

Treatment Intervention Advisory Committee Review and Determination

Date: July 25, 2014

To: DHS/DLTC

From: Wisconsin Department of Health Services Autism and other Developmental Disabilities
Treatment Intervention Advisory Committee: Lana Collet-Klingenberg, Ph.D. (chairperson) LC

RE: Determination of LearningRx as a proven and effective treatment for individuals with autism spectrum disorder and/or other developmental disabilities

This is an initial review.

This is a re-review.

Section One: Literature Review and Determination

Please find below a statement of our determination as to whether or not the committee views LearningRx as a proven and effective treatment for children with autism spectrum disorder and/or other developmental disabilities. In subsequent sections you will find documentation of our review process including a description of the proposed treatment, a synopsis of review findings, a listing of the literature considered, and the treatment review evidence checklist. In reviewing treatments presented to us by DHS/DLTC, we implement a review process that carefully and fully considers all available information regarding a proposed treatment. Our determination is limited to a statement regarding how established a practice is in regard to quality research. We do not make funding decisions.

In the case of LearningRx, please refer to the attached reference listing that details the reviewed research. The committee's conclusions regarding LearningRx include:

- The committee has been unable to identify any scientific studies of the effectiveness of the LearningRx program for children with ASD published in peer-reviewed journals.
- Based on the LearningRx report of 2009 training results, a small percentage of children who participated in LearningRx were diagnosed with ASD (approximately 5%). Moreover, the reported gains on the primary outcome measures (*Woodcock-Johnson Tests of Cognitive Abilities* and *Woodcock-Johnson Tests of Achievement*) are not disaggregated by disability status in the LearningRx report. As such, it is not possible to document outcomes for individuals with ASD and/or other developmental disabilities.
- To date, there have been no studies (published or unpublished) conducted independent of the involvement of the LearningRx franchise (i.e., training and assessment are conducted through LearningRx centers).

In sum, it is the decision of the committee that *Learning Rx* has insufficient evidence and, at this time, is assigned a Level 4 rating.

Section Two: Rationale for Focus on Research Specific to Comprehensive Treatment Packages (CTP) or Models

In the professional literature, there are two classifications of interventions for individuals with Autism Spectrum Disorder (National Research Council, 2001; Odom et al., 2003; Rogers & Vismara, 2008):

- (a) **Focused intervention techniques** are individual practices or strategies (such as positive reinforcement) designed to produce a specific behavioral or developmental outcome, and
- (b) **Comprehensive treatment models** are “packages” or programs that consist of a set of practices or multiple techniques designed to achieve a broader learning or developmental impact.

To determine whether a treatment package is proven and effective, the Treatment Intervention Advisory Committee (TIAC) will adopt the following perspective as recommended by Odom et al. (2010):

The individual, focused intervention techniques that make up a comprehensive treatment model may be evidence-based. The research supporting the effectiveness of separate, individual components, however, does *not* constitute an evaluation of the comprehensive treatment model or “package.” The TIAC will consider and review only research that has evaluated the efficacy of implementing the comprehensive treatment *as a package*. Such packages are most often identifiable in the literature by a consistently used name or label.

National Research Council. (2001). *Educating children with autism*. Washington, DC: National Academy Press.

Odom, S. L., Brown, W. H., Frey, T., Karusu, N., Smith-Carter, L., & Strain, P. (2003) Evidence-based practices for young children with autism: Evidence from single-subject research design. *Focus on Autism and Other Developmental Disabilities, 18*, 176-181.

Odom, S. L., Boyd, B. A., Hall, L. J., & Hume, K. (2010). Evaluation of comprehensive treatment models for individuals with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders, 40*, 425-436.

Rogers, S., & Vismara, L. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child and Adolescent Psychology, 37*, 8-38.

Description of Proposed Treatment

The LearningRx franchise is a network of over 85 “brain training” centers throughout the United States. Brain training (also referred to as cognitive training or cognitive remediation) is grounded in the concept of “neuroplasticity,” which refers to the brain’s ability to change or adapt. LearningRx is a brain-training program consisting of tasks specifically designed to strengthen underlying cognitive skills that are essential for reading and learning (e.g., auditory and visual processing; memory; attention). The training tasks are sequentially organized to move from simple to progressively more challenging exercises. The highly structured *Learning Rx* training is delivered during one-on-one sessions by certified LearningRx trainers (with the option for parents to provide a portion of the training at home). An important component of the training is the use of immediate reinforcement, consistent feedback, and repetition/drill to enhance the student’s learning and mastery.

LearningRx includes two primary training programs; each program may be implemented entirely by certified LearningRx trainers, or through a combination of training sessions delivered by LearningRx trainers (50% of training) and by parents (50% of training).

(a) *ThinkRx* training (6 hours per week; 12 weeks) includes sequentially leveled tasks that focus on cognitive skills such as auditory processing, visual processing, and working memory. Because the pace and progression through training tasks is regulated by each student’s attainment of mastery, the number of tasks completed during sessions may differ from student to student. Whereas all cognitive skills are addressed, *ThinkRx* training is tailored to meet individual needs and to strengthen each student’s deficient areas.

(b) *ReadRx* training (5 hours per week; 24 weeks) includes the *ThinkRx* procedures (above) as well as additional tasks focusing on auditory processing, basic decoding skills, fluency, comprehension, spelling, and writing.

Individuals who participate in the LearningRx program are evaluated at pre-training and post-training using the *Woodcock-Johnson Tests of Cognitive Abilities* (WJ-COG) and *Woodcock Johnson Tests of Achievement* (WJ-ACH).

Synopsis of Review

Six documents (referenced below) were reviewed. Of these, three are dissertations, two are unpublished reports of data analyses, and one is a 2011 report prepared by *Learning Rx* (based on 2009 data). All documents are available through the LearningRx website.

LearningRx has several thousand students who complete the program at training centers nationwide each year, which produces extensive data (pre- to post-training) on measures of cognitive functioning (primarily, WJ-COG and WJ-ACH). The unpublished reports and dissertations (listed below) have used these archival data (provided by LearningRx) and reported statistically significant changes in test scores (from pretest to posttest).

Two studies cited below (Carpenter, 2009; Pfister, 2012) utilized a control group. For each study, however, the “control group” was comprised of children who completed pretesting, but whose parents opted *not* to enroll their child in the LearningRx program. As such, there are severe limitations to the validity of the conclusions that LearningRx students made greater cognitive gains than did control students due to (a) lack of randomization, and (b) inherent self-selection bias in the treatment versus control groups.

Literature Reviewed

**Carpenter, D. (2009). *Testing the effects of LearningRx: 2009 control group study*. Unpublished report. Colorado Springs, CO: University of Colorado – Colorado Springs.
<http://www.learningrx.com/downloads/2009-control-group-study-29-july-09.pdf>

**Jedlicka, E. J. (2012). *The real-life benefits of cognitive training*. Unpublished dissertation. Minneapolis, MN: Capella University.
http://www.learningrx.com/downloads/Dissertation_Jedlicka_2012.pdf

**LearningRx. (2011). *2011 report of LearningRx training results*. Colorado Springs, CO: Author.
<http://www.learningrx.com/brain-training-results.htm#downloadForm>

Luckey, A. J. (2009). *Cognitive and academic gains as a result of cognitive training*. Unpublished dissertation. Tempe, AZ: Arizona State University.

**Marachi, R. (2006). *Statistical analysis of cognitive change with LearningRx training procedures*. Unpublished report. Northridge, CA: California State University at Northridge.
<http://www.learningrx.com/downloads/2005-test-results-all-graduates.pdf>

Pfister, B. E. (2012). *The effect of cognitive rehabilitation therapy on memory and processing speed in adolescents*. Unpublished dissertation. Minneapolis, MN: Capella University.

**Materials submitted to DHS for review.

Section Three: DLTC-TIAC Treatment Review Evidence Checklist

Name of Treatment: LearningRx

Level 1- Well Established or Strong Evidence (DHS 107 - Proven & Effective Treatment))

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, National Professional Development Center) have approved of or rated the treatment package as having a strong evidence base; authorities are in agreement about the level of evidence.
- There exists ample high quality studies that demonstrate experimental control and favorable outcomes of treatment package
 - o Minimum of two group studies or five single subject studies or a combination of the two
 - o Studies were conducted across at least two independent research groups
 - o Studies were published in peer reviewed journals
- There is a published procedures manual for the treatment, or treatment implementation is clearly defined (i.e., replicable) within the studies
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 2 – Established or Moderate Evidence (DHS 107 - Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have approved of or rated the treatment package as having at least a minimal evidence base; authorities may not be in agreement about the level of evidence
- There exists at least two high quality studies that demonstrate experimental control and favorable outcomes of treatment package
 - o Minimum of one group study or two single subject studies or a combination of the two
 - o Studies were conducted by someone other than the creator/provider of the treatment
 - o Studies were published in peer reviewed journals
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 3 – Emerging Evidence (DHS 107 – Promising as a Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have recognized the treatment package as having an emerging evidence base; authorities may not be in agreement about the level of evidence
- There exists at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package
 - May be one group study or single subject study
 - Study was conducted by someone other than the creator/provider of the treatment
 - Study was published in peer reviewed journal
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 4 – Insufficient Evidence (Experimental Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence
- There is not at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package
 - Study was conducted by the creator/provider of the treatment
 - Study was not published in a peer reviewed journal
- Participants (i.e., N) are not clearly identified as individuals with autism spectrum disorders or developmental disabilities

Notes:

Level 5 – Untested (Experimental Treatment) &/or Potentially Harmful

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence.
 - There are no published studies supporting the proposed treatment package
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- There exists evidence that the treatment package is potentially harmful
 - Authoritative bodies have expressed concern regarding safety/outcomes
 - Professional bodies (i.e., organizations or certifying bodies) have created statements regarding safety/outcomes

Notes: At this level, please specify if the treatment is reported to be potentially harmful, providing documentation

Date: July 25, 2014

Committee Members Completing Initial Review of Research Base: Maribeth Gettinger, Shannon Stuart

Committee Decision on Level of Evidence to Suggest the Proposed Treatment is Proven and Effective:
Level 4 – Insufficient Evidence (Experimental Treatment)

References Supporting Identification of Evidence Levels:

- Chambless, D.L., Hollon, S.D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology*, 66(1) 7-18.
- Chorpita, B.F. (2003). The frontier of evidence---based practice. In A.E. Kazdin & J.R. Weisz (Eds.). *Evidence-based psychotherapies for children and adolescents* (pp. 42---59). New York: The Guilford Press.
- Odom, S. L., Collet-Klingenberg, L., Rogers, S. J., & Hatton, D. (2010). Evidence-based practices in interventions for children and youth with autism spectrum disorders. *Preventing School Failure*, 54(4), 275-282.

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