

Applied Behaviour Analysis Applications in Schools

A White Paper by



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Dear Reader,

In 2016, in response to increased social media attention and news reports about injuries to educators and students resulting from challenging behaviour, the Ontario Association for Behaviour Analysis (ONTABA) lead by Louis Busch formed the Education Task Force. The Task Force, comprised of the membership's behaviour analysts with experience in the education sector, assembled to respond to issues addressed in the media and by education stakeholders from an evidence-based framework. The Task Force worked diligently to assemble a comprehensive list and descriptions of evidence-based applied behaviour analytic practices that have been, and can be, used within a school environment.

We hope that this report will provide guidance for policy makers to incorporate evidence-based practices in educational settings to the benefit of all educators and students. ONTABA would like to thank all the contributors that made this report possible, including the Task Force members, subcommittee members, external reviewers, the ONTABA Board of Directors, and the research assistants and volunteers.

This report is dedicated to educators, who work tirelessly to serve their students, and to students, who deserve the best possible education and support.

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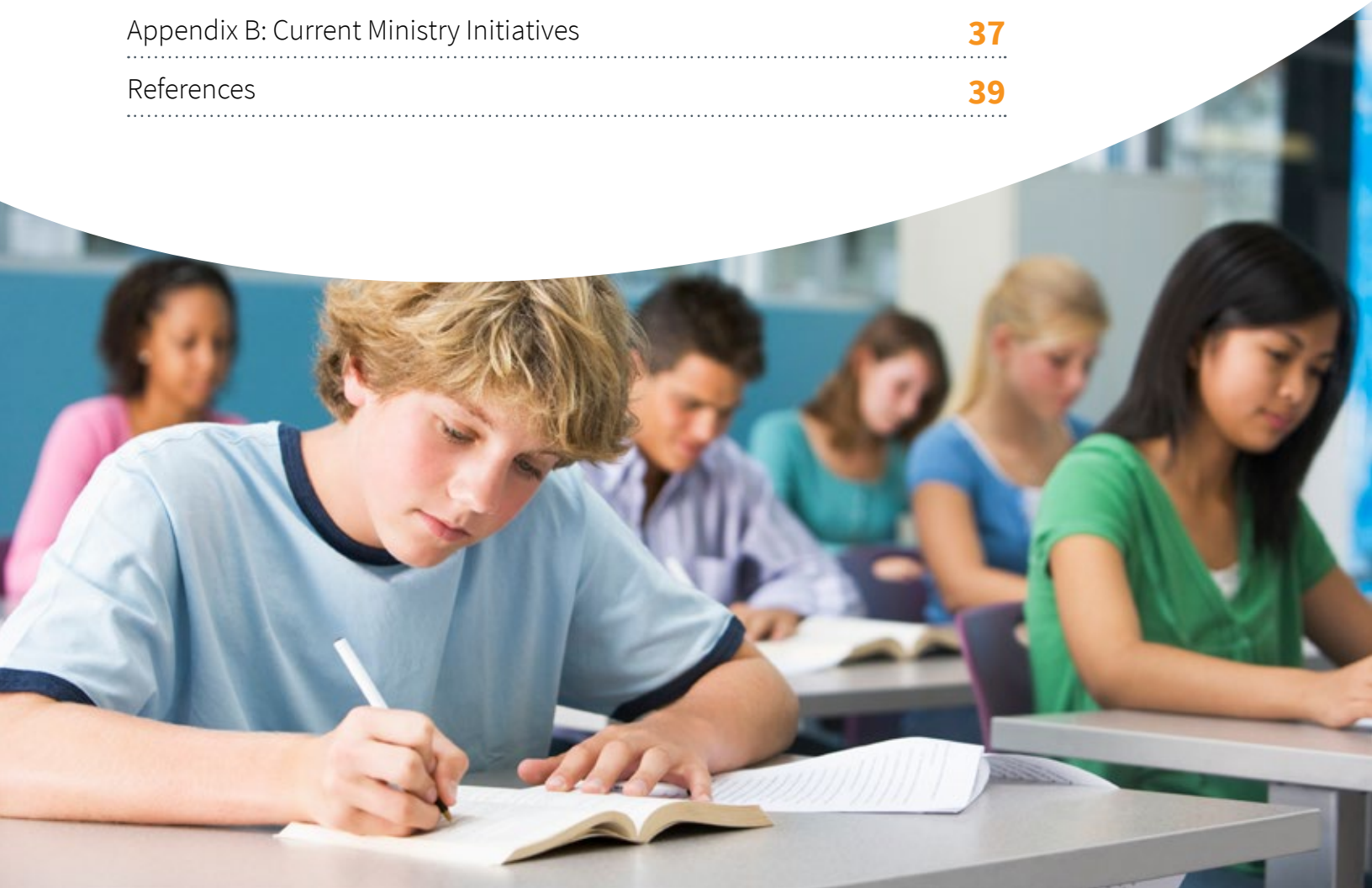
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OVERVIEW

“Since 1994, the Ontario Association for Behaviour Analysis (ONTABA) has worked to foster a culture of excellence, integrity, and expertise for the advancement and promotion of the science of behaviour analysis in Ontario. ONTABA is the largest professional organization representing behaviour analysts in Canada. As an affiliate chapter of the Association for Behaviour Analysis International (ABAI), and an affiliate of the Association for Professional Behaviour Analysts (APBA), ONTABA has served as a resource for practitioners and consumers of behaviour analytic services, a respected community partner, and a dedicated advocate for individuals in need of life-changing behaviour analytic services” (ONTABA, 2017, p. 7).

ONTABA formed the Education Task Force in December of 2016 in response to growing concerns from educators, families, and practitioners of Applied Behaviour Analysis (ABA) over the access to appropriate support for children within the educational system who are present with a variety of challenges, specifically regarding behaviour. There was a growing concern over the safety of children as well as educators within the publicly funded school system (Elementary Teachers’ Federation of Ontario, 2018). The Education Task Force was assembled from the membership of ONTABA and aimed to include clinicians with a wide variety of experience working collaboratively with and within the educational system, supporting individuals through the principles of applied behaviour analysis.

The Ontario Association for Behaviour Analysis (ONTABA), aims to foster a culture of excellence, integrity, and expertise for the advancement and promotion of the science of behaviour analysis. Our mission is to demonstrate leadership, knowledge, and innovation in education, training, and research for the ethical and effective application of behaviour analysis.

It is ONTABA’s position that all students, including those with special education needs, have a right to effective education, evidence-based applied behaviour analytic assessment, and intervention services, in their early childhood and educational settings. There is strong evidence to support the use of Applied Behaviour Analysis (ABA) principles to improve student learning and performance across a variety of educational settings, and in supporting students of various age groups and those with various challenges, regardless of diagnosis. For example, the U.S. Department of Education’s Individuals with Disabilities Education Act (IDEA) states that education services need to accommodate the needs of students with special needs so that they have access to the same level of education as their peers. IDEA regulates that functional behaviour assessment and positive behavioural interventions should be implemented for students whose behaviour impacts their learning (U.S. Department of Education, n.d.). Moreover, Ontario’s Ministry of Education specifies that ABA must be offered to students with autism spectrum disorder (ASD), when appropriate and possible, as outlined in Policy/Program Memorandum No. 140 (Ontario Ministry of Education, 2007).

Policy and Program Memoranda 140 (PPM140) was introduced in 2007 in order to establish a policy framework to support incorporation of ABA methods into school boards’ practices.

PPM140 provides direction to school boards to support their use of applied behaviour analysis (ABA) as an effective instructional approach in the education of many students with autism spectrum disorders (ASD). PPM140 states that schools must offer special education programs that include ABA principles and these programs: 1. must be individualized; 2. must utilize positive reinforcement; 3. must collect and analyze data; and 4. should empathize the transfer or generalization of skills. In addition, schools must facilitate/plan for transitions within settings and activities (Ontario Ministry of Education, 2007).

The Education Task Force undertook a brief review of the current evidence base for the application of behaviour analysis within educational settings. The purpose of this white-paper document is to review and recommend evidence-based practices in Applied Behaviour Analysis (ABA) that would benefit all students in Ontario's publicly funded school system. The continued integration of ABA in the public-school system is in Ontario's best interest due to the holistic and individualized approach that can be offered to each student, educator or school.

This white paper report of the ONTABA Education Task Force aims to provide a summary of evidence-based ABA practices to help support the Ministry of Education, policy makers, area school boards, child care centres, and unions to develop a strategy to provide evidence-based applied behaviour analytic (ABA) services to all individuals within the educational setting who may benefit from these supports. In addition, this report is intended as a resource for families and front-line educators in supporting a diverse student population to ensure the best possible learner outcomes.

APPLIED BEHAVIOUR ANALYSIS (ABA)

The Behaviour Analyst Certification Board (BACB®, 2014) defines ABA as, “a well-developed scientific discipline among the helping professions that focuses on the analysis, design, implementation, and evaluation of social and other environmental modifications to produce meaningful changes in human behaviour” (p.4). In an education setting, meaningful changes to student behaviour include skill development across a variety of domains (e.g., academic, social, physical) and reductions in problem behaviour. The term ‘behaviour’ can be interchanged with ‘skill’ or ‘student response’ throughout this report.

In Ontario, Applied Behaviour Analysis (ABA) is delivered by specially trained people such as Instructor Therapists, Registered Behavior Technicians® (RBTs®), Board Certified Assistant Behavior Analysts® (BCaBAs®) and Board Certified Behavior Analysts® (BCBAs®, BCBA-Ds™). ABA services are provided in clinical settings, such as centres for children with special needs, in homes via parent training, in residential or healthcare settings for children with more complex needs, and in classrooms and schools. In schools, ABA may be used by teachers and educational assistants with support from specially trained individuals, such as BCBAs®.

GOALS

- 1. Outline key concepts within programs based on principles of Applied Behaviour Analysis (ABA):** The document will list and define key elements found in ABA-based strategies and implementations.

- 2. Identify a continuum of evidence-based ABA strategies used in schools:** There is a continuum of special education services in existence within Ontario's school system, ranging from the delivery of instruction in a full classroom setting to the provision of one-to-one support for students with comprehensive learning or challenging behavioural needs. This document will identify evidence-based ABA practices that are applicable to different points along the continuum.

- 3. Identify comprehensive implementations of ABA-based systems:** ABA strategies are often used as a package intervention to address a wide range of skill development and behaviour reduction goals across many students or settings. This document will review some of these school-wide implementations.

- 4. Describe the implementation of ABA supports within other school systems:** ABA is currently in use in schools around the world. This document will review some of these implementation strategies and discuss what is known about their effectiveness.

- 5. Identify personnel and training requirements:** The implementation of evidence-based practices in ABA requires varying degrees of training and collaboration with administrators, teachers and educational support staff as well as program oversight by qualified individuals. This document will make recommendations regarding personnel, training intensity and supervision requirements for the evidence based Applied Behaviour Analysis (ABA) practices along the continuum. Statements regarding the supervision of behaviour analytic programming in this document are based on standards recommended by ONTABA (2017b), which states that overseeing personnel should have:

“Current certification in good standing as a Board Certified Behavior Analyst® (BCBA®) or a Board Certified Behavior Analyst-Doctoral™ (BCBA-D™) by the Behavior Analyst Certification Board® (BACB®) and documented approval from the BACB® to serve as a supervisor; or

Current registration with Ontario College of Psychologists with documented expertise in Applied Behaviour Analysis (ABA). Documentation could include relevant certifications, transcripts, or syllabi showing that the individual has completed coursework and supervised training that is comparable to the requirements to sit for the BCBA®/BCBA-D™ examination” (p. 4).

- 6. Recommend an action plan for Ontario:** This document will summarize recommendations for a long-term comprehensive implementation of ABA in Ontario schools. In addition, the document will provide a suggested stepwise plan for the gradual implementation of ABA practices along the continuum, considering personnel, training and supervision needs.

PROCESS

Literature search: The literature search was a multi-step process. It was not the scope of this document to conduct a systematic review of all evidence-based practices in the school setting. However, we hope to address this limitation in future, in a more in-depth publication. For this white paper document, we completed the following steps:

- a. Area Identification:** The Education Task Force had multiple initial meetings to identify categories, topics and specific terms to research. This was based on the various professional expertise and recent task force literature searches.
- b. Initial Literature Searches:** Electronic databases of peer-reviewed journals were searched using various combinations of the identified terms. Databases included but not limited to were Wiley, EBSCO, specific journals (e.g., *Journal of Applied Behavior Analysis and Behavioral Interventions*), and Google Scholar. Team leads of each area tracked the articles that appeared relevant in these searches and kept a master spread sheet for all team members to reference.
- c. Cross Reference Literature:** Individual member's search results were shared across the task force so all members could pull from selected articles that may be related to their own topics, to either summarize or reference in this document.

KEY COMPONENTS OF AN APPLIED BEHAVIOUR ANALYTIC PROGRAM

1. Selecting and Defining Target Behaviour

The goal of ABA is to change socially significant behaviour. As such, behaviour identified for change needs to have a clear operational definition (i.e. describes what the behaviour looks like in observable and measurable ways). This includes both skills to increase (e.g., reading, problem solving) and disruptive or challenging behaviour to decrease (e.g., out of seat, bullying).

2. Behaviour Assessment

Prior to the onset of any behaviour change program an assessment of the student's current level of performance and/or occurrences of disruptive or challenging behaviour must occur. Behaviour assessments can include skill-based checklists, observing whether the behaviour/skill(s) is/are

present or not, and/or analyzing events surrounding the displays of target behaviour (i.e., a functional behaviour assessment, which may include a functional analysis). An inherent assumption in any behaviour assessment is that behaviour has a function – i.e., it serves a purpose under certain conditions. When school staff understand the function of a behaviour, they can plan lessons and interventions accordingly.

3. Arranging Antecedents

Behaviour can be a response to someone's physical and social environment – be it an instruction, learning materials or the presence of people and other physical items. Collectively, these are referred to as *antecedents*. Attention to, and strategic arrangement of classroom materials and other antecedent events stimulate learning, promote positive behaviour, and prevent problem behaviour.

4. Prompting

Prompts are a specific antecedent tool used by teachers to cue a learner to connect with the curriculum materials and giving correct or desired responses. Prompting can take on the form of: (a) physical guides (e.g., demonstrate correct holding of a pencil or use of gym equipment); (b) gestures (e.g., pointing to the correct country on a map, use a hand sweep to guide student's attention to a display); (c) visuals (e.g., signs reminding students to take home communication books, underlining important text); and (d) verbal instructions or models. Once learners are responding as per the goal, prompts are then faded out, allowing for generalization and greater independence.

5. Behaviour-Outcome Relationship

Learning occurs when the student's response/behaviour is met with either a reinforcing or a punitive consequence. This behaviour-consequence relationship is referred to as a contingency. Reinforcement contingencies increase or strengthen skills and behaviour; whereas contingencies involving a correction procedure or withholding reinforcement decrease or weaken behaviour. What is reinforcing vs. punishing can be different for every student and situation. Therefore, careful attention to the contingencies in place will help to ensure positive behaviour is maximized while problem behaviour is minimized.

6. Positive Reinforcement

Positive reinforcement (described in more depth below) is when the presentation of an item or an event follows the occurrence of a behaviour, resulting in an increase in the behaviour. The challenge in its application, is to ensure that items or events that are being presented as rewards to a student are, in fact, reinforcing that student's behaviour. The reverse caution is also true. Something may be reinforcing (i.e., increasing a student's behaviour) even if a teacher intends it to be a deterrent (e.g., scolding or time out).

7. Error Prevention and Correction

In the process of teaching, errors in how a learner responds to instructions and/or situations can occur. In some lessons, pre-corrections and/or errorless learning are programmed. Pre-corrections (or priming) involve the teacher reviewing expectations and steps ahead of when the behaviour is to occur. Errorless learning involves prompting for the correct response right away; thus, preventing mistakes from occurring. This allows the student to experience success immediately and ideally more natural positive reinforcement. Should an error occur, error correction steps are taken. Error correction is the process by which the teacher acknowledges the error with brief and specific statements, takes steps to show the correct/desired response, then re-presents the instruction or another opportunity while providing the necessary prompts to ensure the correct/desired response is given.

8. Data Collection and Analysis

Integral to any ABA intervention/program is data collection and analysis. Measures of student responses are gathered before, during, and after a specific teaching program or intervention is implemented in order to assess effectiveness. The data from these measurements are graphed over time and analyzed to see if a skill is improving or problem behaviour is decreasing. Regular analysis of the data allows teachers and support staff to monitor student progress and make changes to programming as needed.

9. Generalizing Skills Learned

After a student has acquired a skill in the classroom, it is important to generalize learning across a variety of settings, people, materials and circumstances. Plans are put into place that ensure the student can practice the skill in a variety of contexts (e.g., with a different teacher, at home with parents or in the community when “real-world” situations occur).

The above components are commonly outlined in a written program, behaviour intervention plan, or Individual Education Plan (IEP) specific to the student (or group of students) and the environment(s) they are in. A program plan acts as a “how to” manual for education staff to follow (e.g., what materials to use, what prompts to use, how reinforcement will be delivered, what data to collect) and know when to make data-informed decisions.

A CONTINUUM OF EVIDENCE-BASED APPLIED BEHAVIOUR ANALYSIS (ABA) PRACTICES

STRATEGIES THAT REQUIRE LOW INTENSITY OF SUPPORT

The first set of Applied Behaviour Analysis (ABA) practices described in this document are classified as Low Intensity and are summarized in the table below. To be identified as Low Intensity, the practices must meet the following criteria:

- The implementation is applied across schools and/or classrooms, rather than being directed at an identified student.
- The implementation is carried out by the classroom teacher and support staff
- A Board Certified Behavior Analyst® (BCBA®, BCBA-D™) may be consulted on the development of the program plans but is not required for regular implementation and/or monitoring.

Positive Reinforcement

Positive reinforcement strategies are the backbone of Applied Behaviour Analysis (ABA; Cooper, Heron, & Heward, 2007). Positive reinforcement is in effect when the frequency of a behaviour increases over time because of a desirable outcome that followed (e.g., algebra skills improve when after five correct math equations, the student can access YouTube videos for five minutes). Positive reinforcement can be applied across many situations where the goal is to increase skills. It can take on forms such as behaviour-specific praise, access to preferred items or time allowed on preferred activities or privileges. Positive reinforcement procedures are implemented in many different variations such as after every occurrence vs. more random occurrences; after a task has been fully completed or when an interval of time on-task has passed. Positive reinforcement can occur naturally or be part of a specialized system (e.g., token economies, level systems).

Specialized systems can enhance the effectiveness of positive reinforcement by tailoring it to the function of behaviour, the quality or how often the behaviour is expected to occur, or by how much response effort goes into performing the behaviour (i.e., might give reinforcement depending on how difficult the skill is). *See below for more specialized uses of reinforcement.*

Behaviour or Contingency Contracts

Behaviour or contingency contracting is when an educator and a student draft a contract that outlines expected behaviour(s) to increased and undesired behaviour(s) that must decrease or stop. The contract also specifies the educator's role and what reinforcer the student earns if they meet criterion. Behaviour contracting has long been shown to be effective with diverse populations and age groups to increase academic and social skills (Arwood, Williams, & Long 1974; De Martini-Scully, Bray, & Kehle, 2000; Kelley & Stokes, 1982; Kelley & Stokes, 1984; Newstrom, McLaughlin, & Sweeney, 2008; Seabaugh & Schumaker, 1994; White-Blackburn, Semb, & Semb, 1977; Williams & Anandam, 1978).

The complexity of the contract will vary and could be renewed daily, weekly, or monthly based on the needs and goals of each situation. It is important to note that the components of a behaviour contract can be diverse and can include other behaviour strategies. Consistent follow through with the use of these components is required for consistent and effective outcomes to occur (Williams & Anandam, 1978).

Behavioural Momentum or High-P (High Probability)

Behavioural momentum is an antecedent strategy meant to prevent off-task or task refusal behaviour from occurring. Behavioural momentum, designed to increase a student's rate of responding, is analogous to the physics theory that once an object (or behaviour) is in motion, it is more difficult to stop or change the direction (i.e., get off-task; Nevin, 1996). The goal of behavioural momentum is to engage the student in successive responses/tasks, so it is more difficult for them to change course and engage in the undesired behaviour during future or more difficult tasks/responses.

One specific example of behaviour momentum is the use of high probability task sequence (commonly referred to as, "high-p"). A high-p task sequence occurs when a teacher asks the student to engage in a series of simple well-developed tasks immediately prior to presenting a harder task to which the student has been known to engage in off-task or refusal behaviour (Cooper et al., 2007). High-p strategies have multiple applications in school settings (e.g., general and specialized classrooms) across varied populations (Belfiore, Basile, & Lee, 2008). For example, high-p request sequences have been used to decrease non-compliance (Ardoyn, Marten, & Wolfe 1999; Belfiore, Lee, Scheeler, & Klein, 2002) and increase various academic skill acquisitions (Belfiore et al., 2008; Lee & Laspe, 2003).

Behavioural Skills Training (BST)

Behaviour skills training (BST) refers to a framework used to teach specific skills. Unlike traditional training models which focus on increasing knowledge and/or verbal skills, BST relies on competency and performance-based training methods and expectations. While there are numerous variants to a BST protocol, in general a BST training package is comprised of these key components: instructions, modeling, rehearsal, and feedback (e.g., Dib & Sturmey, 2007; Nigro-Bruzzi & Sturmey, 2010; Sarokoff & Sturmey, 2004). The competency component requires that a trainee demonstrate the skill to a pre-determined level of mastery.

BST can be used by school staff to teach students directly and is often cited as an effective means of teaching various skills such as responding safely to stranger lures or guns (e.g., Johnson et al., 2005; 2006; Miltenberger et al., 2009), self-management responses and leisure activities (Speelman, Whiting, & Dixon, 2015).

It is important to recognize the versatility of BST as the approach can also be used to increase skills in staff working directly with children. A variety of skills have been shown to be effective for educators to implement in the school setting following BST training: discrete-trial teaching (Sarokoff & Sturmey, 2004); preference assessments (Graff, & Karsten 2012); Picture Exchange Communication System (PECS®) (Homlitas, Rosales, & Candel, 2014); safe physical transfer procedures (Nabeyama & Sturmey 2010); and requesting (Nigro-Bruzzi & Sturmey, 2010). The type of environments that teachers were able to implement included small classrooms (Graff & Karsten, 2012) and therapeutic school settings (Homlitas et al., 2014; Rosales, Gongola, & Homlitas, 2015). The education staff included in the articles reviewed were teachers, speech pathologists and education assistants working with individuals with autism spectrum disorder (Graff & Karsten, 2012; Homlitas et al., 2014; Sarokoff & Sturmey, 2004); multiple physical disability (Nabeyama & Sturmey, 2010); and developmental disabilities (Rosales et al., 2015).

Environmental Arrangements

Environmental Arrangements is an antecedent strategy where the physical and social environment is altered to set the individual up for success. It involves identifying the specific environmental conditions that precede problem behaviour (Cooper et al., 2007; Nordquist & Twardosz, 1990) and making any possible changes to those conditions. Examples of environmental arrangements in the classroom include: limiting unnecessary furniture, arrangement of room to minimize unsupervised and chaotic spaces, positioning of desks to maximize learning, supporting social interactions during free time (e.g., lunches), changes in how materials are made available to or organized for students, and limiting the number of students in any one space (Epstein, Atkins, Cullinan, Kutash, & Weaver, 2008; Fox, 1990; Nordquist & Twardosz, 1990; Waldman-Levi & Erez, 2015). Environmental arrangements can be used as part of a multi-component intervention package. Changes can be made on an on-going basis or be done temporarily while the student acquires more skills.

Group Contingencies

As children age, their influences shift from adults to peers. Group contingencies tap into these peer influences to evoke behaviour change for one or more students. There are three types of group contingencies: 1) independent; where all individuals are working on the same contingency plan and each earn the reward when they reach the criteria; 2) dependent; sometimes referred to as the 'hero' procedure where one student's performance is monitored to determine if the group earns the reward; and 3) interdependent; where all members of the group must meet criterion before the reward is given to all (Cooper et al., 2007).

The Good Behavior Game® is one such interdependent group contingency with applications to school settings. In this program, the teacher will identify the disruptive behaviour (e.g., getting out of their seats, calling out or turning around in their desk). The class is divided into teams. The teacher explains that if any student is caught engaging in the targeted behaviour, their team would earn a mark; the goal being that whatever team had the least number of marks at the end, wins a reward (Barrish, Saunders, & Wolf, 1969).

Tootling is another interdependent group contingency implemented in elementary and secondary classrooms. Here, students are taught to leave notes reporting positive behaviour among their classmates. If a cumulative number of tootles is achieved, the class earns a reward. Tootling has been shown to reduce disruptive behaviour in the classroom while also increasing academic engagement and appropriate behaviour (e.g., Lambert, Tingstrom, Sterling, Dufrene, & Lynne, 2015; McHugh, Tingstrom, Radley, Barry & Walker, 2016; Zoder-Martell et al., 2017).

Group contingencies can be beneficial alternatives to address behaviour change for a few students by including them and their classmates in a program targeted for all (Murphy, Theodore, Aloiso, Alric-Edwards, & Hughes, 2007). The combination of clear rules, teacher providing reinforcement, and social monitoring makes these systems successful among pre-school and elementary age groups (Murphy et al., 2007), and in secondary age groups (see Lynch & Keenan, 2018).

Peer Tutoring

Peer tutoring is an instructional procedure that can be implemented in small or large groups (e.g., class-wide peer tutoring (CWPT)) with students with and without disabilities (Bowman-Perrott, Burke, Zhang, & Zaini, 2014; Greenwood et al., 1984; Greenwood et al., 1987). Peer tutoring involves having students in a classroom or from different grades, present instructions to another student (Greenwood, et al., 1984; Greenwood et al., 1987). The elements of peer tutoring include opportunities to respond, feedback that is regular and immediate, and differentiated instruction as the materials presented can be individualized. Benefits of peer tutoring include academic gains in reading skills, spelling, math, and science, improvements in social skills, as well as reduction in challenging behaviour (Bowman-Perrot et al., 2014; Dineen, Clark, & Risley, 1977; Dufrene et al., 2010; Greenwood et al., 1987; Kamps, Dugan, Potucek, & Collins, 1999; Sideridis et al., 1997).

School-Based Rules

Rules are explicit written or vocal statements, specifying behaviour expectations for a specific context (e.g., classroom, hallway, cafeteria), and are often paired with a description of contingencies for rule-following and rule-violation (Bicard, 2000; Gable, Hester, Rock, & Hughes, 2009; Joyce, Joyce, & Chase, 1989; Madsen, Becker, & Thomas, 1968). Alter and Haydon (2017) reviewed the characteristics of effective classroom rules, highlighting teaching of rules explicitly and tying rules to positive and/or negative consequences as important to their overall effectiveness. The number of rules, positive phrasing, and student involvement are characteristics that demonstrate inconsistent results and limited research to support efficacy. Implementing rules as a stand-alone intervention in a

classroom is not effective in decreasing problem behaviour or increasing appropriate social behaviour (Greenwood, Hops, Delquadri, & Guild, 1974; Madsen et al., 1968; O’Leary, Becker, Evans, & Saudargas, 1969). Effectiveness of school-based and classroom-based rules are attributed to an intervention package and a combination of a reward/reinforcement system (Alter & Haydon, 2017; Gable et al., 2009; Greenwood et al., 1974; O’Leary et al., 1969; Swain-Bradway, Pinkney, & Flannery, 2015).

STRATEGIES THAT REQUIRE MODERATELY INTENSE SUPPORT

The second set of Applied Behaviour Analysis (ABA) practices this document will describe meet the following criteria:

- The implementation is within schools and/or classrooms but is directed at specific students or targeted groups of students.
- The implementation is carried out by the classroom teacher, other school-based professional (e.g., Child and Youth Worker [CYW]), a social worker, or a trained instructor (e.g., Registered Behavior Technician™ [RBT®], Board Certified Assistant Behavior Analyst® [BCaBA®]).
- A Board Certified Behavior Analyst® (BCBA®) should be consulted to make program suggestions and is available for staff training and periodic monitoring of the program.

Acceptance and Commitment Training and Mindfulness-Based Practices

Acceptance and Commitment Training (ACT; Hayes, Pistorello, & Levin, 2012), which is based in applied behaviour analysis, uses tools such as Mindfulness Training to focus on helping individuals to think flexibly and respond adaptively to negative events and thoughts. “Mindfulness is the cognitive propensity to be aware of what is happening in the moment without judgment or attachment to any particular outcome” (Napoli et al, 2005, p. 99). Mindfulness Training has strong evidence for its application to address mental wellbeing in school settings.

In recent years, mindfulness-based programs have been well researched within educational settings and are now considered an evidence-based approach in schools for improving children’s attention (Enoch & Dixon, 2017; Napoli et al. 2005). Mindfulness activities implemented by the classroom teacher decreased a group of students’ stress, hyperactivity and emotional symptoms while it increased positive social behaviour (Pahnke, Lundgren, Hursti, & Hirvikoski, 2014). ACT has also been used in schools to decrease procrastination (Hayes, et al., 2012), and across a variety of settings to address barriers to psychological wellbeing such as anxiety, avoidance and depression (Hayes et al., 2012).

In a study by Schonert-Reichl and colleagues (2015), a social and emotional learning program involving mindfulness and caring for others offered improvements in cognitive control, reduced stress, increased well-being, prosocial behaviour, peer acceptance, and improved math grades. A mindfulness-based stress reduction (MBSR) program implemented in an urban school with students who were

from lower socioeconomic backgrounds and had experienced trauma, was demonstrated to improve psychological functioning and stress symptoms, including lower levels of somatization, negative affect, negative coping, rumination, depression, posttraumatic symptom severity, and self-hostility (Sibinga, Webb, Ghazarian, & Ellen, 2016). Black and Fernando (2014) found that a 5-week mindfulness-based curriculum can lead to improvements in classroom behaviour. Furthermore, the implications for the benefits of mindfulness-based programs implemented with teachers has also been demonstrated to improve well-being, efficacy, and burnout-related stress in this population (Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013).

Check-In, Check-Out

Using principles of reinforcement and self-monitoring, Check-In, Check-Out (CICO; sometimes referred to as ‘Behaviour Education Program’) is an intervention for students whose disruptive behaviour in the classroom is attention maintained. It is designed to allow for regular, yet brief “checking-in” with a teacher or other familiar school staff (e.g., Child & Youth Worker, educational assistant) at the beginning of a period to review behaviour expectations and goals. The teacher may provide reminders or a brief lesson on how the student can meet expectations (e.g., role play desired behaviour, review behaviour contingency maps). At the end of the period, the student “checks-out” with the same staff member to report on what happened (i.e., behaviour expectations met/not met, desired behaviour demonstrated) and receives feedback. Daily Behaviour Report Cards are sent home to caregivers. Additional reinforcers may be attached to a CICO system allowing the student to earn privileges or other items for meeting daily, weekly or monthly goals. Variations on CICO include involving the use of peer mentors and adding a break component (‘Breaks Are Better’; Boyd & Anderson, 2013; Kilgus, Fallon & Feinberg, 2016) for students who also engage in escape-maintained behaviour.

Research on CICO has shown moderate effects on reducing problem behaviour and office referrals in some students (e.g., Campbell & Anderson, 2011; Hawken, MacLeod, & Rawlings, 2007). Increases in academic participation have also been reported while CICO is in effect (Campbell & Anderson, 2011; Hawken & Horner, 2003). A meta-analysis on CICO reported greater effectiveness among elementary students (see Hawken, Bundock, Kladis, O’Keefe, & Barrett, 2014).

Differential Reinforcement

Differential reinforcement is a system of reinforcement that identifies a target behaviour to change by either increasing or decreasing the frequency, duration or fluency of other behaviour (Cooper et al., 2007). An example might be giving a greater reinforcer when a student can complete a skill with little to no assistance than when they require prompting (Johnson, Vladescu, Kodak, & Sidener, 2017). Major advantages of differential reinforcement systems are that the student is not removed from the classroom and that no punishment procedures are used (Vollmer & Iwata, 1992).

There are various types of differential reinforcement systems that have been shown to be effective in the classroom:

- **Differential Reinforcement of Other Behaviour (DRO):** This is the processes by which reinforcement is given following a period during which the problem behaviour did not occur (e.g., Repp, Felce, & Barton, 1991).
- **Differential Reinforcement of Alternative Behaviour (DRA):** This is the process by which one behaviour no longer receives reinforcement and an adaptive behaviour does instead (e.g., Auld, Belifore, & Scheller, 2010).
- **Differential Reinforcement of Incompatible Behaviour (DRI):** This is a process like DRA except the alternative behaviour is one that cannot occur at the same time as the undesired behaviour (e.g., Sigafos, Green, Payne, O'Reilly, Lancioni, 2009).
- **Differential Reinforcement of Low/High Rates of Behaviour:** In cases when a behaviour is happening too much or not enough, reinforcement is only available when the behaviour is performed above or below criterion (e.g. Austin & Bevan, 2011).

Functional Communication Training

First used by Carr and Durand (1985), Functional Communication Training (FCT) is a highly validated ABA approach to teaching functional communication skills. Its effectiveness has been demonstrated in educational settings and elsewhere across various populations and age groups.

FCT uses differential reinforcement (DR) to teach a student an alternative and appropriate social communicative response to get their needs met. This communicative response could be vocal, gestural, involve a picture exchange, or voice-output device. This communication behaviour provides access to reinforcers like those maintaining the problem behaviour. While implementing FCT, reinforcers for problematic behaviour may be withheld to decrease the behaviour further – i.e., the problem behaviour is no longer effective at achieving desired outcomes and instead the student must use their new FCT response, which may include a variety of communication modalities (e.g., PECS®, PICS, voice output).

There are typically three phases to FCT interventions. First, a functional assessment (direct or indirect) is completed in order to determine the conditions and reinforcers of the problem behaviour. Next, an alternative communicative response is identified and taught to the student to replace the problem behaviour. This alternative communicative response must be easy and effective to successfully replace the problematic behaviour. Finally, the intervention is generalized across different settings and people (Tiger, Hanley, & Bruzek, 2008).

Successful FCT implementation can be improved through the collaboration of professionals (e.g., Speech & Language Pathologist (SLP), Board Certified Behavior Analyst® (BCBA®), teaching staff) and family members in the initial determination of the function of the observed behaviour, as well as an agreement with and adherence to the proposed intervention plan by all involved parties (e.g., student, parents, teachers, Educational Assistants (EAs); Battaglia, 2017).

Focused Academic Support Using Direct Instruction

Direct Instruction (DI) as a system of instruction is an evidence-based intervention (see Stockard, Wood, Coughlin, & Rasplia, 2018) designed for classroom use with students in a regular education stream. DI lessons are scripted, enabling a consistency of instructional language with the focus placed on succinct delivery and tight error corrections that increase the effectiveness of teachers. The scripts also allow support staff to be trained to deliver effective instruction (Binder & Watkins, 1990). As Becker (1977) describes, a feature of DI programs is the focus on teaching general cases to then foster generalization to untaught members of the set. This is to ensure efficient learning, as the initial intent of DI implementations was to bring underperforming students up to the level of their peers (Becker, 1977).

DI programs show achievement gains superior to other instructional models across three types of measures: basic skills, cognitive skills and affective skills (Adams, 1996). More recently, a meta-analysis conducted by Stockard et al., (2018) found that the effectiveness of DI implementations exceeds criteria used in both the fields of education and psychology. Stockard et al., (2018) also evaluated measures of ability and affective outcomes in the areas of reading, math, language and spelling, and found similar effects for the DI programs.

DI can be used in full-scale school-wide implementation as well as in focused intervention for individuals or small groups of students. Focused DI has been used to improve general language skills (e.g., Language for Learning and Reasoning and Writing; Cadette, Wilson, Brady, Dukes, & Bennett, 2016; Engelmann & Grossen, 1995; Ginn, Keel, & Fredrick, 2002; Shillingsburg, Bowen, Peterman, & Gayman, 2015), reading (e.g., Reading Mastery; Kamps et al., 2016) and math skills (Scarlato & Burr, 2002).

Independent Activity Schedules

Activity Schedules are a tool for increasing independence and supporting individuals in completing tasks and engaging in independent activities. These schedules may rely on pictures or text to cue students through different steps involved with a task, including gathering and putting away their materials. Activity schedules have been successfully implemented within typical classroom settings with 3- to 4-year old children (Zimmerman, Ledford, & Barton, 2017) as well as special education resource classrooms and vocational settings with adults (Spriggs, Mims, van Dijk, & Knight, 2017).

Non-contingent Reinforcement (NCR)

Non-contingent reinforcement (NCR) is an antecedent strategy put in place to prevent problem behaviour from occurring. This procedure occurs when a known reinforcing item or

experience (e.g., attention) is presented at predetermined times, independent of what behaviour is occurring (Cooper et al., 2007). For example, if problem behaviour is shown to be the way a student accesses a staff member's attention, then that attention is given freely on a schedule before the problem behaviour is likely to occur. The functional assessment process and ensuring that the reinforcement matches the functions is a key component of this intervention strategy (Carr et al. 2000).

While non-contingent reinforcement has a strong evidence base in clinical and therapeutic settings (Carr et al., 2000; Slocum, Grauerholz-Fisher, Peters, & Volmer, 2018), its application has not been documented sufficiently in school settings to validate its effects and as such is an emerging technology within education.

Prevent-Teach-Reinforce (PTR)

Prevent-Teach-Reinforce (PTR; Dunlap, Iovannone, Kincaid, Wilson, Christiansen & Strain, 2010) is a manualized tool to guide school teams in completing a functional behaviour assessment on a student's disruptive behaviour. The tool is structured such that the school team can then select intervention components that match the identified function(s). Intervention components include (a) prevention strategies (e.g., rearranging the environment, using supporting visuals and other curriculum adaptations); (b) identifying skill to teach (e.g., social skills, self-management skills, replacement behaviour); and (c) reinforcement procedures (e.g., contingent attention, token economies, differential reinforcement).

Studies with over 400 students from JK to grade 8 show that the PTR process and interventions resulted in significant reductions in problem behaviour and subsequent improvements in classroom engagement and social skill development (see Dunlap, Strain, Lee, Joseph, & Leech, 2018; Iovannone et al., 2009). Additional single case experimental design has also shown effectiveness in using PTR to address the behaviour of students with autism spectrum disorder (ASD) in general education settings (Strain, Wilson & Dunlap, 2011).

Social Skills Intervention Programs

Social skills training involves teaching specific, observable skills (e.g., initiating conversation, joining play) through behavioural and social learning methods (Cooper, Griffith, & Filer, 1999; Quinn, Kavale, Mathur, Rutherford, & Forness, 1999), with interventions based on Applied Behaviour Analysis (ABA) as the most common intervention type (Reichow & Volkmar, 2010). Various empirically supported techniques are used, including behaviour skills training, prompting, modeling, shaping, and reinforcement (Cappadocia & Weiss, 2011, Reichow, Steiner, & Volkmar, 2012; Reichow & Volkmar, 2010). Social skills package interventions may occur in a 1:1 setting, in a peer dyad, or in a small group (National Autism Center, 2015).

A didactic approach with direct instruction, modeling and immediate practice, in addition to using positive reinforcement, proves to be the most effective teaching strategy for social skills training, especially for students with autism spectrum disorder (ASD) (Denning, 2007; Dağseven

Emecen, 2011; Kasari et al., 2016; Laugeson, Frankel, Gantman, Dillon, & Mogil, 2012; Lopata, Thomeer, Volker, Nida, & Lee, 2010; Camargo, 2016).

Peer-mediated interventions are commonly used and identified as an effective intervention approach for teaching social skills (McConnell, 2002; (Reichow et al., 2012); Reichow & Volkmar, 2010). Typically developing peers are trained using methods of behaviour skills training, to direct and model prosocial behaviour to engage students (e.g., students with ASD) (Matthews et al., 2018).

Social skills training programs vary in group size (e.g., 2-10 individuals), format (e.g., once per week for 12+ weeks, additional parent component, homogeneous vs. heterogeneous groupings), mode of delivery (e.g., adult-led, peer-mediated), approach (e.g., structured didactic, naturalistic) and duration (Cappadocia & Weiss, 2011, Reichow et al., 2012).

The Program for the Education and Enrichment of Relational Skills (PEERS®; Laugeson, Frankel, Mogil, & Dillon, 2009) and Children's Friendship Training (CFT; Frankel & Myatt, 2003) are two examples of evidence-based social skills programs that use Applied Behaviour Analysis (ABA) principles and are being practiced in school settings.

STRATEGIES THAT REQUIRE HIGHLY INTENSIVE AND SPECIALIZED SUPPORT

The final set of Applied Behaviour Analysis (ABA) practices this document will describe meet the following criteria:

- The implementation is within schools but may occur in isolation from regular classrooms or in more specialized education settings.
- The implementation is facilitated by individuals who have received training and supervision in executing these types of interventions (e.g., Registered Behavior Technician™ [RBT®]/ Board Certified Assistant Behavior Analyst® [BCaBA®]).
- A Board Certified Behavior Analyst® (BCBA®) should be part of the behaviour assessment, contribute to the design of the program/intervention plan, deliver staff training, then provide ongoing oversight and monitoring of results in collaboration with the classroom staff.

Discrete Trial Teaching

The evidence base for discrete trial teaching (DTT) has been established (see ONTABA, 2017) and is applicable to classroom settings. DTT is often delivered in one-to-one lessons where a specific response is taught using clearly defined instructions, environmental cues, prompts, reinforcement and error correction procedures. Lessons are quick and often repeated allowing the student many opportunities to develop the skill. Skill domains where DTT can be effective include expressive language for requesting, labelling and answering questions; receptive language; spelling; writing; math; social and self-help skills.

Leaf et al. (2013) demonstrated that a group implementation of DTT is equally effective as individualized sessions. Language skills were acquired in the small group setting with an equal level of efficiency as the matched targets for the same skills taught during individualized lessons. Leaf et al. (2013) demonstrated that students not only learn targets directly taught during group DTT sessions but also acquire targets that had been taught to other members of the group during the sessions. Ledford, Lane, Elam & Wolery (2012) evaluated 47 studies (197 participants in total) and found small group instruction using discrete trial methodology to be effective for 195 of those participants. In addition, they reported 697 replication effects.

Aside from the obvious economic advantage to small-group instruction, it allows for lessons to be set up in a way to capitalize on observational learning and social interaction opportunities for the students (Leaf et al., 2013).

Fluency-Based Instruction

Fluency-based instruction (e.g., Precision Teaching) is a model of instruction that ensures a skill is demonstrated fluently or performed automatically before it is considered a mastered skill. Fluency encompasses not only correct responding, but responding with speed, and relates to three desirable learning outcomes: Retention (long term), endurance (increasing duration of responding), and application (within more complex skills; Kubina, Morrison & Lee, 2002). Fluency-based instruction has been used successfully to teach academic skills such as reading (Hughes, Beverley and Whitehead, 2007; Mercer, Campbell, Miller, Mercer & Lane, 2000), math facts (Burns, Coddington, Boice & Lukito, 2010), fine motor skills (Twarek, Cihon & Eshleman, 2010), oral responding, and responding to instructions (Chapman, Ewing & Mozzoni, 2005).

Functional Behaviour Assessment

Functional behaviour assessment (FBA) is a critical component to school-based intervention on challenging behaviour such as aggression, property destruction and self-injury. Challenging behaviour impacts not only a student's ability to access the curriculum and engage in learning (Sugai, Horner & Gresham, 2002) but also a teacher's ability to run an effective classroom (Lloyd, Weaver & Staubitz, 2016). Interventions based on the results of a functional assessment have been shown to result in greater reductions in problem behaviour compared to interventions not informed by functional assessment (Cooper et al., 2007). Attempting to design interventions in the absence of a thorough and accurate functional assessment may lead to failed attempts or even counterproductive procedures (Lloyd et al., 2016), both of which may waste time and resources.

Components of a functional assessment include interviews with school personnel and family members; direct observation of the student while recording the event(s) that precede and follow challenging behaviour, and experimental functional analysis (Cooper et al., 2007; Iwata, Dorsey, Slifer, Bauman, & Richman, 1994).

Given the complexity associated with conducting and interpreting the results of functional behaviour assessments and functional analyses, a behaviour analyst who has specialized education, training, and supervision should conduct the assessments, identify the functions, and create the behaviour support plans.

Teachers and support staff can participate in on-going evaluation (and implementation) of these behaviour support plans that are monitored by a behavioural analyst.

Picture-Exchange Communication System (PECS®)

The Picture-Exchange Communication System (PECS®; Bondy & Frost, 1994; Frost & Bondy, 2002) is an augmentative and alternative communication (AAC) system often used for learners with limited verbal communication skills to teach communication skills (Bondy & Frost, 1994). PECS® is unique to AAC in that the users are required to approach their communication partners in every communication event (Ganz & Simpson, 2004). This is a particularly important skill for students with autism, who are the most common users of PECS®, as social approach is often a deficit for this population (Ganz & Simpson, 2004). Students with development disability and Down syndrome have also shown progress with PECS® resulting in increased communication (Hill, Flores, & Kearley, 2014).

Progressing through PECS® training allows students to communicate functionally to make requests, initially with single words (represented by a small picture that is handed to a communication partner) then developing to the use of complete sentences (Frost & Bondy, 2002). Following the acquisition of requesting skills, PECS® is designed to further develop language skills such as commenting and the use of adjectives and adverbs (Frost & Bondy, 2002). PECS® training has been shown to increase communication initiations from students when delivered in specialized classroom settings (Gilroy, Leader, & McCleery, 2018; Howlin, Gordon, Pasco, & Charman, 2007). Studies on the effectiveness of PECS® have also shown collateral effects such as an increase in vocalizations in school settings (Charlop-Christy, Carpenter, Le, LeBlanc, & Kellet, 2002; Ganz & Simpson, 2004; Kravitz, Kamps & Kemmerer, 2002) as well as social behaviours such as joint attention, imitation of peers and cooperative play (Charlop-Christy et al., 2002).

PECS® can be implemented by teachers, paraprofessionals and Speech and Language Pathologists in school systems with training and ongoing supervision. The most effective way to train school staff is through behaviour skills training (BST; mentioned elsewhere in this document). Such training has been shown to improve both the quality and quantity of PECS® use by students (McCoy & McNaughton, 2018).

COMPREHENSIVE PROGRAMS FOR EDUCATION SETTINGS USING APPLIED BEHAVIOUR ANALYSIS (ABA) PRINCIPLES

The section that follows summarizes system applications of evidence-based ABA strategies across education settings. These comprehensive programs incorporate several ABA practices adopted by the entire school and are part of their daily practices.

School-Wide Positive Behaviour Supports

School Wide Positive Behaviour Supports (SWPBS) is the application of various positive behavioural interventions at the school level for all students. The goal of SWPBS is to establish a positive school climate by teaching and rewarding students for following school rules and expectations while also intervening on identified challenges within the school (e.g., tardiness, bullying, violence).

SWPBS is delivered at three levels: Tier I systems for all students; Tier II interventions for targeted population(s) within the school; and Tier III individualized assessment and intervention for students unresponsive to Tier I and Tier II supports. Integral to the implementation of SWPBS is the formation of SWPBS team within the school and/or school board responsible for staff training and commitment, data collection, data analysis and planning/implementation. School can take anywhere from two to five years to fully implement SWPBS elements with consistency and fidelity (see Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008; Lassen, Steele & Sailor, 2006). However positive results emerge within the first year (see Childs, Kincaid, George, & Gage, 2016).

Data are collected on student outcomes such as academic engagement, academic achievement, the number of office referrals or disciplinary actions taken, as well as group data on measures of problem behaviour. Social validity data from teachers is also gathered. Group studies have shown that elementary and secondary schools that implemented SWPBS experienced statistically significant decreases in risks to school safety, reports of problem behaviour and on measures of students' externalizing and internalizing behaviour compared to schools that did not use SWPBS (e.g., Cheney et al., 2009; Freeman et al., 2016; Horner et al., 2009). On pre- and post-measures, SWPBS interventions have been shown to decrease discipline referrals, suspensions, bullying and the use of physical restraint (e.g., Bradshaw, Mitchell & Leaf, 2010; McCurdy et al., 2016; Childs et al., 2016; Nocera, Whitbread & Nocera, 2014; Ross, Horner & Higbee, 2009). Meanwhile, measures of pro-social behaviour have been found higher among students at schools implementing SWPBS (see Caldarella, Shatzer, Gray, Young, & Young, 2011). Social validity scores show positive effects on school climate (see Nocera et al., 2014) and teacher self-efficacy (see Kelm & McIntosh, 2012).

Comprehensive Applications of Behaviour Analysis to Schooling (CABAS®)

CABAS® or Comprehensive Applications of Behaviour Analysis to Schooling, is a systems approach to education that includes all components and roles involved in teaching, pedagogy, parent training, and mentoring and supervision (Greer, 2002; Greer, Keohane, & Healy, 2002). The CABAS® system

focuses on the individual child as the centre of instruction, and includes assessment and curricula across academic literacy, communication and social skills, expanding community of reinforcers, and self-management repertoires. The system defines a criterion of skill sets for teachers, teaching assistants, and all levels of mentored supervision. Another component of the system includes parents as their children's first teachers and encourages parent participation through parent training and coaching.

The CABAS® system includes education for learners with autism spectrum disorder, language delays, and other developmental disabilities, as well as general education. The goals of CABAS® are to expand a learner-driven science of teaching and developmental interventions, as well as developing teacher training model to encourage teachers as scientist practitioners (Greer, 2002).

Within the CABAS® system, 1) instruction is individualized by curricular sequence; however instruction is delivered individually or in groups, 2) continuous measurement is provided, 3) graphs for instruction are always available, 4) curricular decisions are based on a strategic analysis of the learn unit in context, 5) tactics from basic and applied science of behaviour analysis are selected to improve student learning, 6) logical curricula and sequences are also derived from research, 7) professionals are trained to be scientist-practitioners, and 8) positive environment is key (Greer, 2002).

Direct Instruction Implementation in Schools

Schools that adopt a full-scale implementation of Direct Instruction (see above for description) structure their classrooms based on student skill level and move students between groups frequently based on student progress data. This system allows students who are grasping the curriculum at faster rates to move at that rate. It also allows those students requiring more assistance to learn the material and not be left behind.

Promoting the Emergence of Advanced Knowledge (PEAK Program)

The PEAK relational training system was created as both an assessment and intervention tool for addressing cognitive and language deficits (Dixon et al., 2017). There are four training modules students work through: Direct Training, Generalization, Equivalence and Transformation. The program includes the assessment, the curriculum tool and the steps to teach each skill, with a custom data sheet that allows for prompt fading to be captured (McKeel et al., 2015). The manuals for the third and fourth modules on Equivalence and Transformation assess and offer programs based on relational frame theory (Dixon et al 2017). Relational frame theory allows a behavioural explanation of perspective taking (Belisle, Dixon, Stanley, Munoz, & Daar, 2016) and concept building.

The PEAK program is implemented in specialized classrooms (e.g., Belisle et al., 2016), regular classroom with time in the day or pull out time from the classroom (e.g., Dixon et al., 2017). The time frame for program implementation varied across studies with skill gains observed when the child had programs implemented for 10-120 minutes daily (Dixon, Belisle, Stanley, & Rowsey 2017; Dixon, Rowsey, Gunnarsson, Belisle, Stanley, & Daar 2017; Dixon, Belisle, Stanley, Speelman,

Rowsey, Kime, & Daar 2017). The variation in time was based on factors such as how quickly the students moved through the programs, school resources and school schedules.

PEAK is currently the only ABA-based curriculum assessment tool with empirical evidence of validity and reliability (McKeel et al., 2015). While the initial evidence from the research on PEAK is strong, this relatively new program has some limitations: the same researchers are conducting the studies, and students with autism spectrum disorder have been the main subjects.

Pyramid Approach to Education

The Pyramid Approach to Education (see Bondy & Battaglini, 2006; Bondy & Battaglini, 2007) is a comprehensive model for developing an effective learning environment. This model is comprised of four foundational elements (“the what of teaching”) as well as four instructional elements (“the how of teaching”). The foundational elements include focus on functional activities, powerful reinforcement systems, functional communication and social skills; all while addressing contextually inappropriate behaviour. The instructional elements support the creation of effective lessons and include generalization, lesson formats, teaching/prompting strategies, and error correction. All components of the model involve data-based decisions.

Research has been conducted involving the Pyramid Approach to Education (see Bondy & Battaglini, 2006; Bondy & Battaglini, 2007) within a school setting with neurotypical preschoolers as well as children, ages 2 to 21, with a diagnosis of autism spectrum disorder (ASD). The curriculum is based on the Individual Education Plan (IEP) of each student with programming across functional domains and emphasizes generalization and integration (i.e., least restrictive environment). The program uses visual schedules and visual supports (i.e. ‘help’ and ‘break’ cards). There is also an emphasis on staff training and parent involvement.

The outcomes of the research indicate high parent satisfaction with the program as well as improvements for the children in classroom rule following, work skills, communication skills, social skills, and self-management skills (Bondy & Battaglini, 2006; Bondy & Battaglini, 2007).

USE OF EVIDENCE-BASED ABA IN SCHOOLS: AN INTERNATIONAL SNAPSHOT

This section is meant to provide a small sampling of ABA implementation in schools, identifying, where possible who implements the ABA strategies, how ABA is disseminated and the role the qualified staff have within the school.

AUSTRALIA

Abacus Learning Centre (Mornington Peninsula)

Offers two service models focused on incorporating ABA strategies in schools using consultations, training for school staff (with follow up observations included) and direct service by Abacus providers for one-on-one therapy in the school.

Learning for Life Autism Centre (Melbourne and Victoria)

Treatment centre that offers school behaviour support programs using a consultative model to teachers and school staff on positive behaviour support and ABA based strategies that can be used in the class to address identified academic and behavioural needs. Team of staff who have masters level supervision in behaviour analytic programming support students in the following services: early intensive behavioural intervention, focused ABA consultative supports, school wide behavioural supports, inclusion teacher training, and social skills programming.

Little School and Moomba Park (across Australia)

Service focused on expanding the educational framework of ABA in conjunction with the local curriculum. Focused on implementing functional behaviour assessments as well as using evidence-based ABA practices in schools.

1- Little School is a pre-preparation program for children with ASD and is run by teachers and behavioural therapists in a 1:2 ratio (staff: student). A Behavioural Consultant provides weekly consultation services and a Psychologist supports periodically throughout the school year. Transition support is provided when students move to mainstream school system.

2- School based services focus on training school staff, conducting functional behaviour assessments, and conducting social skills groups through consultation by a Behaviour Analyst.

Lizard Centre (Melbourne, Sydney, and Adelaide)

Centre based program with BCBA® and BCBA-D™ supervision who offer consultation services to schools for identified academic and behavioural goals, including building independence in friendships, tolerance and emotional regulation, daily living skills, and community participation skills.

Woodbury Academy (Sydney)

School for students with ASD that embeds ABA strategies into both academic and behavioural supports with attempts to incorporate the national curriculum into all programming goals. A BCBA® is on staff as a Clinical Supervisor who sets goals, completes assessments and outlines lessons plans for teachers. All staff are trained in ABA strategies.

UNITED STATES OF AMERICA

The ABA Academy (Saint Petersburg and Tampa, FL)

Offers programming for students with ASD and other developmental disabilities using the principles of ABA taught by instructors who have extensive training in ABA. Programming typically starts with a curricular assessment (Verbal Behaviour Milestones Assessment and Placement Program; VB-MAPP) that guide individualized interventions tailored to the student's needs.

The Bay School (Santa Cruz, CA)

Year-round full-time school for students with ASD and developmental disabilities, offering intensive clinical and educational programming in a 1:1 (staff: student) ratio using the principles of ABA which are also closely monitored by diligent data collection.

Beyond the Spectrum (Sarasota, FL)

School for students with ASD and related disabilities that use the principles of ABA to assist with communication, behavioural and life skills development.

Heartspring (Wichita, KS)

A residential and day school for students with ASD that employs a BCBA® and a BCaBA®, who offer entry assessments and use the principles of ABA to teach individualized programs to students. Programs also incorporate parent training, home visits, and natural environment teaching.

Ivymount School (Rockville, MD)

Elementary and middle school for students with ASD, speech and language impairments and learning disabilities offering individualized programs that incorporate classroom involvement and parent training options

The May Institute (Randolph, MA)

Offers two programs for students with ASD and other diagnoses: (a) a school consultation model and (b) a specialized school. ABA strategies are used to teach a variety of skills including academic, communication and social interaction. Functional behaviour assessments and behaviour support plans are incorporated into the available services.

Morningside Academy (Seattle, WA)

Provides behavioural-based academic and social programs for identified children and youth. The school uses strategies such as direct instruction, as well as competency-based and mastery-based programs to establish acquisition of new skills.

Morris School District (Morristown, NJ)

Offers seven classrooms in the school district that utilize the CABAS® system in general education classrooms ranging from pre-kindergarten to Grade 5 for teacher training, student instruction and supervision. The classrooms all use the principles of ABA for curricular development and classroom management, including individualized and differentiated instruction.

The New England Centre for Children (Southborough, MA)

Partners with public schools to provide ABA classrooms that works similarly to their centres, providing a way for the school districts to improve their support for special education in a cost-effective way. These classrooms are run by teachers who have a master's degree and are overseen by a BCBA® weekly. They have 53 classrooms across 28 school districts.

UNITED KINGDOM

Beyond Autism Schools (London)

Includes two independent specialized schools for children with autism aged 4-12 and for young students aged 14-19. The schools incorporate ABA strategies in the form of functional communication training, verbal behaviour strategies, breaking down required skills into achievable and measurable goals, incorporating generalization and maintenance of acquired skills, and using data to measure successful teaching methods.

Child Autism UK (Formally PEACH) (Ascot, Berkshire)

Provides consultation to schools for students with ASD focused on providing ABA-based training to school staff in the school location, conducting functional behaviour assessments, implementing Picture Exchange Communication Systems, setting up ABA based teaching units and developing IEP goal for identified students.

Easy Steps Early Years Intervention (London)

Offers school-based consultations by BCBAs® who support development and implementation of functional behaviour assessments and individualized behaviour support plans for teachers, in discussion with parents, that incorporate modeling, role-play, data collection strategies and district-wide positive behaviour support strategies.

Forest Bridge School (Berkshire)

Tuition-free school for students with ASD aged 4-13 with a ratio of 2:1 (student: teacher). The school staff include behaviourists who are trained in ABA, VB and ASD.

Jigsaw School (Guildford, Surrey)

A primary and secondary school that utilizes the CABAS® system for education for students with ASD. The program uses system-wide ABA strategies for curricular development, parent training, teacher training, and supervision.

Kings Mill School (East Yorkshire)

Provides instruction for students aged 2-19 with severe or complex learning disabilities in group and one-on-one teaching environments supervised by an assistance Behaviour Analyst with consultation from the Carbone Clinic in New York. Offers two ABA classes that incorporate a variety of curricular assessments (VB-MAPP ABLLS-R, and Essentials for Living) to determine teaching targets.

Manor School and The Avenue School (London)

Primary specialized schools for students with global developmental disorder, autism, and learning disabilities, and staff who are trained in the delivery of ABA teaching strategies. School has five classrooms across the two locations that are designated Verbal Behaviour Classrooms. ABA strategies are incorporated through functional behaviour assessments and interventions using modeling, prompting and positive reinforcement, and curricular assessments (VB-MAPP and Essentials for Living) for goal identification.

Peartree Centre at Stanley Primary School (London)

A specialized school of three classrooms for 18 students with ASD, focused on linking students to mainstream teachers with the goal of an eventual successful transition back into school. Multidisciplinary team, including Behaviour Analysts, who incorporate ABA and school wide positive behaviour supports to teach functional, communication and social skills, as well as using a functional approach to address challenging behaviour and teach alternative behaviour.

Snowflake School (London)

Provides individualized and small group learning opportunities for students aged 5-16 years with a diagnosis of ASD who have applied to the school. Qualified ABA and verbal behaviour (VB) supervisors conduct strength and needs assessment to assist with offering placement opportunities within the school. The principles of ABA and VB are used to create individualized programs using ABLLS-R assessments, data analysis, and planned generalization techniques to support the acquisition of communication and independence skills.

Treehouse School (London)

Uses school wide positive behaviour supports and individualized ABA learning programs in a school setting for students aged 5-16 with a primary focus on academics.

Treetops School (Essex)

Provides instruction for students aged 3-19 with moderate learning difficulties using a team of therapists with ABA training, a BCaBA® and a BCBA®. The school uses curricular assessments (ABLLS-R), ABA teaching strategies and data collection methods.

CANADA

Atlantic Canadian Initiative (Across Atlantic Provinces)

An interprovincial collaboration between the four Atlantic Provinces (NS, NB, NFLD, PEI). The initiative is focused more on being an information sharing resource as opposed to a supervisory resource. Each province has different supervisory capacities and the Autism in Education Partnership is focused on sharing this to improve practices related to ABA in schools across the Atlantic Provinces.

New Brunswick is currently using a systematic model for training BCBAs® and resource teachers in schools. There are approximately 30 resource teachers, psychologists, or others who maintain BCBA® certification (or those pursuing international certification). Their role is to support staff to incorporate general ABA strategies school wide, class wide, and in individualized capacities. BCBA® who are working directly in schools are also venturing into RBT® training for educational assistance, teachers and resource teachers.

Prince Edward Island is currently working with some BCBAs® on staff as autism specialists within schools to primarily consult with school staff on ABA strategies that can be incorporated school- and class-wide.

Newfoundland and Nova Scotia are expanding the training model being used in New Brunswick to schools within their provinces. Currently focused on training school board autism specialists and resource teachers using an advanced behaviour-training pilot. This pilot is starting to venture into using functional behaviour assessment for identified students of those receiving the specialized training.

Burnaby School District (Burnaby, BC)

Uses a consultative model in public school systems with two BCBA® positions and one district teaching support teacher (also a BCBA®). This team provides workshops for school staff focused on building capacity on subjects such as functional behaviour assessments, positive behaviour support, and general principles of behaviour. ABA based strategies are incorporated for students through behaviour assessments and support plans for identified students and the school has created a customized online data training system for teachers and support staff.

The Gregory School for Exceptional Learning

Private school offering one-on-one and small group ABA based programming with BCBA® Supervision. ABA based services include functional behaviour assessments (including functional analysis) and data driven behaviour plans that include discrete trial teaching, direct instruction, natural environment teaching, picture exchange communication system training (PECS®) and behaviour skills training (BST) for students, as well as BST for staff and parents.

Halton District School Board (Halton, ON)

Board ABA team with two BCBAs® and two additional staff pursuing international certification. ABA programming and goals are set by the BCBAs® in collaboration with the teacher and school staff. ABA team provides professional development on ABA topics as well as consultations for individual referrals by principals for students with autism focused on behavioural goals. A large portion of referrals are for students transitioning from clinical settings, but also include consultations to High School Community Pathways Programs and Elementary Life Skills Classrooms. The school and teachers drive instruction and IEPs, but the ABA team may provide support with goals for students who have barriers to learning by recommending ABA strategies as part of a behaviour reduction plan paired with building replacement behaviour.

Halton Catholic District School Board (Halton, ON)

A team of five BCBA®/BCaBA® who work with school staff to support students with behavioural challenges. The team is part of a transdisciplinary round in a multidisciplinary team working with families, school staff, and community agencies to enhance student success in school. The behaviour analyst team focuses on: (a) behavioural observations and assessments, (b) dissemination and training in ABA, (c) development, implementation and monitoring of ABA recommendations following assessment, and (d) support for transitions from community agencies.

Hamilton Wentworth Catholic District School Board (Hamilton, ON)

Student Support Services department uses consultation and training, focused on supporting the understanding and implementation of ABA strategies within schools. The team currently has two special assignment ABA resource teachers, one BCBA®, and one Special Education, and an ABA Consultant. Supports in ABA are provided as needed in the following areas: (a) IEP goal development, (b) functional behaviour assessments and development of behaviour support plans, (c) data collection, (d) use of general ABA principles in classrooms, (e) evidence based ABA social skills group, and (f) behaviour skills training (BST) to support fidelity of ABA strategy implementation.

Oak Bridge Academy (Cambridge, ON)

An independent private school structured around the principles of ABA and specifically designed for children with neurodevelopmental disorders. Currently one BCBA® on staff consults teachers who are certified Ontario teachers with several years of experience in special education and exposure to ABA strategies, as well as support staff who are required to have an RBT® certification with experience in both IBI and ABA. ABA based strategies are incorporated through assessments and support plans for identified students and use both paper and online electronic data collection methods for various strategies such as schedules of reinforcement and Accept Identify Move (AIM), Promoting the Emergence of Advanced Knowledge (PEAK) and Preschool Life Skills (PLS) curriculums.

Ottawa Carleton District School Board (Ottawa, ON)

Multidisciplinary team at the board level (including one BCBA®) that focuses on providing consultations and support to school staff in their creation and implementation of ABA strategies. This board is also part of a ministry pilot project which focuses on training educational assistants in RBT® certification (currently 25 EAs trained with the intention of an additional 25 staff) as well as providing dedicated space for ABA/IBI programming to outside providers.

St.Amant (Winnipeg, MB)

St.Amant School is a year-round, extended day school program that uses principles of applied behaviour analysis to teach socially important behaviour. Students registered with the school can access supports from a behaviour analyst and a psychology technician through St.Amant Psychology Services. In addition, students in the local publicly funded school system who have completed St.Amant's Early Learning Program are eligible for consultation from St.Amant's team. These services are time-limited and focussed on a specific goal. St.Amant provides a continuum of services including education, training, capacity building, and individualized consultations such as conducting a behavioural assessment, designing a treatment plan and supporting the education team to implement the plan.

Surrey School District (Surrey, BC)

A district autism team who uses a consultative model in a public-school system, with a team that includes two BCBAs®, one Special Educator and one RBT®-trained educational assistant, as well as a contract BCBA-D™ who provides monthly clinical consultations. The team provides capacity building trainings related to ABA strategies for teachers and support staff. ABA based strategies include functional behaviour assessments and positive behaviour support plans for identified students with problem behaviour.

Vancouver Christian Academy (Vancouver, BC)

Private school ranging from K-Grade 12, using a school wide positive behaviour support (SWPBS) model with support from a BCBA® on staff and a SWPBS consultant (on contract). Currently targeting ABA strategies in individualized and group-wide services in the form of functional behaviour assessments, Check-In/Check-Out reinforcement strategies, social skills and self-regulation groups, as well as general ABA strategies that apply both individualized and class wide.

Waterloo Catholic District School Board (Kitchener, ON)

For individualized programs, school staff work with a collaborative team assigned to their school. The collaborative team is multidisciplinary and includes behaviour analytic staff (currently three BCBAs® on staff). The ABA team supports: (a) behavioural assessments and implementation of behaviour support plans, (b) IEP goals development, and (c) social skills group implementation in the classroom using ABA and BST strategies.

York Region District School Board (Aurora, ON)

ABA services are delivered through a mediator model in the public-school system for students with complex needs who engage in challenging behaviour. Twelve ABA Facilitators (most of whom are BCBA® certified) offer adjunct support with an interdisciplinary team consisting of Psychologists, PT/OTs, SLPs, Social Workers, Special Education Resource Teachers and Intervention Support Workers. The service includes completing functional behaviour assessments, designing support plans, data analysis, joint consultation with other disciplines, staff training and coaching. Capacity building is also offered to school staff through workshops for teachers and education assistants, specific ABA training series for teachers in an ASD setting, train-the-trainer projects (e.g., Prevent-Teach-Reinforce) and small group behaviour skills training sessions on focused topics (e.g., implementation of strategies outlined in behaviour support plan).

RECOMMENDATIONS FOR POLICY MAKERS:

- 1.** Strategies based on Applied Behaviour Analysis (ABA) should be implemented through the school system, including, but not limited to:
 - a.** across all grades
 - b.** with typically developing students and students with exceptionalities (as per PPM140)
 - c.** in regular classrooms and intensive settings
 - d.** across domains (academic achievement, self-regulation, and social competence)
- 2.** Use strategies that are consistent with the current evidence base.
- 3.** Make use of evidence-based curricula: Developed curricula (e.g., Direct Instruction programs) exist to help learners build foundational skills in mathematics and reading. These curricula are evidence-based and have been implemented widely in schools nationally and internationally. Appendix A contains examples.
- 4.** Teachers, administrators and support staff should implement positive reinforcement procedures to teach new skills. Students are more likely to be successful when positive reinforcement procedures are used individually, in the classroom, and part of school-wide procedure.
- 5.** Provide training and monitoring: We identified the level of specialized training required to implement the procedures (low, moderate, or intensive). Board Certified Behavior Analysts® (BCBA®) and/or Board Certified Assistant Behavior Analysts® (BCaBA®) have the minimum education and experience in delivery and monitoring of moderate and intensive procedures. It is recommended that the level of support from a BCBA® and/or BCaBA® increase with complexity of the behavioural program and/or intensity of the implementation. Staff training should involve Behaviour Skills Training (BST), which is an evidence-based training package, comprised of four key components: instructions, modeling, rehearsal, and feedback (e.g., Dib & Sturmey, 2007; Nigro-Bruzzi & Sturmey, 2010; Sarokoff & Sturmey, 2004).

6. School board professionals should include Board Certified Behavior Analysts® (BCBA®) as part of a multidisciplinary team, especially when aiming to provide support for behaviour analytic procedures. A certified professional will be able to deliver training in ABA theory, model appropriate applications of ABA, and provide support to teachers and staff in the implementation of evidence-based procedures. Funding for hiring personnel with expertise in ABA is already available (Ontario Ministry of Education, 2018).
7. Address behaviour that interferes with learning using functional behaviour assessment: We recommend the use of functional behaviour assessment (including functional analysis with appropriate training and supervision) as an assessment process in addressing challenging behaviour. It is strongly recommended that a Board Certified Behavior Analyst® (BCBA®) support that assessment and program development.
8. For individualized programs and, where applicable, classroom strategies, use written procedures (e.g., program plan, fidelity checklist) to ensure consistent implementation of strategies.
9. Gather data on the target skills or behaviour prior to and during the implementation consistent with recommendations within PPM140 (see Appendix B). These data can inform the teaching team as to the success of the program or the need for revisions. In cases where moderate – to – weak strategies are being implemented, it is important that data be collected and monitored for effectiveness and appropriateness.

APPENDIX A: EVIDENCE-BASED CURRICULA

ACADEMIC CURRICULA

Language for Learning (Engelmann & Osborn, 1998) is a scripted, Direct Instruction program designed to teach students in kindergarten. Oral language use, concepts and grammatical structures are taught explicitly and systematically. In addition, beginning worksheet skills are addressed. Students learn to follow directions to complete several pencil and paper tasks that provide foundational skills which translate to later grade level expectations. Lessons are designed to engage the students, keep them on task and involved. Procedures for assessment and error correction are specified in the program manuals. Language for Thinking (Grades 1-2) and Language for Writing (Grades 2-3) further develop students' language skills to acquire higher level grammar and reasoning concepts. This series of language programs is also useful for older students with special needs.

Reading Mastery (Engelmann & Bruner, 1988) is a scripted, Direct Instruction program designed to teach students in kindergarten through grade five. Both decoding and comprehension skills are taught explicitly and systematically. The early levels of the program use a specialized orthography that helps students learn letter sounds more efficiently. Lessons are designed to engage the students, keep them on-task and involved. Procedures for assessment and error correction are specified in the program manuals.

Connecting Math Concepts (Engelmann, Carnine, Kelly & Engelmann, 1996) is a scripted, Direct Instruction program designed to teach students in kindergarten through grade five. Explicit instruction takes students from basic arithmetic skills through complex concepts. Word problems are taught with an innovative number-family diagram process, which builds success across problem types and operations.

Reasoning and Writing (Engelmann & Silbert, 1991) is a scripted, Direct Instruction program designed to teach students in grade one through grade six. Higher order language and thinking process are taught, leading to clear and concise expository writing. Clever and engaging stories are used to exemplify logical connections and narrative structures. By the final level, students are writing sophisticated critiques and arguments.

SOCIAL SKILLS CURRICULA

The Program for the Education and Enrichment of Relational Skills (PEERS®) is an evidence-based, manualized parent-assisted, social skills training intervention for youth with social challenges (Laugeson & Frankel, 2009). The primary focus of this program is to teach students who are motivated, how to make and keep friends, and manage peer rejection and conflict. Each session contains

a structured, didactic lesson with embedded activities, use of positive reinforcement, and homework assignments to promote generalization of ecologically valid social skills learned. The lesson format and rules of social behaviour were adapted from Children's Friendship Training (CFT, *see below). The parent-assisted component supports generalization of skills as parents are taught how to support their youth/teens by providing feedback and coaching beyond the intervention context. The PEERS® program has a strong evidence base with long-term treatment outcomes (Mandelberg et al., 2013) across settings with individuals with autism spectrum disorder, but is also appropriate for individuals with ADHD, anxiety, depression, and other socioemotional problems (Dolan et al., 2016; Gantman, Kapp, Orenski, & Laugeson, 2012; Gardner, Gerdes, & Weinberger, 2015; Hill et al., 2017; Karst et al., 2014; Laugeson, Ellingsen, Sanderson, Tucci, & Bates, 2014; Laugeson et al., 2009; Laugeson et al., 2012; Laugeson, Gantman, Kapp, Orenski, & Ellingsen, 2015; Lordo et al., 2017; Marchica & D'Amico, 2016; Matthews et al., 2018; Schohl et al., 2013; Van Hecke et al., 2013; Yoo et al., 2014).

Children's Friendship Training (CFT) (Frankel & Myatt, 2003) is an evidence-based, manualized parent-assisted, social skills intervention for children (grades 2-6). Each session contains a structured, didactic lesson with embedded activities on targeted skills (e.g., conversational skills, handling teasing), use of positive reinforcement and homework assignments to promote generalization of ecologically valid social skills learned. The parent-assisted component supports generalization of skills as parents are taught how to support their child by providing feedback and coaching beyond the intervention context. Each session runs for 90 minutes, once per week, for 12-weeks. CFT has a strong evidence base across settings for children with ASD (Frankel, Myatt, Cantwell, & Feinberg, 1997; Frankel, Myatt, & Feinberg, 2007; Frankel et al., 2010; Frankel & Whitham, 2010; Mandelberg et al., 2014), ADHD (Frankel, Myatt, & Cantwell, 1995), and Fetal Alcohol Spectrum Disorders (Frankel, Paley, Marquardt, & O'Connor, 2006; Keil, Paley, Frankel, & O'Connor, 2010; Laugeson et al., 2007; O'Connor et al., 2006; O'Connor et al., 2012; Schonfeld, Paley, Frankel, & O'Connor, 2009). The CFT manual is accessible and does not require facilitators to be certified to run the program.

Secret Agent Society (SAS) (Beaumont & Sofronoff, 2008) is curriculum designed for individuals ages 8-12 and can be implemented with individuals, small groups or in classroom formats. The program has been implemented with various populations showing increase in social and emotional regulations skills, including ADHD, autism and those with anxiety, anger, social or learning difficulties (Social Skills Training Institute, N.D.). A social skills program that can be incorporated into a school curriculum gives students the opportunity to learn the skill and immediately have an opportunity to rehearse. There has been research to support the effectiveness of the components of the Secret Agent Society outside the school environment. The limited studies conducted in the school environment are also showing an increase in social and emotional skills post intervention (Beaumont, Rotolone, & Sofronoff, 2015; Einfeld, et al 2018). This is an area that additional research and publication is suggested but is currently demonstrating positive changes.

APPENDIX B:

CURRENT MINISTRY INITIATIVES

Full-Day Kindergarten

The five fundamental principles to play-based learning identified by the Ontario Ministry of Education (2016) could be supported and enhanced by ABA principles.

1. The Ministry of Education (Ontario, 2016) identifies that educators encourage children's play by following their lead. A parallel concept called Natural Environment Training, frequently used in Applied Behaviour Analysis (ABA) programs, allows items and activities in the child's environment to serve as variables that may be used to increase or decrease the ability of the child to learn (i.e., be reinforced). While the child directs the play content, the educator is responsible for establishing rules and reinforcing the desired behaviour (Schutte & Hopkins, 1970).
2. Children's interests should create the lesson plans (Ontario Ministry of Education, 2016). Stimulus preference assessments, frequently used in ABA programs, would be useful to educators to ensure that the motivation of their students is built into their programming.
3. Educators observe, listen, question and engage in conversation with children to see what can be used to motivate future learning opportunities. ABA data collection procedures may be used to streamline effective practices for educators. Educators can use this knowledge to reinforce desired behaviour; learning occurs faster when reinforcement frequency is varied rather than held constant (Egel, 1980; Robinson & St. Peter, 2019).
4. The environment has a major role in how children learn. This includes people as well as objects. A strategy used by ABA practitioners called "pairing" could enhance educators' understanding of how their relationships with students can serve as a motivator (Axe & Laprime, 2017; Kelly, Axe, Allen & Maguire, 2015).
5. The Ministry of Education (Ontario, 2016) speaks about the importance of assessment and identifies that it is done when learning is visible. Operational definition of skills and behaviour, accompanied by measurement tools with which to collect the students' learning of these skills and behaviour, is a primary competency of ABA practitioners. These ABA technologies could enhance educators' assessment findings and provide a strong basis for the recommendations that arise from their assessments.

Ontario Ministry of Education Pilot to Improve School-Based Supports for Students with ASD

(Ontario Ministry of Education, 2017)

The Ministry of Education (EDU) collaborated with the Ministry of Children and Youth Services (MCYS), now the Ministry of Children, Community and Social Services (MCCSS), on a Pilot to Improve School-Based Supports for Students with ASD.

The Pilot had two components:

Component 1: Dedicated space on school site will enable external ABA practitioners to deliver ABA services on school site in a select number of schools. Allowing external ABA practitioners into schools to provide ABA services to students with ASD will reduce transitions in the student's day, and reduce the burden on families to transport their child to and from school/services.

Component 2: A 40-hour online ABA based training module for Educational Assistants (EAs) to improve their capacity to support students with ASD, complimented with hands on school board-organized professional learning communities. The Ministry has enlisted the Geneva Centre for Autism to design and deliver a 40-hour online ABA-based training module for EAs. The training is designed by Board Certified Behavior Analysts® (BCBA®) and based on the Behaviour Analyst Certification Board (BACB®) Registered Behavior Technician™ (RBT®) task list.

A total of 18 school boards across Ontario are participating in this Pilot. Eleven pilot boards are participating in both components and the remaining seven boards are implementing the targeted Educational Assistant (EA) training.

All 18 pilot boards received funding to hire additional ABA Expertise Professionals with BCBA® certification for the pilot year to support students with ASD and school teams to improve supports for students with ASD.

Policy/Program Memorandum No. 140: Incorporating Methods of Applied Behaviour Analysis (ABA) into Programs for Students with Autism Spectrum Disorder (ASD)

PPM 140 (Ontario Ministry of Education, 2007) provides direction to school boards to support their use of Applied Behaviour Analysis (ABA) as an effective instructional approach in the education of many students with autism spectrum disorders (ASD). PPM 140 specifies two requirements:

1. School boards must offer students with ASD special education programs and services, including, where appropriate, special education programs using ABA methods.
2. School board staff must plan for the transition between various activities and settings involving students with ASD.

The Behaviour Expertise Amount allocation provides funding for school boards to hire professional staff at the board level who have expertise in Applied Behaviour Analysis, and starting in 2018–19 it will also include a new Applied Behaviour Analysis (ABA) Training Amount. This new component was previously provided to school boards through the Autism Supports and Training funding allocation in Education Programs.

REFERENCES

- Adams, G. (1996). Project follow through: In-depth and beyond. *Effective School Practices*, 15, 43–56. Retrieved from <https://www.nifdi.org/research/esp-archive>
- Alter, P., & Haydon, T. (2017). Characteristics of effective classroom rules: A review of the literature. *Teacher Education and Special Education*, 40, 114-127. doi: 10.1177/0888406417700962
- APA Presidential Task Force on Evidence-Based Practice. (2006). Evidence-based practice in psychology. *American Psychologist*, 61, 271–285.
- Ardoin, S. P., Martens B. K., & Wolfe, L. A. (1999). Using high-probability instruction sequences with fading to increase student compliance during transitions. *Journal of Applied Behaviour Analysis*, 32, 339-351. doi: 10.1901/jaba.1999.32-339
- Arwood, B., Williams, R.L., & Long, J.D. (1974). The effects of behaviour contracts and behaviour proclamations on social conduct and academic achievement in a ninth grade English class. *Adolescence*, 35, 425-436. Retrieved from <https://www.apa.org/pubs/databases/psycinfo>
- Auld, R. C., Belfiore, P. J., & Scheeler, M. C. (2010). Increasing pre-service teachers' use of differential reinforcement: effects of performance feedback on consequences for student behaviour. *Journal of Behaviour Education*, 19, 169-183. doi:10.1007/s10864-010-9107-4
- Austin, J. L., & Bevan, D. (2011). Using differential reinforcement of low rates to reduce children's requests for teacher attention. *Journal of Applied Behaviour Analysis* 44, 451-461. doi: 10.1901/jaba.2011.44-451
- Add: Axe, J.B., & Laprime, A.P. (2017). The effects of contingent pairing on establishing praise as a reinforcer with children with autism. *Journal of Developmental Physical Disability* 29, 325-340.
- Barrish, H. H., Saunders, M., & Wolf, M. M. (1969). Good behaviour game: Effects of individual contingencies for group consequences on disruptive behaviour in a classroom. *Journal of Applied Behaviour Analysis*, 2, 119-124. doi: 10.1901/jaba.1969.2-119
- Battaglia, D. (2017). Functional communication training in children with autism spectrum disorder. *Young Exceptional Children*, 20, 30-40. doi: 10.1177/1096250615576809
- Beaumont, R., Rotolone, C., & Sofronoff, K. (2015). The secret agent society social skills program for children with high-functioning autism spectrum disorders: a comparison of two school variants. *Psychology in the Schools*. 52(4), 390-402.
- Beaumont, R., & Sofronoff, K. (2008). A multi-component social skills intervention for children with Asperger syndrome: The Junior Detective Training Program. *Journal of Child Psychology and Psychiatry*, 49(7), 743-753. doi: 10.1111/j.1469-7610.2008.01920.x

- Becker, W. (1977) Teaching reading and language to the disadvantaged: What we have learned from research. *Harvard Educational Review*, 47, 518-543. doi: 10.17763/haer.47.4.51431w6022u51015
- Behaviour Analysis Certification Board. (2014). *Applied behaviour analysis treatment of autism spectrum disorder: Practice guidelines for healthcare funders and managers. Second edition*. Retrieved from: https://www.BACB.com/wp-content/uploads/2017/09/ABA_Guidelines_for_ASD.pdf
- Belfiore, P. J., Basile, S. P., & Lee, D. L. (2008). Using a high probability command sequence to increase classroom compliance: The role of behavioural momentum. *Journal of Behavioural Education*, 17, 160-171. doi: 10.1007/s10864-007-9054-x
- Belfiore, P. J., Lee, D. L., Scheller, M. C., & Klein, D. (2002). Implications of behavioural momentum and academic achievement for students with behaviour disorders: Theory, application, and practice. *Psychology in the Schools*, 39, 171-179. doi: 10.1002/pits.10028
- Belisle, J., Dixon, M. R., Stanley, C. R., Munoz, B., & Daar, J. H. (2016). Teaching foundational perspective-taking skills to children with autism using the PEAK-T curriculum: Single-reversal “I-You” deictic frames. *Journal of Applied Behaviour Analysis*, 49, 965-969. doi: 10.1002/jaba.324
- Bicard, D. F. (2000). Using classroom rules to construct behaviour. *Middle School Journal*, 31, 37-45. doi: 10.1080/00940771.2000.11494651
- Binder, C., & Watkins, C. (1990). Precision teaching and direct instruction: Measurably superior instructional technology in schools. *Performance Improvement Quarterly*, 3, 74-96. Retrieved from <http://www.behaviour.org/resources/295.pdf>
- Black, D. & Fernando, R. (2014). Mindfulness training and classroom behaviour among lower-income and ethnic minority elementary school children. *Journal of Child and Family Studies*. 23(7), 1242-1246.
- Bondy, A., & Battaglini, K. (2006). Application of the Pyramid approach to education model in a public-school setting. *School-age programs for children with autism*, 163-194.
- Bondy, A. & Battaglini, K. (2007). Application of the pyramid approach to education in a public school supported preschool setting. In J. Handleman & S. Harris (Ed) *Pre-school education programs for children with autism* (3rd Ed.). (pp. 283-308). Austin: TX. Pro-Ed Inc.
- Bondy, A. & Frost, L. (1994). The picture exchange communication system. *Focus on Autistic Behaviour*, 9, 1-19.
- Bowman-Perrott, L., Burke, M. D., Zhang, N., & Zaini, S. (2014). Direct and collateral effects of peer tutoring on social and behavioural outcomes: A meta-analysis of single-case research. *School Psychology Review*, 43, 260-285. Retrieved from <https://naspjournals.org/loi/spsr>
- Bradshaw, C. P., Reinke, W. M., Brown, L. D., Bevens, K. B., & Leaf, P. J. (2008). Implementation of school-wide positive behavioural intervention and supports (PBIS) in elementary schools: Observations from a randomized trial. *Education and Treatment of Children*, 31, 1-26. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3483890/pdf/peds.2012-0243.pdf>

- Bradshaw, C., Mitchell, M., & Leaf, P. (2010). Examining the effects of schoolwide positive behavioural interventions and supports on student outcomes. *Journal of Positive Behaviour Interventions*, 12, 133-148. doi: 10.1177/1098300709334798
- Burns, M. K., Coddling, R. S., Boice, C. H., & Lukito, G. (2010). Meta-analysis of acquisition and fluency math interventions with instructional and frustration level skills: Evidence for a skill-by-treatment interaction. *School Psychology Review*, 39, 69–83. Retrieved from <https://naspjournals.org>
- Buron, K. D., & Curtis, M. (2012). *The incredible 5-point scale: Assisting students in understanding social interactions and controlling their emotional responses*. (2nd Ed.) Shawnee Mission, KS: AAPC Publishing.
- Cadette, J. N., Wilson, C. L., Brady, M. P., Dukes, C., & Bennett, K. D. (2016). The effectiveness of direct instruction in teaching students with autism spectrum disorder to answer “wh-” questions. *Journal of Autism and Developmental Disorders*, 46, 2968-2978. doi: 10.1007/s10803-016-2825-2
- Caldarella, P., Shatzer, R. H., Gray, K. M., Young, K. R., & Young, E. L. (2011). The effects of school-wide positive behaviour support on middle school climate and student outcomes. *RMLE Online: Research in Middle Level Education*, 35, 1-14. doi: 10.1080/19404476.2011.11462087
- Camargo, S. P., Rispoli, M., Ganz, J., Hong, E. R., Davis, H., & Mason, R. (2016). Behaviourally based interventions for teaching social interaction skills to children with ASD in inclusive settings: A meta-analysis. *Journal of Behavioural Education*, 25, 223-248. doi 10.1007/s10864-015-9240-1
- Campbell, A., & Anderson, C. M. (2011), Check-in/check-out: A systematic evaluation and component analysis. *Journal of Applied Behaviour Analysis*, 44, 315-326. doi: 10.1901/jaba.2011.44-315
- Cappadocia, M. C., & Weiss, J. A. (2011). Review of social skills training groups for youth with Asperger Syndrome and high functioning autism. *Research in Autism Spectrum Disorders*, 5, 70-78. doi: 10.1016/j.rasd.2010.04.001
- Carr, E. G., & Durand, V. M. (1985). Reducing behaviour problems through functional communication training. *Journal of Applied Behaviour Analysis*, 18, 111– 126. doi: 10.1901/jaba.1985.18-111
- Carr, J. E., Coriaty, S., Wilder, D. A., Gaunt, B. T., Dozier, C. L., Britton, L. N., ... Reed, C. L. (2000). A review of “noncontingent” reinforcement as treatment for the aberrant behaviour of individuals with developmental disabilities. In *Research in Developmental Disabilities* 21, 377-391.
- Chambless, D.L., Baker, M., Baucom, D.H., Beutler, L.E., Calhoun, K.S., Critz-Christoph, P., ... Woody, S. (1998). Update on empirically validated therapies, II. *Clinical Psychologist*, 51(1):3–16.
- Chapman, S. S., Ewing, C. B., & Mozzoni, M. P. (2005). Precision teaching and fluency training across cognitive, physical, and academic tasks in children with traumatic brain injury: A multiple baseline study. *Behavioural Interventions*, 20, 37–49. doi: 10.1002/bin.168
- Charlop-Christy, M. H., Carpenter, M., Le, L., LeBlanc, L. A., & Kellet, K. (2002). Using the picture exchange communication system (PECS®) with children with autism: Assessment of PECS® acquisition, speech, social-communicative behaviour, and problem behaviour. *Journal of Applied Behaviour Analysis*, 35(3), 213-231.

- Cheney, D., Stage, S., Hawken, L., Lynass, L., Mielenz, C., & Waugh, M. (2009). A 2-year outcome study of the check, connect, and expect intervention for students at risk for severe behaviour problems. *Journal of Emotional and Behavioural Disorders*, 17, 226-243. doi: 10.1177/1063426609339186
- Childs, K. E., Kincaid, D., George, H. P., & Gage, N. A. (2016). The relationship between school-wide implementation of positive behaviour intervention and supports and student discipline outcomes. *Journal of Positive Behaviour Interventions*, 18, 89-99. doi: 10.1177/1098300715590398
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behaviour analysis (second edition)*. Upper Saddle River, NJ: Pearson Education Inc.
- Cooper, M. J., Griffith, K. G., & Filer, J. (1999). School intervention for inclusion of students with and without disabilities. *Focus on Autism and Other Developmental Disabilities*, 14, 110-115. doi: 10.1177/108835769901400207
- Dağseven Emecen, D. (2011). Comparison of direct instruction and problem-solving approach in teaching social skills to children with mental retardation. *Educational Sciences: Theory & Practice*, 11, 1414-1420. Retrieved from <https://files.eric.ed.gov/fulltext/EJ936323.pdf>
- De Martini-Scully D., Bray, M. A., & Kehle, T. J. (2000). A packaged intervention to reduce disruptive behaviours in general education students. *Psychology in the Schools*, 37, 149-156. doi: 10.1002/(SICI)1520-6807(200003)37:2<149::AID-PITS6>3.0.CO;2-K
- Denning, C. B. (2007). Social skills interventions for students with asperger syndrome and high-functioning autism: Research findings and implications for teachers. *Beyond Behaviour*, 16, 16-23. Retrieved from <https://eric.ed.gov/?id=EJ840251>
- Dib, N. E., & Sturmey, P. (2007). The effects of verbal instruction, modeling, rehearsal, and feedback on correct posture during flute playing. *Behaviour Modification*, 31, 382-388. doi: 10.1177/0145445506296798
- Dineen, J. P., Clark, H. B., & Risley, T. R. (1977). Peer tutoring among elementary students: Educational benefits to the tutor. *Journal of Applied Behaviour Analysis*, 10, 231-238. doi: 10.1901/jaba.1977.10-231
- Dixon, M.R., Belisle, J., Stanley, C.R., & Rowsey, K. (2017). Student outcomes after 1 year of front-line staff implementation for the PEAK curriculum. In *Behaviour Analysis and Therapy Solutions* 33, 185-195.
- Dixon, M. R., Belisle, J., Stanley, C. R., Speelman, R. C., Rowsey, K. E., Kime, D., & Daar, J. H. (2017). Establishing derived categorical responding in children with disabilities using the PEAK-E curriculum. *Journal of Applied Behaviour Analysis*, 50, 134-145. doi: 10.1002/jaba.355
- Dixon, M. R., Rowsey, K. E., Gunnarsson, K. F., Belisle, J., Stanley, C. R., & Daar, J. H. (2017). Normative sample of the PEAK relational training system: generalization module with comparison to individuals with autism. *Journal of Behavioural Education*, 26, 101-122. doi: 10.1007/s10864-016-9261-4

- Dolan, B. K., Van Hecke, A. V., Carson, A. M., Karst, J. S., Stevens, S., Schohl, K. A., ...Hummel, E. (2016). Brief Report: Assessment of intervention effects on in vivo peer interactions in adolescents with autism spectrum disorder (ASD). *Journal of Autism and Developmental Disorders*, 46, 2251-2259. doi: 10.1007/s10803-016-2738-0
- Dufrene, B. A., Reisener, C. D., Olmi, D. J., Zoder-Martell, K., McNutt, M. R., & Horn, D. R. (2010). Peer tutoring for reading fluency as a feasible and effective alternative in response to intervention systems. *Journal of Behavioural Education*, 19, 239-256. doi: 10.1007/s10864-010-9111-8
- Dunlap, G., Strain, P., Lee, J. K., Joseph, J., & Leech, N. (2018). A randomized controlled evaluation of prevent-teach-reinforce for young children. *Topics in Early Childhood Special Education*, 37, 195-205. doi: 10.1177/0271121417724874
- Egel, A.L. (1980). The effects of constant vs. varied reinforcer presentation on responding by autistic children. *Journal of Experimental Child Psychology*, 30, 455-463.
- Einfeld, S.L., Beaumont, R., Clark, T., Clarke, K.S., Costley, D., Gary, K.M., ... Howlin, P. (2018). School-based social skills training for young people with autism spectrum disorders. *Journal of Intellectual & Developmental Disability*, 43(1), 29-39. doi.org/10.3109/13668250.2017.1326587
- Elementary Teachers' Federation of Ontario (ETFO). (2018). Violence in schools. Retrieved from <https://ett.ca/key-issues/violence-in-schools/>
- Engelmann, S., & Bruner, E. (1988). *Reading mastery I: Distar reading*. Science Research Associates.
- Engelmann, S., & Carnine, D., Kelly, B., Englemann. (1996). *Connecting Math Concepts*. Toledo, OH: McGraw-Hill.
- Engelmann, S., & Grossen, B. (1995). *Reasoning and writing, level F*. Blacklick, OH: McGraw-Hill.
- Engelmann, S., & Osborn, J. (1998). *Language for learning*. Science Research Associates.
- Engelmann, S., & Silbert, J. (1991). *Reasoning and writing*. Desoto, TX: SRA/McGraw-Hill
- English, K. Goldstein, H., Shafer, K., & Kaczmarek, L. (1997). Promoting interactions among preschoolers with and without disabilities: Effects of a buddy skills-training program. *Exceptional Children*, 63, 229-243. doi: 10.1177/001440299706300206
- Enoch, M.R. & Dixon, M. R. (2017). The Use of a Child-Based Acceptance and Commitment Therapy Curriculum to Increase Attention. *Child and Family Behaviour Therapy*, 39(3), 200-224.
- Epstein, M., Atkins, M., Cullinan, D., Kutash, K., & Weaver, R. (2008). Reducing behaviour problems in the elementary school classroom. *The Institute of Education Sciences*, 12. Retrieved from <https://www.teachersity.org/Reading4.pdf>
- Fox, J. (1990). Ecology, environmental arrangement, and setting events: An interbehavioural perspective on organizing settings for behavioural development. *Education and Treatment of Children*, 13, 364-373. Retrieved from <https://www.jstor.org/stable/42899179?seq=1>

- Frankel, F., & Myatt, R. (2003). *Children's friendship training*. New York, NY: Brunner-Routledge
- Frankel, F., & Whitham, C. (2011). Parent-assisted group treatment for friendship problems of children with autism spectrum disorders. *Brain Research*, 1380, 240-245. doi: 10.1016/j.brainres.2010.09.047
- Frankel, F., Myatt, R., & Cantwell, D. P. (1995). Training outpatient boys to conform with social ecology of popular peers: Effects on parent and teacher ratings. *Journal of Clinical Child Psychology*, 24, 300-310. doi: 10.1207/s15374424jccp2403_7
- Frankel, F., Myatt, R., & Feinberg, D. (2007). Parent-assisted friendship training for children with autism spectrum disorders: Effects of psychotropic medication. *Child Psychiatry and Human Development*, 37, 337-346. doi: 10.1007/s10578-007-0053-x
- Frankel, F., Myatt, R., Cantwell, D. P., & Feinberg, D. T. (1997). Parent-assisted transfer of children's social skills training: Effects on children with and without attention-deficit hyperactivity disorder. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36, 1056-1064. doi: 10.1097/00004583-199708000-00013
- Frankel, F., Myatt, R., Sugar, C., Whitham, C., Gorospe, C. M., & Laugeson, E. (2010). A randomized controlled study of parent-assisted children's friendship training with children having autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 40, 827-842. doi: 10.1007/s10803-009-0932-z
- Frankel, F., Paley, B., Marquardt, R., & O'Connor, M. (2006). Stimulants, Neuroleptics, and Children's Friendship Training for Children with Fetal Alcohol Spectrum Disorders. *Journal of Child and Adolescent Psychopharmacology*, 16(6), 777-789. doi: 10.1089/cap.2006.16.777
- Freeman, J., Simonsen, B., McCoach, D. B., Sugai, G., Lombardi, A., & Horner, R. (2016). Relationship between school-wide positive behaviour interventions and supports and academic, attendance, and behaviour outcomes in high schools. *Journal of Positive Behaviour Interventions*, 18, 41-51. doi: 10.1177/1098300715580992
- Frost, L. & Bondy, A. (2002). *The picture exchange communication system: Training manual*. Burlington ON: Pyramid Educational Products Inc.
- Gable, R. A., Hester, P. H., Rock, M. L., & Hughes, K. G. (2009). Back to basics: Rules, praise, ignoring, and reprimands revisited. *Intervention in School and Clinic*, 44, 195-205. doi: 10.1177/1053451208328831
- Gantman, A., Kapp, S. K., Orenski, K., & Laugeson, E. A. (2012). Social skills training for young adults with high-functioning autism spectrum disorders: A randomized controlled pilot study. *Journal of Autism and Developmental Disorders*, 42, 1094-1103. doi: 10.1007/s10803-011-1350-6
- Ganz, J. B., & Simpson, R. L. (2004). Effects on communicative requesting and speech development of the picture exchange communication system in children with characteristics of autism. *Journal of Autism and Developmental Disorders*, 34(4), 395-409.

- Gardner, D. M., Gerdes, A. C., & Weinberger, K. (2015). Examination of a parent-assisted, friendship-building program for adolescents with ADHD. *Journal of Attention Disorders*, 23, 363-373. doi: 10.1177/1087054715588188
- Gilroy, S.P., Leader, G., McCleery J.P. (2018). A pilot community-based randomized comparison of speech generating devices and the picture exchange communication for children diagnosed with autism spectrum disorder. *Autism Research*, 11(12), 1701-1711. doi: 10.1002/aur.2025.
- Ginn, P., Keel, M., & Fredrick, L., (2002). Using reasoning and writing with gifted fifth-grade students. *Journal of Direct Instruction*, 2, 41-47. Retrieved from <https://www.nifdi.org/research/journal-of-di/volume-2-no-1-winter-2002/436-using-reasoning-and-writing-with-gifted-fifth-grade-students/file>
- Government of Ontario. (2007). Policy/Program Memorandum No. 140. Retrieved from <http://www.edu.gov.on.ca/extra/eng/ppm/140.html>
- Graff, R. B., & Karsten, A. M. (2012). Evaluation of a self-instruction package for conducting stimulus preference assessments. *Journal of Applied Behaviour Analysis* 45, 69-82.
- Greenwood, C. R., Dinwiddie, G., Bailey, V., Carta, J. J., Dorset, D., Kohler, F. W., ... Schulte, D. (1987). Field replication of classwide peer tutoring. *Journal of Applied Behaviour Analysis*, 20, 151-160. doi: 10.1901/jaba.1987.20-151
- Greenwood, C. R., Dinwiddie, G., Terry, B., Wade, L., Stanley, S. O., Thibadeau, S., & Delquadri, J. C. (1984). Teacher-versus peer-mediated instruction: An ecobehavioural analysis of achievement outcomes. *Journal of Applied Behaviour Analysis*, 17, 521-538. doi: 10.1901/jaba.1984.17-521
- Greenwood, C. R., Hops, H., Delquadri, J., & Guild, J. (1974). Group contingencies for group consequences in classroom management: A further analysis. *Journal of Applied Behaviour Analysis*, 7, 413-425. doi: 10.1901/jaba.1974.7-413
- Greer, R. D., Keohane, D. D., & Healy, O. (2002). Quality and comprehensive applications of behaviour analysis to schooling. *The Behaviour Analyst Today*, 3, 120. doi: 10.1037/h0099977
- Greer, R.D. (2002). *Designing teaching strategies: An applied behaviour analysis systems approach*. New York, NY: Academic Press
- Hawken, L. H., Bundock, K., Kladis, K., O’Keeffe, B., & Barrett, C. A. (2014). Systematic review of the check-in, check-out intervention for students at risk for emotional and behavioural disorders. *Education & Treatment of Children*, 37, 635-658. doi: 10.1353/etc.2014.0030
- Hawken, L. S., & Horner, R. H. (2003). Evaluation of a targeted intervention within a school-wide system of behaviour support. *Journal of Behavioural Education*, 12, 225-240. doi: 10.1023/A:1025512411930
- Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and commitment therapy as a unified model of behaviour change. *The Counseling Psychologist*, 40, 976-1002. doi: 10.1177/0011000012460836

- Hill, D. A., Flores, M. M., Kearley, R. F. (2014). Maximizing ESY services: Teaching pre-service teachers to access communication skills and implement picture exchange with students with autism spectrum disorder and developmental disabilities. *Teacher Education and Special Education*, 37(3), 241-254
- Hill, T. L., Gray, S. A., Baker, C. N., Boggs, K., Carey, E., Johnson, C., ... Varela, R. E. (2017). A pilot study examining the effectiveness of the PEERS program on social skills and anxiety in adolescents with autism spectrum disorder. *Journal of Developmental and Physical Disabilities*, 29, 797-808. doi: 10.1007/s10882-017-9557-x
- Homlitas, C., Rosales, R., & Candel, L. (2014). A further evaluation of behavioural skills training for implementation of the picture exchange communication system. *Journal of Applied Behaviour Analysis* 47, 198-203.
- Horner, R. H., Sugai, G., Smolkowski, K., Eber, L., Nakasato, J., Todd, A. W., & Esperanza, J. (2009). A randomized, wait-list controlled effectiveness trial assessing school-wide positive behaviour support in elementary schools. *Journal of Positive Behaviour Interventions*, 11, 133-144. doi: 10.1177/1098300709332067
- Howlin, P., Gordon, R. K., Pasco, G., Wade, A., & Charman, T. (2007). The effectiveness of Picture Exchange Communication System (PECS®) training for teachers of children with autism: A pragmatic, group randomized controlled trial. *Journal of Child Psychology and Psychiatry*, 48(5), 473-481.
- Hughes, J. C., Beverley, M., & Whitehead, J. (2007). Using precision teaching to increase the fluency of word reading with problem readers. *European Journal of Behaviour Analysis*, 8, 221-238. doi: 10.1080/15021149.2007.11434284
- Iovannone, R., Greenbaum, P. E., Wang, W., Kincaid, D., Dunlap, G., & Strain, P. (2009). Randomized controlled trial of the prevent-- teach--reinforce (PTR) tertiary intervention for students with problem behaviours. *Journal of Emotional and Behavioural Disorders*, 17, 213-225. doi: 10.1177/1063426609337389
- Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behaviour Analysis*, 27, 197-209. (Reprinted from *Analysis and Intervention in Developmental Disabilities*, 2, 3-20, 1982).
- Jennings, P. A., Frank, J. L., Snowberg, K. E., Coccia, M. A., & Greenberg, M. T. (2013). Improving Classroom Learning Environments by Cultivating Awareness and Resilience in Education (CARE): Results of a Randomized Controlled Trial. *School Psychology Quarterly*, 28(4), 374-390.
- Johnson, B. M., Miltenberger, R. C., Egemo-Helm, K., Jostad, C. M., Flessner, C. & Gatheridge, B. (2005). Evaluation of behavioural skills training for teaching abduction-prevention skills to young children. *Journal of Applied Behaviour Analysis*, 38, 67-78. doi: 10.1901/jaba.2005.26-04
- Johnson, B. M., Miltenberger, R. C., Knudson, P., Egemo-Helm, K., Kelso, P., Jostad, C., & Langley, L. (2006). A preliminary evaluation of two behavioural skills training procedures for teaching abduction-prevention skills to schoolchildren. *Journal of Applied Behaviour Analysis*, 39, 25-34. doi: 10.1901/jaba.2006.167-04

- Johnson, K. A., Vladescu, J. C., Kodak, T., & Sidener, T. M. (2017). An assessment of differential reinforcement procedures for learners with autism spectrum disorders. *Journal of Applied Behaviour Analysis* 50, 290-303. doi: 10.1002/jaba.372
- Joyce B. G., Joyce, J. H., & Chase, P. N. (1989). Considerations for the use of rules in academic settings. *Education and Treatment of Children*, 12, 82-92. Retrieved from https://www.jstor.org/stable/42899096?seq=1#page_scan_tab_contents
- Kamps, D. M., Dugan, E., Potucek, J., & Collins, A. (1999). Effects of cross-age peer tutoring networks among students with autism and general education students. *Journal of Behavioural Education*, 9, 97-115. doi: 10.1023/A:1022836900290
- Kamps, D., Heitzman-Powell, L., Rosenberg, N., Mason, R., Schwartz, I., & Romine, R. S. (2016). Effects of reading mastery as a small group intervention for young children with ASD. *Journal of Developmental and Physical Disabilities*, 28, 703-722. doi: 10.1007/s10882-016-9503-3
- Karst, J. S., Van Hecke, A. V., Carson, A. M., Stevens, S., Schohl, K., & Dolan, B. (2015). Parent and family outcomes of PEERS: A social skills intervention for adolescents with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 45, 752-765. doi: 10.1007/s10803-014-2231-6
- Kasari, C., Dean, M., Kretzmann, M., Shih, W., Orlich, F., Whitney, R., . . . King, B. (2015). Children with autism spectrum disorder and social skills groups at school: A randomized trial comparing intervention approach and peer composition. *Journal of Child Psychology and Psychiatry*, 57(2), 171-179. doi: 10.1111/jcpp.12460.
- Keil, V., Paley, B., Frankel, F., & O'Connor, M. J. (2010). Impact of a social skills intervention on the hostile attributions of children with prenatal alcohol exposure. *Alcoholism: Clinical and Experimental Research*, 34, 231-241. doi: 10.1111/j.1530-0277.2009.01086.x
- Kelly, A.N., Axe, J.B., Allen, R.F., & Maguire, R.W. (2015). Effects of pre-session pairing on the challenging behavior and academic responding of children with autism. *Journal of Behavioral Interventions* 30(2), 135-156.
- Kelley, M. L. & Stokes, T. F. (1984). Student-teacher contracting with goal setting for maintenance. *Behaviour Modification*, 8, 222-244. doi: 10.1177/01454455840082005
- Kelley, M. L., & Stokes, T. F. (1982). Contingency contracting with disadvantaged youths: Improving classroom performance. *Journal of Applied Behaviour Analysis*, 15, 447-454. doi: 10.1901/jaba.1982.15-447
- Kelm, J. L., & McIntosh, K. (2012). Effects of school-wide positive behaviour support on teacher self-efficacy. *Psychology in The Schools*, 49, 137-147. doi: 10.1002/pits.20624
- Kravitz, R. R., Kamps, D. M., & Kemmerer, K. (2002). Brief report: Increasing communication skills for an elementary-aged learner with autism using the picture exchange communication system. *Journal of Autism and Developmental Disorders*, 32(3), 225- 230.

- Kubina, R. M., Morrison, R., & Lee, D. L. (2002). Benefits of adding precision teaching to behavioural interventions for students with autism. *Behavioural Interventions*, 17, 233–246. doi: 10.1002/bin.122
- Kuypers, L.M. (2011). *The Zones of Regulation A Curriculum Designed to Foster Self-Regulation and Emotional Control*. San Jose, CA: Social Thinking Publishing.
- Lambert, A. M., Tingstrom, D. H., Sterling, H. E., Dufrene, B. A., & Lynne, S. (2015). Effects of tootling on classwide disruptive and appropriate behaviour of upper-elementary students. *Behaviour Modification*, 39, 413-430. doi: 10.1177/0145445514566506
- Lassen, S. R., Steele, M. M., & Sailor, W. (2006). The Relationship of School-Wide Positive Behaviour Support to Academic Achievement in an Urban Middle School. *Psychology in The Schools*, 43, 701-712. doi: 10.1002/pits.20177
- Laugeson, E. A., Ellingsen, R., Sanderson, J., Tucci, L., & Bates, S. (2014). The ABC's of teaching social skills to adolescents with autism spectrum disorder in the classroom: The UCLA PEERS® program. *Journal of Autism and Developmental Disorders*, 44, 2244-2256. doi: 10.1007/s10803-014-2108-8
- Laugeson, E. A., & Frankel, F. (2010). Social skills for teenagers with developmental and autism spectrum disorders: The PEERS treatment manual. New York, NY: Routledge.
- Laugeson, E. A., Frankel, F., Gantman, A., Dillon, A. R., & Mogil, C. (2012). Evidence-based social skills training for adolescents with autism spectrum disorders: The UCLA PEERS program. *Journal of Autism and Developmental Disorders*, 42(6), 1025-1036. doi:10.1007/s10803-011-1339-1
- Laugeson, E. A., Frankel, F., Mogil, C., & Dillon, A. R. (2009). Parent-assisted social skills training to improve friendships in teens with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 39, 596-606. doi: 10.1007/s10803-008-0664-5
- Laugeson, E. A., Gantman, A., Kapp, S. K., Orenski, K., & Ellingsen, R. (2015). A randomized controlled trial to improve social skills in young adults with autism spectrum disorder: The UCLA PEERS® program. *Journal of Autism and Developmental Disorders*, 45, 3978-3989. doi: 10.1007/s10803-015-2504-8
- Laugeson, E. A., Paley, B., Schonfeld, A. M., Carpenter, E. M., Frankel, F., & O'Connor, M. J. (2007). Adaptation of the children's friendship training program for children with fetal alcohol spectrum disorders. *Child & Family Behaviour Therapy*, 29, 57-69. doi: 10.1300/J019v29n03_04
- Leaf, J. B., Tsuji, K.H., Lentell, A. E., Dale, S. E., Kassardjian, A., Taubman, M., ... Oppenheim-Leaf, M. L. (2013). A comparison of discrete trial teaching implemented in a one-to-one instructional format and in a group instructional format. *Behavioural Interventions*, 28, 82-106. doi: 10.1002/bin.1357
- Ledford, J. R., Lane, J. D., Elam, K. L., & Wolery, M. (2012). Using response-prompting procedures during small-group direct instruction: Outcomes and procedural variations. *American Journal on Intellectual and Developmental Disabilities*, 117(5), 413–434. doi: 10.1352/1944-7558-117.5.413

- Lee, D. L., & Laspe, A. K. (2003). Using high-probability request sequences to increase journal writing. *Journal of Behavioural Education, 12*, 261-273. doi: 10.1023/A:1025944923494
- LeGoff, D. B. (2004). Use of LEGO® as a therapeutic medium for improving social competence. *Journal of Autism and Developmental Disorders, 34*, 557-571. doi: 10.1007/s10803-004-2550-0
- Lerner, M. D., & Levine, K. (2007). The Spotlight Program: An integrative approach to teaching social pragmatics using dramatic principles and techniques. *The Journal of Developmental Processes, 2*, 91-102.
- Lloyd, B. P., Weaver, E. S., & Staubitz, J. L. (2016). A review of functional analysis methods conducted in public school classroom settings. *Journal of Behavioural Education, 25*, 324-356. doi: 10.1007/s10864-015-9243-y
- Lopata, C., Thomeer, M. L., Volker, M. A., Nida, R. E., & Lee, G. K. (2008). Effectiveness of a manualized summer social treatment program for high-functioning children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 38*, 890-904. doi: 10.1007/s10803-007-0460-7
- Lordo, D. N., Bertolin, M., Sudikoff, E. L., Keith, C., Braddock, B., & Kaufman, D. A. S. (2017). Parents perceive improvements in socio-emotional functioning in adolescents with ASD following social skills treatment. *Journal of Autism and Developmental Disorders, 47*, 203-214. doi: 10.1007/s10803-016-2969-0
- Lynch, D., & Keenan, M. (2018). The good behaviour game: Maintenance effects. *International Journal of Education Research, 87*, 91-99. doi:10.1016/j.ijer.2016.05.005
- Madsen, C. H., Becker, W. C., & Thomas, D. R. (1968). Rules, praise, and ignoring: Elements of elementary classroom control. *Journal of Applied Behaviour Analysis, 1*, 139-150. doi: 10.1901/jaba.1968.1-139
- Mandelberg, J., Laugeson, E. A., Cunningham, T. D., Ellingsen, R., Bates, S., & Frankel, F. (2014). Long-term treatment outcomes for parent-assisted social skills training for adolescents with Autism Spectrum Disorders: The UCLA PEERS program. *Journal of Mental Health Research in Intellectual Disabilities, 7*, 45-73. doi: 10.1080/19315864.2012.730600
- Marchica, L., & D'Amico, M. (2016). Examining the efficacy of an adapted version of the UCLA PEERS® program with Canadian adolescents. *Journal of Education & Social Policy, 3*, 54-65.
- Matthews, N. L., Orr, B. C., Warriner, K., DeCarlo, M., Sorensen, M., Laflin, J., & Smith, C. J. (2018). Exploring the effectiveness of a peer-mediated model of the PEERS curriculum: A pilot randomized control trial. *Journal of Autism and Developmental Disorders, 48*, 2458-2475. doi: 10.1007/s10803-018-3504-2
- Matthews, N. L., Orr, B. C., Warriner, K., DeCarlo, M., Sorensen, M., Laflin, J., & Smith, C. J. (2018). Exploring the effectiveness of a peer-mediated model of the PEERS curriculum: A pilot randomized control trial. *Journal of Autism and Developmental Disabilities, 48*, 2458-2475. doi: 10.1007/s10803-018-3504-2

- McConnell, S.R. (2002). Interventions to facilitate social interaction for young children with autism: Review of available research and recommendations for educational intervention and future research. *J Autism Dev Disord* (2002) 32: 351. <https://doi.org/10.1023/A:1020537805154>
- McCoy, A., & McNaughton, D. (2018). Training education professionals to use the picture exchange communication system: a review of the literature. *Behaviour Analysis in Practice*, 12 667-676.
- McCurdy, B. L., Thomas, L., Truckenmiller, A., Rich, S. H., Hillis-Clark, P., & Lopez, J. C. (2016). School-wide positive behavioural interventions and supports for students with emotional and behavioural disorders. *Psychology in The Schools*, 53, 375-389. doi:10.1002/pits.21913
- McGinnis, E., & Goldstein, A. P. (1997). *Skill streaming the elementary school child: New strategies and perspectives for teaching prosocial skills*. Champagne, IL: Research Press.
- McHugh, M. B., Tingstrom, D. H., Radley, K. C., Barry, C. T., & Walker, K. M. (2016). Effects of tootling on classwide and individual disruptive and academically engaged behaviour of lower-elementary students. *Behavioural Interventions*, 31, 332-354. doi: 10.1002/bin.1447
- McKeel, A. N., Rowsey, K. E., Belisle, J., Dixon, M. R., & Szekely, S. (2015). Teaching complex verbal operants with the PEAK relational training system. *Behaviour Analysis in Practice*, 8, 241-244. doi: 10.1007/s40617-015-0067-y
- Mercer, C. D., Campbell, K. U., Miller, M. D., Mercer, K. D., & Lane, H. B. (2000). Effects of a reading fluency intervention for middle schoolers with specific learning disabilities. *Learning Disabilities Research and Practice*, 15, 179-189. doi: 10.1207/SLDRP1504_2
- Miltenberger, R., Gross, A., Knudson, P., Bosch, A., Jostad, C., & Breitwieser C. B. (2009). Evaluating behavioural skills training with and without simulated in situ training for teaching safety skills to children. *Education and Treatment of Children*, 32, 63-75. doi: 10.1353/etc.0.0049
- Murphy, K. A. Theodore, L. A., Aloiso, D., Alric-Edwards, J. M., & Hughes, T. L. (2007). Interdependent group contingency and mystery motivators to reduce preschool disruptive behaviour. *Psychology in the Schools* 44, 53- 63. doi: 10.1002/pits.20205
- Nabeyama, B. & Sturmey, P. (2010). Using behavioural skills training to promote safe and correct staff guarding and ambulation distance of students with multiple physical disabilities. *Journal of Applied Behaviour Analysis* 43, 341-345.
- Napoli, M., Krech, P. R., & Holley, L. C. (2005). Mindfulness Training for Elementary School Students. *Journal of Applied School Psychology*, 21(1), 99-125.
- National Autism Center. (2015). *Findings and conclusions: National standards project, phase 2*. Randolph, MA
- Nevin, J. A. (1996). The momentum of compliance. *Journal of Applied Behaviour Analysis*, 29, 535-547. doi: 10.1901/jaba.1996.29-535

- Newstrom, J., McLaughlin, T. F., & Sweeney, W. J. (2008). The effects of contingency contracting to the mechanics of written language with a school student with behaviour disorders. *Child & Family Behaviour Therapy*, 21, 39-48. Retrieved from <https://www.apa.org/pubs/databases/psycinfo>
- Nigro-Bruzzi, D., & Sturmey, P. (2010). The effects of behavioural skills training on mand training by staff and unprompted vocal mands by children. *Journal of Applied Behaviour Analysis*, 43, 757-761. doi: 10.1901/jaba.2010.43-757
- Nocera, E. J., Whitbread, K. M., & Nocera, G. P. (2014). Impact of School-wide Positive Behaviour Supports on Student Behaviour in the Middle Grades. *Research in Middle Level Education Online*, 37, 1-14. doi: 10.1080/19404476.2014.11462111
- Nordquist, V. M., & Twardosz, S. (1990). Preventing behaviour problems in early childhood special education classrooms through environmental organization. *Education and Treatment of Children*, 13, 274-287. Retrieved from https://www.jstor.org/stable/42899173?seq=1#page_scan_tab_contents
- O'Connor, M. J., Laugeson, E. A., Mogil, C., Lowe, E., Welch-Torres, K., Keil, V., & Paley, B. (2012). Translation of an Evidence-Based Social Skills Intervention for Children with Prenatal Alcohol Exposure in a Community Mental Health Setting. *Alcoholism: Clinical and Experimental Research*, 36(1), 141-152.
- O'Connor, M. J., Frankel, F., Paley, B., Schonfeld, A. M., Carpenter, E., Laugeson, E. A., & Marquadt, R. (2006). A controlled social skills training for children with fetal alcohol spectrum disorders. *Journal of Consulting and Clinical Psychology*, 74, 639-648. doi: 10.1037/0022-006x.74.4.639
- O'Leary, K. D., Becker, W. C., Evans, M. B., & Saudargas, R. A. (1969). A token reinforcement program in a public school: A replication and systematic analysis. *Journal of Applied Behaviour Analysis*, 2, 3-13. doi: 10.1901/jaba.1969.2-3
- Ontario Ministry of Education. (2007). Policy/program memorandum No.140. Retrieved from <http://www.edu.gov.on.ca/extra/eng/ppm/140.html>.
- Ontario Ministry of Education (2016). The kindergarten program. Retrieved from: https://files.ontario.ca/books/edu_the_kindergarten_program_english_aoda_web_oct7.pdf
- Ontario Ministry of Education. (2017). Supporting students with autism spectrum disorders in schools. Retrieved from: <http://www.edu.gov.on.ca/eng/general/elemsec/speced/autismpilot.html>
- Pahnke, J., Lundgren, T., Hursti, T., & Hirvikoski, T. (2014). Outcomes of an acceptance and commitment therapy-based skills training group for students with high-functioning autism spectrum disorder: A quasi-experimental pilot study. *Autism: The International Journal of Research and Practice*, 18, 953-964. doi: 10.1177/1362361313501091
- Quinn, M. M., Kavale, K. A., Mathur, S. R., Rutherford, R. B., & Forness, S. R. (1999). A meta-analysis of social skill interventions for students with emotional or behavioural disorders. *Journal of Emotional and Behavioural Disorders*, 7, 54-64. doi:10.1177/106342669900700106

- Reichow, B., & Volkmar, F. R. (2010). Social skills interventions for individuals with autism: evaluation for evidence-based practices within a best evidence synthesis framework. *Journal of Autism and Developmental Disorders*, 40, 149-166. doi:10.1007/s10803-009-0842-0
- Reichow, B., Steiner, A. M., & Volkmar, F. (2012). Social skills groups for people aged 6 to 21 with autism spectrum disorders (ASD). *A Cochrane Review Journal*, 16, 1-75. doi:10.4073/csr.2012.16
- Repp, A. C., Felce D., & Barton, L. E., (1991). The effects of initial interval size on the efficacy of DRO schedules of reinforcement. *Exceptional Children* 57, 417-425. Retrieved from <https://psycnet.apa.org/record/1991-25920-001>
- Rosales, R., Gongola, L., & Homlitas, C. (2015). An evaluation of video modeling with embedded instructions to teach implementation of stimulus preference assessments. *Journal of Applied Behaviour Analysis* 48, 209-214
- Ross, S. W., Horner, R. H., & Higbee, T. (2009). Bully prevention in positive behaviour support. *Journal of Applied Behaviour Analysis*, 42, 747-759. doi: 10.1901/jaba.2009.42-747
- Sarokoff, R. A., & Sturmey, P. (2004). The effects of behavioural skills training on staff implementation of discrete-trial teaching. *Journal of Applied Behaviour Analysis*, 37, 535-538. doi: 10.1901/jaba.2004.37-535
- Scarlato, M. C., & Burr, W. A. (2002). Teaching Fractions to Middle-School Students. *Journal of Direct Instruction*, 2, 23-38. Retrieved from <https://www.jstor.org/stable/26507739>
- Schohl, K. A., Van Hecke, A., Carson, A. M., Dolan, B., Karst, J., & Stevens, S. (2013). A replication and extension of the PEERS intervention examining effects on social skills and social anxiety in adolescents with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 44, 532-545. doi: 10.1007/s10803-013-1900-1
- Schonert-Reichl, K. A., Oberle, E., Lawlor, M. S., Abbott, D., Thomson, K., Oberlander, T. F., & Diamond, A. (2015). Enhancing cognitive and social-emotional development through a simple-to-administer mindfulness-based school program for elementary school children: A randomized controlled trial. *Developmental Psychology*, 51(1), 52-66.
- Schonfeld, A. M., Paley, B., Frankel, F., & O'Connor, M. J. (2009). Behavioural regulation as a predictor of response to Children's Friendship Training in children with fetal alcohol spectrum disorders. *The Clinical Neuropsychologist*, 23, 428-445. doi: 10.1080/13854040802389177
- Schutte, R.C., & Hopkins, B.L. (1970). The effects of teacher attention on following instructions in a kindergarten class. *Journal of Applied Behaviour Analysis*, 3, 117-122. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1311101/pdf/jaba00076-0043.pdf>
- Seabaugh, G.O., & Schumaker, J. B. (1994). The effects of self-regulation training on the academic productivity of secondary students with learning problems. *Journal of Behavioural Education*, 4, 109-133. doi: 10.1007/BF01560513

- Shillingsburg, M. A., Bowen, C. N., Peterman, R. K., & Gayman, M. D. (2015). Effectiveness of the direct instruction language for learning curriculum among children diagnosed with autism spectrum disorder. *Focus on Autism and Other Developmental Disabilities*, 30, 44-56. doi: 10.1177/1088357614532498
- Sibinga, E. M. S., Webb, L., Ghazarian, S. R., & Ellen, J. M. (2016). School-Based Mindfulness Instruction: An RCT. *Pediatrics*, 137(1), 1-8.
- Sideridis, G. D., Utley, C., Greenwood, C. R., Delquadri, J., Dawson, H., Palmer, P., & Reddy, S. (1997). Classwide peer tutoring: Effects on the spelling performance and social interactions of students with mild disabilities and their typical peers in an integrated instructional setting. *Journal of Behavioural Education*, 7, 435-462. doi: 10.1023/A: 1022855218347
- Sigafoos, J., Green, V. A., Payne, D., O'Reilly, M. F., & Lancioni, G. E. (2009). A classroom-based intervention reduces obsessive-repetitive behaviour in an adolescent with autism. *Clinical Case Studies*, 8, 3-13. doi: 10.1177/1534650108327475
- Slocum, S. K., Grauerholz-Fisher, E., Peters, K. P., & Vollmer, T. R. (2018). A multicomponent approach to thinning reinforcer delivery during noncontingent reinforcement schedules. *Journal of applied behaviour analysis*, 51(1), 61-69.
- Social Skills Training Institute, (N.D.). Secret agent society. Retrieved from: <https://www.sst-institute.net/sas-families>.
- Speelman, R. C., Whiting, S. W., & Dixon, M. R. (2015). Using behavioural skills training and video rehearsal to teach blackjack skills. *Journal of Applied Behaviour Analysis*, 48, 1-11. doi: 10.1002/jaba.225
- Spriggs, A. D., Mims, P. J., van Dijk, W., & Knight, V. F. (2017). Examination of the evidence base for using activity schedules with students with intellectual disability. *The Journal of Special Education*, 51, 14-26. doi: 10.1177/0022466916658483
- Stockard, J., Wood, T. W., Coughlin, C., & Rasplika, K., C. (2018). The effectiveness of direct instruction curricula: A meta-analysis of a half century of research. *Review of Educational Research*, 88, 479-507. doi: 10.3102/0034654317751919
- Strain, P. S., Wilson, K., & Dunlap, G. (2011). Prevent-teach-reinforce: Addressing problem behaviours of students with autism in general education classrooms. *Behavioural Disorders*, 36, 160-171. Retrieved from <https://eric.ed.gov/?id=EJ942459>
- Sugai, G., Horner, R. H., & Gresham, F. M. (2002). Behaviourally Effective School Environments. In M. R. Shinn, H. M. Walker, & G. Stoner, *Interventions for academic and behaviour problems II: Preventive and remedial approaches* (pp. 315-350). Washington, DC: National Association of School Psychologists.
- Swain-Bradway, J., Pinkney, C., & Flannery, K. B. (2015). Implementing schoolwide positive behaviour interventions and supports in high schools: Contextual factors and stages of implementation. *Teaching Exceptional Children*, 47, 245-255. doi: 10.1177/0040059915580030

- Tiger, J.H., Hanley, G.P., & Bruzek, J. (2008). Functional communication training: A review and practical guide. *Behaviour Analysis in Practice*, 1, 16-23. doi: 10.1007/BF03391716
- Twarek, M., Cihon, T. & Eshleman, J. (2010). The effects of fluent levels of big 6 skill elements on functional motor skills with children with autism. *Behavioural Interventions*, 25, 275-293. doi: 10.1002/bin.317
- U.S. Department of Education (n.d.). Individuals with Disabilities Act – Statute and Regulations <https://sites.ed.gov/idea/statuteregulations/#regulations>
- Van Hecke, A. V., Stevens, S., Carson, A. M., Karst, J. S., Dolan, B., Schohl, K., ... & Brockman, S. (2015). Measuring the plasticity of social approach: A randomized controlled trial of the effects of the PEERS intervention on EEG asymmetry in adolescents with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 45, 316-335. doi: 10.1007/s10803-013-1883-y
- Vollmer, T.R., & Iwata, B.A. (1992). Differential reinforcement as treatment for behaviour disorders: procedural and functional variations. *Research in Developmental Disabilities*, 13, 393-417. doi:10.1016/0891-4222(92)90013-V
- Waldman-Levi, A., & Erez, A. B-H. (2015). Will environmental interventions affect the level of mastery motivation among children with disabilities? A preliminary study. *Occupational Therapy International*, 22, 19-27. doi: 10.1002/oti.1380
- White-Blackburn, G., Semb, S., & Semb, G. (1977). The effects of a good-behaviour contract on classroom behaviours of sixth-grade students. *Journal of Applied Behaviour Analysis*, 10, 312. doi:10.1901/jaba.1977.10-312
- Williams, M. S., & Shellenberger, S. (1996). *How does your engine run?: A leader's guide to the alert program for self-regulation*. Albuquerque, NM: TherapyWorks, Inc.
- Williams, R. L., & Anandam, K. (1978). The effect of behaviour contracting on grades. *The Journal of Educational Research*, 66, 230-236. doi: 10.1080/00220671.1973.10884461
- Winner, M. G. (2013). *Why teach social thinking?: Questioning our assumptions about what it Means to Learn Social Skills*. Santa, Clara, CA: Think Social Publishing, Inc.
- Yoo, H., Bahn, G., Cho, I., Kim, E., Kim, J., Min, J., ... Laugeson, E. A. (2014). A randomized controlled trial of the Korean version of the PEERS parent-assisted social skills training program for teens with ASD. *Autism Research*, 7, 145-191. doi: 10.1002/aur.1354
- Zimmerman, K.N., Ledford, J.R., & Barton, E.E. (2017). Using visual activity schedules for young children with challenging behaviour. *Journal of Early Intervention*, 39, 339-358. doi: 10.1177/1053815117725693
- Zoder-Martell, K. A., Dieringer, S. T., Dufrene, B. A., Lum, J. K., Tingstrom, D. H., Radley, K. C., & Lynne, S. (2017). Effects of tootling on classwide disruptive and academically engaged behaviour of general-education high school students. *Psychology in The Schools*, 4, 370. doi: 10.1002/pits.22002



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