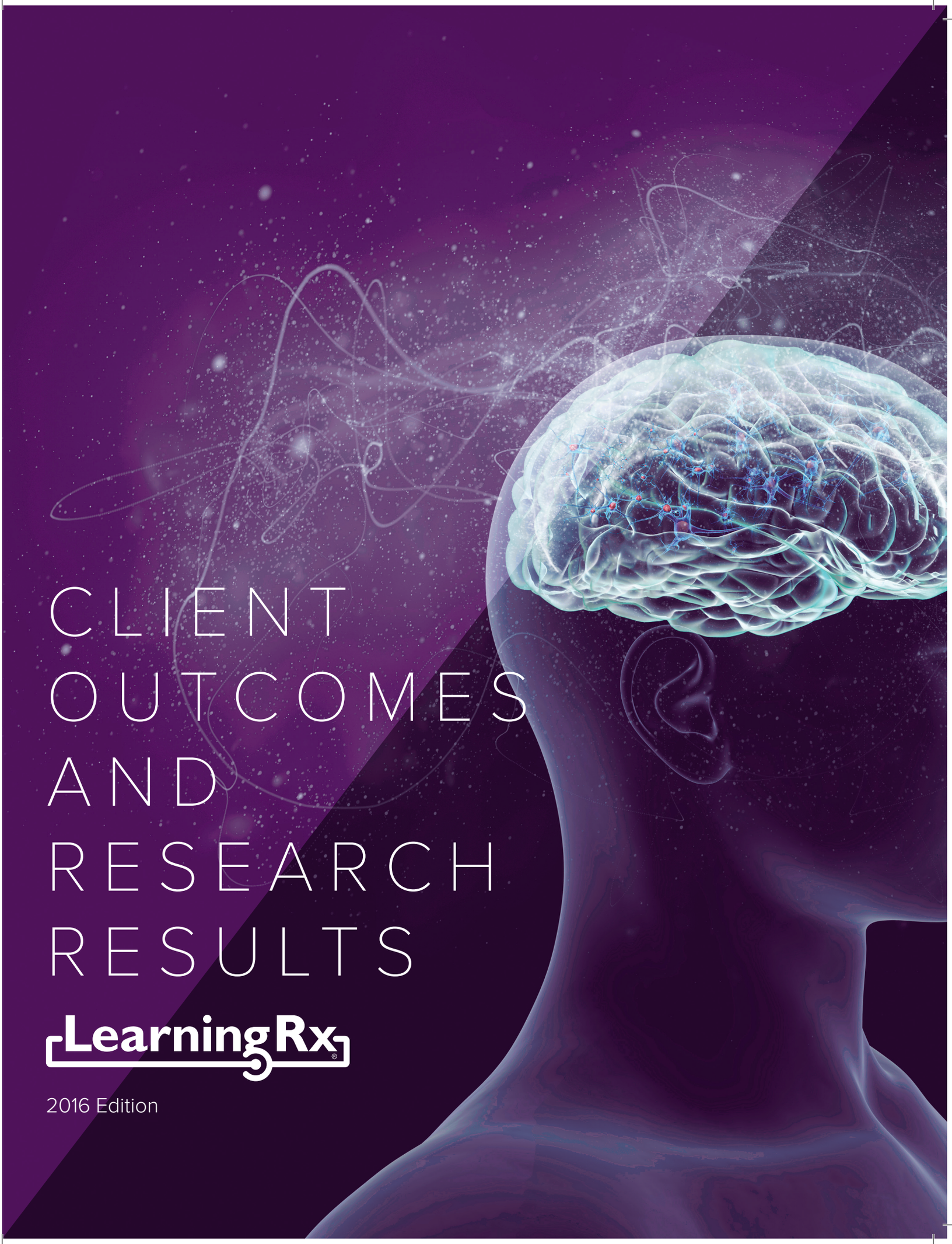

CLIENT OUTCOMES AND RESEARCH RESULTS

LearningRx®

2016 Edition

Prepared by
Amy L. Moore, PhD
Educational psychologist and research director at the Gibson Institute of Cognitive Research

Reviewed by
Howard Wainer, PhD
Distinguished research scientist, American statistician, and most recently the author of Truth or Truthiness: Distinguishing Fact from Fiction by Learning to Think Like a Data Scientist (Cambridge University Press, 2016)

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Foreword

Executive processing is dependent upon the collective interplay of brain networks underlying fundamental cognitive skills. In ways, one's executive processing is only as strong as one's weakest cognitive skill. Cognitive training offers the most promising method for strengthening underlying cognitive networks, allowing one to increase overall executive processing ability!

However, not all cognitive training programs are alike! LearningRx is distinct in many ways from the variety of digital training programs available today. Foremost, LearningRx programs are delivered by a clinician who gives dynamic feedback throughout every training session. Further, LearningRx programs are based on the Cattell-Horn-Carroll theory of intelligence, a widely-accepted view of cognition and the theoretical foundation of modern day cognitive assessment. LearningRx is comprehensive; targeting and training seven key cognitive skills and multiple sub-skills. It is also highly intensive, including an average of 60 to 120 hours of training over several months.

We are beginning to use MRI to visualize the underlying changes in brain structure and function after LearningRx training. In one research study, we looked at underlying changes related to gains in auditory processing and found correlated changes in functional connectivity! The dynamic feedback, thoroughness, and intensity of LearningRx cognitive training are keys to producing lasting modifications of cognitive skill networks and the desired functional cognitive gains. It is certainly an exciting time to be in the field of cognitive training research.

Sincerely,
Christina Ledbetter, PhD
Neuroscientist and Research Fellow, LSU Health Sciences Center

Introduction

Since 1985, Dr. Ken Gibson and his colleagues have helped over 95,000 clients with a unique cognitive training methodology designed to remediate deficits in multiple underlying learning skills. Dr. Gibson has devoted his entire career to helping children and adults with learning struggles, beginning first with a visual information processing intervention and later restructuring the program to include auditory processing, memory, attention, processing speed, and reasoning training procedures. With input from a team of psychologists, educators, speech and language pathologists, and occupational therapists, Dr. Gibson has continuously studied the results of learning and cognition research to develop an intensive reading intervention, a math intervention, and a reading comprehension intervention that have complemented the original training program.

Today, his focus has turned to building an empirical research base that supports the cognitive training procedures and assessments used by LearningRx Brain Training Centers, and to the continued development and testing of cognitive training program components. He established the Gibson Institute of Cognitive Research in April 2014 to accomplish those goals. The mission of the Gibson Institute is to conduct research on the programs and assessments, to communicate the latest research findings to the education and cognitive science communities, to provide opportunities for outside researchers to participate in research projects that utilize our cognitive training and assessment instruments, and to inform the practices of cognitive trainers by translating research findings into real-world applications. This report provides an overview of the LearningRx client outcomes from 2010 to 2015 and summarizes the major research on LearningRx programs.

Amy L. Moore, PhD
Educational Psychologist and
Research Director, Gibson Institute
of Cognitive Research

LearningRx Client Outcomes: 2010–2015

Executive Summary

Introduction

This report presents the results of a national assessment of the training impacts on cognitive skills and on reading and math achievement for nearly 18,000 clients of LearningRx Brain Training Centers between 2010 and 2015.

Background

LearningRx is a supplemental educational services provider of brain training and cognitive-focused reading and math interventions for students. The services are based on a cognitive training approach to reducing deficits in cognition, reading, and math skills. The services are currently provided at 80 LearningRx Centers across the United States. Each center is an independently owned franchise that implements the LearningRx proprietary programs, including ThinkRx, ReadRx, MathRx, ComprehendRx, and LiftOff.

Clients in the ThinkRx, ReadRx, MathRx, and ComprehendRx programs complete a battery of tests from the Woodcock-Johnson III – Tests of Cognitive Abilities and Tests of Achievement before and after training.

Characteristics of Clients Served Between 2010 and 2015

Training Program	# Clients	% of Clients	Average Age	# Training Hours
ThinkRx	7,138	40	13.7	60–90
ReadRx	6,460	36	11.4	120
MathRx	1,368	8	13.2	120
LiftOff	1,245	7	6.2	60
ComprehendRx	358	2	13.1	40

Summary of Findings

To assess the outcomes for clients between 2010 and 2015, pre-intervention test scores were compared to post-intervention test scores using paired samples t tests. Training gains were examined in three ways: a pooled analysis of test data across all clientele, analysis of test data based on self-reported diagnosis, and analysis of test data based on training program. The analyses revealed positive trends and significant training gains for all LearningRx programs and all diagnostic categories.

Gains by Program. When the Woodcock-Johnson III standard score results from clients in each program are compared in a table, we can see the mean gain for each cognitive skill by program and as a whole, and also the average gain for all cognitive skills for each program and as a whole.

Table of Cognitive Skill Standard Score Gains by Program

Skill	MathRx	ThinkRx	ReadRx	ComprehendRx	Skill Mean
IQ	13	17	13	15	14.9
Long-Term Memory	15	15	14	14	14.3
Processing Speed	13	12	12	11	11.6
Logic & Reasoning	12	11	11	10	10.8
Auditory Processing	9	10	11	10	10.4
Working Memory	11	10	10	9	9.6
Broad Attention	10	8	8	8	8.3
Visual Processing	9	8	8	8	8.0
Program Mean	11.5	11.4	10.8	10.7	11.1

- Overall, LearningRx clients made the greatest gains in IQ and long-term memory, followed by processing speed, logic & reasoning, and auditory processing.
- Consistent with the program's focus on reading skills, ReadRx clients made greater gains in auditory processing than clients in other programs.

- As a group, ThinkRx clients averaged a 17-point gain in IQ score and an 11.4 standard point gain on tests of cognitive skills, including long-term memory, broad attention, logic & reasoning, auditory processing, working memory, visual processing, and processing speed.
- As a group, ReadRx clients averaged a 13-point gain in IQ score, a 10.8 standard point gain on tests of cognitive skills, and made statistically significant gains on tests of Reading Fluency, Word Attack, Spelling Sounds, Sound Awareness, and Passage Comprehension. The mean gain across reading achievement tests was 3.5 years.
- As a group, MathRx clients averaged a 13-point gain in IQ score, an 11.5 standard point gain on tests of cognitive skills, and made statistically significant gains on tests of Math Fluency, Applied Problems, Decision Speed, and Quantitative Concepts. The mean gain across math achievement tests was 3.4 years.
- As a group, ComprehendRx clients averaged a 15-point gain in IQ score, an 10.7 standard point gain on tests of cognitive skills, and made statistically significant gains on tests of Reading Fluency, Word Attack, Listening Comprehension, Sound Awareness, and Passage Comprehension. The mean gain across reading achievement tests was 3.8 years.

Gains by Diagnosis. When the Woodcock-Johnson III standard score results from clients with different diagnoses are compared in a table, we can see the mean gain for each cognitive skill by diagnosis and as a whole, and also the average gain in all cognitive skills for each diagnosis and as a whole.

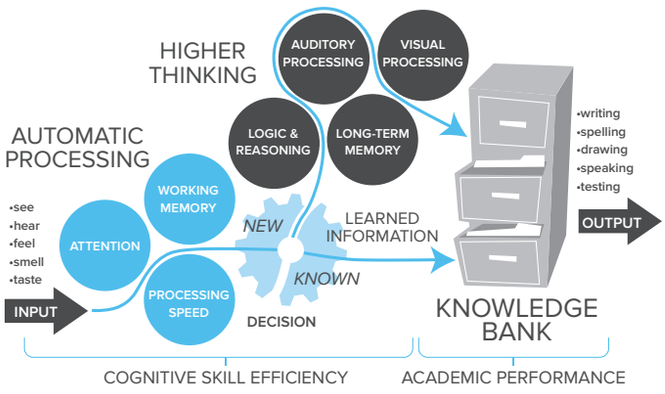
Table of Standard Score Cognitive Skill Gains by Diagnosis

Skill	ADHD	Senior Adults	Dyslexia	Autism	TBI	LD	Speech & Language	Skill Mean
Auditory Processing	14	14	14	14	15	15	15	14.4
Long-Term Memory	14	15	14	13	14	14	13	13.9
IQ	14	19	13	9	9	9	9	11.7
Logic & Reasoning	11	10	12	11	11	11	11	11.0
Broad Attention	12	7	11	11	11	11	10	10.4
Working Memory	10	10	9	11	10	10	10	10.0
Processing Speed	9	6	8	10	9	9	9	8.6
Visual Processing	11	9	8	8	8	8	8	8.6
Diagnosis Mean	11.9	11.3	11.1	10.9	10.9	10.9	10.6	11.1

- All cognitive skills gains were statistically significant regardless of diagnosis.
- Clients who came to LearningRx with a prior diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) achieved the greatest gains overall, averaging 11.9 standard score points across cognitive skills.
- Clients over the age of 50 who came to LearningRx made the greatest gains in IQ score, averaging a 19-point increase. Clients with ADHD averaged a 14-point increase in IQ score, and clients with dyslexia averaged a 13-point increase. The average increase in IQ score for all diagnostic categories combined was 11.7 points.
- As a group, clients who came to LearningRx with a diagnosis made the greatest gains in auditory processing and long-term memory, followed by IQ score and logic & reasoning.

The Science Behind LearningRx One-on-One Brain Training

The Learning Model is grounded in the Cattell-Horn-Carroll (CHC) theory of intelligence, which describes thinking as a set of seven broad abilities: comprehension knowledge, long-term retrieval, visual-spatial thinking, auditory processing, fluid reasoning, processing speed, and short-term memory.



According to the Learning Model, an individual takes information in through the senses (input) that must be recognized and analyzed by the active processing system (working memory, processing speed, attention). This executive control system determines which information is unimportant, easily handled, or requires thinking. Unimportant information is discarded from working memory. If the input contains important information about data that have already been stored in the knowledge bank, it is quickly retrieved and converted to output, such as speaking or writing.

If the information has not been previously stored, higher thinking processes must then occur. Reasoning, auditory processing, and visual processing must be used to solve the problem or complete the task. If the task is practiced often enough, however, the information is stored in the knowledge bank, which will decrease the time between input to output. This occurs because the higher thinking processes can then be bypassed.

SEVEN KEY COGNITIVE SKILLS

- **Attention:** Focus over time, despite distraction, or while multitasking
- **Processing Speed:** Think and perform tasks quickly and accurately
- **Working Memory:** Hold on to and use information during the learning process
- **Auditory Processing:** Distinguish, blend, and segment sounds accurately
- **Visual Processing:** Create and picture mental images while thinking or reading
- **Logic & Reasoning:** Reason, form ideas, and solve problems
- **Long-Term Memory:** Efficiently recall facts and stored information

LearningRx Cognitive Training

LearningRx cognitive training programs target and remediate seven primary cognitive skills and multiple sub-skills through repeated engagement in game-like mental tasks delivered one-on-one by a clinician or cognitive trainer. The tasks emphasize visual or auditory processes that require attention and reasoning throughout each 60- to 90-minute training period. Using a synergistic "drill for skill" and metacognitive approach to developing cognitive skills, the program incorporates varying levels of intensity, hierarchical sequencing of tasks, multiple-task loading, and instant feedback from the clinician or trainer. Training sessions are focused, demanding, intense, and tightly controlled by the clinician or trainer to push students to just above their current cognitive skill levels. Deliberate distractions are built in to the sessions to tax the brain's capacity for sorting and evaluating the importance of incoming information. This ability to correctly handle distracting information and interruptions is the foundation for focus and attention skills.

THE SEVEN KEY INGREDIENTS OF EFFECTIVE BRAIN TRAINING

Brain training must be practiced. Because brain training builds skills, it can't be taught in the classroom. It must be practiced, like learning to play tennis or the piano.

Brain training that gets the best results is done one-on-one with a personal trainer. Teaming with an experienced trainer provides accountability, motivation, and—ultimately—life changing results.

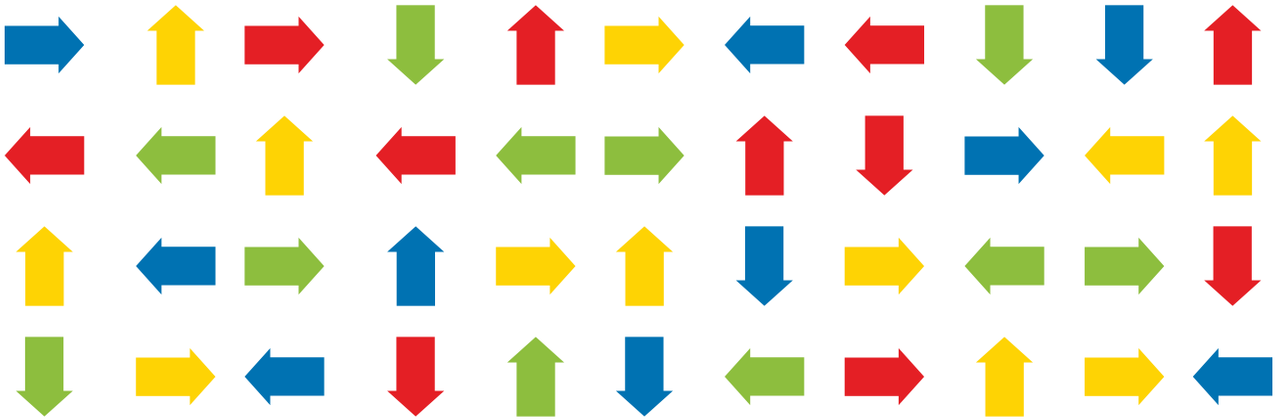
Brain training exercises need to be intense, requiring concentrated repetitions in order to train skills quickly.

Brain training exercises need to be targeted in order to address specific weak cognitive skills.

Brain training exercises need to be done in a particular sequence. Small challenging steps don't overwhelm the client, but allow the trainer to continually challenge the client incrementally and keep them engaged in the training.

Brain training exercises must be progressively loaded. Loading incorporates multitasking and is a fast-track way to take a new skill and make it a more automatic skill.

Brain training, to be effective, requires immediate, accurate feedback. Instant, effective reinforcement and adjustments keep training focused and intense.



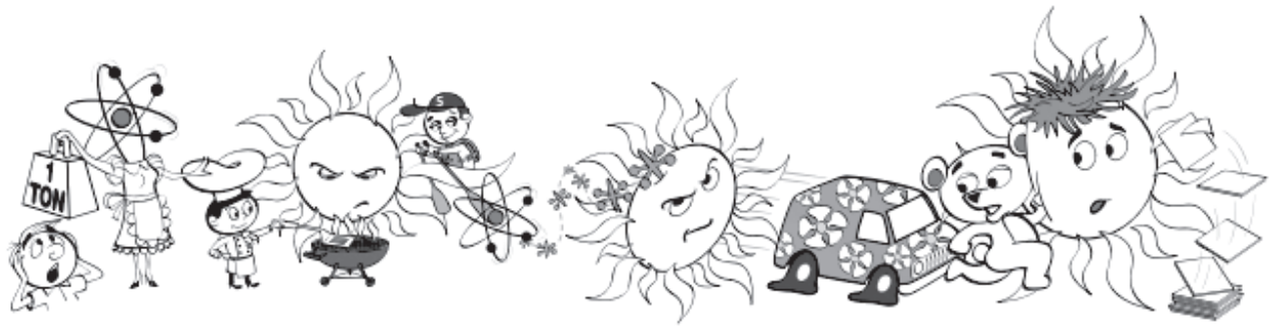
Feel Your Brain at Work:

Try a LearningRx Procedure

Follow the directions below for a fun way to work on your attention, working memory, and visual processing skills. Each level increases the difficulty by adding a second mental challenge. Don't worry...your brain can adapt! Try it alone or try it with your child.

Directions

1. From the top row, moving left to right, call out the color of each of the arrows without a mistake.
2. Call out the direction of each arrow. Do it without error in 40 seconds. Keep practicing until you can do it in only 20 seconds.
3. Next, call out the direction of the arrows as if they were turned a ¼-turn clockwise. Get that time down to 20 seconds without error.
4. Now comes the fun part! Call out the color of the UP and DOWN arrows, and call out the direction of the LEFT and RIGHT arrows (this requires divided attention). Once mastered, increase the difficulty by saying red for yellow and blue for green. Try substituting different colors. Keep track of your time and stay with it until each exercise flows quickly and smoothly.
5. Finally, call out the direction of the arrow as if red and green arrows were turned a ¼-turn clockwise and yellow and blue were turned ¼-turn counterclockwise. You will find yourself not only doing the familiar ones more easily, but mastering each new variation faster as well.



Feel Your Brain at Work:

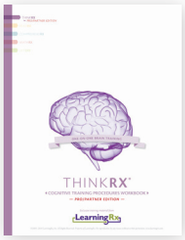
Try a LearningRx Procedure

All LearningRx students learn the presidents forward and backward using a memory strategy called mnemonics. By using silly pictures and fun links, students can remember almost anything. Once they have completed the presidents, they learn how to visualize their own pictures and links, creating stronger memory and visualization skills. These skills are important for test-taking and reading comprehension. Have fun using this technique to learn the first 10 presidents.

Here is the script our trainers use to help students associate the linked images with the names they want to memorize:

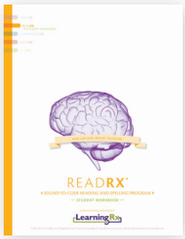
What is the man watching? (the man is WATCHING-a-TON). If a ton was hanging over my head, I'd be watching it too, wouldn't you? WATCHING-a-TON will remind you of WASHINGTON. (WATCHING-a-TON; WASHINGTON). What is funny about the lady who is holding the ton? (Her head). Her head is superpowered! Do you know where the superpowers are coming from? (ATOMS). ATOMS will remind you of ADAMS. (ATOMS; ADAMS). Who is the woman patting on the head? (a CHEF). The chef is HER-SON. CHEF-HER-SON will remind you of JEFFERSON. (CHEF-HER-SON; JEFFERSON). What is the chef grilling? (a SUN). Does the sun look happy or mad? (MAD). So, the sun is a…MAD-SUN. (MAD-SUN; MADISON). What do you see on one of the sunbeams? (a MAN-ROWing a boat). (MAN-ROW; MONROE). What superpowered thing do you see at the end of his oar? (ATOMS). (ATOMS; ADAMS). What little toys are flying out of the atoms? (JACKs). What did one of the jacks stab? (a SUN). (JACK-SUN; JACKSON). The sun is very hot and is melting the tires of what kind of vehicle? (a VAN). The van is about to run over what kind of animal? (a BEAR). If a van was trying to run you over, would you walk or run? (RUN). (VAN-BEAR-RUN; VAN BUREN). What does the bear run into? (a SUN). And what does the sun have a lot of on his head? (HAIR). So he is a…HAIRY-SUN. (HAIRY-SUN; HARRISON). What do you see the hairy sun stacking? (TILES; TYLER).

Profile of LearningRx Programs



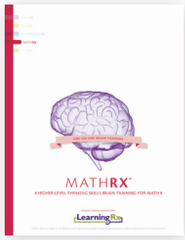
Years:	2010–2015
% of Clients:	40%
# Clients:	7,138
Average age:	13.7
# Training hours:	90

ThinkRx is the foundational one-on-one cognitive training program for clients ages six to adult. ThinkRx includes 35 training procedures that target all major cognitive skills, including attention, memory, processing speed, auditory and visual processing, and logic & reasoning.



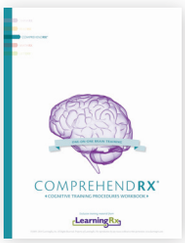
Years:	2010–2015
% of Clients:	36%
# Clients:	6,460
Average age:	11.4
# Training hours:	120

ReadRx is an intensive sound-to-code reading and spelling intervention for clients ages six to adult. ReadRx includes all 35 ThinkRx training procedures and adds an additional 60 hours of training in auditory processing along with basic and complex code reading training to increase reading and spelling fluency.



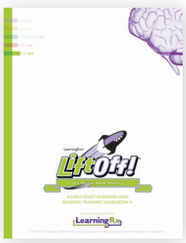
Years:	2010–2015
% of Clients:	8%
# Clients:	1,368
Average age:	13.2
# Training hours:	120

MathRx is an intensive math intervention for clients from fourth grade to adult. MathRx includes all 35 ThinkRx training procedures and adds an additional 60 hours of training in math concepts, problem solving, reasoning, and calculations designed to increase mathematical fluency.



Years:	2014–2015
% of Clients:	2%
# Clients:	358
Average age:	13.1
# Training hours:	40

ComprehendRx is an add-on training for clients ages six to adult to improve reading comprehension and metacognition.

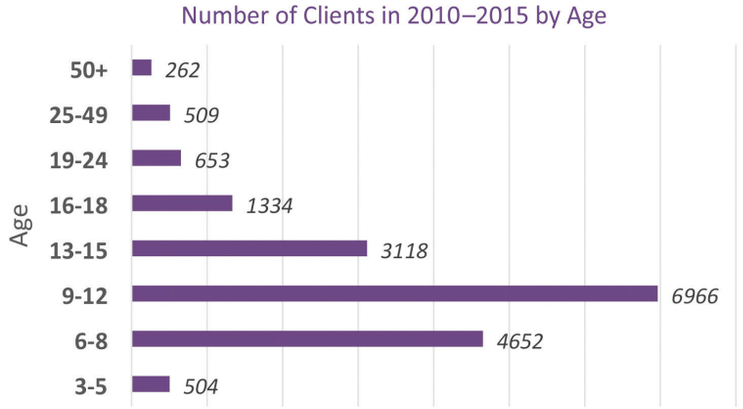


Years:	2010–2015
% of Clients:	7%
# Clients:	1,245
Average age:	6.2
# Training hours:	60

LiftOff is a reading readiness and cognitive skills training intervention for four- to seven-year-olds.

*An additional 1,429 clients were enrolled in short booster programs without cognitive testing.

Profile of LearningRx Clients



Percentage with a Prior Diagnosis	
Attention Deficit Hyperactivity Disorder (ADHD)	30
Dyslexia	12
Learning Disability	11
Speech/Language Delay	10
Autism Spectrum Disorder	5
Traumatic Brain Injury	2
Age-Related Memory Loss	<1

Gender	
Female	40
Male	60

LearningRx Assessments and Interpretation of Results

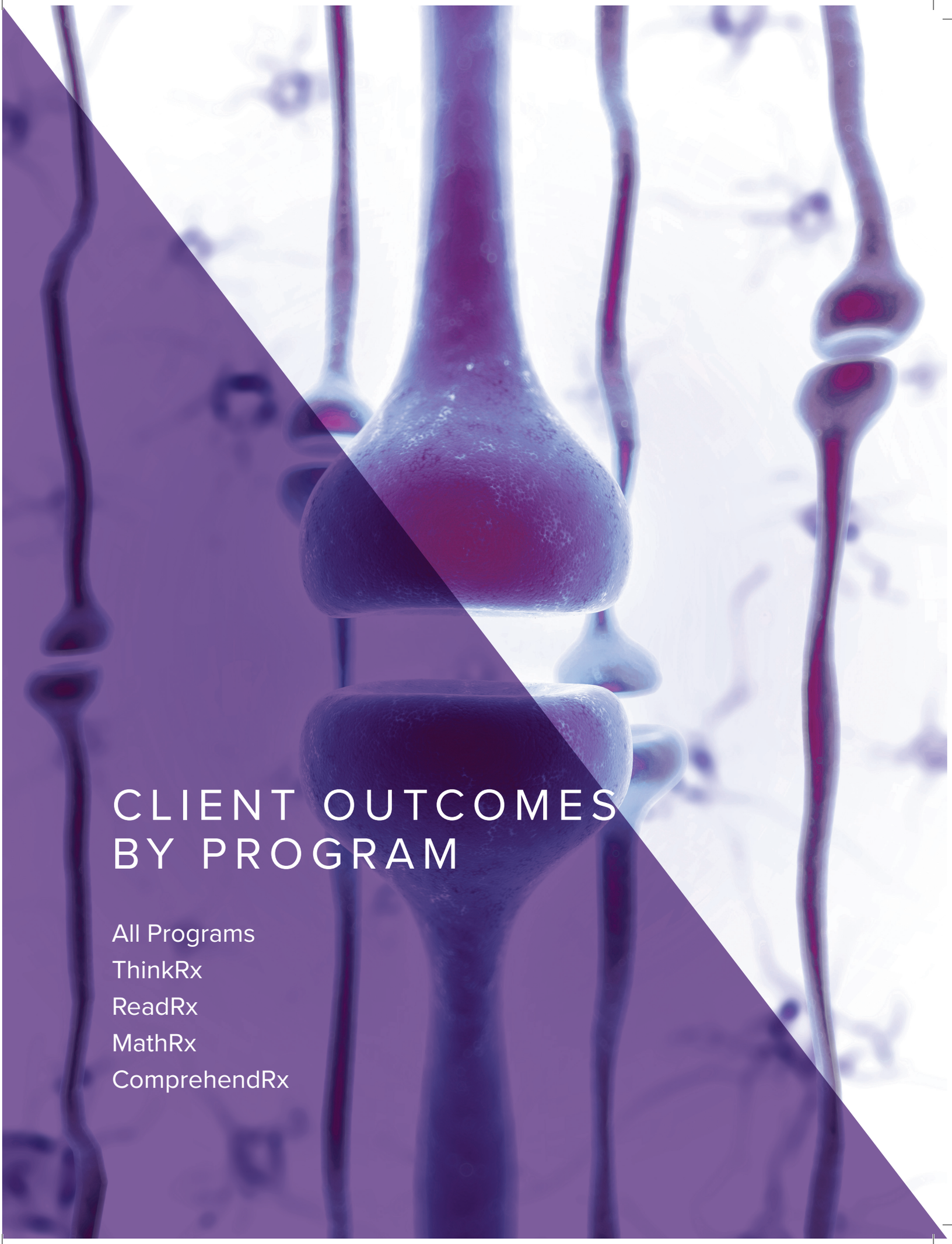
LearningRx clients take a battery of cognitive and achievement tests before they begin a training program, and then again at the end of their training. Test administrators use subtests from the Woodcock-Johnson III family of tests, including Tests 1-7 of the cognitive battery to derive an IQ score. The selection of supplemental tests is determined by the training program in which clients are enrolled. Pre-test to post-test changes in standard scores are statistically analyzed using paired samples t tests. Percentiles and age-equivalents are reported to show the distribution of scores relative to same-age peers.

Woodcock-Johnson III - Tests of Cognitive Abilities (COG)

Test	Test Name	Skill Measured	Clients
COG 1	Verbal Comprehension	General Knowledge	All
COG 2	Visual-Auditory Learning	Long-Term Memory	All
COG 3	Spatial Relations	Visual Processing	All
COG 4	Sound Blending	Auditory Processing	All
COG 5	Concept Formation	Logic & Reasoning	All
COG 6	Visual Matching	Processing Speed	All
COG 7	Numbers Reversed	Working Memory	All
COG 9	Auditory Working Memory	Auditory Working Memory	ReadRx
COG 15	Analysis-Synthesis	Fluid Reasoning	MathRx
COG 16	Decision Speed	Cognitive Fluency	MathRx
COG 20	Pair Cancellation	Broad Attention	All

Woodcock-Johnson III - Tests of Achievement (ACH)

Test	Test Name	Skill Measured	Clients
ACH 2	Reading Fluency	Broad Reading	ReadRx
ACH 4	Understanding Directions	Listening Comprehension	ReadRx/ComprehendRx
ACH 6	Math Fluency	Broad Math	MathRx
ACH 9	Passage Comprehension	Reading Comprehension	ReadRx/ComprehendRx
ACH 13	Word Attack	Word Attack	All
ACH 18	Quantitative Concepts	Math Reasoning	MathRx
ACH 20	Spelling of Sounds	Phonemic Awareness	ReadRx
ACH 21	Sound Awareness	Auditory Processing	All



CLIENT OUTCOMES BY PROGRAM

All Programs
ThinkRx
ReadRx
MathRx
ComprehendRx

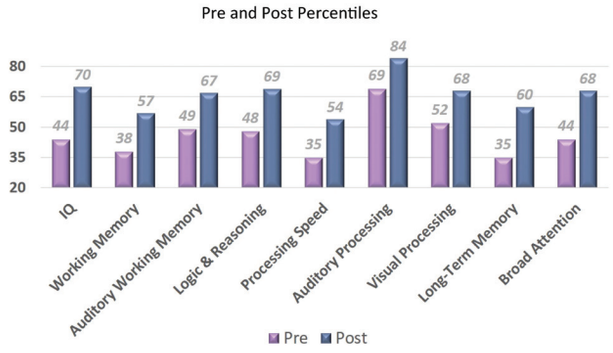
Cognitive Assessment Results: 2010–2015

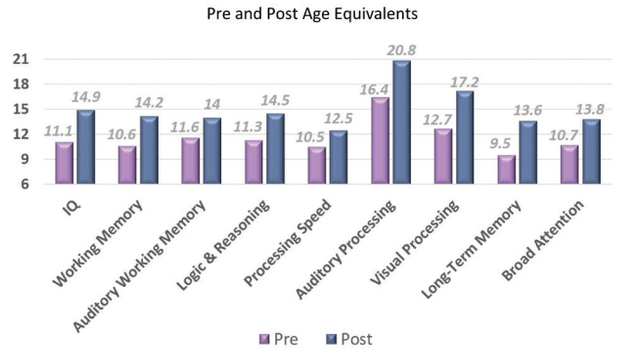
Program: All programs

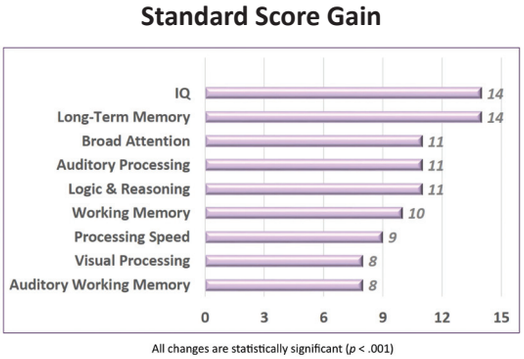
Number of Clients: 17,998

Mean Age: 12.3

Results: LearningRx clients are given pre- and post-assessments using the Woodcock-Johnson III – Tests of Cognitive Abilities. The changes in standard scores were statistically significant for all measures ($p < .001$). Overall, the largest gains were seen in IQ and long-term memory, followed by broad attention, auditory processing, and logic & reasoning. The average pre-test IQ score was 97 and the average post-test IQ score was 111. In addition, post-training percentiles are well within the range of normal functioning, and the average age-equivalent gain in cognitive skill performance was 3.4 years.







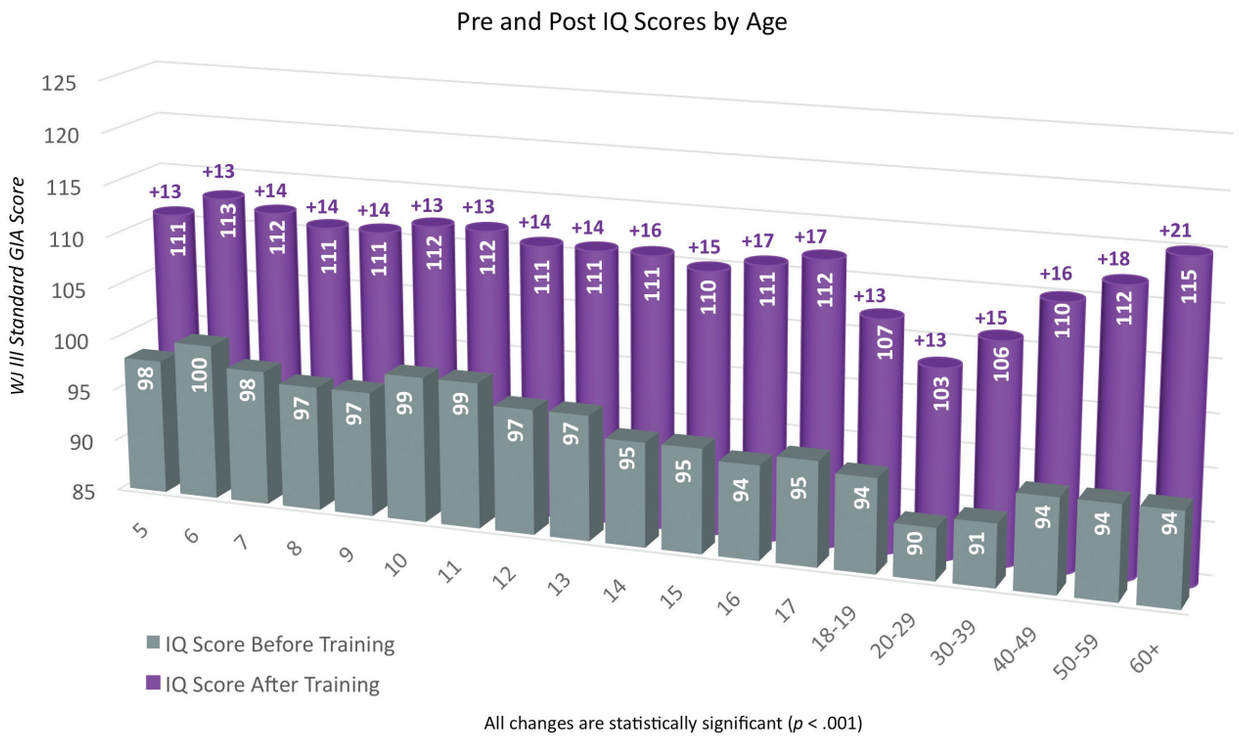
IQ Score Results: 2010–2015

Program: All programs

Number of Clients: 17,998

Mean Age: 12.3

Results: LearningRx clients are given pre- and post-assessments using the Woodcock-Johnson III – Tests of Cognitive Abilities. A majority of clients take the seven subtests required to calculate an IQ score, or General Intellectual Ability score. The changes in IQ scores were statistically significant for all measures ($p < .001$). The average pre-test IQ score was 97 and the average post-test IQ score was 111. Mean gains ranged from 13 points to 21 points across age groups.



All changes are statistically significant ($p < .001$)

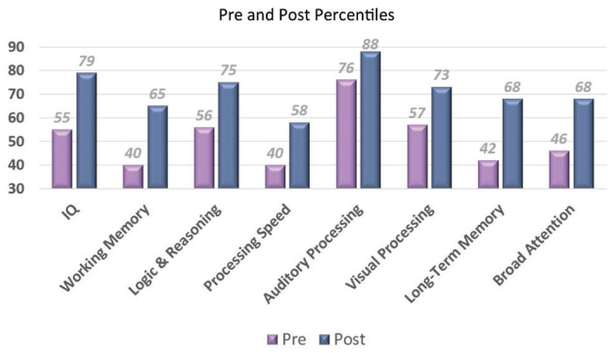
ThinkRx Cognitive Results: 2010–2015

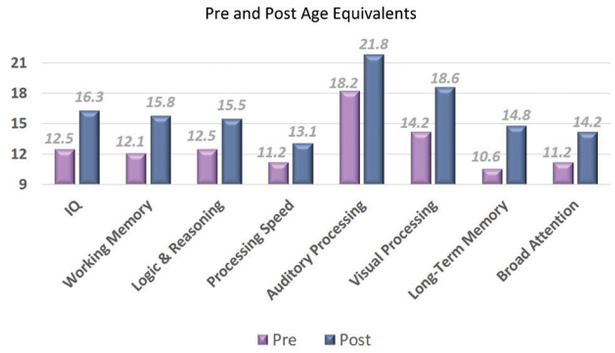
Program: ThinkRx

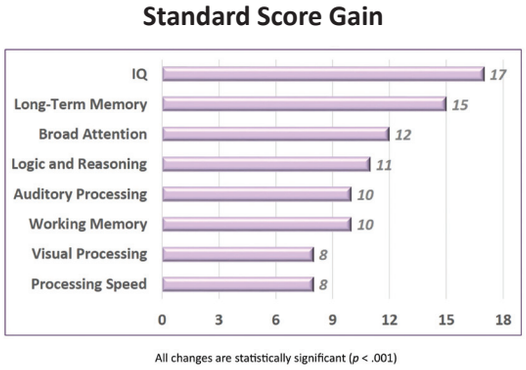
Number of Clients: 7,138

Mean Age: 13.7

Results: The changes in standard scores on the Woodcock-Johnson III – Tests of Cognitive Abilities were statistically significant for all skills ($p < .001$) assessed. Overall, the largest gains were seen in IQ and long-term memory, followed by broad attention, auditory processing, and logic & reasoning. The average pre-test IQ score was 100 and the average post-test IQ score was 117. In addition, post-training percentiles are well within the range of normal functioning, and the average age-equivalent gain in cognitive skill performance was 3.4 years.







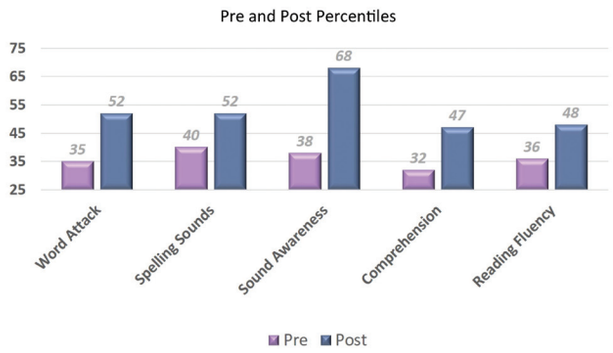
ReadRx Achievement Results: 2010–2015

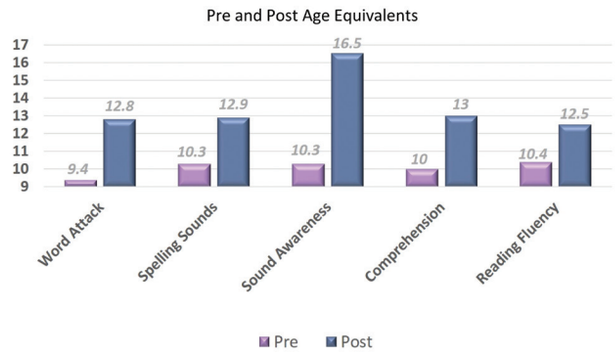
Program: ReadRx

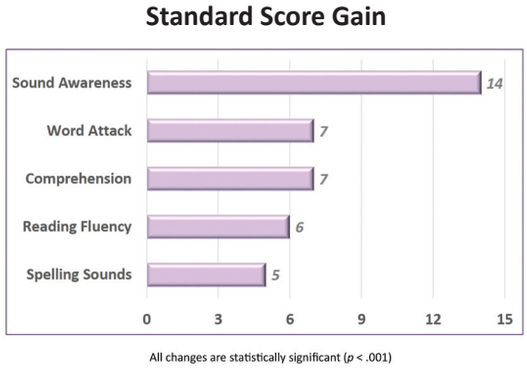
Number of Clients: 6,460

Mean Age: 11.4

Results: Clients who completed the 120-hour ReadRx program achieved statistically significant standard score changes ($p < .001$) on all five reading subtests administered from Woodcock-Johnson III – Tests of Achievement. Overall, the largest gain was seen in sound awareness, the primary skill needed for reading. Post-training percentiles are all within the normal range, and the overall age-equivalent gain in reading achievement was 3.5 years.







All changes are statistically significant ($p < .001$)

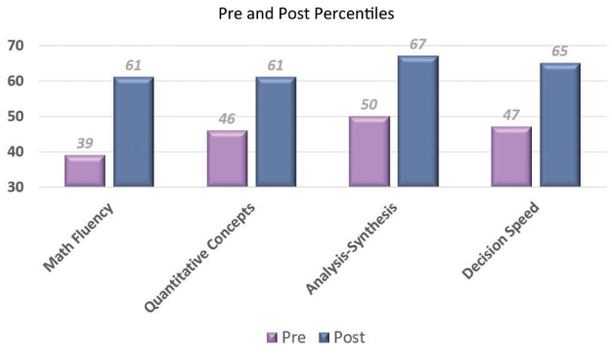
MathRx Achievement Results: 2010–2015

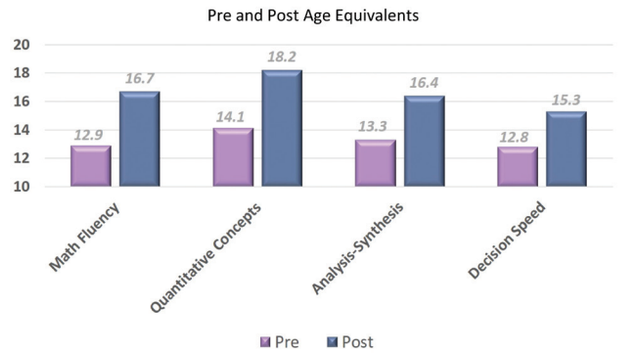
Program: MathRx

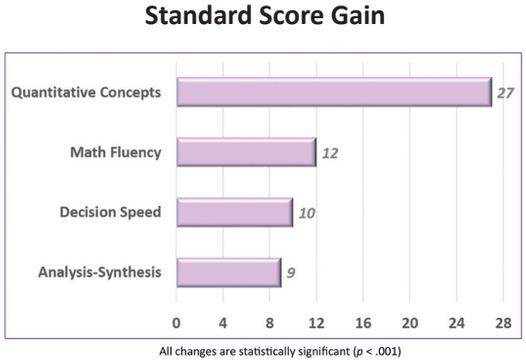
Number of Clients: 1,368

Mean Age: 13.2

Results: Clients who completed the 120-hour MathRx program achieved statistically significant standard score changes ($p < .001$) on the assessment of math skills selected from the Woodcock-Johnson III – Tests of Cognitive Abilities and Tests of Achievement. Post-training percentiles are all within the normal range, and the overall age-equivalent gain in math skills was 3.4 years.







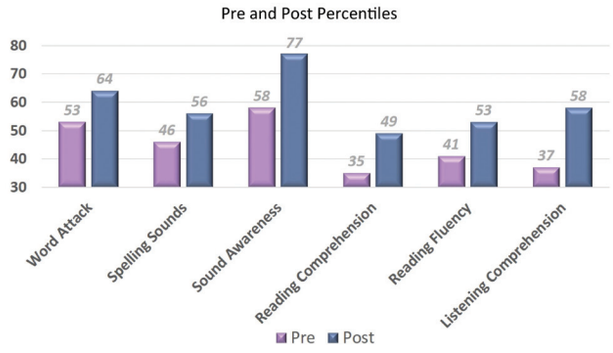
ComprehendRx Achievement Results: 2010–2015

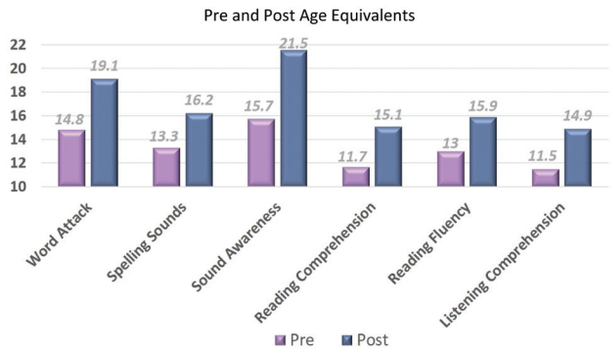
Program: ComprehendRx

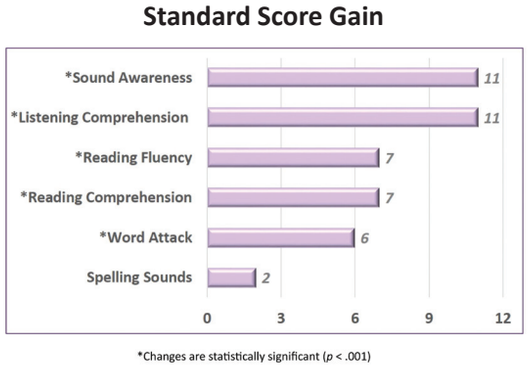
Number of Clients: 358

Mean Age: 13.1

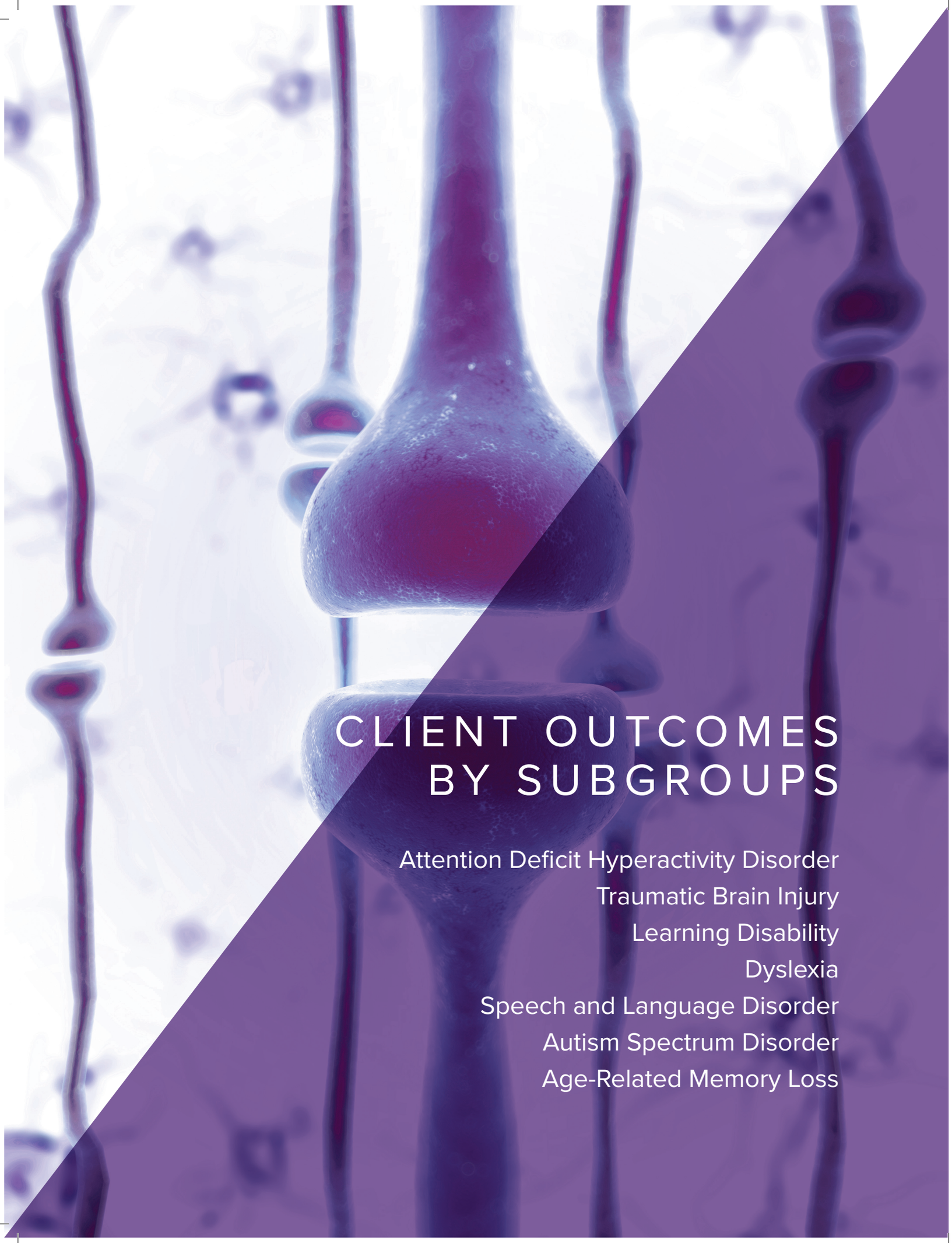
Results: Clients who completed the 160-hour ComprehendRx program achieved statistically significant standard score changes ($p < .001$) on five of the six reading subtests administered from Woodcock-Johnson III – Tests of Achievement. Overall, the largest gain was seen in sound awareness, the primary skill needed for reading. Substantial gains were also noted in listening comprehension. Post-training percentiles are all within the normal range, and the overall age-equivalent gain in reading achievement was 3.8 years.







*Changes are statistically significant ($p < .001$)



CLIENT OUTCOMES BY SUBGROUPS

Attention Deficit Hyperactivity Disorder
Traumatic Brain Injury
Learning Disability
Dyslexia
Speech and Language Disorder
Autism Spectrum Disorder
Age-Related Memory Loss

Cognitive Assessment Results by Client-Reported Diagnosis

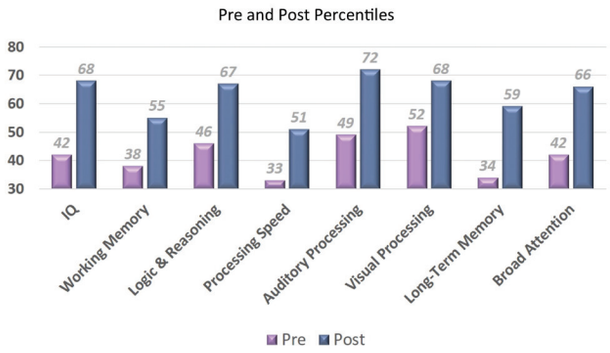
Attention Deficit Hyperactivity Disorder

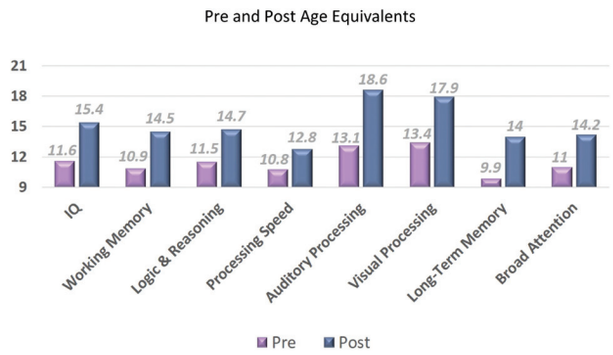
Program: All

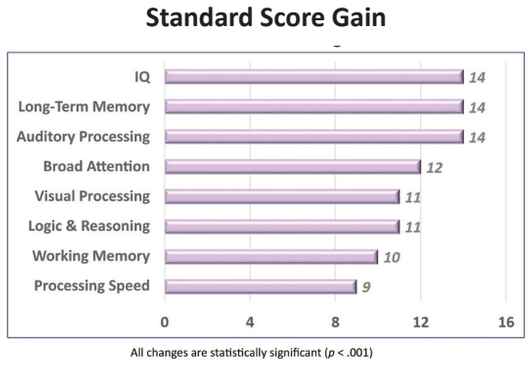
Number of Clients: 5,416

Mean Age: 12.3

Results: The following charts show the improvements in cognitive skills for clients who came to LearningRx with a diagnosis of ADHD between 2010 and 2015. The changes in standard scores on the Woodcock-Johnson III – Tests of Cognitive Abilities were statistically significant for all skills ($p < .001$) assessed. Overall, the largest gains were seen in IQ, auditory processing, and long-term memory, followed by broad attention and logic & reasoning. The average pre-test IQ score was 96 and the average post-test IQ score was 110. In addition, post-training percentiles are well within the range of normal functioning, and the average age-equivalent gain in cognitive skill performance was 3.7 years.







Cognitive Assessment Results by Client-Reported Diagnosis

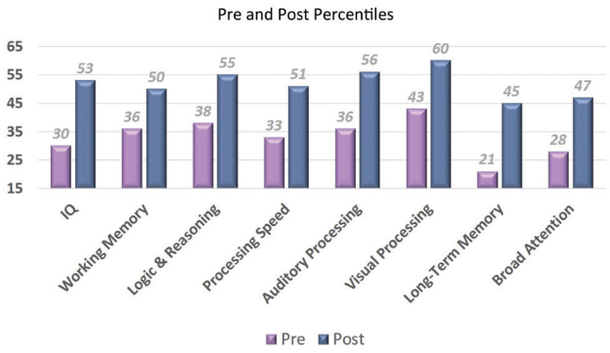
Traumatic Brain Injury

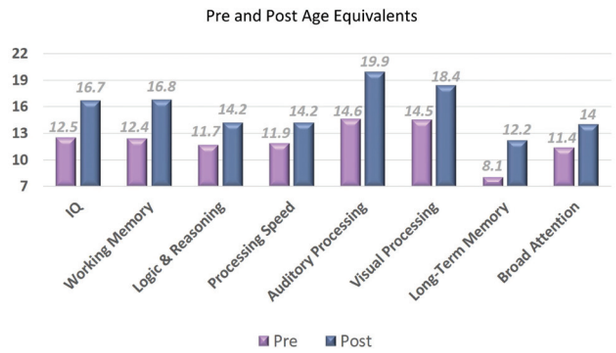
Program: All

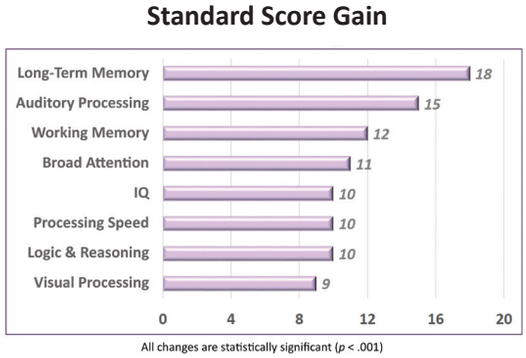
Number of Clients: 273

Mean Age: 25.6

Results: The following charts show the improvements in cognitive skills for clients who came to LearningRx with a diagnosis of traumatic brain injury (TBI) between 2010 and 2015. The changes in standard scores on the Woodcock-Johnson III – Tests of Cognitive Abilities were statistically significant for all skills ($p < .001$) assessed. Overall, the largest gains were seen in auditory processing and long-term memory, followed by working memory and broad attention. The average pre-test IQ score was 92 and the average post-test IQ score was 102. In addition, post-training percentiles are within the range of normal functioning, and the average age-equivalent gain in cognitive skill performance was 3.7 years.







Cognitive Assessment Results by Client-Reported Diagnosis

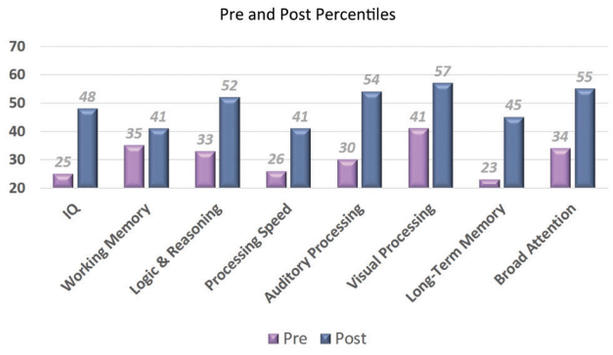
Learning Disability (LD)

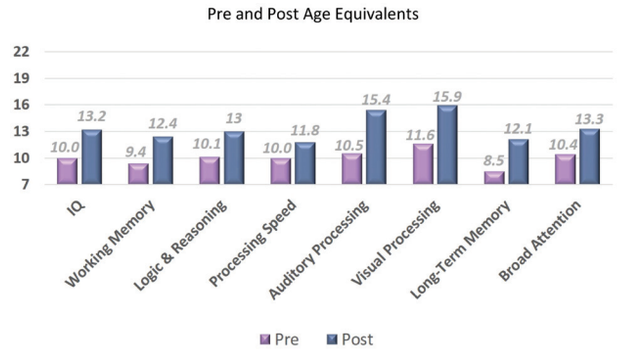
Program: All

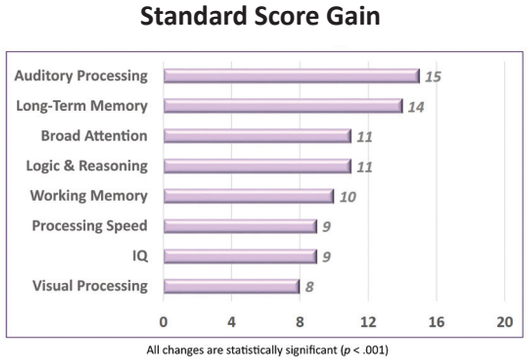
Number of Clients: 2,003

Mean Age: 13.1

Results: The following charts show the improvements in cognitive skills for clients who came to LearningRx with a diagnosis of Learning Disability (LD) between 2010 and 2015. The changes in standard scores on the Woodcock-Johnson III – Tests of Cognitive Abilities were statistically significant for all skills ($p < .001$) assessed. Overall, the largest gains were seen in auditory processing and long-term memory, followed by logic & reasoning and broad attention. The average pre-test IQ score was 90 and the average post-test IQ score was 99. In addition, post-training percentiles are within the range of normal functioning, and the average age-equivalent gain in cognitive skill performance was 3.3 years.







Cognitive Assessment Results by Client-Reported Diagnosis

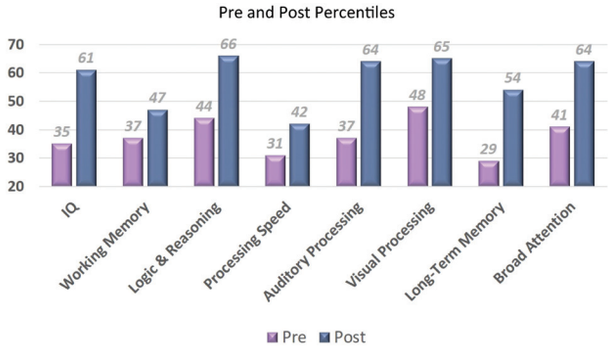
Dyslexia *(Cognitive Results)*

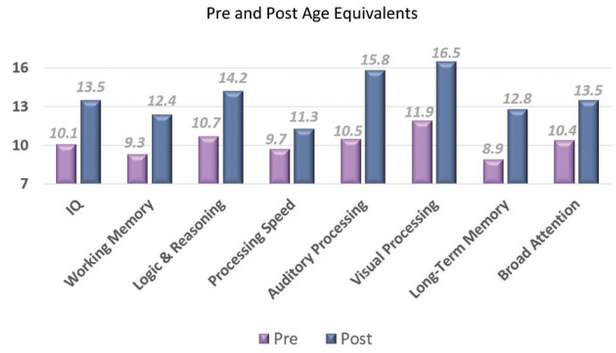
Program: All

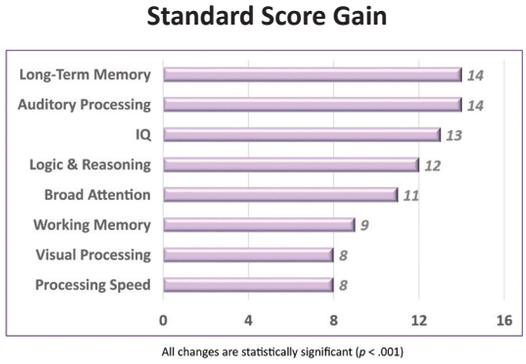
Number of Clients: 2,112

Mean Age: 11.9

Results: The following charts show the improvements in cognitive skills for clients who came to LearningRx with a diagnosis of dyslexia between 2010 and 2015. The changes in standard scores on the Woodcock-Johnson III – Tests of Cognitive Abilities were statistically significant for all skills ($p < .001$) assessed. Overall, the largest gains were seen in auditory processing and long-term memory, followed by logic & reasoning and broad attention. The average pre-test IQ score was 93 and the average post-test IQ score was 106. In addition, post-training percentiles are within the range of normal functioning, and the average age-equivalent gain in cognitive skill performance was 3.6 years.







Reading Assessment Results by Client-Reported Diagnosis

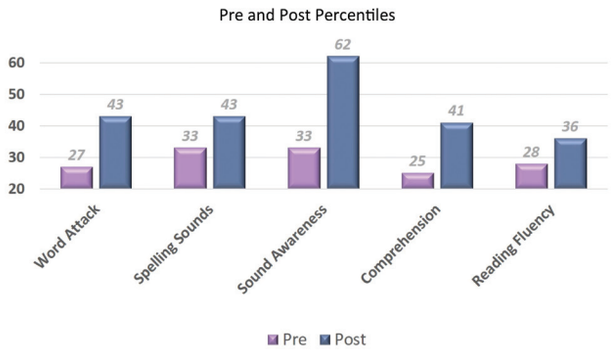
Dyslexia and Reading Skills *(Reading Results)*

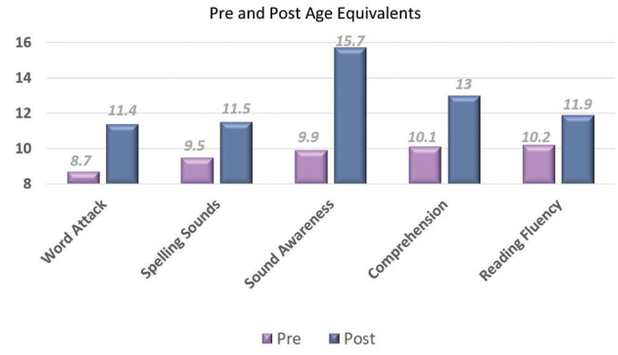
Program: ReadRx

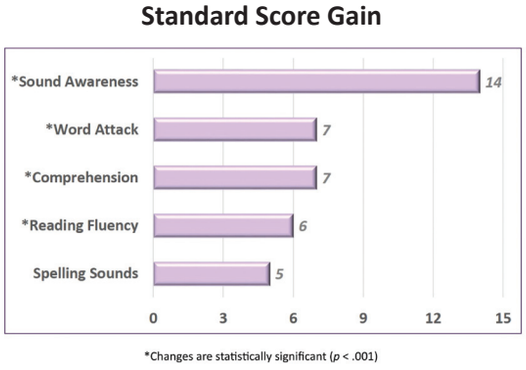
Number of Clients: 1,512

Mean Age: 11.8

Results: The following charts show the improvements in reading skills for clients who came to LearningRx with a diagnosis of dyslexia between 2010 and 2015, and completed the ReadRx program. The changes in standard scores on the Woodcock-Johnson III – Tests of Achievement were statistically significant for four of five skills ($p < .001$) assessed. Overall, the largest gains were seen in sound awareness, word attack, and comprehension followed by reading fluency and spelling. In addition, the average age-equivalent gain in reading skill performance was three years. In sound awareness—the primary skill needed for reading—the average age-equivalent gain was nearly six years.







*Changes are statistically significant ($p < .001$)

Cognitive Assessment Results by Client-Reported Diagnosis

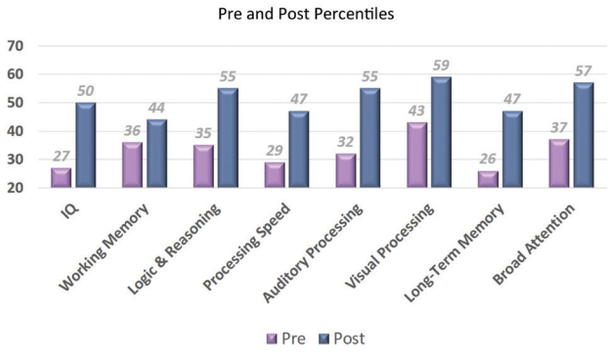
Speech and Language Disorder

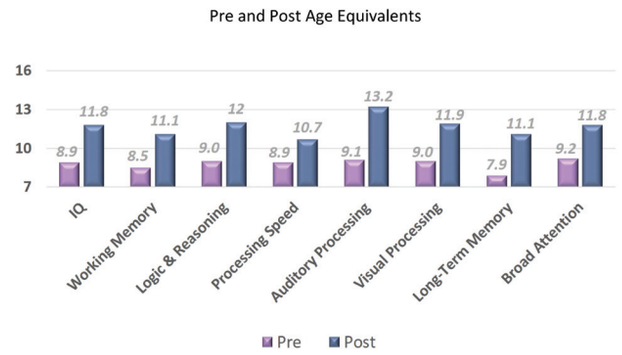
Program: All

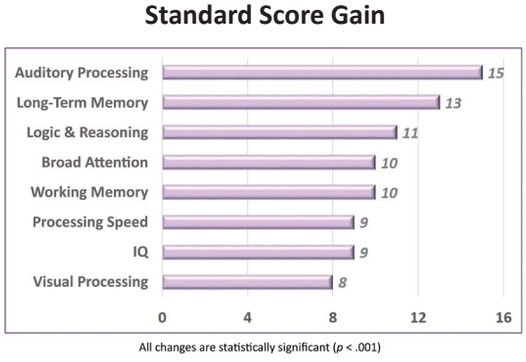
Number of Clients: 1,854

Mean Age: 10.7

Results: The following charts show the improvements in cognitive skills for clients who came to LearningRx with a diagnosis of speech and language disorder between 2010 and 2015. The changes in standard scores on the Woodcock-Johnson III – Tests of Cognitive Abilities were statistically significant for all skills ($p < .001$) assessed. Overall, the largest gains were seen in auditory processing and long-term memory, followed by logic & reasoning, working memory, and broad attention. The average pre-test IQ score was 91 and the average post-test IQ score was 100. In addition, post-training percentiles are within the range of normal functioning, and the average age-equivalent gain in cognitive skill performance was three years.







Cognitive Assessment Results by Client-Reported Diagnosis

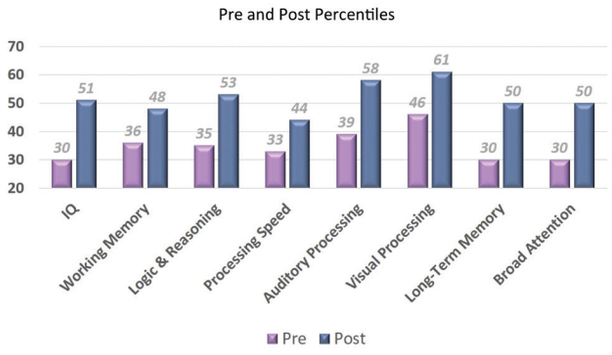
Autism Spectrum Disorder

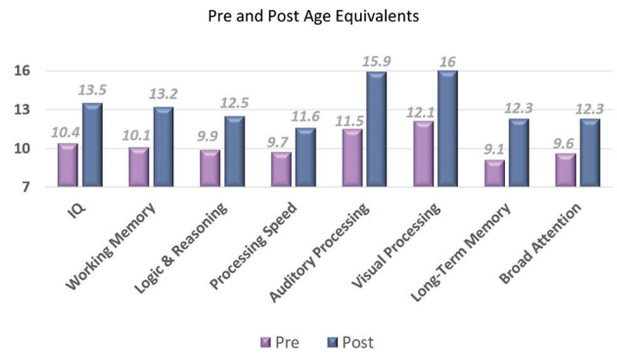
Program: All

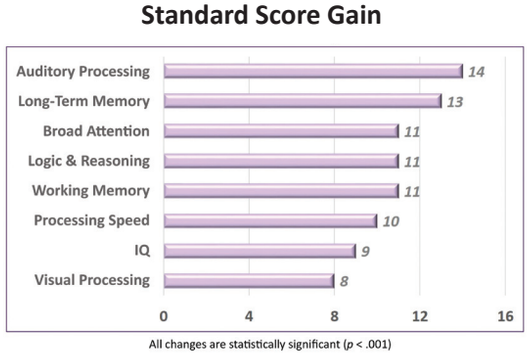
Number of Clients: 857

Mean Age: 11.9

Results: The following charts show the improvements in cognitive skills for clients who came to LearningRx with a diagnosis on the autism spectrum between 2010 and 2015. The changes in standard scores on the Woodcock-Johnson III – Tests of Cognitive Abilities were statistically significant for all skills (p< .001) assessed. Overall, the largest gains were seen in auditory processing and long-term memory, followed by logic & reasoning, working memory, and broad attention. The average pre-test IQ score was 92 and the average post-test IQ score was 101. In addition, post-training percentiles are within the range of normal functioning, and the average age-equivalent gain in cognitive skill performance was 3.1 years.







Cognitive Assessment Results by Client-Reported Diagnosis

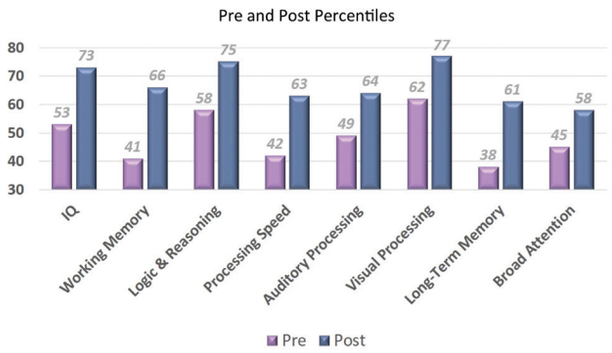
Senior Adults

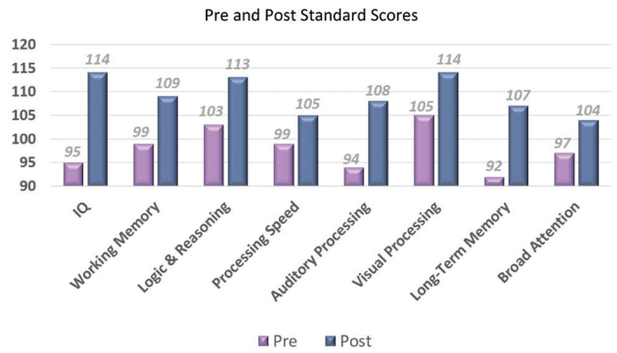
Program: All

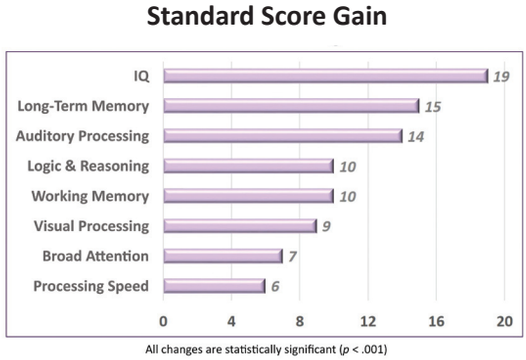
Number of Clients: 262

Mean Age: 60.1

Results: The following charts show the improvements in cognitive skills for clients over the age of 50 who came to LearningRx between 2010 and 2015. The changes in standard scores on the Woodcock-Johnson III – Tests of Cognitive Abilities were statistically significant for all skills ($p < .001$) assessed. Overall, the largest gains were seen in IQ, auditory processing, and long-term memory, followed by logic & reasoning, working memory, and visual processing. The average pre-test IQ score was 95 and the average post-test IQ score was 114. In addition, post-training percentiles are well within the range of normal functioning.







RESEARCH ABSTRACTS

LearningRx Cognitive Training Effects in Children Ages 8–14: A Randomized Controlled Trial

Abstract: In a randomized controlled study with students ages 8–14, we examined the effects of the ThinkRx cognitive training program on IQ, memory, visual and auditory processing, processing speed, and reasoning as measured by the Woodcock-Johnson III – Tests of Cognitive Abilities, and on attention as measured by the NIH Toolbox Cognitive Battery. Participants were randomly assigned to either an experimental group (n= 20) to complete 60 hours of cognitive training, or to a wait-list control group (n= 19). The purpose of the study was to examine changes in general intelligence and individual cognitive skills after completing cognitive training with ThinkRx, a LearningRx program. Results showed statistically significant differences between groups on all outcome measures, except for attention. (R^2= .352), and word attack (R^2= .359). Completion of the cognitive training program was not a significant predictor of scores on visual processing.

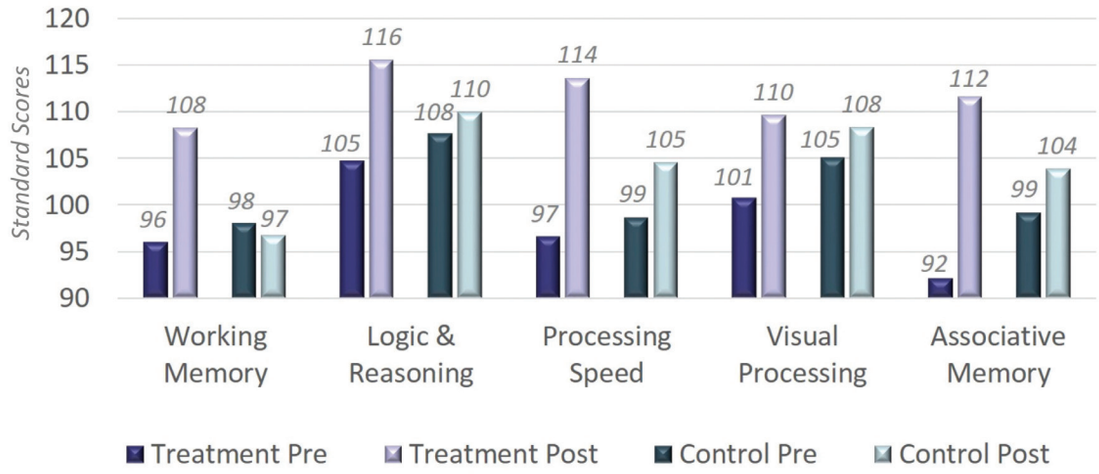
	CONTROL	TREATMENT	CAUSAL EFFECT
	Pre-Post Difference	Pre-Post Difference	Treatment-Control
Logic & Reasoning	-7	21	28
IQ	-5	21	26
Long-Term Memory	7	28	21
Working Memory	-8	13	21
Auditory Processing	-4	13	17
Associative Memory	8	23	15
Visual Processing	4	11	7
Processing Speed	7	13	6
Attention	3	5	2
Average Standard Score Gain	1	17	16

Carpenter, D., Ledbetter, C., & Moore, A.L. (2016). LearningRx cognitive training effects in children ages 8–14: A randomized controlled trial. *Applied Cognitive Psychology, 30*(5), 815-826. doi: 10.1002/acp.3257. Available at http://onlinelibrary.wiley.com/doi/10.1002/acp.3257/epdf

Training the Brain to Learn: Beyond Vision Therapy

Abstract: The purpose of this study was to investigate the effectiveness of the ThinkRx cognitive training program. Sixty-one children (ages 6–18) were given pre-test and post-test assessments using seven batteries from the Woodcock-Johnson III Tests of Cognitive Abilities and Tests of Achievement. Thirty-one of the students were enrolled in or had completed a 24-week cognitive training program in a LearningRx Center. A propensity matched control group of 30 students was selected from a group who had pre-tested but chosen not to enroll in the cognitive training program. Students who completed the ThinkRx cognitive training program realized greater gains than the control group on all measures. Statistically significant differences between groups were noted in six of the seven sets of scores (ps < .001). There were no significant differences based on age, gender, or learning disability.

Multiple regression analyses indicated that treatment group membership was a statistically significant predictor of pre-test to post-test score differences in associative memory (R^2= .445), logic & reasoning (R^2= .233), working memory (R^2= .265), processing speed (R^2= .409), auditory processing (R^2= .352), and word attack (R^2= .359). Completion of the cognitive training program was not a significant predictor of scores on visual processing.



Reference: Gibson, K., Carpenter, D., Moore, A.L., & Mitchell, T. (2015). *Training the Brain to Learn: Beyond Vision Therapy. Vision Development and Rehabilitation*, 1(2), 119–128.

Analysis of Resting State Functional Connectivity in a LearningRx Cognitive Training Study

Abstract: As part of a larger randomized controlled study by Hill, Serpell, and Faison (2016), 30 of the 225 participating high school students were randomly assigned to one of three conditions: ThinkRx cognitive training (n=11), BrainSkills digital cognitive training (n=12), or Control (n=7). In addition to pre and post cognitive testing, these students underwent pre and post MRI imaging. Resting state functional MRI was used to assess: (1) training-induced changes in global efficiency, (2) training-induced changes in functional connectivity, and (3) correlation of changes in functional connectivity to changes in cognitive test scores.

Results: Training-induced changes in global efficiency, a measure of information exchange, occurred for areas associated with visual processing (left pITG, T=-3.34, p=0.002), auditory processing (left pSTG, T=-2.19, p=0.037; right pSTG, T=-2.08, p=0.047), contextual associations (left aPaHC, T=2.09, p=0.045), the default mode network (LLP, T=-2.18 , p=0.038), and the cerebellum (left Cereb6, T=2.55, p=0.017; Ver12, T=2.29, p=0.030; Ver3, T=2.26, p=0.032).

Training-induced changes in functional connectivity, a measure of the relationship between anatomically distinct regions, occurred for areas associated with auditory processing (right HG & left putamen, T=-5.07, p-FRD=0.003; left PP & left putamen, T=-3.8, p-FDR=0.048), contextual associations (left aPaHC & vermis 9, T=4.08, p-FDR=0.028; left aPaHC & left pPaHC, T=4, p-FDR=0.028), and memory (left hippocampus & left Cereb8, T=4.09, p-FDR=0.045).

For all seven cognitive skills measured, changes in resting state functional connections correlated with changes in performance on the test (see Figure 3 on the following page).

Figure 1. Effect of Cognitive Training on Global Efficiency. Treatment vs Control, Pre to Post Changes.

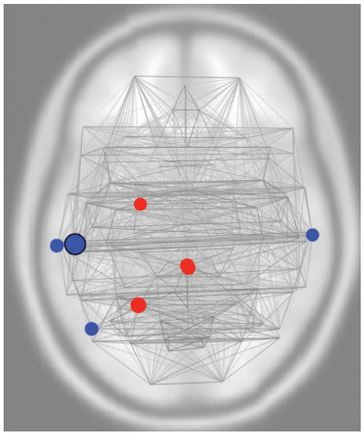
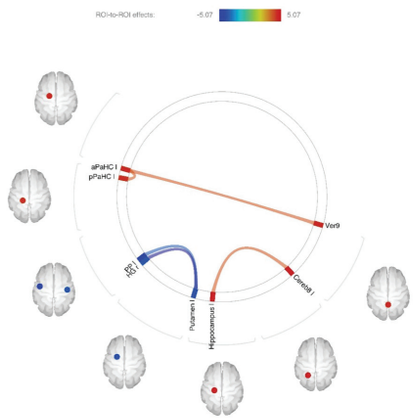
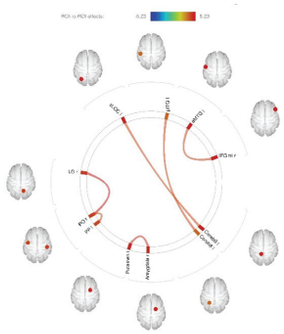


Figure 2. ROI-Level Analysis of Global Efficiency
Cognitive Training > Controls Post Cognitive Training.

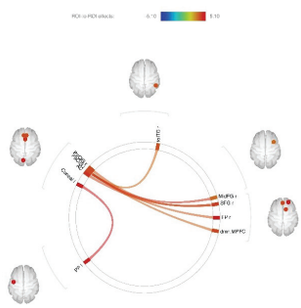


Correlation of Treatment Group Changes in Connectivity to Changes in Cognitive Test Scores

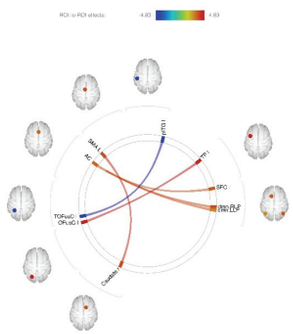
VISUAL PROCESSING



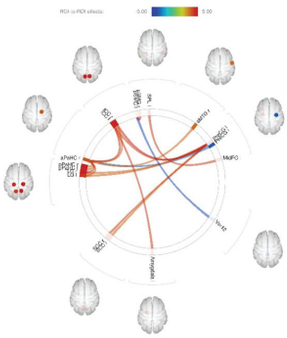
WORKING MEMORY



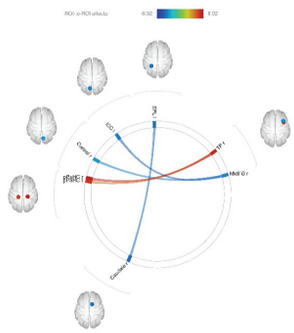
LONG-TERM MEMORY



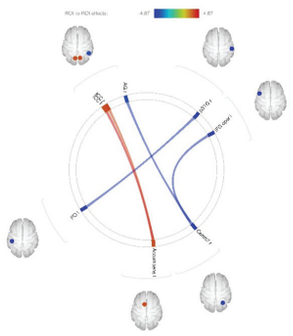
LOGIC & REASONING



AUDITORY DROPPING



AUDITORY SEGMENTING



PROCESSING SPEED

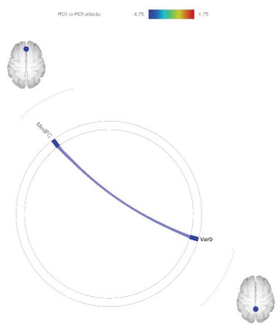


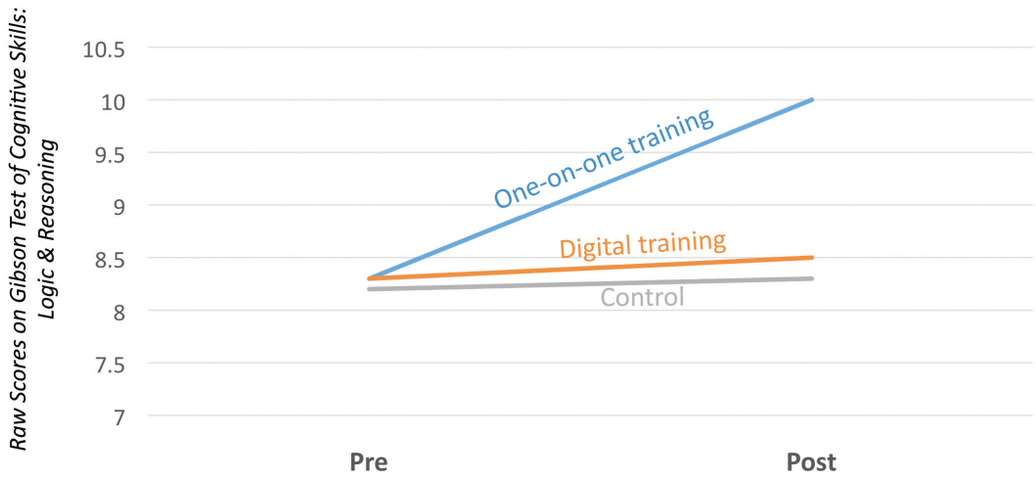
Figure 3. Changes in Connectivity that Correlated with Change in Cognitive Test Measures. All Connectivity Maps, p-FDR Corrected <0.05.

References: Ledbetter, C., Faison, M., Hill, O., & Patterson, J. (2016). Analysis of Resting State Functional Connectivity in a Cognitive Training Intervention Study. Poster presented at Center for Brain Health Annual Symposium: Reprogramming the Brain to Health: Computational Psychiatry and Neurology, University of Texas at Dallas, April 14, 2016.

Ledbetter, C., Faison, M., Hill, O., & Patterson, J. (2016). Correlation of Cognitive Training Gains and Resting State Functional Connectivity. Poster presented at Society for Neuroscience, San Diego, CA, November 12, 2016.

The Efficacy of the LearningRx Cognitive Training Program: Modality and Transfer Effects

Abstract: This study tested the efficacy of a one-on-one cognitive training program (ThinkRx) and a digital training program in laboratory and school settings. In a randomized controlled study, 225 high school students were randomly assigned to one of three conditions: ThinkRx, digital training, or study hall (control) in a school setting for a 15-week training period. Univariate ANCOVAs revealed significantly higher scores for the treatment groups compared with controls on working memory, logic & reasoning, and three of four math attitude measures, but not for math performance. However, because the intervention did not include the MathRx program, the results are as expected.



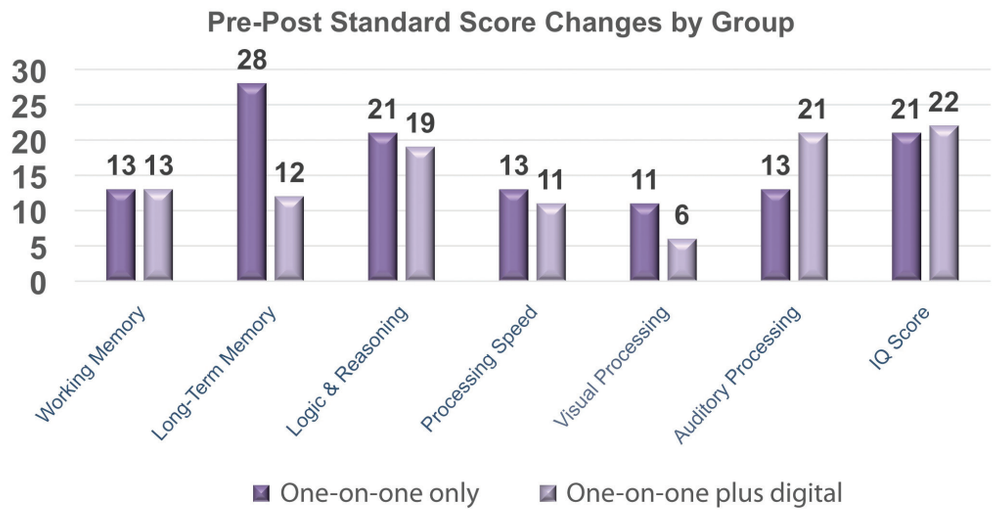
Hill, O.W., Serpell, Z., & Faison, O. (2016). The efficacy of the LearningRx cognitive training program: Modality and transfer effects. *Journal of Experimental Education: Learning, Instruction, and Cognition, 84*(3), 600-620. doi: 10.1080/00220973.2015.1065218. Available at http://dx.doi.org/10.1080/00220973.2015.1065218

Two Methods of Delivering ThinkRx Cognitive Training Improve Cognition in Children: A Randomized Controlled Trial

Abstract: In the second phase of a randomized controlled trial with students ages 8-14 (n = 38), we examined the effects of the ThinkRx cognitive training program on IQ, memory, visual and auditory processing, processing speed, and reasoning as measured by the Woodcock-Johnson III – Tests of Cognitive Abilities, and on attention as measured by the NIH Toolbox Cognitive Battery. In Phase 1, participants were randomly assigned to either an experimental group to complete 60 hours of cognitive training or to a wait-list control group (see Carpenter, Ledbetter, & Moore, 2016).

In Phase 2, the wait-list control group from Phase 1 completed 60 hours of the same cognitive training program, but with 30 hours delivered one-on-one by a cognitive trainer and 30 hours delivered through BrainSkills, a digital program that includes some ThinkRx procedures. The purpose of the second phase was to determine if a combination of clinician-delivered and digitally-delivered training was as effective as clinician delivery alone at improving general intelligence and individual cognitive skills.

Results showed statistically significant differences between groups only on long-term memory outcomes. That is, both delivery methods enhanced IQ and cognition in children.

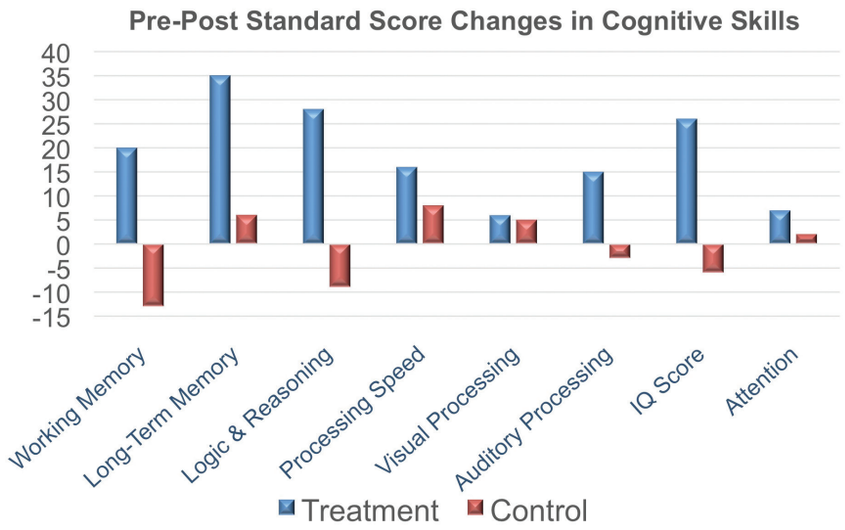


Reference: Moore, A.L., Ledbetter, C., & Carpenter, D.M. (2016, November). *Intensive Metronome-Based Cognitive Training Improves Cognition in Children: A Randomized Controlled Trial.* Presented at Society for Neuroscience Annual Meeting, San Diego, CA.

ThinkRx Cognitive Training for Children with ADHD: Cognitive and Behavioral Transfer Effects

Abstract: In a randomized controlled trial, we examined the effects of the ThinkRx cognitive training program on IQ, memory, visual and auditory processing, processing speed, and reasoning as measured by the Woodcock-Johnson III – Tests of Cognitive Abilities and attention as measured by the NIH Cognition Toolbox on children ages 8-14 with ADHD. Participants were randomly assigned to either an experimental group (n = 6) to complete 60 hours of cognitive training, or to a wait-list control group (n = 7).

Results showed statistically significant differences between treatment and control groups on five variables—auditory processing, logic & reasoning, working memory, long-term memory, and IQ score. The treatment group outperformed the control group on all measures. Qualitative thematic analysis of survey and interview data from participants, parents, and trainers revealed six themes of behavioral improvements in addition to the cognitive improvements reported by the treatment group.



Behavioral Improvements*

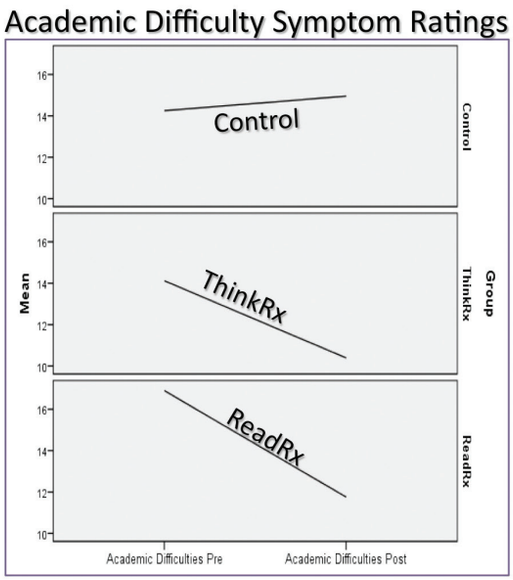
Academic performance	Confidence & self-esteem
Relationships with others	Self-discipline
Sports performance	Sleep habits

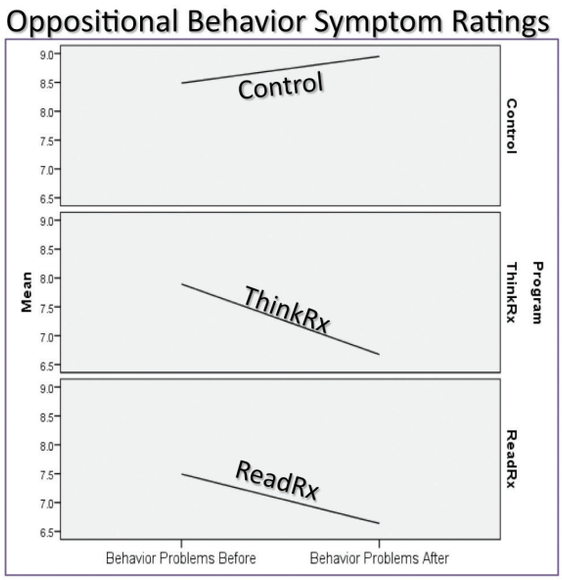
**Reported by the treatment group*

Reference: Carpenter, D.M., Ledbetter, C., Moore, A.L., & Miller, T. (2016). *Clinician-delivered cognitive training for children with ADHD: Cognitive and behavioral transfer effects from the ThinkRx randomized controlled trial.* Manuscript submitted for peer review.

Real Life Benefits of LearningRx Cognitive Training: A Controlled Study

Abstract: This study investigated whether a one-on-one cognitive training program reduced academic difficulties and oppositional behavior for 226 school-age children. Using a standardized parent rating scale, Learning Skills Rating Scale (LSRS), three groups were surveyed: 77 students who had completed the 60-hour ThinkRx cognitive training program, 69 students who had completed the 120-hour ReadRx cognitive training program, and 80 students who completed initial testing, but chose not to complete a training program. Results indicated there were statistically significant differences between the treatment groups and the control group on all measures of academic difficulties. Both treatment groups saw a reduction in academic difficulty ratings following training while the control group saw an increase in academic difficulty during a comparable time interval. Further, both treatment groups improved on ratings of oppositional behavior while the control group ratings worsened.

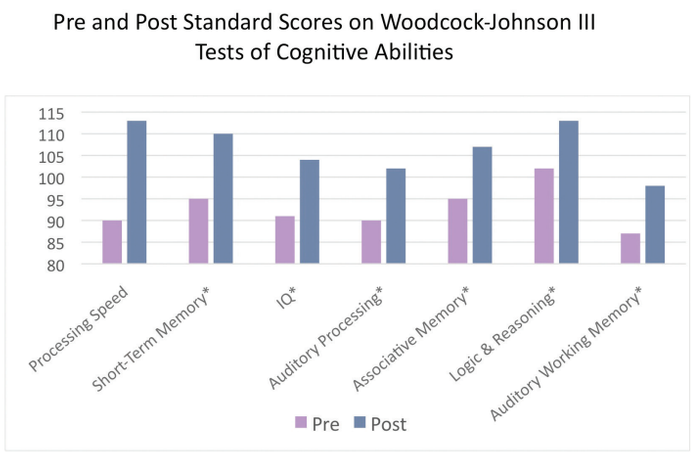




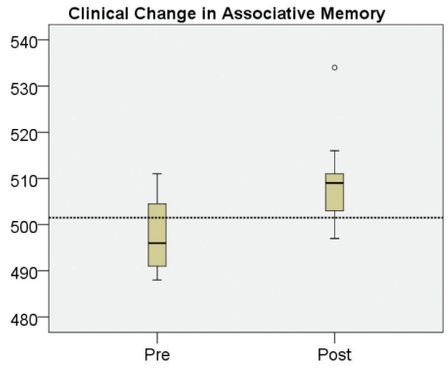
Reference: Jedlicka, E.J. (2015). *Real Life Benefits of LearningRx Cognitive Training: A Controlled Study*. Based on 2012 dissertation; manuscript submitted for publication.

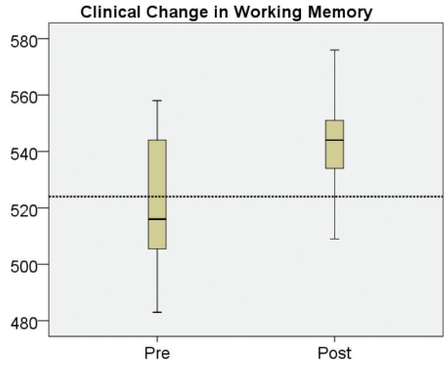
A Feasibility Study of One-On-One Cognitive Training with Supplemental Digital Delivery for Soldiers with Traumatic Brain Injury

Abstract: In this quasi-experimental, pre-test-post-test feasibility study, 11 soldiers between 3 and 36 months post-traumatic-brain-injury completed half of ThinkRx through one-on-one cognitive training at an occupational therapy clinic, and half through computer-based cognitive training sessions at home. Participants achieved statistically significant gains in short-term memory, associative memory, executive processing, auditory processing, and fluid reasoning with very large effect sizes; and self-reported improvements in attention, memory, and organization. Further, they achieved significant clinical changes, restoring function to normal levels in nearly all cognitive skills. Examples of clinically significant changes in memory are shown in the box plots.



*change significant at $p < .005$





Reference: Ledbetter, C., Moore, A.L. , & Mitchell, T. (2016). *A Feasibility Study of One-on-One Cognitive Training with Supplemental Digital Delivery for Soldiers with Traumatic Brain Injury.* Manuscript submitted for publication.

A Feasibility Study of One-on-One Cognitive Training with Supplemental Digital Delivery for Soldiers with Traumatic Brain Injury: Functional Results

Abstract: As part of the quasi-experimental, pre-test-post-test feasibility study with 11 soldiers between 3 and 36 months post-traumatic-brain-injury, researchers collected personal pre-intervention goals from each participant. At the completion of the study, researchers collected self-reported improvements from each participant. The results reveal a variety of improvements beyond the initial training goals.

Pre-Intervention Goals	Post-Intervention Improvements
Improve memory	• Increased memory for daily tasks • Remembers appointments without reminders • Remembers conversations
Improve concentration, focus, and attention	• Increased attention span • Increased time on task • Organized and focused • Focused longer
Improve processing speed	• Finds information more quickly
Improve reading, writing, and communication	• Improved language skills • Can complete job applications
Improve math skills	• Increased confidence for math • Can manage bills
Learn and retain information	• Can return to school • Interested in learning
Multitask and work under pressure	• Works harder at challenging tasks • Makes and sticks to plans • Higher tolerance for frustration

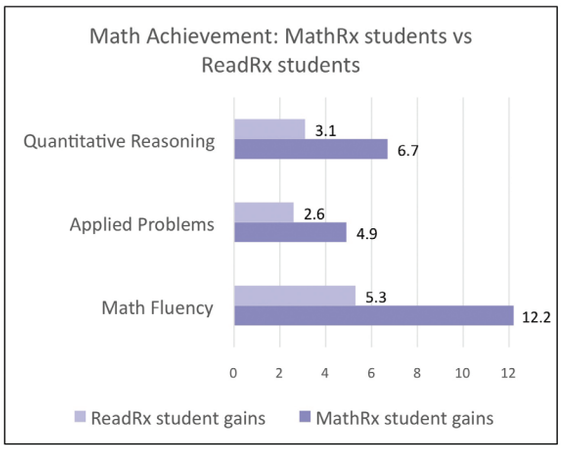
EXIT INTERVIEW COMMENTS FROM TWO PARTICIPANTS:

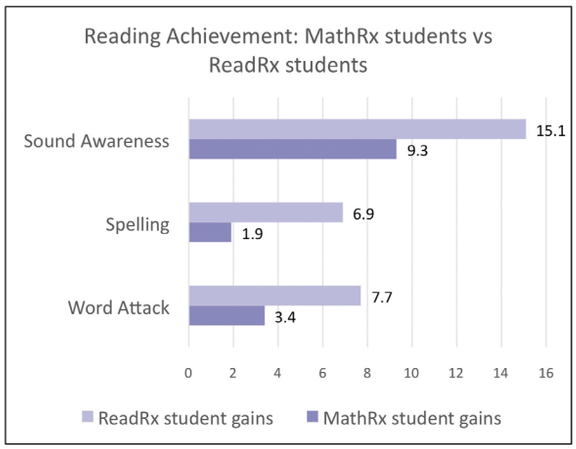
"This program was a bright light in a dark space."
"This was the most helpful thing I have experienced in my life."

Reference: Ledbetter, C., Moore, A.L., & Mitchell, T. (2016). *A Feasibility Study of One-on-One Cognitive Training with Supplemental Digital Delivery for Soldiers with Traumatic Brain Injury.* Full manuscript in preparation. Study can be found at: https://c.ymcdn.com/sites/covd.site-ym.com/resource/resmgr/VDR/VDR_1_2/VDR1-2_article_Gibson_web.pdf

Achievement Outcomes for LearningRx Students: A Differential Effects Analysis of Math and Reading Achievement Before and After Cognitive Training

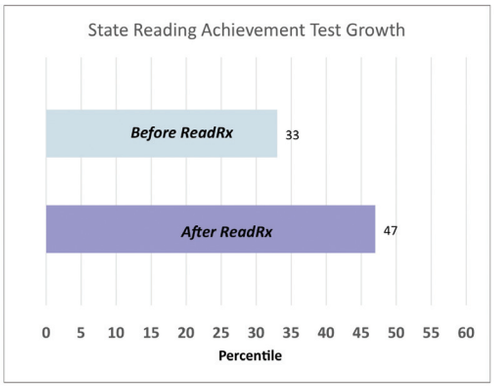
Abstract: To assess the outcomes of the ReadRx and MathRx programs for 2,096 students in 2008 to 2014, pre-intervention reading and math achievement scores were compared to post-intervention scores on the Woodcock-Johnson III Tests of Achievement. To add a measure of control, we conducted a differential effects analysis of performance on achievement tests measuring the opposite skills from which the students were trained. MathRx students made nearly twice the gains in math than the ReadRx students, and ReadRx students made nearly twice the gains in reading as the MathRx students. The results indicate that the reading and math interventions are indeed targeting the skills they are intended to remediate.





State Achievement Test Results for ReadRx Clients

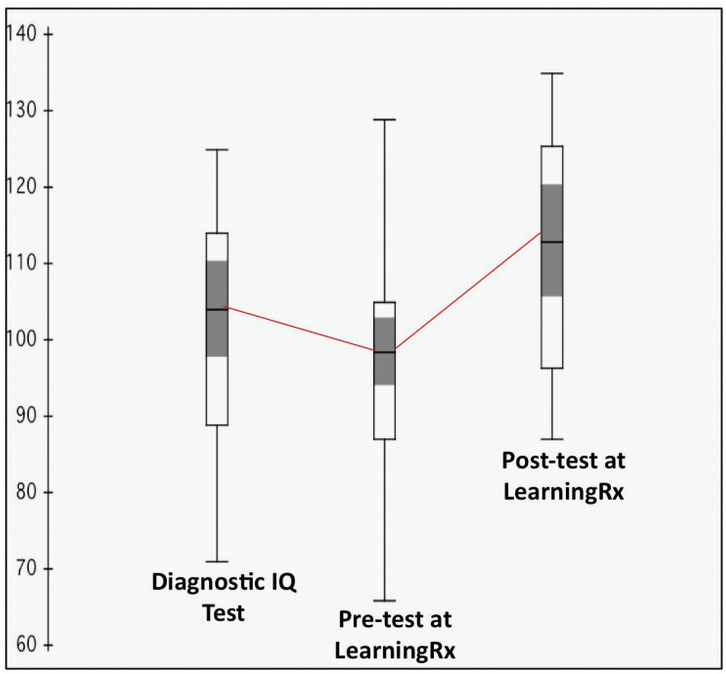
Abstract: In 2010, LearningRx collected state reading achievement test records from 65 ReadRx graduates. Prior to training, the mean percentile for this group was 33. After training, the group had jumped to the 47th percentile in reading—nearly average for their age. Further, 91% of students who completed the ReadRx program (59 of 65) showed improvement on state reading achievement tests after the intervention.



Reference: Moore, A. (2015). *Achievement Outcomes for LearningRx Students: Math and Reading Achievement Before and After Cognitive Training*. Colorado Springs, CO: Gibson Institute of Cognitive Research. (Full manuscript in preparation for publication.)

LearningRx Training and IQ Gains: Multiple Baseline Study

Abstract: This study included multiple IQ baselines to allow students to serve as their own controls. We collected diagnostic test results of 40 students to establish their baseline IQ. These tests were given by independent psychologists within 18 months prior to initial contact with LearningRx. Comparing the diagnostic IQ score to the LearningRx pre-test score, we saw a slight decline in IQ from an average of 102 to an average of 96 during the time students waited to begin training at LearningRx. Thus, it is apparent they were not spontaneously improving after their initial diagnosis; in fact, they were getting worse. However, this changed after treatment. From LearningRx pre-test to post-test, they not only regained the ground they had lost previously, but had also made significant improvements. The average IQ after training had increased to 112—a gain of 16 points.



Reference: Moore, A.L. (2015). *LearningRx Training and IQ Gains*. Colorado Springs, CO: Gibson Institute of Cognitive Research.

Mixed Methods Study on LearningRx Results for Students with Dyslexia

Abstract: To assess the real life changes following training, we surveyed parents of former clients who had been previously diagnosed with dyslexia and later completed a LearningRx training program. The survey results from the 109 respondents indicated that a large percentage of clients saw classroom improvements such as faster reading, reading comprehension, and memory for details. Almost 50% reported achieving better grades after training, and more than 50% reported increased confidence in school. Clients also reported more positive relationships with others, more independence in completing homework, and increased participation and performance in sports.

SOCIAL/RECREATIONAL IMPROVEMENTS

Answer Options	Response
More positive relationships with family	48%
More positive relationships with teachers	47%
More positive relationships with friends	43%
Increased confidence in extracurricular activities	34%
Increased participation in extracurricular activities	28%
Increased confidence about playing sports	26%
Increased participation in sports	18%
Better performance in extracurricular activities	16%
Better performance in sports	15%

SCHOOL-RELATED IMPROVEMENTS

Answer Options	Response
Reads faster	59%
Completes homework more independently	56%
Is more confident about school	55%
Remembers details from reading	53%
Understands what is read	52%
Achieves better grades	46%
Completes homework faster	45%
Has a better memory	40%
Solves math problems more quickly	39%
Pays attention longer	38%
Is more organized	34%
Is eager to read	33%
Is more focused	33.%
Achieves higher standardized test scores	30%
Finishes classwork on time	29%

Reference: Ledbetter, C., Moore, A.L., & Mitchell, T. (2016). *Mixed Methods Study on LearningRx Results for Students with Dyslexia*. Technical report in preparation.

One-Year Retention Results for LearningRx Clients

Abstract: To assess retention of training gains for LearningRx clients, we analyzed the results for 516 clients who opted to return for a one-year follow-up assessment on the Woodcock-Johnson III – Tests of Cognitive Abilities. The average age of clients who completed the follow-up testing was 10.8. Retention rates ranged from 96% to 99%, with the greatest retention of skills in visual processing, auditory processing, and logic & reasoning.

PRE, POST, AND FOLLOW-UP STANDARD SCORES

Skill	Pre	Post	One Year Later	Retention
IQ	95	111	107	97%
Long-Term Memory	94	107	106	98%
Visual Processing	102	109	108	99%
Auditory Processing	111	122	121	99%
Logic & Reasoning	100	111	111	99%
Processing Speed	91	99	94	96%
Working Memory	94	104	101	98%

All scores are rounded to the nearest whole number

Client Satisfaction Ratings

Abstract: To assess client satisfaction with LearningRx training programs, parents and adult clients complete an exit survey at the end of training. From 2005-2015, over 19,000 of our 21,836 clients rated the training a 9 or a 10. 71% rated LearningRx a 10, and another 24% rated LearningRx an 8 or a 9. And in 2015, the average score across all LearningRx Centers was a 9.6 out of 10!

EXIT INTERVIEW RATINGS

Question	10	9 or 8	7 or below	Average Rating
On a scale of 1 to 10, how likely would you be to refer a friend or family member to LearningRx?	71%	24%	5%	9.6

Reference: Cameron, K. & Moore, A.L. (2014). *2014 Report of LearningRx Training Results*. Colorado Springs, CO: LearningRx. Available at LearningRx.com

LearningRx Completed Research

Carpenter, D., Ledbetter, C., & Moore, A.L. (2016). LearningRx cognitive training effects in children Ages 8-14: A randomized controlled trial. *Applied Cognitive Psychology, 30*(5), 815-826. doi: 10.1002/acp.3257 Available at http://onlinelibrary.wiley.com/doi/10.1002/acp.3257/epdf

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Ledbetter, C., Faison, M., Hill, O., & Patterson, J. (2016). *Correlation of Cognitive Training Gains and Resting State Functional Connectivity.* Poster presented at Society for Neuroscience, San Diego, CA, November 12, 2016.

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Musick, S.A. (2015). *Cognitive training in a school curriculum: A qualitative single-instrument case study.* Doctoral dissertation. (UMI No. 3721288). Retrieved from ProQuest.

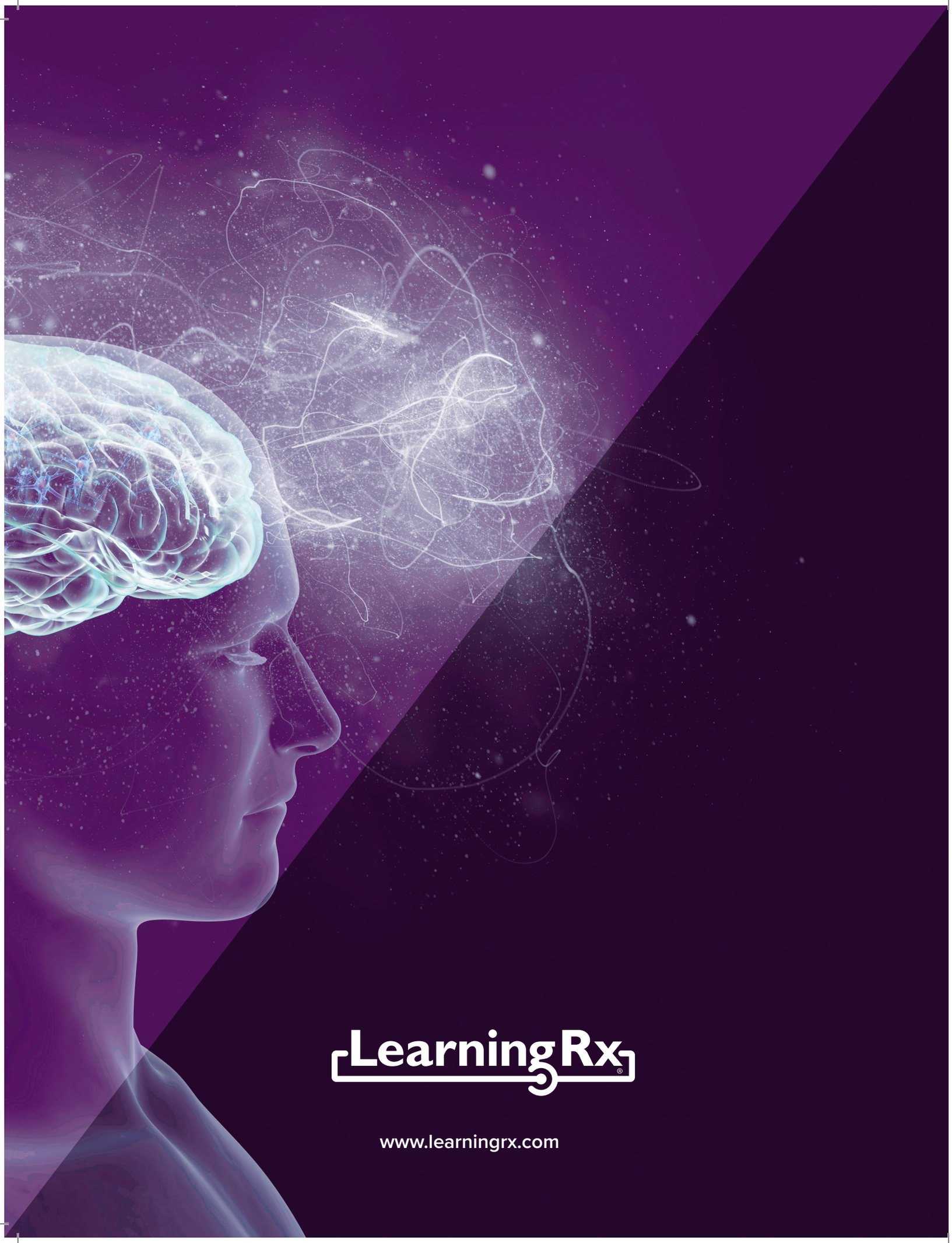
Pfister, B. (2012). *The effect of cognitive rehabilitation therapy on memory and processing speed in adolescents.* Doctoral dissertation. Available at http://downloads.learningrx.com/dissertation-2012-pfister-final-pdf.pdf

Research in Progress

Cognitive Training and Traumatic Brain Injury *(ClinicalTrials.gov NCT#02918994)*

Cognitive Training and ADHD *(ClinicalTrials.gov NCT#02917109)*

Multidisciplinary Approach to Treating Mild Cognitive Impairment/Early Alzheimer's *(ClinicalTrials.gov NCT#02943187)*



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