

SORTING
THROUGH THE
SCIENCE

Making Sense of Evidence-Based Practice

AUTISM IN EDUCATION

RESEARCH SNAPSHOT



EVIDENCE-BASED PRACTICE BRIDGES THE SCIENCE-TO-PRACTICE GAP BY USING RESEARCH EVIDENCE TO INFORM PRACTICE IN THE CONTEXT OF THE CLIENT'S NEEDS AND ENVIRONMENT.

(TWEED, 2009)

HAVE YOU EVER FOUND YOURSELF IN THIS SITUATION?

You're participating in a case conference for a learner who has been diagnosed with Autism Spectrum Disorder (ASD), trying to figure out the best way to help them build important skills and change some behaviours that are interfering with learning. As you sit around the meeting table with the school team, partner professionals, and parents, one professional recommends a sensory diet, while another recommends an augmentative communication system. The parents have heard from a family friend that cutting gluten and dairy out of their child's diet might be helpful. As the conversation swirls around you, you wonder how in the world the team will ever figure out which intervention, or combination of interventions, should be incorporated into this learner's plan.



- How can you know which strategies are effective for individuals with ASD? How will you decide which interventions are likely to be most beneficial for this specific learner?
- It is essential to be mindful when evaluating potential interventions. At best, ineffective interventions result in the loss of valuable time for learning and skill development. At worst, some of these interventions can be harmful and put learners at risk.

Advancing and disseminating knowledge of Autism Spectrum Disorder (ASD) in the area of educational instruction and practice throughout the Atlantic region.

TERMS

EVIDENCE-BASED INTERVENTION

Interventions and strategies that have consistently resulted in successful outcomes in well-controlled scientific studies

EVIDENCE-BASED PRACTICE

Practice that starts with the best available research, then also considers professional judgment, the learning context, resources, and characteristics of the individual learner

EVIDENCE-INFORMED PRACTICE

Practice that takes into account factors such as research evidence, professional experience, family preference, and resources; all factors are considered to be equivalent, with no single factor being considered more important than any other

TERMINOLOGY MAY CONTRIBUTE TO THE CONFUSION

If you've been involved in education for very long, you've probably heard phrases such "research-based interventions," "evidence-based practice," and maybe even "evidence-informed practice." In fact, terms such as these seem to be used so often in education these days that some people don't really pay much attention to them anymore, while others just find them confusing. The reality is that these terms are often used slightly differently by different people, and perhaps the most important question to ask is, "What does all of this really mean for our day-to-day professional practice?"

For the purposes of this discussion, and to underscore the importance of starting with the best scientific evidence, we're choosing to use "evidence-based intervention" to refer to interventions and strategies that have repeatedly resulted in successful outcomes for specific target behaviours in learners with particular characteristics in carefully designed and well-controlled research studies. This means that the differences observed and measured in the target behaviours were clearly the result of the intervention, and not something else (Levant, 2005; Luiselli et al., 2009; Myers & Plauché Johnson, 2007). We're using "evidence-based practice" to describe an approach to professional practice which starts with the best available research evidence, then also considers the well-informed judgment and expertise of the professional based on the learning context, characteristics of the individual learner, and input from the family and school team (APA Presidential Task Force on Evidence-Based Practice, 2005; Wong et al., 2014).

NOT ALL RESEARCH IS OF THE SAME QUALITY

Some research studies are carefully designed and well controlled. Others may contain biases or significant limitations or may have failed to control particular variables. Although educators can, and should, use the research to help select the interventions that are most likely to result in successful outcomes for learners with ASD, it is not always easy to know where to look for good research or what to look for when trying to evaluate the evidence. Fortunately, experts in the field of ASD have helped out by combing through years of research and providing comprehensive and detailed summaries.

EXAMINE THE MOST RECENT RESEARCH EVIDENCE

If you work with learners with ASD, you have probably discovered that there is an overwhelming amount of research out there about interventions, strategies, and approaches that claim to be effective for improving skills and reducing behaviours that interfere with learning for individuals with ASD. Sifting through all of that information to figure out which interventions are likely to be the most effective for the learners you work with may seem like an impossible task. The good news is that there are some great resources available to help you make sense of the research and guide you in making decisions about the interventions that will help learners with ASD experience the most successful outcomes.

The earliest research reviews focused primarily on interventions for young children, from birth to age 8 (New York State Department of Health, 1999; Perry & Condillac, 2008) or on specific aspects such as screening, diagnosis and assessment (Dua, 2003; Nachshen et al., 2008). Recent reviews provide a more thorough evaluation of interventions for individuals with ASD up to the age of 22 (Wong et al., 2014), with the most recent comprehensive reviews also examining research studies involving adults with ASD (National Autism Center, 2015; National Clearinghouse on Autism Evidence and Practice - Steinbrenner 2020). The expanded focus of these reviews allows us to be more confident the interventions will be applicable to school-aged children, youth, and young adults.

RESEARCH SHOWS THAT SOME APPROACHES AND STRATEGIES ARE MORE EFFECTIVE THAN OTHERS FOR LEARNERS WITH ASD.

FOR EDUCATORS WORKING WITH SCHOOL-AGED LEARNERS WITH ASD, THE MOST RELEVANT REVIEWS ARE:

- National Clearinghouse on Autism Evidence and Practice, or NCAEP - Steinbrenner (2020). Evidence-Based Practices for Children, Youth, and Young Adults with Autism.
- National Autism Center (2009/2015). Findings and Conclusions: The National Standards Project Report (Phases 1 and 2).
- National Professional Development Center on Autism Spectrum Disorder, or NPDC on ASD (2014). Evidence-Based Practices for Children, Youth, and Young Adults with Autism Spectrum Disorder.
- Tweed, L, Connolly, N., & Beaulieu, A. (2009). Interventions for autism spectrum disorders: State of the Evidence. Augusta, ME: Muskie School of Public Service and the Maine Department of Health and Human Services. A collaboration of the Maine Department of Health and Human Services and the Maine Department of Education.

AN ONLINE SEARCH FOR “AUTISM INTERVENTION” OR “AUTISM TREATMENT” WILL TURN UP MILLIONS OF RESULTS.



The following table provides a summary of the interventions that **meet the criteria for evidence-based interventions by at least two of the research reviews**. It is important to keep in mind that not all the interventions listed are effective for learners of all ages, with all combinations of strengths and needs, and/or for all targeted outcomes. More detailed information is available in each review and should be taken into consideration when making decisions about what intervention would be best for each individual learner.

INTERVENTION	NATIONAL AUTISM CENTER (2015)	NPDC ON ASD (2014) / NCAEP (2020)	MAINE (2009)
Behavioural Interventions; Comprehensive/Intensive Behavioural Treatment for Young Children	The NPDC on ASD and the Maine Departments of Health and Human Services/Education did not report on specific “comprehensive programs for young children” or “behavioural packages.” However, many of the components in the intervention packages identified as effective by the National Autism Center overlap with individual interventions identified as effective by NCPD on ASD and the Maine Departments of Health and Human Services/Education.		
Antecedent Based Interventions	×	×	×
Augmentative & Alternative Communication	Emerging	×	×
Cognitive Behaviour Intervention	×	×	Promising Evidence
Differential Reinforcement	×	×	×
Discrete Trial Training	×	×	×
Exercise	Emerging	×	×
Extinction	×	×	×
Functional Behaviour Assessment	×	×	×
Functional Communication Training	Emerging	×	×

Modelling	×	×	×
Naturalistic Intervention / Incidental Teaching	×	×	×
Parent-Implemented Intervention	×	×	×
Peer-Mediated Instruction and Intervention	×	×	×
Picture Exchange Communication System (PECS)	Emerging	×	×
Pivotal Response Training (PRT)	×	×	×
Prompting	×	×	×
Reinforcement	×	×	×
Response Interruption/Redirection	×	×	×
Scripting	×	×	Not Reviewed
Self-Management	×	×	×
Social Narratives / Story- Based Interventions	×	×	Insufficient Evidence
Social Skills Training	×	×	Insufficient Evidence
Task Analysis	×	×	×
Technology Aided Instruction and Intervention	Emerging	×	Promising Evidence
Time Delay	×	×	×
Video Modelling	×	×	×
Visual Supports/Schedules	×	×	×

It is worth noting that the most recent review of the research, the 2020 report from the National Clearinghouse on Autism Evidence and Practice (Steinbrenner, 2020), identified five new categories of interventions that now have sufficient research support to be classified as evidence-based.

These include:

- **Augmentative and Alternative Communication**
- **Behavioural Momentum Intervention**
- **Direct Instruction**
- **Music-Mediated Intervention**
- **Sensory Integration (as originated by A. Jean Ayres, 2005).**

This review also identified a number of manualized intervention packages, already included within various categories of evidence-based practices in previous reviews, that now have sufficient research support to stand on their own as evidence-based practices. These include Picture Exchange Communication System (PECS); Pivotal Response Treatment (PRT); Joint Attention, Symbolic Play, Engagement, and Regulation (JASPER); Milieu Training; Project impact; Stepping Stones/Triple P; Social Stories (as originated by Carol Gray, 1990); Program for the Education and Enrichment of Relational Skills (PEERS); Mindreading; and FaceSay. It is also important to note that, with the exception of PRT, the NCAEP review is the only comprehensive review of the research that has, to date, classified these interventions as based on evidence. Future reviews and/or updates to existing reviews may provide additional valuable information on the state of the evidence associated with these interventions.

While educational program planning should focus on the interventions that are currently supported by research, it is important to keep in mind that interventions identified as emerging, promising, or preliminary may be effective for some learners and some targeted outcomes, but there is not yet enough high-quality research to allow us to be confident in their effectiveness. Ongoing research may result in changes to the categorization of some interventions over time, so it is important for professionals who work with learners with ASD to stay up to date about the most current information.

It is also important to ensure that learners with ASD and their families are part of the educational program planning process. The Canadian Academy of Health Sciences points out that the educational experience of learners with ASD can be enhanced by "actively involving Autistic students and their parents through timely communication," and by "offering a broad range of accommodations that include evidence-informed instructional and support strategies" (Canadian Academy of Health Sciences, 2022, p. 191).

It is essential for educators to be cautious when evaluating potential interventions and to be certain that they are selecting and implementing the approaches that have the highest likelihood of success. Non-evidence-based interventions, those that are not based on good research, or for which there is not yet enough evidence, may result in the loss of valuable time for learning and skill development and poor use of limited resources. At worst, some of these interventions can be harmful and put learners at risk. A commitment to evidence-based practice requires educators to start with the best available research to determine which interventions demonstrate the highest likelihood of success, to consider factors that are critical for the effective implementation of the intervention, and to evaluate the effectiveness of the intervention on an ongoing basis.



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