Thank you for your request to our REL Reference Desk regarding evidence-based information about effective intervention strategies for struggling students who do not respond to traditional intervention methods in reading and mathematics. Ask A REL is a collaborative reference desk service provided by the ten regional educational laboratories (REL) that, by design, functions much in the same way as a technical reference library. It provides references, referrals, and brief responses in the form of citations on research based education questions.

The information below represents the most rigorous research available. Researchers consider the type of methodology and give priority to research reports that employ well described and thorough methods. The resources were also selected based on the date of the publication with a preference for research from the last ten years. Additional criteria for inclusion include the source and funder of the resource.

Question*: What does the research say about effective intervention strategies for students who do not respond to traditional interventions? How do you intervene with these kids even if they are eligible for special education so they don't fall further behind?*

Search Process

Key words and search strings used in the search: *RTI* AND *non-responders; treatment resisters; low responders*; *effective intervention* AND *non-responders* OR *treatment resisters;*

Search databases and websites:

1. ERIC: http://www.eric.ed.gov/
2. JSTOR: http://www.jstor.org/action/showAdvancedSearch
3. Google Scholar: www.google.com/scholar
4. Institute of Education Sciences (IES) Resources: http://ies.ed.gov
5. What Works Clearinghouse: http://ies.ed.gov/ncee/wwc/

Sample Citations Retrieved (NOTE: Abstracts and executive summaries are copied directly from the reports when possible to ensure accuracy):

Campbell, M. L., Helf, S., & Cooke, N. L. (2008). Effects of adding multisensory components to a supplemental reading program on the decoding skills of treatment resisters. *Education and Treatment of Children, 31*(3), 267-295.

Abstract/Summary: A multiple-baseline across participants was used to analyze the effects of adding multisensory elements to an explicit, systematic phonics program on the reading achievement of six students identified as treatment resisters. Participants were given 10 minutes of daily instruction in the supplemental program in addition to instruction in the evidence-based school-wide curriculum. The multisensory additions included finger tapping, letter formation

onto carpet squares, and the use of magnetic letters. Fluency of nonsense word reading was used as the dependent variable and fluency of sound recognition within nonsense words was used as a collateral measure. Generalization of the decoding skills was assessed through oral reading fluency on first-grade and grade-level passages.

Compton, D. L., Gilbert, J. K., Jenkins, J. R., Fuchs, D., Fuchs, L. S., Cho, E., & Bouton, B. (2012). Accelerating chronically unresponsive children to tier 3 instruction: What level of data is necessary to ensure selection accuracy? *Journal of Learning Disabilities*, *45*(3), 204-216. doi: 10.1177/0022219412442151

Abstract/Summary: Response-to-intervention (RTI) approaches to disability identification are meant to put an end to the so-called wait-to-fail requirement associated with IQ discrepancy. However, in an unfortunate irony, there is a group of children who wait to fail in RTI frameworks. That is, they must fail both general classroom instruction (Tier 1) and small-group intervention (Tier 2) before becoming eligible for the most intensive intervention (Tier 3). The purpose of this article was to determine how to predict accurately which at-risk children will be unresponsive to Tiers 1 and 2, thereby allowing unresponsive children to move directly from Tier 1 to Tier 3. As part of an efficacy study of a multitier RTI approach to prevention and identification of reading disabilities (RD), 129 first-grade children who were unresponsive to classroom reading instruction were randomly assigned to 14 weeks of small-group, Tier 2 intervention. Nonresponders to this instruction (n = 33) were identified using local norms on first-grade word identification fluency growth linked to a distal outcome of RD at the end of second grade. Logistic regression models were used to predict membership in responder and nonresponder groups. Predictors were entered as blocks of data from least to most difficult to obtain: universal screening data, Tier 1 response data, norm referenced tests, and Tier 2 response data. Tier 2 response data were not necessary to classify students as responders and nonresponders to Tier 2 instruction, suggesting that some children can be accurately identified as eligible for Tier 3 intervention using only Tier 1 data, thereby avoiding prolonged periods of failure to instruction. (Contains 4 tables.)

Coyne, M. D., Simmons, D. C., Simmons L., E., Hagan-Burke, S., Kwok, O., Kim, M, Fogarty, M., Oslund, E., Taylor, A., Capozzoli-Oldham, A., Ware, S., Little, M. E., & Rawlinson, D. M., (2013) Adjusting beginning reading intervention based on student performance: An experimental evaluation. *Exceptional Children*, *80*, 25-44.

Abstract/Summary: This experimental study evaluated a model in which the delivery of a supplemental beginning reading intervention was adjusted based on student performance. Kindergarten students identified as at risk for reading difficulties were assigned to one of two versions of the Early Reading Intervention (ERI; Pearson/Scott Foresman, 2004). Students assigned to the experimental condition received the intervention with systematic adjustments based on student performance. Students in the comparison condition received the same

intervention without instructional modifications. The experimental group outperformed the comparison group on all posttest measures at the end of kindergarten. Follow-up analyses at the end of first grade revealed a continued advantage for the experimental group. Findings suggest that systematically adjusting intervention support in response to student performance may be feasible and efficacious.

Fuchs, L. S., Fuchs, D., & Compton, D. L. (2012). The early prevention of mathematics difficulty: Its power and limitations. *Journal of Learning Disabilities, 45*, 257-269. doi: 10.1177/0022219412442167

Abstract/Summary: In this article, the authors consider the power and limitations of responsiveness-to-intervention (RTI) for reducing the need for ongoing and intensive services for the segment of the school population traditionally identified as having a learning disability in mathematics. To assess the robustness of RTI, the authors describe four studies with strong demonstrations of efficacy, as they considered the percentage of students who failed to respond, the post-tutoring achievement gap between tutored and not-at-risk students, and the extent of transfer across components of the mathematics curriculum. The authors then discuss implications and additional research questions pertaining to mathematics intervention generally and within the context of RTI. They conclude with a proposal for an expanded conceptualization of RTI.

Fuchs, D., Compton, D. L., Fuchs, L. S., Bryant, J., & Davis, N. G. (2008). Making "secondary intervention" work in a three-tier responsiveness-to-intervention model: Findings from the first-grade longitudinal reading study of the national research center on learning disabilities. *Reading and Writing: An Interdisciplinary Journal, 21*, 413-436. doi: 10.1007/s11145-007-9083-9

Abstract/Summary: Responsiveness-to-intervention (RTI) is a method for both preventing and helping to identify learning disabilities. An important feature is its multi-tier structure: "primary intervention" (tier 1) refers to classroom instruction; "secondary intervention" (tier 2) usually involves more intensive pullout, small-group instruction; and "tertiary intervention" (tier 3) typically denotes most intensive special education. Despite RTI's popularity and promise, there are many questions about how to implement it effectively and efficiently. So, in 2001, the Office of Special Education Programs in the U.S. Department of Education funded the National Research Center on Learning Disabilities to conduct two large-scale, field-based, longitudinal, and experimental RTI studies. Both studies, one in reading and one in math, were conducted at first grade, with annual follow up for 3 years in the reading study and 2 years in the math study. This article summarizes findings from the reading study, which was designed to answer three basic questions about RTI's pivotal secondary intervention: Who should participate in it? What instruction should be conducted to decrease the prevalence of reading disabilities? How should responsiveness and non-responsiveness be defined?

Gersten, R., Compton, D., Connor, C.M., Dimino, J., Santoro, L., Linan-Thompson, S., and Tilly, W.D. (2008). *Assisting students struggling with reading: Response to Intervention and multi-tier intervention for reading in the primary grades. A practice guide.* (NCEE 2009-4045). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc/publications/practiceguides/.

Abstract/Summary: This guide offers five specific recommendations to help educators identify struggling readers and implement evidence-based strategies to promote their reading achievement. Teachers and reading specialists can utilize these strategies to implement RtI and multi-tier intervention methods and frameworks at the classroom or school level. Recommendations cover how to screen students for reading problems, design a multi-tier intervention program, adjust instruction to help struggling readers, and monitor student progress.

Gersten, R., Beckmann, S., Clarke, B., Foegen, A., Marsh, L., Star, J. R., & Witzel, B. (2009). *Assisting students struggling with mathematics: Response to intervention (RTI) for elementary and middle schools* (NCEE 2009-4060). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc/publications/practiceguides/.

Abstract/Summary: Taking early action may be key to helping students struggling with mathematics. The eight recommendations in this guide are designed to help teachers, principals, and administrators use Response to Intervention for the early detection, prevention, and support of students struggling with mathematics.

Harn, B. A., Linan-Thompson, S., & Roberts, G. (2008). Intensifying instruction: Does additional instructional time make a difference for the most at-risk first graders? *Journal of Learning Disabilities, 41*(2), 115-125. doi: 10.1177/0022219407313586

Abstract/Summary: Research is clear on the benefit of early intervention efforts and the importance of intensive instructional supports; however, understanding which features to intensify is less clear. General intervention features of group size, instructional delivery, and time are areas schools can consider manipulating to intensify instruction. Also, each of these features can vary along a continuum making them easier or more challenging for schools to implement. What is unclear is if implementing very intensive interventions early in school (first grade), which require significantly more school resources, provides accordingly accelerated student learning. This article investigates the role of intensifying instructional time for the most at-risk first graders in schools implementing research-based instructional and assessment practices within multitiered instructional support systems. Results indicate that students receiving more intensive intervention made significantly more progress across a range of early reading

measures. Intervention features, limitations, recommendations for practice, and implications for treatment resisters are discussed.

Jenkins, J. R., Schiller, E., Blackorby, J., Thayer, S. K., & Tilly, D. W. (2013). Responsiveness to intervention in reading: Architecture and practices. *Learning Disability Quarterly, 36*, 36-46. doi: 10.1177/0731948712464963

Abstract/Summary: This article describes how a purposeful sample of 62 elementary schools from 17 states implemented a Response to Intervention (RtI) framework for reading. School informants answered surveys and were interviewed about differentiated instruction in Tier 1, screening/benchmarking, where Tier 2 interventions were located, typical group size and the minutes/day of intervention in Tiers 2 and 3 groups, and how students with individualized educational programs (IEPs) in reading were served in the school's RtI model. Schools reported using differentiated instruction in Tier 1, favored curriculum-based measures for screening/benchmarking and progress monitoring, reported more intensive interventions and more progress monitoring in Tier 3, and used a wide variety of models for serving students with IEPs within the schools' RtI models.

Marr, M. B., Algozzine, B., Nicholson, K., & Dugan, K. K. (2011). Building oral reading fluency with peer coaching. *Remedial and Special Education, 32*(3), 256-264. doi: 10.1177/0741932510362202

Abstract/Summary: Fluent oral reading is an essential literacy skill, and data suggest that it is a consistent and persistent problem for many elementary school children. Peer-mediated instruction in which students work together to support each other is an evidence-based practice for improving performance in a variety of academic areas. In this study, we investigated the effectiveness of a peer-mediated fluency-building intervention for struggling readers in second grade. The intervention was provided to small groups of students referred to as difficult-to-remediate, treatment resisters, nonresponders, or lower responders in similar research. Oral reading fluency performance for students who received supplemental intervention (n = 17) was statistically significantly better than that for their peers who received only typical classroom instruction (n = 17). The effects of enhanced fluency instruction were evident across multiple benchmarks, and significant relationships were evident between oral reading fluency and comprehension. The authors discuss the findings in the context of similar peer-mediated interventions and the emerging development of targeted interventions to support response-to-intervention practices. (Contains 3 figures and 3 tables.)

McMaster, K., Fuchs, D., Fuchs, L. S., & Compton, D. L. (2002). Monitoring the academic progress of children who are unresponsive to generally effective early reading intervention. *Assessment for Effective Intervention, 27(4)*, 23-33. doi: 10.1177/073724770202700404

Abstract/Summary: This article proposes a dual-discrepancy approach to identifying children who do not respond to generally effective reading instruction. Curriculum based measurement is suggested as an effective tool for detecting dual discrepancies and an example is provided from an ongoing program of research that uses the dual-discrepancy approach to identify non-responders.

Scanlon, D. M., Vellutino, F. R., Small, S. G., Fanuele, D. P., & Sweeney, J. M. (2005). Severe reading difficulties--can they be prevented? A comparison of prevention and intervention approaches. *Exceptionality, 13*(4), 209-227. doi: 10.1207/s15327035ex1304_3

Abstract/Summary: This study evaluated the efficacy of a preventative program delivered in kindergarten to children who were identified as being at risk for experiencing reading difficulties. It also examined the effects of two 1st-grade intervention programs delivered to children who demonstrated substantial difficulty with reading development at the beginning of 1st grade. The 1st-grade programs differed in the amount of emphasis placed on helping the children to develop phonological skills versus providing the children with the opportunity to read connected text with guidance. These kindergarten and 1st-grade intervention approaches were instituted in an effort to identify instructional approaches that would reduce the incidence of reading difficulties among at-risk children. Of particular interest was reduction in the incidence of treatment resisters--children who continue to experience serious reading difficulties despite being provided with early and intensive intervention services to alleviate their early difficulties. The results indicated that the kindergarten intervention program was effective in reducing the number of children who qualified as poor readers in 1st grade and in reducing the incidence of treatment resistance at the end of 1st grade regardless of the type of intervention provided in 1st grade. The data further suggested that the 1st-grade intervention approach that emphasized the development of phonological skills was more effective in reducing the incidence of treatment resistance than the program that emphasized engaging the children in reading connected text.

Torgesen, J. K. (2000). Individual differences in response to early interventions in reading: The lingering problem of treatment resisters. *Learning Disabilities Research & Practice, 15(1)*, 55-64. doi: 10.1207/SLDRP1501_6

Abstract/Summary: Five recent studies of methods to prevent reading difficulties are examined. It is estimated that current methods would leave 2 to 6 percent of children with inadequate word reading skills in the first and second grades. Several broad characteristics of these " treatment resisters" are identified and implications are discussed.

Referrals

Organizations:

- Council for Exceptional Children: http://www.cec.sped.org/

- RTI Action Network: http://www.rtinetwork.org
- The Meadows Center for Preventing Educational Risk: http://www.meadowscenter.org
- The IRIS Center: http://iris.peabody.vanderbilt.edu
- The National Center on Learning Disabilities: http://www.ncld.org
- The Center on Learning Disabilities: http://www.ldonline.org
- National Center on Intensive Intervention: http://www.intensiveintervention.org
- National Dissemination Center for Children with Disabilities: www.nichcy.org
- Florida Center for Reading Research: http://www.fcrr.org
- Reading Rockets: http://www.pbs.org/launchingreaders/
- Center on Instruction: http://www.centeroninstruction.org
- National Center on Response to Intervention: http://www.rti4success.org

Federally Funded Resources:

- US Department of Education, Institute of Education Sciences (IES) Resources: http://ies.ed.gov
- What Works Clearinghouse: http://ies.ed.gov/ncee/wwc/

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