

Best Practices for Children and Youth with Autism Spectrum Disorder: A Resource
Guide for Community Partners

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Abstract

Students with Autism Spectrum Disorder (ASD) present a unique challenge, and learning opportunity for professionals. The purpose of this study was to create a comprehensive and accessible handbook to empower those who work with children and youth with ASD in a community setting. The best practices and effective intervention programs for students with ASD were researched and evaluated. Four individuals from various community agencies voluntarily participated in a Needs Assessment Questionnaire and, based on their information, a Handbook on Best Practices for Children with ASD, including a resource section was created. The theoretical framework examined for this project was based on social-cognitive theory, specifically Bandura's (1986) theory of triadic reciprocity and reciprocal determinism. This theory places emphasis on the fact that behaviour must be evaluated in the course of normal development, and that what may be appropriate for an individual at one age or point in time, may not be at another. Once the handbook was complete, an Evaluative Questionnaire was circulated to determine its effectiveness and overall benefits in practice for community partners in the field. The results of this questionnaire contributed to a final copy of the handbook. Implications for future research were considered and the limitations of this study were examined.

¹ Key Words: Autism Spectrum Disorder, ASD, Community Partners, Applied Behavioral Analysis (ABA), Best Practices

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CHAPTER ONE: THE PROBLEM

The goal of this project was multi-faceted: (1) to develop an informative collection of evidence-based resources and scientifically based intervention programs for children with Autism Spectrum Disorder (ASD); and (2) to enable and empower community partners in their daily interactions with children with ASD through a user-friendly handbook filled with resources and information on how best to support these children in community based programs.

There are many family and child-centered educational community programs throughout Canada that run before, during and after school hours, providing service to a number of children both with special education needs and without. Some of these educational programs include; day camps, drama clubs, dance classes, preschool drop-in programs, mommy and me classes, toddler playgroups, etc. Given a prevalence rate of 1 in 68 children (Chen et al., 2015; Cook & Willmerdinger, 2015; Roane, Fisher & Carr 2016) and the vast number of opportunities for children with ASD to take part in their community, it is more important than ever that the community partners understand ASD and are able to provide the best support possible to these children through scientifically validated best practice strategies.

As of June 2017, the Ministry of Child and Youth Services will be implementing the Ontario Autism Program. This program is being put in place to make it easier for families to access Autism specific services for their children by reducing wait times, providing flexible services and increasing the number of treatment spaces in existing programs to provide service more children and youth (Ministry of Child and Youth

Services, 2017). This program is a large step in allowing children to easily access intervention based on best practice

There are many educational based community programs outside of this initiative, which may cater to a mix of children with ASD and their typically developing peers (Ministry of Child and Youth Services, 2017). The development of this project was based on these service providers. This project was inspired by a desire to be able to provide community service partners with easy to access, comprehensive, information about ASD diagnosis and the best practices for children with ASD within a community setting. This handbook focused on helping community partners become more knowledgeable in and familiar with the ASD diagnosis and the best practices for educating and caring for individuals with ASD through the use of an accessible and comprehensive resource.

Background of the Problem

At this time, there is a meager amount of empirical research on the need for education and information sharing with community partners regarding children with ASD (Russa, Matthews & Owen-DeSchryver, 2015; Iadorola et al., 2015 & Rosso, 2016). However, with the increase in children taking part in various community based programming and the increase in the diagnosis of ASD; it is imperative for those who are interacting with these children to have knowledge of the ASD diagnosis, and knowledge of appropriate strategies to use when interacting with these children (Wong et al., 2015 & Russa et al., 2015)

Statement of the Problem Situation

With the increase in children taking advantage of community based programming, and the increase in children who are diagnosed with ASD, combined with a lack of prior education opportunities for community based partners on the ASD diagnosis and strategies/interventions that are most effective; there is a necessity for an effective comprehensive research tool for community partners who have interactions with children with ASD in their daily programming (Iadarola et al., 2015; Wong et al., 2015 & Russa et al., 2015). Based on this identified need, the research problem in this project was to develop a handbook for community partners on the diagnosis of ASD and the best practices associated with this diagnosis. Specifically, the characteristics of this diagnosis were presented and empirically validated intervention strategies were reviewed including a variety of resources.

The main goal of this project was to: (1) to develop an informative collection of evidence-based resources and scientifically based intervention programs for children with Autism Spectrum Disorder (ASD); and (2) to enable and empower community partners in their daily interactions with children with ASD through a user-friendly handbook filled with resources and information on how best to support these children in community based programs. Specifically, the purpose of this project was to create a best practices resource handbook for the diagnosis of ASD that can be used as an accessible resource tool for those, with or without experience, who are interacting with children with ASD in community-based programming.

The handbook includes: (1) a definition and characteristics of Autism Spectrum Disorder; (2) empirical research relating to best practices an intervention strategies

for individuals with ASD; (3) a set of pedagogical strategies that community partners can implement for children with ASD; (4) a sample of some activities that community partners can implement for children with ASD, which may serve to develop social, cognitive and behavioral skills; and (5) a comprehensive list of resources for each intervention strategy in order to foster further independent learning as well as general information regarding the ASD diagnosis and education.

The premise for this ASD resource handbook for community partners was to provide empirical knowledge of and information relating to the diagnosis of ASD and best practices in supporting children with ASD in a community-based program. The handbook is targeted for any individual who is involved in an extra-curricular, community-based program targeted for children and youth who is in need of information regarding the diagnosis of ASD and the best practices for those interacting with these children.

Questions to be Answered

There were three main issues that this project sought to examine. The research questions include: (1) What are features of an ASD resource tool that provide readers with the most beneficial information regarding the ASD diagnosis and intervention strategies? (2) What information and resources would be most beneficial for community-based partners who interact with children with ASD in their programming? (3) What resources are most beneficial to community partners to promote social, cognitive and behavioural educational for children in their programs and (4) How will this resource handbook empower community partners in practice?

Rationale

There were several impetuses for developing a handbook to provide information and resources regarding the children and youth with ASD. Research regarding the best practices and diagnostic characteristics for individuals with ASD was reviewed along with research on the demographics of Canadian families. When examining the demographics of Canadian families with children, it was found that as of 2014 69% of families with children under the age of 16 were dual-earner families (Statistics Canada, 2014). This means that both parents work outside of the home either full-time or part-time. Additionally, as of 2011 46% of children aged 0-14 were in some form of childcare; including 54% of children aged 4 and under and 39% of children aged 5 to 14 years (Statistics Canada, 2011). This demographic information suggests that after school hours, children are spending increased amounts of time outside of the home, and in community-based programs.

With the current prevalence of ASD being 1 in 68 (Chen et al., 2015) it is probable that children with ASD are also involved in these community-based programs. Therefore it is of ever-increasing importance that those who are running these programs become familiar with the ASD diagnosis and the best practices for children with ASD. This was the main impetus for this development of this handbook.

This handbook may serve as a resource tool for professionals working in community-based children's programs. As researchers are continuously exploring and publishing information with up to date materials and strategies, it is important for professionals to be able to easily access information regarding the most effective and beneficial intervention strategies for children with ASD in order to maximize their

success in community-based programs (Wong et al., 2015). Thus, a handbook outlining the ASD diagnosis and characteristics and the best practices for children with ASD is of critical importance.

Theoretical Framework

The present project used the theoretical framework of social-cognitive theory, specifically Bandura's (1986) theory of triadic reciprocity and reciprocal determinism. Social-cognitive theory was used to frame this project, since the project factors in consideration the development features of behavior, and the fact that behavior must be evaluated in the context of normal development (Kaufmann & Landrum, 2013). That is, what may be appropriate and adaptive behavior in one setting, or at a specific age, will not be adaptive or developmentally appropriate in another context or point in development. When examining ASD, it is important to explore behaviour, since this is the basis of most intervention strategies for children and youth with ASD. In Applied Behavioural Analysis (ABA) and Intensive Behavioural Intervention (IBI) interventions, therapists attempt to determine the function of behaviour and replace an undesired behaviour with one that is more socially appropriate. Functional communication is taught through programs such as PECS in hopes that with language undesired behaviours will decrease and sensory integration interventions strive to decrease challenging behaviours through giving them the tools to properly process sensory information (Anagnostou et al., 2014; Boutot & Hume, 2012; Estes et al., 2012).

Social cognitive theory places an emphasis on personal agency, which is the ability of humans to use symbols for communication, to anticipate future events, to learn from observation or vicarious experiences, to evaluate and regulate themselves

and to be reflectively self-conscious (Kauffman & Landrum, 2013). This personal agency takes place in the three specific contexts that are constantly interacting to influence a final outcome in the individual; these include the environment (both social and physical), personal factors (such as thoughts, feelings, and perceptions), and the individual's behavior itself (Woods & Bandura, 1989).

When investigating ASD, the Social Cognitive Theory and specifically the three interacting factors in Bandura's theory of triadic reciprocity and reciprocal determinism each play a significant role in treatment. It is important for robust intervention programs to factor in the child as a whole, with a set of interacting environments, personal variables, and behaviours that are specific to them, as well as changing each day. Looking at these three factors can help to analyze both specific and broad situations but it important for practitioners and family members alike to take into account interactions between what is said, what is done, what is autonomously decided and outside factors when making decisions for their child. This framework served as a consideration for the interventions and recommendations outlined in this project.

Objectives of the Handbook

The specific objectives of this handbook that were imperative to the collection, organization, and implementation of the ASD resource manual are listed below. These objectives will be revisited in the methodology and evaluation of the handbook within this project.

- Professionals who run community based programs will become familiar with the components and characteristics of the ASD Diagnosis

- Professionals who run community-based programs will identify components within the handbook that maximize the potential for success within community programs
- Professionals who run community-based programs will familiarize themselves with techniques and intervention strategies that are best suited for children with ASD
- Professionals who run community-based programs will be equipped with easy to access and valuable resources/information to use within the classroom environment
- Professionals who run community-based programs will evaluate the handbook and its effectiveness for the successful inclusion of students with ASD

Scope and Limitation of the Study

There are several limitations to the handbook created for this project. First, due to the ever-changing scope of empirical evidence-based research on the ASD diagnosis and intervention techniques, only the most recent published information was examined. Many aspects of the ASD diagnosis are still unknown, such as the cause and prognosis for this disorder; therefore this handbook will require consistent updating, in order to keep it relevant for community partners in the years to come. Secondly, this project was limited by sample size and different levels of education within the sample of community partners.

The social location of the researcher may have served as a limitation of this handbook. As a professional who has worked in the Autism field and in partnerships with many community partners, I have had the opportunity to take part in training

and professional development opportunities and increase my own knowledge of the ASD diagnosis and the best practices discussed within this handbook. This background, as well as a passion for supporting individuals with ASD, may cause me to believe that community partners require further education, professional development and an increase in resources to support those with ASD in the community setting.

This handbook will be available through the researcher to community partners, friends, and family who express the desire to have a copy to use in their field. This researcher hopes that these individuals will find this handbook helpful and that they will pass along the information within the handbook to other community partners who work with children with ASD and that this handbook will enable and empower them in their practice as well.

Outline for the Remainder of the Project

Chapter Two consists of an in-depth view of the theoretical and empirical literature of the ASD diagnosis and its characteristics. Next, a theoretical framework based on social-cognitive theory, specifically Bandura's (1986) theory of triadic reciprocity and reciprocal determinism and how it relates directly to the diagnosis of ASD and interventions for ASD is discussed. Finally, the best practices and current intervention strategies are discussed in detail and their relationship to the inclusion of children with ASD in community-based programs.

Chapter Three provides a detailed description of the methodology and procedures used to develop the handbook. More specifically, the results of the needs assessment are outlined.

Chapter Four contains the complete handbook.

Chapter Five provides a summary of the findings from the study, the results from the Evaluative Questionnaire, assessing the handbook, provides implications for theory and practice, and recommendations for further research.

CHAPTER TWO: REVIEW OF LITERATURE

The purpose of this chapter was to critically examine theoretical and empirical research on Autism Spectrum Disorder (ASD) diagnosis and early intervention practices. The initial focus of this chapter includes the history of ASD diagnosis as well as an in-depth overview of the characteristics, prevalence and proposed causes. Further, current empirical research early intervention programs are discussed, along with their potential impact on the prognosis for children with Autism Spectrum Disorder. The programs addressed serve as the basis for the strategies presented in the handbook. This chapter discussed the theoretical framework underlying this project and its connection to early interventions for ASD.

Autism Spectrum Disorder History, Diagnosis and Characteristics

Autism Spectrum Disorder (ASD) is a widely accepted diagnosis in the 21st century with prevalence seeing a steady increase in the last decade (Chen, Penagarikano, Belgard, Swarup & Geschwind 2015; Cook & Willmerdinger, 2015; McPartland, Law & Dawson, 2016). However, criteria and characteristics of an ASD diagnosis have seen many changes throughout history (Cook & Willmerdinger, 2015). The first version of the Diagnostic and Statistical Manual (DSM) did not categorize Autism as a unique disorder, but rather as a childhood subtype of schizophrenia (APA, 1952). From there, the first writings of Autism that are more similar to what is seen today revolved around Victor, known as the 'Wild Boy of Aveyron'; who, after being isolated in the woods for 11 years, was found to be socially withdrawn and have language and intellectual disabilities (Cook & Willmerdinger, 2015). At the time, French physician Jean-Marc Itard only recognized Victor as being developmentally

different from other children his age; it was not until much later that Victor was formally characterized as autistic (Cook & Willmerdinger, 2015).

In 1943, Dr. Leo Kanner was the first to formally separate Autism from schizophrenia; he first introduced "infantile autism" as a clinical syndrome when describing 11 children whom he characterized as relating better to objects than people and showing severe social and communication abnormalities as such narrow and restricted interests (McCrimmon, Altomre, Smith, Jitlina, Matchullis & Sakofske, 2014; Cook & Willmerdinger, 2015). One year later, in 1944 Hans Asperger, a German pediatrician identified a milder form of autism after completing a study of all boys with an autistic psychopathology (Asperger & Frith, 1991; McCrimmon et al., 2014; Cook & Willmerdinger, 2015). Asperger (1944), described these children as being verbally fluent but having peculiar language use and abnormal prosody (McCrimmon et al., 2014) Further, they were socially isolated and demonstrated repetitive behaviors, a desire for sameness, interest in unusual topics, motor clumsiness, and a propensity toward a rote memorization of facts (McCrimmon et al., 2014).

Kanner was the first to propose a cause for autism, suggesting that the disorder came from a lack of maternal warmth that he referred to as "refrigerator mothers" (Cook & Willmerdinger, 2015). This theory was later supported was supported by child physiologist Bettelheim (1960) who concluded that emotionally cold parents produce autistic features in their children through feelings of hostility and rejection (Mesibov, Shea & Schopler, 2005; Cook & Willmerdinger, 2015). Bettelheim (1960) was a proponent of residential treatment facilities for children with autism, as he believed that taking them away from their 'cold parents' could help reduce their

symptoms (Cook & Willmerdinger, 2015; Mesibov, Shea & Schopler, 2005). It was not until after 1964 with the founding of the Autism Society of America, that Rimland (1964) sought to refute the theory of the "refrigerator mother" (Cook & Willmerdinger). Rimland (1964) instead extended the theory that autism had a biological basis and that there was genetic component responsible for autism (Edlelson, 2014; Cook & Willmerdinger, 2015). After this, the 1960's produced a shift toward understanding the biological and behavioral causes of autism (Cook & Willmerdinger, 2015).

Since the initial concepts of autism introduced by Kanner and Asperger and with the rise of research surrounding the disorder, the prevalence of incidence of the diagnosis have expanded in spectrum (Cook & Willmerdinger, 2015). With revisions of the Diagnostic and Statistics Manual (DSM) throughout the 20th and 21st century, there have been many changes to the definition of autism; as well as to the prevalence linked to each new set of diagnostic criteria. Up until 1966, autism was still formally characterized in the DSM-II as a form of childhood schizophrenia and was considered a rare childhood disorder with a prevalence rate of 4.5 in 10,000 children (McCrimmon et al., 2014; Cook & Willmerdinger, 2015). In 1980 autism was officially separated from schizophrenia and was re-conceptualized into a distinct class of neurobehavioral-based disorder and labeled infantile autism in the DSM-III (McCrimmon et al., 2014; Cook & Willmerdinger, 2015). In 1987, the DSM-III-R expanded the definition in identifying the spectrum of the disorder and labeling it by the name we know today, autism spectrum disorder (ASD); at this time diagnostic criteria was also expanded to require behavioral evidence (McCrimmon et al., 2014;

Cook & Willmerdinger, 2015). In 1994 the definition was expanded yet again in the DSM-IV to include Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS) and Aspergers Syndrome (Baker, 2013; Cook & Willmerdinger, 2015). In 2000, the DSM-IV –TR expanded the ASD umbrella to include not three, but five disorders classified as pervasive developmental disorders including; autistic disorder (autism), Rett's disorder, childhood disintegrative disorder, Asperger's disorder, and pervasive developmental disorder – not otherwise specified (PDD-NOS) (McCrimmon et al., 2014; Cook & Willmerdinger, 2015). Each of these disorders were classified by varying degrees of qualitative impairment in three areas of development including (1) reciprocal social interaction, (2) communication and (3) restrictive and repetitive patterns of interest, activities, and behaviors (McCrimmon et al., 2014). Within the DSM-IV-TR differential diagnosis was based on cognitive and language development, physical or motor characteristics, the age of onset of symptoms and developmental trajectory (McCrimmon et al., 2014). Under the DSM-IV –TR prevalence rates of ASD were estimated to be 1 in 150 children in 2007, and then reduced to 1 in 110 children in 2009; however, this difference is partially attributed to improved screening and diagnostic techniques (Cook & Willmerdinger, 2015).

In 2013 the DSM-V consolidated the five subcategories of ASD into one unified disorder; at this time PDD-NOS and Asperger's were no longer seen as a separate condition (Cook & Willmerdinger, 2015; McCrimmon et al., 2014; McGuinness & Johnson, 2013). This modification also clinically reflects a change in the diagnostic criteria from three to two core impairments: (1) social- communication deficits and (2) fixated interests and repetitive behaviors. Individuals who meet the criteria for

ASD also receive a rating of (1) requiring support, (2) requiring substantial support, or (3) requiring very substantial support. Each level indicates and increases in symptom severity (McPartland, Law & Dawson, 2016; Cook & Willmerdinger, 2015; McCrimmon et al., 2014). As of 2014, the prevalence of ASD was estimated to be 1 in 68 (Cook & Willmerdinger, 2015; Chen, Penagarikano, Belgard, Swarup & Geschwind 2015; McCrimmon et al., 2014).

Changes from the DSM-IV-TR to the DSM-V have been the largest to take place in a number of years, but such revisions have resulted in criticisms. Critics propose that the DSM-V is more restrictive than the previous version and that those individuals with milder forms of ASD such as PDD-NOS and Asperger's, and individuals with normative cognitive abilities are more likely to be excluded under new criteria (McPartland, Law & Dawson, 2016). Further, it has been proposed that individuals who meet the criteria for DSM-V criteria are more impaired than those who would have met previous criteria; making service provision more difficult based on diagnosis alone (McPartland, Law & Dawson, 2016).

Additionally, the DSM-V is the first diagnostic manual to acknowledge gender and culture, specifying that the level of impairment observed must be compared to the norms of each individual's culture; and cautioning that females without accompanying intellectual impairment or language delays may have more subtle social communication difficulties that are more likely to escape detection (McPartland, Law & Dawson, 2016). This caution raises the concerns from critics that the criteria as a whole may be less sensitive in detecting a proper diagnosis for females and young children (McPartland, Law & Dawson, 2016). Among practitioners, there is much

concern that autism diagnostic assessments may lack correspondence to one another as they undergo revision to align with the DSM-V criteria (McPartland, Law & Dawson, 2016).

Currently, Autism Spectrum Disorder can be concisely defined as an early onset; pervasive and lifelong neurodevelopmental disorder characterized by challenges in social communication, repetitive, restricted behavior patterns and atypical response to sensory stimuli (McPartland, Law & Dawson, 2016; Shirian & Dera, 2015; Hiller, Young, & Weber, 2014). In terms of challenges in social communication, individuals with ASD have specific impairments in socio-emotional reciprocity, non-verbal communication, and maintenance of relationships (McPartland, Law & Dawson, 2016). Deficits in non-verbal communication include poor eye contact, or difficulty understanding body language and facial expressions (McPartland, Law & Dawson, 2016). Impairments in socio-emotional reciprocity are often seen as a lack of interest in or struggle with, sustained social interaction (McPartland, Law & Dawson, 2016). For example, these individuals may be unable to initiate conversation or may consistently have one-way conversations centering on their own interests (McPartland, Law & Dawson, 2016). In terms of social relationships, individuals with ASD may lack interest in making friends or have difficulty adjusting their behaviors to match different social situations (McPartland, Law & Dawson, 2016).

The second criteria for an ASD diagnosis, restricted, repetitive behavior patterns, may include repetitive movements or language such as lining up toys or repeating unusual phrases with no connection to a conversation among others (McPartland, Law & Dawson, 2016). Alternatively, individuals may display behavioral rigidity such as

experiencing extreme distress in relation to change, large or small (McPartland, Law & Dawson, 2016). These individuals may also have restricted interests that are abnormal in intensity or focus and interfere with different life domains (McPartland, Law & Dawson, 2016).

The DSM-V definition of ASD includes sensory issues as one of the four subsets of restricted/repetitive behavior and defines them as "hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment" (Grapel, Cicchetti & Volkmar, 2015 pg.69) Sensory abnormalities are typically seen as a core characteristic of ASD and can affect all sensory modalities including: auditory, visual, tactile, taste and smell (Stewart et al., 2015). Children with ASD typically fall into the category of either hyper- or hypo-sensitive, ranging from a severe dislike and avoidance of particular sensory input to unawareness of sensory input including pain (McPartland, Law & Dawson, 2016; Stewart et al., 2015).

Subsequent to the aforementioned three main areas of deficit, other areas of deficit include theory of mind and executive functioning (McCrimmon et al., 2014). Theory of mind (TOM) refers to the ability to conceive of the mental states of another individual; lacking TOM makes it difficult for those with ASD to understand complex social situation, recognize self-conscious emotions such as embarrassment and shame or understand personal mental states (McCrimmon et al., 2014). Executive functions (EF) are higher order cognitive processes that are required to respond to new or complex situations; in ASD these deficits can include planning, mental flexibility, inhibition and self-monitoring abilities (McCrimmon et al., 2014). Additionally, individuals with EF deficits have been found to have difficulty with shifting thoughts

and actions to suit different situation, often described as thinking in 'black and white' (McCrimmon et al., 2014). This underlies their characteristic perseverative behavior and problems following more complex sets of rules (McCrimmon et al., 2014). Many early interventions for ASD focus on addressing these deficits in TOM and EF.

When undertaking an examination of the characteristics of ASD, it is important to highlight the high risk of comorbid disorders including, but not limited to, intellectual disability, epilepsy, tic disorders, obsessive-compulsive disorder, attention-deficit/hyperactivity disorder, depression, separation anxiety, oppositional defiant disorder and generalized anxiety disorder (McCrimmon et al., 2014). Less frequent comorbid conditions include bipolar disorder, schizophrenia, delusions, and hallucinations (McCrimmon et al., 2014).

As there are differences in symptom severity for individuals with ASD, it has also been suggested that there are many differences related to gender and diagnosis. Although it is commonly known that ASD is more prevalent in males, there are many other difference based on sex (McPartland, Law & Dawson, 2016). Several studies have found that females with ASD tend to be more severely affected and more often have intellectual disabilities (McPartland, Law & Dawson, 2016; Rivet & Matson, 2011). Specifically, although ASD is diagnosed four times more frequently in boys than girls in the absence of intellectual disability the male to female ratio of diagnosis increases to 10:1 (Rivet & Matson, 2011). Additionally, girls are not only diagnosed less, but are diagnosed later with high-functioning autism (indicating a lack of intellectual disability) in particular (Hiller, Young & Weber, 2014; Begeer et al., 2012). Furthermore, this discrepancy in diagnosis is despite no difference in the number of

professionals visited and the age at which the child's parent first expressed concern (Hiller, Young & Weber, 2014; Begeer et al., 2012).

In terms of symptoms significance, males have been found to display more aggression, hyperactivity and stereotyped behaviors whereas females display higher anxiety and depression and, as previously stated, greater intellectual impairment (Bhat, Acharya, Adeli, Bairy & A. Adeli, 2014). Females have more comorbidity with other psychopathologies, sleep problems, attention problems, and thought problems (McPartland, Law & Dawson, 2016). Furthermore, they have more sensory issues, motor difficulties, irritability, lethargy, and self-injurious behaviors than males (McPartland, Law & Dawson, 2016). However, it is males who tend to have more restricted, repetitive behaviors and more interpersonal conflicts over time (McPartland, Law & Dawson, 2016).

Proposed Causes of Autism Spectrum Disorder

Though there is no known singular cause of ASD, research has identified a number of suspected contributing factors for this neurobiological disorder including genetic, epigenetic and non-genetic factors acting in combination through various paths (Anagnostou et al., 2014). It has been found that up to 20% of ASD cases are associated with genes, copy number variation, and functional pathways; these findings direct focus to synaptogenesis and neural connectivity as common causal elements (Anagnostou et al., 2014). Copy number variations (CNV) involve relatively large segments of DNA; rare CNVs or other deleterious smaller sequence alterations occur on about 10% of idiopathic cases of ASD, suggesting that CNVs may be the primary cause of ASD in some cases (Anagnostou et al., 2014). Another 10% of individuals with

ASD have known genetic conditions including fragile X syndrome, tuberous sclerosis and Rett syndrome (Anagnostou et al., 2014).

When exploring the brain of an autistic individual, there were many evident differences to be seen. Studies indicated that de novo gene mutations are more common in children with ASD than in typically developing children (Gilman et al., 2011; Bhat et al., 2014). The de novo gene is responsible for neuron motility, axon guidance and synaptic development (Gilman et al., 2011). Additionally, ASD has been found to affect the size of the corpus callosum, which is a collection of nerve fibers connecting the two hemispheres of the brain; this plays a major role in the transmission of sensory, motor and cognitive information (Bhat et al., 2014). It has been found that the brain's intrinsic connectivity differs in those with ASD compared to neurotypical brains in that wiring costs in children with ASD are significantly reduced and functional connectivity with other brain regions are decreased within the frontal and temporal cortical regions (Bhat et al., 2014; Tyszka et al., 2014). This under connectivity results in language impairment and a reduced learning rate in children with ASD (Bhat et al., 2014). Additionally, the left temporal cortex activity, which is responsible for language comprehension in typically developing children, is reduced in those with ASD (Bhat et al., 2014). Eyler, Pierce, and Courchesne (2012) proposed that early diagnosis of these types of lateralized abnormalities of the temporal cortex could lead to early neurodevelopmental pathology in ASD. When looking at each of these abnormalities, mutations, and mal-connections a strong case can be made for both genetic and epigenetic factors as causal factors for ASD.

Other suggested causes for ASD include a combination of genetic and environmental factors; as evidenced in the incomplete concordance in monozygotic twins and increase in overall ASD diagnosis (Anagnostou et al., 2014). In utero exposures have also been hypothesized including medication such as valproic acid, thalidomide, misoprostol, terbutaline or antidepressants (Anagnostou et al., 2014). Additionally, environmental neurotoxins (i.e. pesticides) and infections (e.g. congenital rubella) have also been stated as a possible cause for ASD (Anagnostou et al., 2014). Finally, some early hypotheses have suggested a link between vaccines and ASD; however, this has been thoroughly disproved (Anagnostou et al., 2014; Offit, 2008; Fombonne et al., 2006).

Theoretical Framework

The proposed theoretical framework for the current study was framed by social-cognitive theory, specifically Bandura's (1986) theory of triadic reciprocity and reciprocal determinism. Social-cognitive theory is used to frame this study as it takes into consideration the development features of behavior and the fact that behavior must be evaluated in the context of normal development (Kaufmann & Landrum, 2018). That is, what may be appropriate and adaptive behavior in one setting, or at a specific age, will not be adaptive or developmentally appropriate in another context or point in development. When looking at ASD, it is important to look at behaviour, as this is the basis of most intervention. In ABA and IBI interventions, therapists attempt to determine the function of behaviour and replace an undesired behaviour with one that is more socially appropriate. Functional communication is taught through programs such as PECS in hopes that with language undesired behaviours will

decrease and sensory integration interventions strive to decrease challenging behaviours through giving them the tools to properly process sensory information.

Social cognitive theory places an emphasis on personal agency, which is the ability of humans to use symbols for communication, to anticipate future events, to learn from observation or vicarious experiences, to evaluate and regulate the self and to be reflectively self-conscious (Kauffman & Landrum, 2013). This personal agency takes place in the three specific contexts that are constantly interacting to influence a final outcome in the individual; these include the environment (both social and physical), personal factors (such as thoughts, feelings, and perceptions), and the individual's behavior itself (Woods & Bandura, 1989).

Specifically, Bandura's (1986) theory of triadic reciprocity and reciprocal determinism takes into account how these three variables all operate interactively as determinants of each other. In this theory, the term reciprocal refers to the mutual action between casual factors (Bandura, 1986). The term determinism signifies the production of effects by certain factors, rather than the doctrinal sense of actions being completed by a prior sequence of causes operating independently of the individual (Bandura, 1986).

Many factors are needed to create a given effect and because of this multiplicity or interacting influences, the same a factor can be a part of many different effects; particular factors are therefore associated with effects probabilistically rather than inevitably (Bandura, 1991). For example, people's efficacy (behavior) and outcome expectations (personal factors) influence how they behave and the environmental effects created by their actions, in turn, alter their expectations; in this way each of the

three factors is acting on another, and in turn acting on itself (Bandura, 1978). The interaction of these three factors can be seen often in children with ASD entering treatment. For example, a child may display efficacy in the form of a tantrum when it is time to go to gym (behaviour), their outcome expectations may be that if they are upset they will get out of gym (personal factors); if this behaviour is reinforced and they do get out of gym their expectation going forward will be that a tantrum produces the desired outcome. However, if the environmental effect created by their action is not expected (i.e. they are still expected to complete gym activities) they will alter future expectations, they may not expect a tantrum to get out of an undesired activity.

Differential Contribution of the Triadic Factors of Bandura's Social Cognitive Theory

As can be seen from the preceding example, the relative influences exerted by the three sets of interacting factors will vary for different activities, different individuals, and different circumstances. In most instances, the development and activation of the three sets of interacting factors are all highly interdependent (Bandura, 1986). Most external influences affect behavior through intermediary cognitive processes; cognitive factors partly determine which external events will be observed, how they will be perceived, whether they have any lasting effects, what valence and efficacy they have, and how the information they convey will be organized for future use (Bandura, 1978). By altering their immediate environment, creating self-inducements, and by arranging conditional incentives for themselves, people can exercise some influence over their over behavior (Bandura, 1978). For children with ASD, the ability to exercise influence over their own behaviour is often limited

however with intervention they may be able to learn to alter their immediate environment, create self-inducements and arrange conditional incentives for themselves.

Additionally, reciprocal processes operate within each of the three constituent factors; within the behavioral domain, many actions are mutually related so their occurrences co-vary positively or negatively, within the environmental domain, situational happening are often interactional as when changes in a milieu set in motion other environmental changes (Bandura, 1986). In the personal realm of affect and thought, there exist reciprocal escalating processes, for example when frightening thoughts arouse internal turmoil that, in turn, breeds even more frightening thoughts (Bandura, 1986). *Temporal Dynamics of Triadic Reciprocity of Bandura's Social Cognitive Theory*

Though reciprocal processes operate within each of the three constituent factors, the triadic factors do not always operate in the manner of simultaneous holistic interaction (Bandura, 1986). Additionally, reciprocity does not mean simultaneity of influence (Bandura, 1986). Although each of the segments of reciprocity involves bidirectional influence processes, the mutual influence and their reciprocal effects do not spring forth all at once, it takes time for a casual factor to exert its influence (Bandura, 1986). Interacting factors work their mutual effects sequentially over variable time courses and influence is not altered until it has exerted itself (Bandura, 1986). [See Figure 1] To give an example, when someone selects a television program they do not immediately change their viewing preference, or immediately cause the television company to change its programming – acquiring

preferences and behavioral competencies through televised modeling does not, at that precise moment, trigger action effects; executing an act does not instantly transform the social milieu (Bandura, 1986). To give another example directly related to ASD, when a child enters an ABA program their behaviour does not change after the first session, nor does the pre-planned program written by the therapist alter – the first trial or first set back does not alter either person's behaviour. However, as time goes on both the behaviour of the child and the pre-written program will change and adapt as factors interact.

Analytic Decomposition of Triadic Reciprocity of Bandura's Social Cognitive Theory

Environmental influences can affect a person apart from their behavior, as when thoughts and feelings are modified through modeling, tuition or social persuasion (Bandura, 1986). Personal determinants are not disembodied from the person presiding over them and his or her physical characteristics. People activate different reactions from their social environment (apart from behavior) simply by their physical characteristics such as sex, age, size and race and their socially conferred attributes, roles, and status (Bandura, 1978, 1986). By their observable characteristics people can affect their social environment before they say or do anything and in turn, the social reactions elicited affect the recipients' conception of themselves and others in ways that either strengthen or reduce environmental bias (Bandura, 1978, 1986). This concept is especially prevalent for individuals with an exceptionality, such as ASD, with many potential observable markers such as altered gait, lack of eye contact, self-stimulatory behaviours, etc.

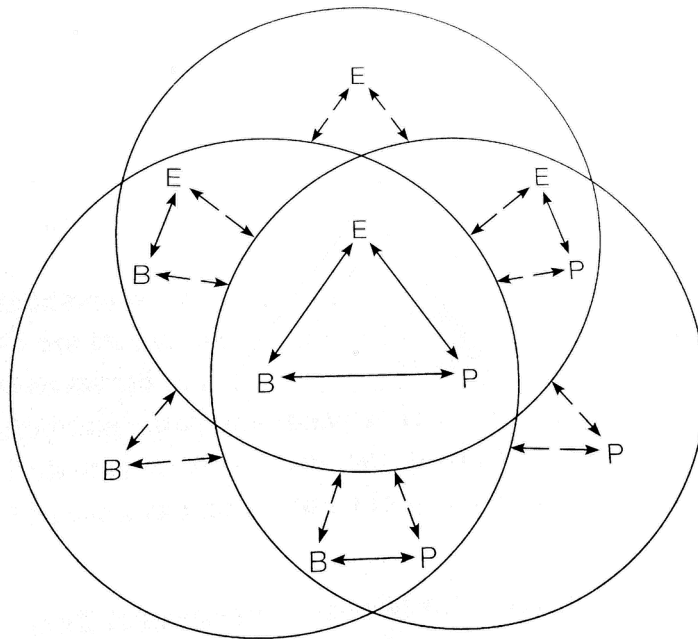


Figure 1. (Adapted from Kauffman & Landrum, 2018) Triadic Reciprocity in Social-Cognitive Theory: Environment (E), behaviour (B), and personal variables (P) influence each other reciprocally. Solid lines connecting B, P and E represent strong reciprocal effects; dashed lines represent weaker influences. Circles represent environment, behaviour, and personal variables and their shared reciprocal effects.

Each of these observable characteristics can affect the social environment of individuals before they say or do anything.

In reciprocal determinism, in an interacting process, one and the same event can either be an environmental stimulus, a response, or an environmental 'reinforcer' depending arbitrarily on when and on which side of the ongoing exchange one happens to look first in the flow of events (Bandura, 1978, 1986). Confining analysis to a particular interactive segment sheds some light on causal processes, but it leaves unexplained some of the observed variances in events when other determinants in the triadic system make casual contributions at various points in the transactions (Bandura, 1986).

Cognitions do not arise in a vacuum, nor do they function as autonomous causes of behavior. In fact, people's conceptions of themselves and the nature of things are developed and verified through four different processes:

1. Direct experiences of the effects produced by their actions;
2. Vicarious experience of the effects produced by someone else's actions;
3. Judgments voiced by others and,
4. Derivation of further knowledge from what they already know using their rules of inferences (Bandura, 1986).

To contextualize this for the current study; If a child with ASD hits his caregiver when he is asked to wash his hands, and therefore get offered snack with no hand washing, he will come to the determination that he is in control (self-conception), that others respond to his actions (behaviour), and that hand washing is an activity to avoid or fear (environment). If this same child is thinking of hitting their caregiver but

sees another child getting in trouble for doing so they will learn from this vicarious experience that the adults are in charge, others will not respond to their actions and that hand washing may still be an activity to avoid or fear but that other children are still able to do it; this, in turn, may alter their own actions regarding their behavior when asked to wash their hands before snack.

While it is true that conceptions govern behavior, the conceptions themselves are partly fashioned from direct or socially mediated transactions with the environment, the relationship between thought and action involves two-way causation (Bandura, 1986). While behaving, people are cognitively appraising the progression of events; their thoughts about the probable effects of prospective actions partly determine how actions are affected by their immediate environmental consequences (Bandura, 1978). In this way counter responses to antecedent acts are influenced not only by their immediate effects, but also by the judgments of the later consequences of a given action. The predictive value of people's momentary reciprocal consequences derives partly from people's expectations of how their actions are likely to change future consequences over the course of sequential interchanges (Bandura, 1978). This two-way causation works best when there is the opportunity for direct or vicarious experiences, however, when these are not possible, people can still develop and evaluate their conceptions in terms of judgments by others (Bandura, 1978).

Selective Activation of Potential Influences on the Individual

In this theory, the environment is not a fixed property that inevitably impinges upon individuals (Bandura, 1986). For the most part, the environment is inoperative until it is actualized by appropriate action; which part of the potential environment

becomes the actual environment depends on how people behave (Bandura, 1986). Personal variables are also inoperative as influences unless they are activated, for example people who can converse knowledgeably about a certain issues can affect the course of social interaction if they speak but not if they remain silent; therefore behavior partly determines which of the many potential personal variables come into play and which forms they will take (Bandura, 1986). Personal variables in turn partly determine which forms of behavior are developed and activated (Bandura, 1986).

Social environments provide especially wide latitude for creating conditions that can have a reciprocal effect on one's own behavior. In social transactions, the behavior of each participant governs which of their potential qualities and interests will be actualized and which will remain unexpressed (Bandura, 1986). Interdependency does not mean that there is symmetry among reciprocal influences; disparities in social power, competencies, and self-regulatory skills serve to create asymmetries in their mutual influences (Bandura, 1986).

This theory of Triadic Reciprocity indicates that environment, personal variables, and social environment are not fixed variables is important when thinking of a child with ASD. So much of the child's life is controlled by others, whether it be parents, caregivers or therapists; however, the concept that each of these factors do not ultimately impinge upon the individual gives each child a chance of autonomy.

Reciprocal Determinism as a Generic Analytic Principal

As an analytic principal, reciprocal determinism can be looked at in three levels; (1) the Intrapersonal Level; (2) the Interpersonal Level; and (3) the Broader Societal Level.

(1) Intrapersonal Level of Reciprocal Determinism

At this level, people's conceptions influence what they perceive and do, and their conceptions are in turn altered by the effects of their actions and the observed consequences accruing to others. In social learning theory, people play an active role in creating information-generating experiences as well as in processing and transforming informative stimuli that happen to impinge upon them (Bandura, 1978). This is when reciprocal transactions between thought, behavior and environmental events come into play.

(2) Interpersonal Level of Reciprocal Determinism

At this level, reciprocal processes involve cognition as well as action. Cognitive factors will play a role in how external events will be observed and perceived and how they will have an effect on the action of the observer (Bandura, 1978).

(3) Broader Societal Level of Reciprocal Determinism

At this level, reciprocal processes are reflected in the interdependence of organizational elements, social subsystems and transnational relations (Bandura, 1978).

When examining ASD, the Social Cognitive Theory and specifically the three interacting factors in Bandura's theory of triadic reciprocity and reciprocal determinism each play a significant role in treatment. It is important for good intervention programs to look at each child as a whole person with a set of interacting environments, personal variables, and behaviours that are specific to them, as well as changing each day. Looking at these three factors can help to analyze both specific and broad situations but it is important for practitioners and family members alike to

take into account interactions between what is said, what is done, what is autonomously decided and outside factors when making decisions for their child. This framework will serve as a consideration for the interventions and recommendations outlined in this project.

Interventions for Autism Spectrum Disorder

Though there is no one agreed upon cause of ASD, the vast majority of professionals do agree that early identification and early intervention are of the utmost importance (McCrimmon et al., 2014; Anagnostou et al., 2014). Since the disorders initial recognition, treatment approaches have ranged from psychoanalytic therapies and electroconvulsive treatments to the present-day focus on behavioural interventions and the enhancement of developmental abilities (McCrimmon et al., 2014). The overarching goal of ASD interventions is to facilitate the acquisition of skills, remove barriers to learning, and improve functional skills and quality of life (Anagnostou et al., 2014). With a wide range of interventions becoming increasingly available, there may be different interventions that are effective for different children; however, there are some guidelines to follow when investigating a new intervention (McCrimmon et al., 2014). These guidelines include; (a) treatment should be individualized to the presenting behavioural pattern of each child; (b) prompting, shaping and reinforcement techniques should be used to develop skills; (c) functional analysis should be used to understand problematic behaviors; (d) verbal and/ or nonverbal communication skills should be developed to minimize interfering behaviours; (e) the environment should be modified to promote communication, understanding, and interaction; (f) opportunities for teaching and reinforcement

should be used even outside of the therapeutic setting; and (g) new skills should be taught in the framework of predictable schedules and consistency and then generalized (McCrimmon et al., 2014). It is important that families and caregivers determine which intervention program(s) are best suited to the individual in terms of managing behaviour and increasing overall potential. The following section will give an in-depth look at several evidence-based intervention programs which have been scientifically proven to be effective in increasing positive outcomes for individuals with ASD.

Applied Behavioural Analysis (ABA)

Applied Behavioural Analysis (ABA) is an intervention that is based on the contingencies of reinforcement schedules, and variables involved in behavioral interventions for example extinctions, spontaneous recovery and conditional emotional response (Sulzer-Azaroff & Mayer, 1991). ABA uses positive reinforcement over punishment, seeks to establish a clear connection between treatment and outcome and is focused on the generalization of socially important skills to the natural environment (Mohammadzaheri, Koegel, Rezaee & Rafiee, 2014; Boutot & Hume, 2012). ABA includes an analysis of whether or not changes in behaviour are caused by the behavioural modification techniques used or whether there were other variables or pure coincidence that lead to behavioural change (Boutot & Hume, 2012). In order for the use of behavioural principals to be applied, they must be conducted with meaningful, socially important behaviours and be generalized to the natural environment where those behaviours or skills are needed (Boutot & Hume, 2012).

With recent ministry changes (2016) in Ontario, there has been a rise in funding for ABA programs; and therefore it is ever more important for parents and caregivers to know what qualifies as an ABA program. In seminal research on ABA, Baer et al. (1968, 1987) recommended that intervention based on ABA principles be judged by six criteria that are still used today (Boutot & Hume, 2012). The criteria are as follows: (1) the intervention must be applied, meaning that it addresses behaviours that are socially significant and will improve or benefit the life of the individual; (2) the intervention must be behavioural, meaning that the behaviour addressed in intervention is observable and measurable through direct assessment or observation; (3) the intervention must be analytic and conceptual, this is the element of control, the researcher or interventionist must be able to demonstrate a functional relationship change in targeted behaviour and they must be able to demonstrate that this was due to the use of behaviour strategies based on relevant principles; (4) the intervention must be technological, meaning that the program should be clear, concise and contain enough detail to be replicated with minimal teaching; (5) the intervention must be effective, there must be a change in the targeted behaviour that is clinically or socially significant; and (6) the intervention must be judged on generality, changes must last over time and generalize to other environments, people and items and this must continue to be true after the original treatment procedures are withdrawn (Boutot & Hume, 2012; Bear et al., 1968, 1987; Kaufmann & Landrum, 2017).

Current research indicates that the 'applied' piece of ABA is important and that this intervention is successful when carried out in home and school-based as well as clinical settings (Boutot & Hume, 2012; Mohammadzaheri, et al., 2014). Additionally,

research continues to support that parents, teachers, and paraprofessionals can be taught to successfully use ABA strategies (Boutot & Hume, 2012). Overall, ABA intervention is considered to be among the current best practices for teaching young children with ASD and outcomes have been found to include language improvement, reductions in challenging behaviours and improvement in both cognitive and adaptive skills (Anagnostou et al., 2014).

[Early] Intensive Behavioural Interventions ([E]IBI)

[Early] Intensive Behavioural Interventions ([E]IBI) begins before age 5 and involves 15 to 40 hours per week of individualized treatment for two or more years (Smith, Klorman & Mruzek, 2015). EIBI emphasizes highly structured, adult-led, one-to-one teaching approaches based on principles of ABA and operant conditioning (Smith, Klorman & Mruzek, 2015). EIBI has been found to increase desired behaviour, specifically in the areas of imitation, receptive and expressive language, gross and fine motor skills, play and joint attention and decrease challenging behaviours such as tantruming, aggression, self-injurious behaviour (SIB) and vocal or motor stereotypic behaviours (MacDonald, Parry-Cruwys, Dupree & Ahearn, 2014).

EIBI programs are recognized as an efficacious approach for improving outcomes for young children with ASD including future educational placement and level of support needed (Estes et al., 2015; Dawson et al., 2010). Many studies have examined the efficacy of EIBI programs on standardized measures such as IQ and adaptive behavior and have proven that this type of intervention produces large gains in these areas for children with ASD (Eldevik, Hastings, Jahr & Hughesm 2012).

Alternative or Augmented Communication for Individuals with Non-Verbal ASD

Often integrated into ABA and IBI intervention plans are goals related to the use of functional communication. However, approximately 25% of children with ASD are unable to use natural, verbal speech as their main form of communication (Boesch, Wendt, Subramanian & Hsu, 2013). Despite this large group of non-verbal children, it has been found that prognosis is improved with early and intensive intervention, typically involving an Alternative or Augmented Communication System (AAC) (Boesch et al., 2013). AAC systems can include manual signs (sign language and gestures), voice output communication devices and pictures/symbols (Aguis & Vance, 2016; Graham et al., 2016; Lerna, Esposito, Conson, Russo & Massagli, 2012). AAC systems are broadly categorized into aided and unaided systems (Aguis & Vance, 2016). Unaided systems do not require any external equipment, for example, manual signing or gestures (Aguis & Vance, 2016). Aided systems are more widely used for children with ASD and include systems such as the Picture Exchange Communication System (PECS) and speech generating devices (SGD) (Aguis & Vance, 2016).

PECS are widely used throughout the ASD community and are often taught in both centers and schools. PECS was originally developed by Bondy and Frost (1994) and is a picture based AAC system that was specifically developed to teach non-verbal children with ASD to initiate requests and to comment (Aguis & Vance, 2016; Boesch et al., 2016; Lerna et al., 2012). It uses basic behavioural principals, particularly reinforcement techniques to teach children to use functional communication in a social interaction context (Lerna et al., 2012). The PECS protocol consists of six phases; Phases 1 and 2 teach the learners to exchange pictures for preferred items with Phase 2 having them do so across distance and with persistence (Aguis & Vance,

2016; Lerna et al., 2012). Phase 3 teaches learners to discriminate between preferred and non-preferred items and eventually between a variety of preferred items; in Phase 4 learners are taught to make a request using complete sentences (Aguis & Vance, 2016; Lerna et al., 2012). Phase 5 involves instruction in answering questions and Phase 6 teaches learners to make a variety of comments (Aguis & Vance, 2016; Lerna et al., 2012). Essentially the first four phases focus on teaching the child to use a symbol to make a request while the final two phases expand the range of communicative functions used by the child (Lerna et al., 2012).

PECS has been found to be a promising intervention for supporting functional communication skills such as initiating interactions and joint attention as well as increasing verbal speech and spontaneous communication skills (Aguis & Vance, 2016; Boesch et al., 2016; Ganz et al., 2012; Lerna et al., 2012). Additionally, PECS use has been found to decrease interfering or challenging behaviours (Aguis & Vance, 2016).

Speech generating devices (SGD) are also a common AAC choice for those with ASD to replace or augment speech communication; these devices emit digitized speech and come in a variety of configurations to suit the needs of individuals with little or no fluent speech (Boesch et al., 2016). Recent trends on AAC even include the use of mobile technology such as Android tablets; touch screen phones, and iPads as SGD (McNaughton & Light, 2013). There have been found to be a number of advantages to using tablets as SGD including their relatively low cost, mainstream appeal, and portability when compared to other SGD (McNaughton & Light, 2013). Different forms of AAC work well for different children depending on both ability and preference;

however, it is universally agreed that a goal of functional communication is an important part of any intervention program.

Sensory Integration Intervention for Individuals with ASD

Sensory impairments are common for children with ASD with up to 90% of this population exhibiting either hypo or hyper-reactivity to sensory input (Case-Smith, Weaver & Fristad 2015; Karim & Mohammed, 2015; Schaaf, Benevides, Kelly & Mailloux-Maggio, 2012). Families report that sensory impairments significantly restrict full participation in daily activities for their children and create social isolation for both the child and the family as a whole (Schaaf et al., 2012). Children with such sensory impairment often have complex responses to sensory stimuli and this may contribute to the maladaptive behavioural profile that is often displayed by those with ASD (Karim & Mohammed, 2015; Schaaf et al., 2012). For these reasons, sensory integration interventions are among the most requested by families and caregiver of children with ASD with up to 60% of children receiving this type of intervention at some point (Case-Smith et al., 2015). Sensory-based interventions are increasingly used by therapists and include activities that are thought to manage the sensory system by providing vestibular, proprioceptive, auditory and tactile input (Karim & Mohammed, 2015). The two most common types of sensory interventions are (1) Sensory Integration Therapy (SIT); and (2) Sensory Based Intervention (SBI) (Case-Smith et al., 2015).

The theory of SIT was originally developed by A. Jean Ayres in 1972 and proposes that if a child is engaged in individually tailored sensory-motor activities, their nervous system is better able to modulate, organize and integrate sensory

information and they are more likely to use incoming sensory information in an adaptive way (Schaaf et al., 2012). SIT as a clinic-based intervention uses play and sensory enhanced interactions to elicit adaptive responses from the child (Case-Smith et al., 2015). During this intervention, the therapist creates activities that will engage the child and challenge their sensory processing and motor planning skills (Case-Smith et al., 2015). The goal of SIT is to use gross motor activities to activate the vestibular and somatosensory systems thereby increasing the child's ability to integrate sensory information and demonstrate more organized and adaptive behaviours such as joint attention, social skills, motor planning and perceptual skills (Case-Smith et al., 2015).

The key feature of SIT is the 'just right challenge'; these are activities that are designed to have the child use their highest developmental skills thereby facilitating progressively more sophisticated adaptive behaviours in response to a challenge (Case-Smith et al., 2015; Schaaf et al., 2012). SIT has 10 essential elements which must be encompassed in the program including: (1) ensuring safety; (2) presenting a range of sensory opportunities; (3) using activity and arranging the environment to help the child maintain self-regulation and alertness; (4) challenging postural, ocular, oral, or bilateral motor control; (5) challenging praxis and organization of behaviour; (6) collaborating with the child on activity choices; (7) tailoring activities to present the 'just-right challenge', (8) ensuring that activities are successful; (9) supporting the child's intrinsic motivation to play; and (10) establishing a therapeutic alliance with the child (Case-Smith et al., 2015; Parham et al., 2011). Finally, SIT therapists will work with the child's family or other professionals to reframe the child's behaviour

using a sensory processing perspective; this can help others involved in the child's life to develop different approaches to accommodate the child's sensory needs and set them up for success which will allow them to participate more fully in life (Case-Smith et al., 2015).

Another common sensory integration intervention are SBI's, which are adult, directed sensory modalities that are applied to the child to improve behaviours associated with sensory processing concerns (Case-Smith et al., 2015). This intervention requires less engagement on the part of the child and is intended to fit into the child's daily routine (Case-Smith et al., 2015). SIB's that are believed to promote behavioural regulation include brushing, massage, swinging, bouncing on a therapy ball and wearing a vest (Case-Smith et al., 2015). These interventions are based on the hypothesis that the efficiency with which the child's nervous system interprets and uses sensory information can be enhanced through the systematic application of sensation to promote a controlled change in arousal state (Case-Smith et al., 2015). Most often, SBI's are used to promote a change in arousal from a high arousal state such as hyperactivity, agitation or self-stimulating behaviours to a low arousal state such as sitting nicely or functional play (Case-Smith et al., 2015).

In contrast to SIT which typically takes place in a clinic, most SIB's are used in the child's natural environment, are integrated into the child's daily routine, and are applied by family members, teachers or aides (Case-Smith et al., 2015). Like SIT, SBI's also have criteria for good programming including; (1) they must be based on a specific assessment of the child's performance, development, and sensory needs; (2) they must include stated goals of self-regulation and related behavioural outcomes;

and (3) they require the child's active participation (Case-Smith et al., 2015). As maladaptive sensory behaviours are common in children with ASD, it is important for both families and professionals to look at different ways of addressing these sensory concerns to determine which would be most beneficial for each individual child.

Current Empirical Research on Interventions for ASD

When looking at an overview of Autism Spectrum Disorder and empirically based interventions it is important to review recent literature on such interventions. Following is a review of five empirical studies on prominent ASD intervention programs.

Rodriguez and Gutierrez (2017) aimed to use operant and respondent procedures to condition social stimuli that were shown to be neutral prior to conditioning. More specifically, they aimed to compare the two procedures in their effectiveness to condition social stimuli to function as reinforcers to a simple task, as well as the ability to maintain conditioning effects after training (Rodriguez & Gutierrez, 2017). This study is important as reinforcement is often used during IBI and ABA interventions.

There were six male participants in this study, each was diagnosed with Autism Spectrum Disorder and this diagnosis was confirmed using the Autism Diagnostic Observation Schedule (ADOS) (Rodriguez & Gutierrez, 2017). Participants were between the ages of 18 months and 3 years (Rodriguez & Gutierrez, 2017).

Prior to trials commencing a Preference Assessment Parent Interview Form was created and used to generate a list of preferred social and nonsocial stimuli for each participant according to parent report (Rodriguez & Gutierrez, 2017). Tangible items were collected based on this data and picture cards were also made which

represented both the social and nonsocial stimuli (Rodriguez & Gutierrez, 2017). The five nonsocial stimuli ranked highest and then five social stimuli ranked lowest were validated using a free-operant, concurrent-choice reinforce assessment (Rodriguez & Gutierrez, 2017).

The reinforcer assessment consisted of picture cards of the preferred stimuli being presented one at a time to test how many times the child would engage in a simple task – touching the card or handing it to the adult – to obtain access to the stimuli (Rodriguez & Gutierrez, 2017). Each trial began with five forced exposures in which the children received prompts i.e. "If you want bubbles, hand me the card" which resulted in brief (30 sec) access to the stimulus (Rodriguez & Gutierrez, 2017). After forced exposure, the participant was asked to engage in the task in a free operant manner during a 1-minute interval in order to receive brief access to the stimulus (Rodriguez & Gutierrez, 2017). This was repeated until each stimulus was tested and was then repeated three times in order to control for order effects (Rodriguez & Gutierrez, 2017). The nonsocial stimulus that resulted in the highest rates of responding and the two social stimuli that resulted in the lowest rates of responding were selected for the conditioning procedure (Rodriguez & Gutierrez, 2017). A smile was selected as the discriminative stimulus for all participants as it was ranked the lowest or second lowest for all. Clapping, shouting "Hooray!", saying "Yay!", and a hug resulted in the lowest response rates and were selected for the pairing procedure for participants according to their individual results (Rodriguez & Gutierrez, 2017). The nonsocial stimuli that resulted in the highest response rates included: a car-shaped book, a video played on the iPad, chocolate chip cookies,

balloons, an iPad games and bubbles (Rodriguez & Gutierrez, 2017). These were used to condition stimuli in both conditions according to individual preferences.

The study used a multiple treatment with reversal, embedded in a multiple-baseline design. Conditions included Baseline A (extinction), Baseline A1 (preconditioning), Reversal A (postconditioning), Baseline B (preconditioning second procedure), Reversal B (postconditioning second procedure), Probe A and Probe B (Rodriguez & Gutierrez, 2017). Participants were split with Participants 1 through 3 receiving the pairing procedure first and Participants 4 through 6 receiving the discriminative stimulus procedure first (Rodriguez & Gutierrez, 2017).

During baseline sessions, the child received a forced exposure before engaging in a simple task (pointing to or handing a picture card to an adult) in order to receive a stimulus in a free operant manner within a 1-minute interval (Rodriguez & Gutierrez, 2017). During baseline, each picture card had a non-specific picture (a smiley face colour coded to each stimulus), different than during the reinforce assessment (Rodriguez & Gutierrez, 2017). Baseline was broken down into two phases; the first set of baseline trials were labeled extinction because there were no programmed consequences given contingent on task completion (Rodriguez & Gutierrez, 2017). This tested whether the child found the task itself reinforcing and would engage in it without a reinforcer. The second set of baseline trials presented the social stimulus to be conditioned only when the task was completed (Rodriguez & Gutierrez, 2017). This was used as a preconditioning measure in order to determine how many times the child would complete the task in order to gain access to the social stimulus prior to being conditioned to do so (Rodriguez & Gutierrez, 2017). Both baselines continued

until stability was reached. Reversal baselines were completed following conditioning trials in order to test the social stimuli after conditioning (Rodriguez & Gutierrez, 2017). Test trials were completed with only the social stimulus being presented contingent on touching or handing the card in order to determine the reinforcing effects of the previously neutral stimulus (Rodriguez & Gutierrez, 2017).

The pairing procedure began with five forced exposures in which the social and nonsocial stimuli were presented in a delay conditioning fashion following the completion of the task (Rodriguez & Gutierrez, 2017). Then the child was then asked to complete the task in a free operant manner within a 1-minute interval (Rodriguez & Gutierrez, 2017). Intervals were repeated as many times as necessary to reach a total of 80 conditioning trials. The discriminative stimulus procedure also began with five forced exposures in which the participant was asked to look at the experimenter in order to attend to the discriminative stimulus (a smile) before being allowed to reach for the card (Rodriguez & Gutierrez, 2017). Verbal, gestural and physical prompts were used as necessary during these forced exposures. Following forced exposure, prompts to observe the discriminative stimulus were only given if the participant attempted to reach for the card before attending to the experimenter's face (Rodriguez & Gutierrez, 2017). During each trial, the experimenter smiled as soon as the participant looked at their face; throughout the rest of the session the experimenter maintained a neutral affect (Rodriguez & Gutierrez, 2017). As in all other conditions, the child was asked to complete the task in a free operant manner within a 1-minute interval and again, intervals were repeated until 80 trials had been completed (Rodriguez & Gutierrez, 2017). Finally, follow up baseline trials testing for

maintenance were repeated on each conditioned stimulus at least three weeks after the last conditioning trial has been completed (Rodriguez & Gutierrez, 2017). This procedure was identical to the pre-test baseline, though only 3 trials were completed.

Quantitative data was taken throughout the study and was collected during all live sessions by a second observer. Interobserver agreement (IOA) for frequency of responding was collected by the researcher and another trained observer for one third of all sessions with the total IOA score being 99.94% (Rodriguez & Gutierrez, 2017). Data was calculated for the mean and median response rates for each participant.

The main findings from the pairing procedure demonstrated that for some participants the procedure was more effective than the discriminative stimulus procedure for conditioning social stimuli to function as a reinforcer (Rodriguez & Gutierrez, 2017). Response rates, for some cases, which followed pairing, were much higher than they were before conditioning and in most cases they were at least slightly higher following pairing (Rodriguez & Gutierrez, 2017). However graphic analysis of the data for the pairing procedure only demonstrated clear effects for two of the six participants (Rodriguez & Gutierrez, 2017). Participants 1 and 3 had very stable, low response rates prior to the pairing procedure. These rates were much higher following intervention and were also found to be relatively stable, indicating a substantial effect (Rodriguez & Gutierrez, 2017). In regard to the other participants; Participant 2 showed a very unstable and long preparing condition and high but variable post pairing response rates, Participants 5 and 6 showed moderate increases in mean response rate times between pre and post pairing (Rodriguez & Gutierrez,

2017). Participant 4 was the only participant who showed no effect due to the pairing intervention (Rodriguez & Gutierrez, 2017).

The discriminative stimulus procedure was found to be relatively ineffective in conditioning social stimuli to be reinforcing. Post discriminative stimulus response rates were found to be lower than the post pairing response rates overall which demonstrated less of an effect from this intervention (Rodriguez & Gutierrez, 2017). Participant 1 was found to have had a higher response rate in the pre discriminative stimulus condition, Participant 2 also had a relatively high and variable pre response rates and these did not increase substantially post intervention (Rodriguez & Gutierrez, 2017). Participant 3 had higher and more variable response rates that decreased and then stabilized in the precondition (Rodriguez & Gutierrez, 2017). Finally, Participants 4-6 had low response rates in both the pre and post conditions and there was little to no evidence of carry over effect to the pairing condition (Rodriguez & Gutierrez, 2017). However, with 4 of the 6 participants completing the discriminative stimulus procedure (80 trials) it was demonstrated that it is possible to garner orienting to the experimenter's face (Rodriguez & Gutierrez, 2017).

Throughout typical ABA interventions, many associations or pairing between social and nonsocial stimuli occur incidentally; this study demonstrated that they could be made in a systematic and programmatic fashion. Additionally, this study demonstrated that the specific methods chosen for conditioning social stimuli to serve as a reinforcer might have an impact on the effectiveness of such procedures.

When looking at the characteristics of ASD there are many that can affect sleep such as behavioural concerns, difficulty in understanding sleep expectations or the

benefits of sleep, restricted interests and repetitive behaviours which interfere with bedtime, and interfering sensory concerns (Loring, Johnston, Gray, Goldman & Malow, 2016). Due to these concerns, Loring et al. (2016) completed a pilot study that aimed to assess the impact of a brief sleep education program on nighttime sleep for adolescents with ASD. Loring et al. (2016) hypothesized that sleep latency and night wakings would decrease compared to baseline.

The participants in this study included adolescents with ASD and their parents (Loring et al., 2016). Criteria for inclusion included an ADOS-2 confirmed ASD diagnosis, a lack of medication changes in the last 30 days, no anticipated medication changes during the study timeline and sleep concerns (Loring et al., 2016). Sleep concerns were defined as taking at least 30 minutes to fall asleep (sleep latency) at least 3 nights a week and/or waking during the night for at least 40 minutes at least 3 nights a week (Loring et al., 2016).

Exclusion criteria included adolescents who had an overall cognitive score of less than 70 or a comorbid diagnosis of Fragile X syndrome, Down's syndrome, neurofibromatosis, tuberous sclerosis, Angleman syndrome, Rett syndrome or childhood disintegrative disorder (Loring et al., 2016). Additionally, those with an untreated medical condition, such as seizure disorder, sleep apnea, gastrointestinal reflux disorder or frequent parasomnias that affected sleep were not included in the study (Loring et al., 2016).

Overall, 23 adolescents and their parents were enrolled in the study. 73.9% were male and 26.1 % female with a mean age of 14.8 years (Loring et al., 2016). The

mean cognitive score was in the average range and the mean ADOS-2 severity score was 7.33 out of 10 (Loring et al., 2016).

Prior to the beginning of the study, the ADOS-2 was given to all participants to confirm an ASD diagnosis (Loring et al., 2016). The behavioural observations were taken and a structured ASD interview based off of the DSM-5 criteria was given, this interview focused on current and past functioning (Loring et al., 2016). Other measures included the Weschler Abbreviated Scale of Intelligence – Second Edition, the Vineland Adaptive Behaviour Scales- Second Edition and questionnaires assess demographics and level of pubertal development (Loring et al., 2016). Outcome measures used included: actigraphy to measure the participants sleep, the Adolescent Sleep Hygiene Scale (ASHS), the Adolescent Sleep Wake Scale (ASWS), the Modified Epworth Sleepiness Scale (M-ESS), the Parent Adolescent Absorption Scale and an end of session survey (Loring et al., 2016).

To begin the study, participants were asked to wear an actigraphy watch for 10-14 consecutive days (Loring et al., 2016). The data obtained from this watch served to screen for sleep latency and night waking and provided a baseline measure of sleep disturbance. Following baseline adolescents and their parents received two individual sleep education sessions conducted 1 week apart and carried out by a psychologist (Loring et al., 2016). A common protocol was covered across all sessions that covered behaviours that promote successful sleep and bedtime routine (Loring et al., 2016). Session one consisted of a discussion regarding identified sleep challenges and a review of the actigraphy data along with provision sleep recommendations (Loring et al., 2016). Adolescents and parents were then given a homework sheet and

asked to record the adolescent's completion of the sleep recommendations and note any questions or concerns; troubleshooting was also provided (Loring et al., 2016).

The second session began with a review of the homework sheet and a discussion on the implantation of recommendations since the last session; challenges were discussed and again troubleshooting was provided (Loring et al., 2016). Then, the psychologist introduced relaxation and distraction techniques to help with sleep onset delay and night wakings (Loring et al., 2016). Throughout each of the sessions measure for success were included such as asking each individual their preference for the delivery of recommendations (i.e. verbal, written out, or through a presentation on a laptop) (Loring et al., 2016). Additionally, evidence-based supports for individuals for ASD were included as necessary, such as visual schedules, visual reminders, task analysis, scripts, and visual reinforcement systems (Loring et al., 2016). Role-play was also included throughout the sessions to model relaxation and distraction techniques.

After the second session, parents and adolescents were instructed to continue using the recommendations. Follow-up telephone calls were conducted by the psychologist approximately 1 and 2 weeks after the second session in order to assess parental understanding, implementation, and comfort level of concepts covered using the Parent Absorption Scale (Loring et al., 2016). During the third and fourth weeks after the second session, parents and participants were instructed to continue to implement the recommended strategies and to contact study staff as questions arose (Loring et al., 2016). At the end of this period, each participant wore the actigraphy watch again for 1014 days to assess changes in overall sleep quality and quantity (Loring et al., 2016). Finally both the parent and adolescent returned for a final

appointment to complete the same sleep and behavioural measures as at baseline; parents were also contacted by phone 3 months after the final appointment to assess implementation of strategies and report adolescent sleep improvement (Loring et al., 2016).

The data for this study were analyzed quantitatively as changes in score were calculated for each participant (post treatment – baseline). A mean of each participants sleep onset latency, wake after sleep onset, total sleep time and sleep efficiency were calculated based off of the number from the actigraphy watch (Loring et al., 2016). For the Adolescent Sleep Hygiene Scale (ASHS) and the Adolescent Sleep Wake Scale (ASWS), the total score was calculated for all subscales and for the Modified Epworth Sleepiness Scale (M-ESS) the total score was calculated (Loring et al., 2016). Wilcoxon signed-ranks test was completed for analysis and to test the null hypothesis (Loring et al., 2016). Additionally, Spearman correlations were used in order to assess the association between the change score in sleep latency and sleep efficiency with the parent and adolescent report measures (Loring et al., 2016).

The main finding of this study confirmed the hypothesis that sleep latency and night wakings would decrease compared to baseline. More specifically on the parent report of the ASWS, a significant improvement was seen with treatment on the total score and on all subscales (Loring et al., 2016). On the adolescent report of the ASWS a significant improvement was also seen throughout (Loring et al., 2016). Parent report of the ASHS showed significant improvement with treatment on total score and four of the five subscales, the adolescent report showed the same results (Loring et al., 2016). In regard to the M-ESS, a significant improvement was seen in total score on the

adolescent report but not the parent report (Loring et al., 2016). Finally, in regard to actigraphy measures, significant improvement was seen post treatment in sleep latency and sleep efficiency through not in wake time after sleep onset and total sleep time (Loring et al., 2016). Overall, this study shows behavioural concerns related to sleep concerns in adolescents with ASD could be addressed through evidence-based practice.

As described in the rationale for this handbook, it is important for children with ASD to have good relationships between home, school and community settings; further, it is important for interventions and strategies to be consistent throughout these settings. Garbacz and McIntyre (2016) completed a study that looked at an intervention protocol (Conjoint Behavioural Consultation) that took place in both the school and home settings. The purposes of their study were to (a) determine the efficacy of Conjoint Behavioural Consultation (CBC) for enhancing behaviours in children with ASD; (b) examine pretest and posttest ratings of the parent-teacher relationships; and (c) investigate pretest and posttest ratings of parent and teacher competence in problem solving (Garbacz & McIntyre, 2016). More specifically, their research questions were: (a) What is the effect of CBC on positive social behaviour and externalizing behaviour of children with ASD in early elementary school? (b) What is the impact of CBC on children with ASD on parent and teacher perceptions of the parent-teacher relationship? (c) What is the impact of CBC on children with ASD on parent and teacher perceptions of their competence in problem solving? (Garbacz & McIntyre, 2016). Garbacz and McIntyre (2016) held three hypothesizes: (1) that CBC would be effective in enhancing behavioural outcomes for children with ASD, (2) that

parent-teacher relationships and parent and teacher problem solving competencies would improve from pretest to posttest, and (3) that parents and teacher would find CBC acceptable.

The participants in this study included three students with ASD, three parents, three teachers and three CBC consultants (Garbacz & McIntyre, 2016). All three children attended elementary school in a community in the Pacific Northwest region of the United States (Garbacz & McIntyre, 2016). Alex was an 8-year-old White male in third grade, Eric was a 7-year-old White male in first grade and Diane was a 6-year-old White female in first grade (Garbacz & McIntyre, 2016). It was noted that Alex as eligible for a free or reduced price lunch while Eric and Diane were not (Garbacz & McIntyre, 2016). In order to meet inclusion criteria children must (a) have mild to moderate symptoms of Autism based on the Childhood Autism Rating Scale-Second Edition (CARS-2) and (b) have t scores of 65 or higher on the Total Problem Scale of Child Behavior Checklist (CBCL) or the Teacher's Report Form (TRF) (Garbacz & McIntyre, 2016).

The parental participants were each of the children's biological mothers; all identified as White (Garbacz & McIntyre, 2016). Alex's mother reported completing high school and Eric and Diane's mother reported completing some college (Garbacz & McIntyre, 2016). Alex had a White female special education teacher with eight years of teaching experience; Eric had a White female general education teacher with 16 years of teaching experience and Diane had a White, female special education teacher with 6 years six years of teaching experience (Garbacz & McIntyre, 2016). Each family-teacher group had one CBC consultant. All consultant wee White female graduate

students in school psychology who had completed a criterion based training program (Garbacz & McIntyre, 2016). All consultants also received individual and group supervision from the first author throughout casework.

Child outcomes for intervention were measured through classroom behaviour and parent and teacher goal attainment scaling ratings. For child classroom behaviour, observers trained to criterion completed direct observations of the children in their classrooms and coded behaviours such as engaged time, off-task, and aggression (Garbacz & McIntyre, 2016). Additionally, individualized target behaviours were collaboratively identified by each consultant-parent-teacher team (Garbacz & McIntyre, 2016). Alex's target behaviour was tantrum which was defined as showing inappropriate signs of anger, including refusing to comply with adult comments, clenching fists, tensing body, making audible growling sounds, grabbing objects that are not associated with the assigned activity, and/or making forceful, threatening and/or abusive actions (Garbacz & McIntyre, 2016). Eric's target behaviour was off-task, which was defined as motor and/or verbal behaviours that are not permitted or associated with the assigned task (Garbacz & McIntyre, 2016). Diane's target behaviours was compliance, defined as exhibiting, within 30 seconds or time specified by the adult, a behaviour that has been specified in a command issued by an adult, or ceases to exhibit within at least 30 seconds a behaviour, the cessation of which has been specified in a command issued by an adult (Garbacz & McIntyre, 2016).

Goal attainment scaling was used to assess parent and teacher perceptions of goal attainment for the goals set during consultation (Garbacz & McIntyre, 2016). Parallel parent and teacher version of the Parent-teacher Relationship Scale-II (PTRS-

II) were used to examine parent and teacher perceptions of the parent-teacher relationship (Garbacz & McIntyre, 2016). Parent and teacher perceptions of their competence in problem solving were assessed using the Parent Competence in Problem-Solving Scale (PCPS) and the Teacher Competence in Problem Solving Scale (TCPS) (Garbacz & McIntyre, 2016). Finally, the acceptability of CBC was assessed in order to understand social validity through parent and teacher version of the Behavior Intervention Rating Scale-Revised (BIRS-R) and the Consultant Evaluation Form (CEF) (Garbacz & McIntyre, 2016).

CBC was conducted with each parent-teacher dyad and included three to four conjoint session facilitated by the consultant (Garbacz & McIntyre, 2016). The first meeting consisted of the Needs Identification Interview in which the child's need and strengths are discussed (Garbacz & McIntyre, 2016). Additionally, in this session, the child's target behaviours and associated operational definitions were identified and procedures to collect baseline data were established (Garbacz & McIntyre, 2016). During the second meeting – the Needs Analysis Interview - baseline data were reviewed, behavioural patterns were discussed and behaviour support plans were created (Garbacz & McIntyre, 2016). Following this phase, both parents and teacher implemented the behaviour support plans in their respective settings with support from the consultant through home visits and classroom observations (Garbacz & McIntyre, 2016). The final session was the Plan Evaluation Interview; during this session, the child's progress towards the goal was reviewed and determinations for continuing, modifying or discontinuing the plan were made (Garbacz & McIntyre, 2016).

This study used a concurrent multiple baseline across participants design in order to examine the efficacy of CBC on the classroom behaviour of children in elementary classrooms and missed measures data was collected (Garbacz & McIntyre, 2016). Quantitatively, visual analysis, the TauU summary index and the percentage of all non-overlapping data were used to examine the efficacy of CBC and behaviour support plans in child classroom behaviour (Garbacz & McIntyre, 2016). Qualitative measures were used through the descriptive examination of data to address CBC's impact on parent and teacher perceptions of relationships and competence in problem solving, as well as CBC acceptability (Garbacz & McIntyre, 2016).

Results of the study showed that all three children demonstrated improvements in all behaviour codes measured after the introduction of behaviour support plans with CBC (Garbacz & McIntyre, 2016). Specifically, data analysis revealed an increase in children's positive social behaviour and a decrease in externalizing behaviour in the classroom (Garbacz & McIntyre, 2016). Goal Attainment Scale (GAS) ratings indicated that all parents and teacher observed improvements in children's target behaviours at the conclusion of CBC (Garbacz & McIntyre, 2016).

In regard to parent-teacher relationships, the data based on self-report indicated that Alex's and Diane's parent and teacher-reported improvements in their relationships from pretest to posttest (Garbacz & McIntyre, 2016). Eric's teacher reported a decrease in parent-teacher relationship and Eric's parent reported a decrease in communication within this relationship; however it was a goal for this dyad to decrease off topic conversation in meetings and this may have played a role in

these ratings (Garbacz & McIntyre, 2016). Finally, all parents and teachers reported improvements in their problem solving competencies and favourably rated the CBC process and their consultants (Garbacz & McIntyre, 2016). These findings suggest that a strong connection between two setting, using CBC can effectively improve behavioural outcome in classrooms for children with ASD in early elementary school.

As discussed in the previous two studies, behavioural interventions are most common for multiple concerns in children with ASD. However, some of this population also receives daily medication concurrently in order to further manage behavioural concerns. Risperidone is one of the most common medications prescribed to children with ASD, however, there are some concerns about the side effects of this drug for young children (Boon-yasidhi, Jearnarongrit, Tulayapichitchock & Targusa, 2014). Given these concerns, Boon-yasidhi et al. (2014) completed a study whose objective was to evaluate adverse effects of Risperidone in children who received this medication for an extended period in a naturalistic clinical setting.

The sample for this study consisted of 45 Thai children between the ages of 2 and 15 years who were receiving treatment in the child psychiatry clinic at Siriraj Hospital Thailand (Boon-yasidi et al., 2014). Each of these children had previously received a diagnosis of ASD according to the DSM-IV diagnostic criteria and were prescribed Risperidone (Boon-yasidi et al., 2014). Three quarters of the sample were males and the mean age at which they started Risperidone was 8.15 (Boon-yasidi et al., 2014).

The mean dose of Risperidone was .94 mg/day and the mean duration of treatment with Risperidone was 36.8 months (Boon-yasidi et al., 2014).

The instrument for data collection in this study was a questionnaire for assessing the adverse effects of Risperidone that was developed by the investigators; this questionnaire was comprised of a list of 15 common adverse or symptoms thought to be adverse (Boon- yasidi et al., 2014). At the beginning of the study, parents gave consent for their child to participate and were then interviewed using this questionnaire. The interviews took place during the child's regularly scheduled clinic visits (Boon- yasidi et al., 2014). Parents were also asked to indicate the action they took for each adverse effect including the continuation of medication, a dose reduction or discontinuation of medication (Boon- yasidi et al., 2014).

Quantitative data was collected and descriptive statistics were calculated for the frequencies, mean and standard deviation of the collected demographic data and reported adverse effects (Boon- yasidi et al., 2014). All statistical analysis was performed using SPSS 16; however, it was not indicated which statistical tests were completed (Boon- yasidi et al., 2014).

Boon- yasidi et al. (2014) results demonstrated that adverse effects of Risperidone were seen in 39 or 86.7% of the children and that the three most common adverse effects were increased appetite (57.8%), somnolence (22.2%) and rhinorrhea (11.1%). It was reported that these adverse effects were tolerable and that there was no dose reduction or discontinuation required in the majority of children (Boon- yasidi et al., 2014). It was found that 5 children discontinued the use of Risperidone, however, 4 were due to symptom improvement and only 1 was due to irritability (Boon- yasidi et al., 2014). Data was also taken for weight gain as this is a common side effect of Risperidone and it was found that the mean standard deviation

for weight gain was 4.18 kg per year (Boon-yasidi et al., 2014). These findings show that with a relatively low dose range, Risperidone treatment in children with ASD is associated with mild adverse effects (Boon-yasidi et al., 2014).

Though it is of utmost importance for families and community partners alike to have knowledge of different evidence-based treatment options, both behavioural and pharmacological, it is also important for those who carry out treatment to be effectively trained and demonstrate high treatment integrity in order to optimize results for those receiving treatment. Therefore there should be a high level of importance placed upon using active training strategies to teach practitioners how to provide multiple types of interventions (Hassan, Thomson, Khan, Riosa & Weiss, 2017). Hassan et al. (2017) conducted a study that examined the efficacy of a brief, 3 hour Behaviour Skills Training (BST) session for training graduate student therapists how to implement an intervention rooted in Cognitive Behavioural Therapy (CBT) and principles of behaviour analysis meant to help children with ASD develop emotional regulation skills. They hypothesized that the addition of a BST session would provide a greater advantage than self-study alone in terms of treatment integrity as measured by therapist session fidelity and session quality (Hassan et al., 2014).

The participants in this study included seven graduate student therapists who were between the ages of 22 and 32 years, five female and two male (Hassan et al., 2014). All students were enrolled in a clinical developmental psychology program in a southern Ontario university; five participants were entering the second year of the masters program and two were at the beginning of the doctoral program (Hassan et al., 2014). Each participant was part of a larger randomized control study in which

they delivered a manualized CBT intervention to children aged 8-12 with ASD (Hassan et al., 2014). In this larger RCT study, therapists were to carry out a program called the Secret Agent Society: Operation Regulation (SAS:OR).

Hassan et al., (2014) used a concurrent modified multiple-baseline (multiple probe) design across three dyads of therapists. This design allowed for assessment of clinically meaningful changes in the individual therapist's behaviour (Hassan et al., 2014). Therapist behaviour was scored on two outcome variables: (1) session fidelity and (2) session quality across sessions. Session fidelity was scored as the percent correct of therapists' behaviours that were operationally defined on checklists of components of each session in the manualized intervention (Hassan et al., 2014). Checklists included each of the activities that therapists were required to cover during a session such as reviewing session rules, previous home missions, session activities, upcoming home missions and providing sessions rewards (Hassan et al., 2014). Session quality was scored on a 5-point Likert scale ranging from 5= excellent to 1= poor for six operationally defined items that focused on quality of the therapist behaviour for each item (pace, enthusiasm, therapist engagement with the child, therapist engagement with the caregiver, organization of materials and patience) (Hassan et al., 2014). Therapists also completed a survey designed to evaluate the social validity of the research and indicated the extent to which they agreed or disagreed with eight statements on a scale of 1= disagree to 5 =agree (Hassan et al., 2014). These eight items assessed therapist ratings of the importance of the intervention and their perceptions of self- study and BST (Hassan et al., 2014).

Hassan et al. (2014) study was carried out in three phases, baseline, intervention and follow up. Baseline consisted of self-study; therapists were given the SAS:OR intervention materials to review for up to three hours or until they felt that they had mastered the materials (Hassan et al., 2014). Therapists then were asked to role-play intervention sessions (Sessions 2, 3 and 5) with a peer who was acting as a child with ASD from a dynamic script (Hassan et al., 2014). The therapist in the dyad who had the most stable session fidelity at baseline, as scored by a trained observer, started to receive training while the other therapist in the dyad remained at baseline and role-played sessions 7 and 9 (Hassan et al., 2014). The intervention stage consisted of a three hour BST session with a doctoral level Board Certified Behaviour Analyst (BCBA) who had previous experience in providing the SAS:OR intervention (Hassan et al., 2014). All four components of BST were carried out including: (1) instruction in which the trainer explained the intervention and why it was important; (2) modeling in which the trainer demonstrated through both live and video modeling how to perform session activities; (3) rehearsal in which the therapist attempts to perform session skills while role-playing with the trainer; and (4) feedback in which the trainer provides feedback on therapist performance (Hassan et al., 2014). After BST the therapists were again assessed for fidelity by the same observer across the same session attempted at baseline (Hassan et al., 2014). Follow up consisted of the therapists completing all 10 sessions of SAS:OR intervention with the child assigned to them in the larger randomized control trial 4 to 6 months after receiving BST training (Hassan et al., 2014). Trained coders assessed therapist session fidelity and session

quality on session 2, 3 and 5 – the same sessions that were coded at baseline and postintervention (Hassan et al., 2014).

Overall findings from Hassan et al.'s (2014) study showed that all therapists made modest improvements after receiving BST with an average improvement in session fidelity of 6.99% and an average increase of 0.29 (out of 5) in session quality (pace, enthusiasm, therapist engagement with the caregiver, organization of materials and patience) (Hassan et al., 2014). All of the therapists found BST to be an effective component of training and all indicated that they would recommend it to other individuals working with children with ASD (Hassan et al., 2014). They also indicated that they would not recommend the self-study method of training to others. All therapists preferred to be trained with BST, demonstrating additional social validity beyond session fidelity and session quality improvements (Hassan et al., 2014). Finally, it was found that when compared to self-study alone BST did not require considerable additional resources (Hassan et al., 2014). The results of this study indicate that BST, which is also used to teach children with ASD, may be a viable option for training therapists and interventionist to provide high-quality intervention programs for children with ASD.

Summary

This chapter examined in detail, the history of Autism Spectrum Disorder, the best practices for ASD intervention based on current research, as well as the theoretical framework for this project. The Theoretical Framework for this project is based on Social Cognitive Theory and more specifically Bandura's Theory of Triadic Reciprocity and Reciprocal Determinism. Additionally, this chapter outlined current

empirical research on different intervention for children with ASD as well as training programs for those providing intervention. With the ever-increasing prevalence of ASD, it is ever more important that both parents and community partners be educated in the best practices for intervention in a variety of settings. An increase in knowledge for community partners will allow children with ASD to reach their full potential in a variety of settings.

CHAPTER THREE: METHODOLOGY

This chapter outlines the needs assessment for a handbook to be developed that is directed at informing those who lead and work in community-based programs serving children with Autism Spectrum Disorder (ASD) – community partners – of the best practices for children with ASD. A description of the participants in the needs assessment is provided below. Further, the data collected from the needs assessment will serve to determine what information is most needed by this population. A detailed description of the data is explained below.

Need for the Handbook

There is currently a great need for the development of a best practices handbook for community partners working closely or directly with children with ASD. As can be seen through the completed needs assessments, there is a lack of knowledge and/or access to information regarding best practices for children with ASD for those working in community-based programs. If developed, the handbook could serve as a valuable and comprehensive resource of evidence-based practices and intervention strategies for professionals who provide community services to children with ASD.

With the prevalence of the ASD seeing a steady increase within the last decade (Chen et al. 2015; Cook & Willmerdinger, 2015; McPartland et al., 2016), there is a pressing need to discover and be able to provide beneficial treatments and intervention programs for children with ASD. There are currently many effective and empirically based interventions available for children with ASD, however, it can be difficult for professionals to locate and/or understand all the different options. Additionally, children with ASD are all different and different treatments and

interventions will be effective for each individual (Chen et al. 2015; Cook & Willmerdinger, 2015; McPartland et al., 2016). It may take time to determine which interventions work best for which child and in which setting. Given these statements, it is of utmost importance for family and professionals working with the child to be aware of and have easy access to information regarding the most effective and evidence-based treatment and intervention options currently available in order to optimize the experience and learning of the child in community-based programs.

Thus, the current project aimed to determine the needs of community partners who may face challenges while working with students with ASD, who may, in turn, benefit from the proposed handbook. This was achieved by carrying out a needs assessment with a sample of 2 community partners who work in programs where children with ASD are able to join. The purpose of the needs assessment was to collect data on the following: professional development/training available in relation to children with ASD, the challenges of working with children with ASD, and what information would be most beneficial to include in a handbook for those working with children with ASD in a community setting. The purpose of obtaining this information was to structure the handbook according to the identified need and ensure the content of the handbook would be most beneficial for those who would be in a position to use it

Participants in the Needs Assessment

A description of the four community partners, including their community partnership, is listed in Table 1. Please note that all names are pseudonyms and have been changed to allow for confidentiality.

Table 1

Demographics of the Sample [Needs Assessment]

Participant Number	Participant Pseudonym	Highest Education Level	Community Partnership
1	Kelly	Bachelors of Education	Runs an after-school drama, dance and reading program
2	Josh	Masters of Biochemistry	Volunteer in a Sunday School program for children with special needs.
3	Molly	Masters of Education	Works for an organization that runs after-school and summer programming for typical children and those with exceptionalities.
4	Lexie	Autism and Behaviour Science Diploma with BCABA designation.	Works as an IBI/ABA therapist for children with ASD.

Additionally, the specific community locations in which the participants work have been described rather than labeled to increase confidentiality.

Duration of the Needs Assessment

The questionnaire format needs assessment was sent out via e-mail to the administrative staff of multiple community programs throughout the Niagara Region. Along with the questionnaire (Appendix A), these community programs were sent a letter detailing the purpose of the needs assessment questionnaire for the development of a handbook on ASD for community partners, as well as a letter of informed consent to be distributed to each participant. Response was received from four study sites with administrators sending back one completed Needs Assessment from each site. The small sample size in this study is a limitation to its scope as a comprehensive tool based on the needs of multiple community agencies.

Research Ethics

This study along with all research materials was submitted to the Research Ethics Board at Brock University. The ethics application outlined the process of distribution to multiple community agencies, as well as steps to be taken in order to protect the anonymity of all participants, such as using a pseudonym and only having direct contact with the administrators at each agency, never with the participants. This study was thoroughly reviewed and has received ethics clearance through the Research Ethics Board at Brock University [REB# 17-061].

Findings of the Needs Assessment

The following section outlines a list of questions asked in the needs assessment questionnaire and provides a compellation of answers given by 4 participants.

Question #1: *Can you discuss your knowledge related to the characteristics and behaviours of a child with Autism Spectrum Disorder?*

Participants varied in their responses to this question. Participant #1 (Kelly) stated that she had some previous experience working with individuals with ASD in group homes, and therefore has taken some prior training courses on the characteristics of ASD. Additionally, Kelly's expressed that her community organization specifically open its doors to those with exceptionalities including ASD. Participant #2 (Josh) expressed his knowledge of a wide variance in characteristics and behaviours for children with ASD but named some characteristics that he feels are more common including; challenges with communication, difficulties with transitions between tasks, difficulties with responding to multiple step instructions and becoming overwhelmed in some environments. Josh also highlighted 'stimming' as a behaviour that often increases as a response to an overwhelming situation and the importance of routine for children with ASD as an effective tool for creating stability and managing behaviour.

Participant #3 (Molly) felt that she had a lot of knowledge regarding the ASD diagnosis as she had completed a Masters thesis on special education, as well as having teaching experience with children with ASD in her second job. She did state, however, that she feels there are always new things to learn about the diagnosis and how best to support children with ASD. Participant #4 (Lexi) also expressed a great deal of knowledge about the ASD diagnosis, she expressed that ASD is a spectrum disorder and the impact of the diagnosis on an individual can vary greatly. Lexi articulated that ASD effects individuals cognitively, behaviorally and socially and that

some individuals may have sensory sensitivities. She also is aware that communication, as well as the domains of daily living and self-care, can be impacted by this diagnosis.

Questions #2: What recourses are available to you through your organization, relating to children and youth with ASD? What does your organization offer in terms of resources for working with children with ASD?

Participant #1 (Kelly) stated that there are no specific resources available through her organization but that through her own background she is able to access services throughout the Niagara Region. Additionally, Kelly expressed that her organization uses proactive strategies in order to make programming successful for children with ASD participating in The Creative Space. Participant #2 (Josh) expressed that in his volunteer role there is access to experts who are educated in ASD, but that other resources are not available or well know to him.

Participant #3 (Molly) expressed that her organization offers an integrated day camp program for children with ASD, which includes a staff member with 'support training'. This training takes place over three days and seeks to outline important information on a variety of diagnoses' including ASD. The training also includes guest speakers from other community organizations known for ASD programming who work to provide the day camp staff with the tools to help them work with children with ASD such as behaviour management techniques, discussion elements, and inclusion strategies.

Participant #4 (Lexi) stated that she is currently offering her services privately to community members as opposed to through a larger organization.

Question 3: *Are there any professional development workshops/seminars offered by your organization?*

Both participant #1 (Kelly) and #2 (Josh) responded No to this question.

Participant #3 (Molly) stated that only the staff members who are specifically working the day camp program would receive training on ASD; those who work the other childcare programs do not. Participant #4 (Lexi) has attended workshops/ seminars as a part of her self-sought professional development.

Questions 4: *Does your organization provide professional development opportunities external to your organization?*

Participant #1 (Kelly) responded that her organization does not provide external professional development opportunities. Participant #2 (Josh) also expressed that he was not aware of any external professional development opportunities offered by his organization. Finally, Participants #3 (Molly) and #4 (Lexie) responded that their specific organizations do not offer any professional development opportunities that are external to their organization.

Question 5: *What aspects do you find the most challenging working with children/youth with ASD?*

Participants #1 (Kelly) expressed a lack of support as the most challenging aspect of working with children/youth with ASD; she stated that with a higher level of support children would be able to participate in the program to a fuller extent.

Participant #2 (Josh) expressed his biggest challenge as understanding what behaviours and strategies are most successful for creating positive and effective interactions. Josh expressed a relative lack of experience in working with children

with ASD and how he has been surprised at the level of intelligence he has seen in the children he interacts with in his current position; he stated that not underestimating potential is a challenge for community partners with a lack of background knowledge about ASD.

Participant #3 (Molly) expressed that the diversity of the ASD diagnosis was most challenging for her. She stated that while strategies may work for some children or adults with ASD they might not be effective for others. Molly expressed that though she has had the opportunity to work with a lot of individuals with ASD it is a new experience each time and that the diagnosis really is a spectrum of various strengths and needs for each child. Finally, Molly expressed a challenge in the diversity of viewpoints in addressing the needs of children with ASD from programming that emphasize strict routines to those that favour flexibility and choice. Participant #4 (Lexi) finds challenge in the diversity of families goals when working with a child with ASD; some families focus on academic progress while others place more of focus on social progress and level of independence. Personally, she feels that these are of equal importance.

Question 6: *What do you feel would be most beneficial to include in a handbook for community partners working with children with ASD (e.g. content information on the characteristics, symptoms, treatments of ASD, teaching strategies and behavioural management for working with children with ASD)?*

Participant #1 (Kelly) expressed the need for a section in the handbook on prompting and fading prompts in order to have the learner become independent, as well as for a section on the functions of behaviour. Participant #2 (Josh) expressed

that some background information on characteristics of ASD would be beneficial. Additionally, he expressed that some 'interpretation' of behaviours could help with his understanding. Josh also would like to see specific teaching strategies and some of the benefits that they could have in specific situations.

Participant #3 (Molly) expressed that many community partners require more understanding of ASD. She suggested the inclusion of specific strategies such as "If you see ____ try ____" as she feels that it may be hard for most people to understand what an individual with ASD is thinking and feeling. Molly would also like to see a section on the use of visuals for communication and routine. Finally, Molly suggested a list of texts that could be read to other children to support inclusion and build empathy and understanding.

Participant #4 (Lexi) felt that some information on behaviour analysis would be helpful to include in the handbook, such as some information on understanding antecedents, behaviours and consequences. Additionally, she would like to see specific techniques for positive reinforcement and redirection.

Questions #7: *What resources do you feel would be most beneficial for you to support the social, cognitive and behavioural education of children with ASD in your community program?*

Participant #1 (Kelly) felt that visuals and reward boards, as well and information on how to inform other children of what ASD is would help to support the social, cognitive and behavioural education of children with ASD in her community program. Participant #2 (Josh) felt that open dialogue with parents and caregiver

would be most beneficial to support the social, cognitive and behavioural education of children with ASD in his community program.

Participant #3 (Molly) expressed that knowledge on where to access resources such as a list of websites and texts would be most beneficial. Participant #4 (Lexi) suggested resources such as the ABLL's and resources for effective behaviour management would be most beneficial.

Question #8: *Is there any other information you would like to share that has not been discussed above?*

All participants declined to share any additional information.

Summary of the Needs Assessment and Findings

Upon assembling the results from the needs assessment questionnaire, I reviewed the response information and came to the conclusion of the definite need for the proposed handbook. Though all participants indicated some background knowledge on working with individuals with ASD, all expressed clear areas in which they could use further information and resources.

Participants 1 and 2 both expressed the need to further understand the functions of behaviour and to have this included in a handbook. Both felt that with this information they would be able to better understand the children/youth they are supporting and be able to implement proactive strategies in order to increase the level of success for those they support.

The need for specific strategies for behaviour management (i.e. visual and reward boards) was common among all participants, again in order to maximize the level of success for the children and youth supported in their community programs.

Participant 4 also expressed the need for information on specific behavioural techniques such as positive reinforcement and redirection. There was also a common theme of the need for direction to books and websites that could be easily accessed by community partners.

Consequently, based on the findings of the needs assessment the handbook includes, but is not limited to; basic and general information on the Autism diagnosis for those community partners not as familiar with the diagnosis, as well as specific and detailed information and resources to address augmented communication, sensory integration, functions of behaviour, sample activities for different group settings, and evidence-based successful specific strategies to address challenging behaviours.

Additionally, the handbook provides reproducible sample resources and visuals for use in community programs. Overall, the handbook serves to benefit community partners from different organizations; from those with little knowledge of the diagnosis to those with many years of experience.

Proposed Handbook

Upon completion of the needs assessment, the handbook developed in the present project was developed to incorporate the needs and ideas of all participants involved in the needs assessment questionnaire. Upon completion of the handbook, a copy was sent to the administrators of each community organization that participated to share with all participants. Participants will be asked to look over the completed handbook and provide feedback on the usefulness and quality of the handbook for their role as a community partner. A series of questions in the form of a questionnaire

will be provided to administrators to pass on to participants. Upon receipt of the completed feedback questionnaires, any necessary changes will be made to the handbook to increase its convenience and overall benefit to community partners. A copy of the handbook will be then be offered to those community partners interested in having a copy for their personal use.

Summary of Chapter Three

This chapter has described the importance of the handbook on ASD for community partners to disseminate information on the best practices for children and youth with ASD. The handbook was developed using the information and ideas provided by community partners currently working with children with ASD, combined with the information that was gleaned from the comprehensive review of literature in Chapter Two. Following this needs assessment, Chapter Four was completed and contains the proposed handbook to serve as a beneficial and comprehensive resource for those educating or working directly with students diagnosed with ASD. The purpose of this handbook was to provide a practical research for community partners, working with children with ASD. The goal was to provide a pragmatic pedagogical resource for such community educators, which included current and pedagogically effective of evidence-based best practices, for educators working with children with ASD.

CHAPTER FOUR

Best Practices for Children with Autism Spectrum Disorder: *A Resource Guide for Community Partners*

Maureen Fast

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Need for the Handbook

The purpose of this handbook is to enable and equip community partners in their practice. The handbook was designed as a substantial resource for those offering community-based programming to children with Autism Spectrum Disorder (ASD). The handbook is meant to be used as a guide for evidence-based practices in intervention programs as well as effective strategies for community-based programming. The information and resources outlined in this handbook are my personal vision of the best practices currently available based on an extensive review of current literature and my personal experiences.

This handbook was designed to be used by community partners in need of information regarding a diagnosis of ASD, intervention programming, and strategies available for professionals who work directly with children with ASD. The information in this handbook may not be beneficial or suitable for every child with ASD, as each child presents unique strengths, challenges, and needs. It is always best to determine which interventions will be most suitable for the individual based on their specific needs and the demands of the community-based program. It is recommended that this handbook is used as a guide for the best practices and resources currently available.

"Positive and expected outcomes occur when knowledge and skilled professionals in collaboration with parents and families, use methods that have objectively verified efficacy. As anyone who has ever worked with a student with ASD can attest, however, successful outcomes require not only that an effective method be chosen but also that it be properly matched to the needs of a particular student and planning team" (Simpson, 2005, p.145)

It is my belief that the most appropriate and effective community-based programs for children with ASD incorporate a variety of different intervention strategies to meet the individual needs of each student.

What is Autism Spectrum Disorder (ASD)?

Autism Spectrum Disorder (ASD) is a widely accepted diagnosis in the 21st century with prevalence seeing a steady increase in the last decade (Chen, Penagarikano, Belgard, Swarup & Geschwind 2015; Cook & Willmerdinger, 2015; McPartland, Law & Dawson, 2016). ASD can be concisely defined as an early onset; pervasive and lifelong neurodevelopmental disorder characterized by challenges in social communication, repetitive, restricted behaviour patterns and atypical response to sensory stimuli (McPartland, Law & Dawson, 2016; Shirian & Dera, 2015; Hiller, Young, & Weber, 2014). As of 2014, the prevalence of ASD was estimated to be 1 in 68 (Cook & Willmerdinger, 2015; Chen, Penagarikano, Belgard, Swarup & Geschwind 2015; McCrimmon et al., 2014). Due to this high prevalence rate, there is a great demand for support and empirically based intervention programs.

Throughout the history of the ASD diagnosis there have been many changes, the first version of the Diagnostic and Statistical Manual (DSM) did not categorize Autism as a unique disorder, but rather as a childhood subtype of schizophrenia (APA, 1952). From there, the first writings of Autism that are more similar to what is seen today revolved around Victor, known as the 'Wild Boy of Aveyron'; who, after being isolated in the woods for 11 years, was found to be socially withdrawn and have language and intellectual disabilities (Cook & Willmerdinger, 2015). At the time, French physician Jean-Marc Itard only recognized Victor as being developmentally different from other children his age; it was not until much later that Victor was formally characterized as autistic (Cook & Willmerdinger, 2015).

In 1943, Kanner was the first to formally separate Autism from schizophrenia; he first introduced "infantile autism" as a clinical syndrome when describing 11 children whom he characterized as relating better to objects than people and showing severe social and communication abnormalities as such narrow and restricted interests (McCrimmon et al., 2014; Cook & Willmerdinger, 2015). One year later, in 1944 Hans Asperger, a German pediatrician identified a milder form of autism after completing a study of all boys with an autistic psychopathology (Asperger & Frith, 1991; McCrimmon et al., 2014; Cook & Willmerdinger, 2015). Asperger (1944), described these children as being verbally fluent but having peculiar language use and abnormal prosody (McCrimmon et al., 2014). Further, they were socially isolated and demonstrated repetitive behaviours, a desire for sameness, interest in unusual topics, motor clumsiness, and a propensity toward a rote memorization of facts (McCrimmon et al., 2014).

In the present day, the DSM-V has defined ASD as one unified disorder which is reflected by two core impairments: (1) social- communication deficits and (2) fixated interest and repetitive behaviours. Individuals who meet the criteria for ASD receive a rating of (1) requiring support, (2) requiring substantial support, or (3) requiring very substantial support, with each level indicating symptom severity (McPartland, Law & Dawson, 2016; Cook & Willmerdinger, 2015; McCrimmon et al., 2014).

As stated previously ASD encompasses two core deficits: (1) social- communication deficits and (2) fixated interest and repetitive behaviours. In terms of challenges in social communication, individuals with ASD have specific impairments in socio-emotional reciprocity, non-verbal communication, and maintenance of relationships (McPartland,

Law & Dawson, 2016). Deficits in non-verbal communication include poor eye contact, or difficulty understanding body language and facial expressions (McPartland, Law & Dawson, 2016). Impairments in socio-emotional reciprocity are often seen as a lack of interest in or struggle with, sustained social interaction (McPartland, Law & Dawson, 2016). For example, these individuals may be unable to initiate conversation or may consistently have one-way conversations centering on their own interests (McPartland, Law & Dawson, 2016). In terms of social relationships, individuals with ASD may lack interest in making friends or have difficulty adjusting their behaviours to match different social situations (McPartland, Law & Dawson, 2016).

The second criteria for an ASD diagnosis, restricted, repetitive behaviour patterns, may include repetitive movements or language such as lining up toys or repeating unusual phrases with no connection to a conversation among others (McPartland, Law & Dawson, 2016). Alternatively, individuals may display behavioural rigidity such as experiencing extreme distress in relation to change, large or small (McPartland, Law & Dawson, 2016). These individuals may also have restricted interests that are abnormal in intensity or focus and interfere with different life domains (McPartland, Law & Dawson, 2016).

Additionally, the DSM-V definition of ASD includes sensory issues as one of the four subsets of restricted/repetitive behaviour and defines them as "hyper or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment" (Grapel, Cicchetti & Volkmar, 2015 pg.69). Sensory abnormalities are typically seen as a core characteristic of ASD and can affect all sensory modalities including; auditory, visual, tactile, taste and smell (Stewart et al., 2015). Children with ASD typically fall into the

category of either hyper- or hypo-sensitive, ranging from a severe dislike and avoidance of particular sensory input to unawareness of sensory input including pain (McPartland, Law & Dawson, 2016; Stewart et al., 2015).

These characteristics displayed by children with ASD depict the need for early intervention strategies to allow for successful social, emotional and cognitive experiences throughout childhood. Children with autism tend to experience difficulties in community-based programming. Social interaction, environmental stimuli, communication and differing demands and expectations can place stress on these individuals and cause much difficulty. Additionally, each child with ASD is unique and will have differing needs and react to stimuli and challenges in a variety of ways. This is why it is ever more important to empower those in the child's life, such as the community partners who they see in their daycares, extracurricular activities, churches and clubs with the evidence-based tools to best support them and equip them for success.

The next section of this handbook outlines the best practices for supporting children with autism in community programs and provide helpful suggestions for success within different community environments.

Applied Behavioural Analysis (ABA)

Applied Behavioural Analysis (ABA) is an intervention that is based on the contingencies of reinforcement schedules, and variables involved in behavioural interventions, for example; extinctions, spontaneous recovery and conditional emotional response (Sulzer-Azaroff & Mayer, 1991). ABA uses positive reinforcement over punishment, seeks to establish a clear connection between treatment and outcome and is

focused on the generalization, or the ability to transfer, of socially important skills to the natural environment of the child. The analysis part of ABA includes monitoring of whether or not changes in behaviour have occurred and if they were caused by the behavioural modification techniques being used or by other variables, or pure coincidence. The applied part of ABA comes into play with the assurance that behavioural principals are conducted with meaningful, socially important behaviours and generalized to the natural environments where those behaviours or skills are needed (Anagnostou et al., 2014).

It is important for parents, caregivers and community partners to know what qualifies as a true ABA program. There are six primary criteria on which ABA programs are judged today: (1) the intervention must be applied, meaning (as previously stated) that it addresses behaviours that are socially significant and will improve or benefit the life of the individual; (2) the intervention must be behavioural, meaning that the behaviour addressed in the intervention is observable and measureable through direct assessment or observation; (3) the intervention must be analytic and conceptual, this is the element of control, the interventionist must be able to demonstrate a functional relationship change in the targeted behaviour and they must be able to demonstrate that this was due to the use of behaviour strategies based on relevant principles; (4) the intervention must be technological, meaning that the program must be clear, concise and contain enough detail to be replicated with minimal teaching; (5) the intervention must be effective, there must be a change in the targeted behavioural that is clinically or socially significant; and (6) the intervention must be judged on generality, changes must last over time and generalize to other environments, people and items and this must continue to be true after the original

treatment procedures are withdrawn (Boutot & Hume, 2012). It is important to note that it is not only trained interventionists that can carry out ABA successfully, research supports that parents, teachers, and paraprofessionals [community partners] can be taught to successfully use ABA strategies (Boutot & Hume, 2012).

ABA intervention is based on individual treatment and is used to teach concepts such as social play, daily living tasks, imitation skills, attending skills and functional communications skills (Boutot & Hume, 2012). It is considered to be among the current best practices for teaching young children with ASD and outcomes have been found to include language improvement, reductions in challenging behaviours and improvement in both cognitive and adaptive skills.

The use of Positive Behaviour Supports (PBS) is a main component of ABA. PBS involves the assessment and arrangement of the child's environment to promote appropriate behaviour and decrease undesirable behaviour (Sulzer-Azaroff & Mayer, 1991). Two main PBS strategies include; (1) arranging antecedent events (the events that come before behaviour) or (2) arranging consequent events (the events that come after behaviour). Some PBS that focus on type 1 include; giving transitional warnings before a change in activity or event, providing a schedule detailing what will be happening that day/during an activity, mixing and varying difficult and easy tasks in order to increase enjoyment and motivation, allowing the child to have choice whenever possible, establishing routines which allow for predictability within the environment, providing opportunities for a movement break (physical activity) regularly to increase attention and on-task behaviour, and aligning tasks with the child's interests to enhance motivation.

PBS that focus on arranging consequent events include; ignoring maladaptive behaviours that are not highly disruptive, for example, self-stimulatory behaviours, screaming, and pushing materials away. Ignoring these behaviours would include no verbal response or attention being given to the maladaptive behaviour and redirection to the task at hand followed by reinforcement (verbal or tangible) or on task behaviour. Reinforcement for "being good" may increase the probability of the children exhibiting these behaviours again, such as sitting nicely, eye contact, communicating, keeping hands to self or following other rules in the future (Fast, 2018).

Further to these strategies is the PBS of teaching alternative behaviours or skills to gain access to the reinforcement that was maintaining a maladaptive behaviour (Boutot & Hume, 2012). Teaching and increasing the use of functional communication and functional skills may serve to reduce maladaptive behaviours that are caused by frustration or anxiety due to this deficit. Tolerance training is another often used PBS method. This involves gradually (re)introducing an unpleasant or adverse setting; by slowly building the tolerance level for these events/settings students will slowly learn to tolerate them and there will be no need for escape behaviours. Overall the PBS strategies used within ABA Intervention allow community partners to promote appropriate behaviours and decrease of opportunity and/or need for maladaptive behaviours.

Prompting is an important component of ABA; prompts are cues or hints that are given to the child to help them complete a task or expected behaviour (Boutot & Hume, 2012). There are various levels of prompting including full physical, partial physical, gestural, verbal/visual and positional which can be used at the beginning of the learning

process to assist the child in choosing the correct response. Prompts are meant to be faded over time when the child begins to master a skill. The ultimate goal of teaching is to have a child respond independently, therefore, it is important to choose the right (or least) level of prompting and as a general rule only use prompts when teaching a new skill and fade them as quickly as possible. When a skill reaches mastery or generalization prompts are no longer needed (Boutot & Hume, 2012).

Generalization is defined as taking a learned skill and applying it to other environments, materials, people and time. Typically children will first learn a skill in a specific environment and practice it there many times. It is important that the child is able to generalize the task to other places other than where it was learned and to people aside from whom it was learned with (Boutot & Hume, 2012). Working on the skills in different environments (e.g. home and program) will help the child to generalize over a variety of aspects. Maintenance is also important in learning skills through ABA and is the ability of the child to use a previously acquired skill over time and duration in which the level of reinforcement is lower than when the skill was learned (Kaufmann & Landrum, 2017).

Reinforcement is an important component of ABA. Reinforcement can be positive or negative and can be determined through the ABC's of behaviour. (A) the antecedent is defined as what happens before the behaviour occurs (e.g. someone takes your toy), (B) the behaviour is the observed behaviour itself (e.g. you scream) and (C) the consequence is what happens right after the behaviour occurs (e.g. you get your toy back) (Boutot & Hume, 2012). Consequences can take the form of reinforcers or punishers. A reinforcer stimulus that takes place after a behaviour occurs increases the chances of this behaviour

occurring again in the future. Some examples of such reinforcers may be verbal praise, a small edible 'treat', attention, access to a preferred item, or sensory stimulation. A punisher is a stimulus that follows a behaviour that decreases the chances of this behaviour happening again (Kauffmann & Landrum, 2017). An example of an appropriate/effective punisher might be no reinforcer or attention given to the behaviour. Time-outs are not typically effective for children with autism as removing them from the situation provides an escape and may reinforce the maladaptive behaviour. Negative behaviour typically occurs as a result of wanting to escape, seeking attention, seeking access to a tangible, seeking sensory feedback or seeking feedback to cease, avoidance or to delay a situation that they may find undesirable (Boutot & Hume, 2012). It is very important to determine the antecedent variable before the behaviour occurs as a result.

Overall, reinforcers, both positive and negative, will help children to learn which behaviours are expected and those that are unexpected. In order to be most effective, reinforcement should take place directly following an expected behaviour. If a child is rewarded for an unexpected behaviour, they may learn that this unexpected behaviour is acceptable (Kauffmann & Landrum, 2017). Both negative and positive feedback will increase the probability of a behaviour occurring in the future. Data is the final element of ABA and is necessary to determine whether or not progress is being made, allowing for accountability when carrying out a full intervention program (Boutot & Hume, 2012). Data is collected using a variety of tools (see Appendix A) specific to each skill, target behaviour, and program. This data is used to make and refine programs and target behaviours.

The theories of ABA outlined above can be implemented into community programming in order to encourage and facilitate successful experiences for those with ASD. Though full ABA programs are typically provided to children in the home or through a treatment center, many ABA principles are beneficial for use in community programs as well. Such as:

- Providing visual supports (see Appendix B-E)
 - Schedules
 - First-Then Board
 - Visual choice board
 - Reward Boards
- Providing opportunities for choice when possible throughout programming (Fast, 2018).
- Using PBS to set up the environment for success and decrease the need for unexpected behaviours (Fast, 2018).
- Using ABC analysis to determine the function of unexpected behaviours (Fast, 2018).
- Using positive reinforcement to promote expected behaviours (Fast, 2018).
- Teaching/instructing in simple, small steps or breaking down larger tasks/instructions into smaller steps (Fast, 2018).
- Use prompting in a most to least format to help build independence (Fast, 2018).
- Provide frequent breaks (Fast, 2018).
- Providing opportunities for movement throughout the program (Fast, 2018).
- Reward expected behaviour immediately throughout the program consider giving freebies for easier tasks such as sitting nicely, eye contact and attending to the speaker (Fast, 2018).
- Pair yourself with things that the child wants or enjoys in order to build a positive relationship (Fast, 2018). This will help the child be motivated to “work for you” as you are associated with good things.
- Pair the child with a preferred peer in order to increase comfort and decrease anxiety (Fast, 2018).
- Create a system to allow the child to ask for a break when needed (e.g. a break card or signal that can be used discreetly without interrupting) (Fast, 2018).
- Reinforce the child for asking for help when they are having trouble – this is always a desired behaviour (Fast, 2018).

For more information regarding ABA online, please refer to the following websites:

www.ontaba.org - Ontario Association for Behavioural Analysis. Please see this site for regularly updated information on Evidence based practices (EBP) for individuals with ASD. Though this handbook provides the current research on EBP this additional resources is updated with new information regularly and will be helpful for those working with individuals with ASD long-term.

<http://www.children.gov.on.ca/htdocs/English/specialneeds/autism/ontario-autism-program.aspx> - Information on the Ontario Autism Program. Please see this site for updates on the newly developed Ontario Autism Program. As this program was still in its infancy at the time of handbook development, this site will help community partners stay up to date with changes in this new and exciting program for Ontario.

[Early] Intensive Behavioural Intervention

[Early] Intensive Behavioural Intervention ([E]IBI) begins before age five and involves 15 to 40 hours per week of individualized treatment for two or more years (Smith, Klorman & Mruzek, 2015). EIBI emphasizes highly structured, adult-led, one-to-one teaching approaches based on the principles of ABA and operant conditioning. It has been found to increase desired behaviour, specifically in the areas of imitation, receptive and expressive language, gross and fine motor skills play and joint attention and to decrease maladaptive behaviours such as tantruming, aggression, self-injurious behaviour and vocal or motor stereotypic behaviours (MacDonald, Parry-Cruwys, Dupree & Ahearn, 2014).

These programs have been recognized as a good approach for improving outcomes for young children with ASD including their future educational placement and the level of support needed (Estes et al., 2015; Dawson et al., 2010). Some children may go through these programs prior to entering into a community-based activity/program or may be in them concurrently. Contact with parents and EIBI providers is beneficial for community

partners in order maintain continuity in strategies used (Fast, 2018). Using the same strategies as a child's current treatment program will help them to generalize their skills to the community program and promote success.

Alternate/Augmented Communication

A common goal for children with ASD is to communicate; communication can often help reduce behaviours, as children are able to express their wants and needs without frustration. However, approximately 25% of children with ASD are unable to use natural, verbal speech as their main form of communication (Boesch, Wendt, Subramanian & Hsu, 2013). Alternate or Augmented Communication Systems (AAC) can help these children to express themselves. AAC systems can include manual signs, such as sign language and gestures, voice output communication devices and pictures/symbols (Aguis & Vance, 2016). There are two categories of AAC systems, unaided, which do not require any external equipment and includes manual signing and gestures and aided systems, which require external equipment and includes a system such as the Picture Exchange Communication System (PECS) and speech generating devices (SGD) (Aguis & Vance, 2016). There has been much success found with all of these systems and as always it is important to determine which will work best for each individual child.

Picture Exchange Communication System

PECS was originally developed by Bondy and Frost in 1994 and is a picture based AAC system that was specifically developed to teach non-verbal children with ASD to initiate requests and to comment. It uses basic behavioural principals, specifically reinforcement techniques to teach children to use functional communication in the

context of social interaction. The PECS protocol consists of six phases; Phases 1 and 2 teach the learners to exchange pictures for preferred items with Phase 2 having them do across distance and persistence (Aguis & Vance, 2016). Phase 3 teaches learners to discriminate between preferred and non-preferred items and eventually between a variety of preferred items; in Phase 4 learners are taught to make requests using complete sentences. Phase 5 involves instruction in answering questions and finally, Phase 6 teaches learners to make a variety of comments. Each of these phases is important and the Picture Exchange System is intended for use by trained professionals (Bondy & Frost, 1994). Learners who come into community programs may be at any stage of this protocol, each phase is described in greater detail below.

Phase One

The goal of Phase 1 – the Physical Exchange- is to initiate communicative interaction; this phase teaches the learner how to communicate and introduces the rules of communication. First, the learner is taught that the 'rules' are to approach the communicative partner and then to deliver the message. Picture discrimination is not a prerequisite for this stage. This stage requires two adults, one to be the communicative partner and the other to prompt the child. The prompter should always be behind the child as act as an extension of the child's body. It is very important for the prompter not to socially interact with the child throughout the training (Bondy & Frost, 1994).

Before beginning it is important for the communicative partner to determine what objects or reinforcers the student prefers. This can be determined by placing items on a table in front of the child and observing which items the child picks up or plays with

consistently. All other items can then be removed from the table; when the student reaches for an item the prompter will begin to teach the motor response which consists of three steps (1) pick up, (2) reach and (3) release; this is done with full physical prompting. When the child reaches for the item the prompter will guide their hand to a picture of the item placed on the table and help them pick it up, they will then guide a reach towards the communicative partner, and then the prompter helps the child release the picture into the outstretched hand of the communicative partner. Within a ½ second of this exchange, the communicative partner delivers the reinforcement (what the child has asked for), labels the item verbally and praises the child. This continues with the items on the table, the communicative partner should switch preferred items so that the child learns that this exchange works across multiple items they desire. Mastery of this stage is reached when the child can make an independent (no help from prompter) exchange across 3-5 reinforcers with 2+ different communicative partners and in 2 different environments. It is important to change environments and communicative partners to increase the chances of future generalizability (Bondy & Frost, 1994). The child needs to understand that this works with all items, all people in their life, and anywhere they need to make a request (Bondy & Frost, 1994).

Phase Two

The goal of Phase 2 – Distance and Persistence – is to persist in communication across obstacles. In this phase we continue to teach the "how" of communication; at this phase, the student must have a book of PECS. These books can be easily made using a small three-ring binder filled with pictures of the student's preferred items attached via

Velcro to individual pages. For more information on how to organize such a binder please see the links provided at the end of this section. Phase 2 again requires two adults, a communicative partner and a prompter (Bondy & Frost, 1994).

During this phase, the communicative partner slowly increases the distance between the child and themselves and increases the distance between the child and their pictures. The child is taught to travel across a distance to get their pictures and to exchange the picture with the communicative partner. During this phase, no verbal prompts are to be used (i.e., go get your book) as this may result in the child becoming prompt dependent. The prompter may physically guide the child to their book, however, this prompt must be faded by mastery (Bondy & Frost, 1994). Some children may not be able to travel or leave their seat due to physical restrictions, these children may be taught to use a "come here" button. The communicative partner will stand away from the child, the prompter will guide the child to activate the calling device and then the communicative partner will approach and the child will request (Bondy & Frost, 1994).

"Come here" can be recorded on any one-press device or a bell or buzzer can also be used.

Mastery of Phase 2 occurs when the student can cross the room to retrieve the picture and cross the room to the communicative partner and can do so with 5-10 reinforcers (Bondy & Frost, 1994). This phase is important for children who are in community-based programs as they will not always have direct access to their leader and may need to travel to get their attention on request.

Phase Three

The goal of Phase 3- Discrimination – is to be able to choose from among all pictures in their communication book. Only one teacher is needed for this phase. This phase begins with a communication board with 2 pictures on it, one preferred and one non-preferred. The child will learn through this phase that they only get a preferred item when asking for it with the correct picture (i.e. by the correct name) (Bondy & Frost, 1994). First, the communicative partner will model which picture to choose, the student will then practice; if they reach for the correct picture the communicative partner should make a desirable noise (i.e. ohhhhh) and then give the reinforcer within a ½ second of the exchange. They will then switch the pictures for the next trial so that the preferred item is in a different location. If the child gives the picture for the non-preferred item the communicative partner will say nothing, accept the picture and then give the child the non-preferred item; if the child plays with this item the communicative partner will need to find a different item for the next trial (Bondy & Frost, 1994).

Once the child can differentiate between a preferred and non-preferred item when requesting the communicative partner can carry out the same steps with smaller pictures, and pictures of the same item with a different symbol set; this will help the child to be able to use PECS that may not look the exact same as their personal set. If a child may take anything making it hard to distinguish between a preferred and non-preferred item, the communicative partner may use a preferred item and a blank card to teach discrimination, if the blank card is given the communicative partner will give the child nothing (Bondy & Frost, 1994).

The next step in this phase is to discriminate between multiple pictures of preferred items; the child must demonstrate correspondence between the picture and the chosen items. All items used in Phase 1 and Phase 2 are now displayed on the choice board or in the binder (Bondy & Frost, 1994). A correspondence check determines whether the student's actions match their request. When the child requests using their picture, the communicative partner will hold out both items and say "take it"; if the child reaches for the correct item they are allowed to take it, if they reach for the incorrect item the communicative partner will block them and direct them towards the items they asked for (Bondy & Frost, 1994). The child is then asked to request the desired item again. Mastery of Phase 3 is achieved when the child can take the corresponding item on 80% of trials with any number of items on the board and when the student can look inside their book to find a picture (Bondy & Frost, 1994).

Phase Four

Phase 4 works on building a sentence and toward spontaneous commenting. Sentence starters are used in this phase to provide information to the listener on the function of communication. Children are taught at this stage to use a sentence strip while maintaining their requesting skills (Bondy & Frost, 1994). When students enter this phase their communication book with typically contain 12 to 20 pictures, which they can easily retrieve and use. Pictures are typically categorized in their books for easy retrieval. The final goal of this stage is for the child to be able to remove the "I want" icon from their book, place it on the sentence strip, remove the desired item picture from their book, place it on the sentence strip, remove the sentence strip and give it to the communicative

partner and finally to tap the picture in order (Bondy & Frost, 1994). One adult is needed for this phase.

Children will first learn to add their reinforcer picture to the sentence strip; the "I want" icon will already be placed. The communicative partner will wait for initiation and then physically prompt the child to add the picture of the desired item to the exchange strip, quickly read the strip to the student and then give the item within a ½ second. This physical prompt will be faded over the next trials (Bondy & Frost, 1994). Next, children will learn to add both pictures to the sentence strip. Again the communicative partner will wait for initiation, then prompt adding "I want" to the sentence strip, the child will independently add the desired item picture and exchange the strip, then the communicative partner will read the strip and reinforce within a ½ second (Bondy & Frost, 1994). The child will then be taught to read their sentence strip, the communicative partner will prompt the student to point to each picture as they read the strip. Finally, if possible, the communicative partner will encourage speech – this step is NOT necessary in order to receive the reinforcer, as some children with ASD may never communicate verbally (Bondy & Frost, 1994). If the child begins to make sound with their pointing the communicative partner will differentially reinforce or in other words "have a party" and give them child ALL of the items they have (e.g. 5 glitter wands instead of one) in order to encourage further speech (Bondy & Frost, 1994). Mastery of this phase is met when the child independently constructs and exchanges the sentence strip on 80% of opportunities (Bondy & Frost, 1994). In the future the student can be taught to add attributes (e.g. colours, size, etc.) to their requests on their sentence strip, however, this is not a criterion

for mastery; however, it may help to reduce behaviours in children who have a preference for very specific items.

Phase Five

Phase 5 is Responsive Requesting; the goal of this phase is responsively and spontaneously request items. This adds another building block towards commenting and teaches the student how to respond to a question while maintaining a requesting function. One adult is needed to complete this phase. In this phase, the communicative partner will ask the child "What do you want?" and the point to the sentence starter "I want". The length of time between the question and the prompt will continue until the child is able to "beat the prompt" – remove the "I want" card before the communicative partner points to it (Bondy & Frost, 1994). It is important during this phase to ask the question and to give the student opportunities to spontaneously request without being asked in order to maintain this function. By the end of this phase, the student should be able to respond to the question "What do you want" throughout the day as well as spontaneously request (Bondy & Frost, 1994).

Phase Six

The final phase of the PECS protocol is commenting; the long-term goal of this program is to have the child spontaneously comment on the world around them (Bondy & Frost, 1994). However, many children with ASD do not respond to social reinforcement so spontaneous commenting may be difficult. Children are first taught to comment in response to a question. The student will be taught in this phase to respond to questions not only using "I want" but other sentence starters such as "I see", "I hear", "I smell", etc.

To begin the communicative partner will hold up an item and ask the child "What do you see?" and then, similar to phase 5 point to the sentence starter "I see" the child will then add the picture of what they see (Bondy & Frost, 1994). The pointing prompt is slowly eliminated and the child is expected to choose the correct starter on their own. It is important to "ohhh" when the child makes the right choice to reinforce this new skill. When the student is able to pick the correct starter and the correct items the communicative partner will reinforce with a reward that is not connected to the item. Mastery of this phase is reached when the child can; spontaneously request, responsively requests using correct sentence starters and vocabulary, responsively comments, and spontaneously comments (Bondy & Frost, 1994).

It is important to remember that the PECS program was not created to replace or hinder functional speech but to allow for communication when the development of speech is not present (Bondy & Frost, 1994). Additionally, some students with ASD may not benefit from the PECS program as it can be complicated and require many prerequisite skills that are not present in some early learners. However, PCS symbols (just the pictures) can be implemented to allow the student to express wants/needs and provide visual schedules if using the whole PECS protocol is not possible.

Please refer to the following website for additional resources surrounding PECS protocol:
www.pecs.com - This website is updated by the PECS global team, including founders Bondy and Frost (1994) and includes regularly updated research on the protocol.

Please refer to this website for information on the Boardmaker program - this is a very popular program for creating pictures associated with PECS. Please see Appendix B for sample picture.
<https://www.boardmakeronline.com/>

For videos showing each of the six phases provided in this handbook, please refer to the PECS Global YouTube (Bondy & Frost, 1994):
<https://www.youtube.com/user/PECSGlobal>

Speech Generating Devices

Speech generating devices (SGD) are also a common AAC choice for those with ASD to replace or augment speech communication; these devices emit digitized speech and come in a variety of configurations to suit the needs to individuals with little or no fluent speech (Boesch et al., 2016). Recently, SGD have even begun to include mobile technology such as Android tablets, touchscreen phones, and iPads. This has been found to be advantageous to the community as they have a relatively low cost, a mainstream appeal as many typical children carry their devices around daily, and portability when compared to other SGD (Boesch et al., 2016).

Many children who come into community programs may have a SGD such as a tablet or iPad that they use for communication. Often times these are 'locked' meaning that they can be used for communication only and not games. It is important to communicate with parents or caregiver to determine the function of these devices and if the child needs to have the device with them at all times (Boesch et al., 2016). It is very important not to deprive a child of a device that they use to communicate; taking such a device away should never be a consequence.

Sign Language

Sign language is another AAC modality for children with ASD who are minimally or non-verbal. Typically this form of communication is used by a child who has good fine motor skills and hand dexterity and who is able to comprehend the use of signs as a mode

of functional communication (Barlow, Tiger, Slocum & Miller, 2013). Sign language is typically taught by pairing the sign with the spoken word in order to allow children to understand the correspondence in meaning. It is taught a couple of signs at a time, typically by teaching the signs for the most preferred items first and then increasing the number of signs over time (Barlow et al., 2013). Though every community partner may not be fluent in sign language, it is a good idea to learn some basic signs that children may use to express their wants or needs.

Sensory Integration Intervention

Sensory impairments are common for children with ASD with up to 90% exhibiting either hypo or hyper-reactivity to sensory input. Many families express that sensory concerns significantly restrict their child's full participation in daily activities and therefore create social isolation for not only the child but oftentimes the family as a whole. Sensory-based interventions include activities that are thought to manage the sensory system by providing vestibular, proprioceptive, and tactile input (Karim & Mohammed, 2015).

The Vestibular System

The vestibular system provides information about movement, gravity and head positioning. This system in children with ASD may be either hypo or hyper-responsive to vestibular sensations. Those children who are hyposensitive do not recognize the effects gravity and movement have on their bodies (Karim & Mohammed, 2015). These children will crave moving fast and in ways that have a high energy output such as jumping, running, climbing and falling. Typically their attention span is short and the desire for movement overtakes daily activities (Karim & Mohammed, 2015). Often times safety is an

issue for these students as their need for movement is so strong that they may not recognize that a situation is unsafe for themselves or for others. These children may need access to frequent movement breaks, or chairs on which they can move around. On the other hand, children who are hypersensitive to movement and changes in gravity do not typically have an interest in movement activities and may decline participation. For these children, movement may cause anxiety and therefore there is often a decrease in the development of motor planning for these children (Karim & Mohammed, 2015).

The Proprioceptive System

The proprioceptive system is the unconscious awareness of a person's body in space. Children with ASD may have difficulty with this sensory system as well. Some may seek out additional proprioceptive sensation in order to increase their body awareness. Such children will typically enjoy sensations such as a squeeze, rocking, weighted vests, pressing themselves between objects or furniture, laying under a heavy blanket, or bouncing on balls, beds or other furniture (Karim & Mohammed, 2015). Deep pressure may help to alleviate the hypersensitive sensations and to help them receive and process the proprioceptive input their body craves (Karim & Mohammed, 2015). For these children, it is important to provide tools to help them receive this input such as weighted vests, balls to bounce on or weighted blankets among others (Karim & Mohammed, 2015).

The Tactile System

The tactile system involves the sense of touch. Children with ASD can be both hypo and hypersensitive to touch. For children who are hypersensitive touch can be seen as threatening or something that they need to work hard to stay away from (Karim &

Mohammed, 2015). This can include touch from another person or touch for materials, clothing, items or even things such as the wind. The sense of touch is typically very overwhelming for these students, however they may still be able to initiate touch with others on their own terms – which can be confusing for peers and adults. Children who are hyposensitive to touch may seek touch in an aggressive way; they often crave touch through rough or deep pressure or may enjoy touching things excessively (Karim & Mohammed, 2015). It is important to understand if the children in a community program are hyper or hypo sensitive, as this will influence the tactile interaction that leaders will have with them (Karim & Mohammed, 2015).

There are many predesigned sensory integration strategies that are developed to meet the specific needs of children who have either unregulated or underdeveloped sensory systems. Most often, sensory integration interventions are introduced on an individual basis by a registered Occupational Therapist (Karim & Mohammed, 2015). However, there are steps community partner can take in their programs to promote successful experience for those children with sensory concerns. Children with ASD typically get overwhelmed or distracted with unorganized or over-stimulating environments. It is important for community partners to work to decrease visual and auditory stimuli in order to increase attention in children with ASD.

Some helpful hints for maintaining a positive program space are:

- Minimize visual clutter
 - Have a space for toys and objects that are not being used. Clear containers with labels for easy access are a good choice.
 - Avoid hanging up unnecessary posters
 - Keep coats and bags in the program space neat and organized in a specific location
- Use visuals – pictures and schedules to provide predictability and structure

- Use soft lighting to decrease visual stimuli
- Put carpets on hard floors or tennis balls on chair legs to decrease auditory stimuli
- Provide a 'quiet space' where children can go to clam or relax
 - This can include a chair, soft pillow or visual stimuli such as calm down bottles

Materials that may be helpful in a program space for children with sensory concerns (Karim & Mohammed, 2015; Fast, 2018):

- Bubbles
- Finger paints
- Misting fans
- Sand table
- Swings
- Balancing boards
- Exercise balls
- A trampoline
- Seesaws
- Weights
- Medicine balls
- Stress balls
- Modeling clay
- Weight blankets
- Assorted fidget toys
- Alternate seating

Please see Appendix F for some Movement Activities

Sample Activities for Community Programs

Students with ASD have diverse needs, and diverse interests and because of this it can sometimes be a challenge to incorporate them fully into community-based programs or keep them interested in what is going on. The following are some sample resources and activities that can easily be incorporated into different community-based programs:

Sensory Activities:

Having sensory bins available for free time may help student with ASD to increase their tolerance to sensory experiences and may also serve to provide much needed sensory input for those who seek it. Some examples of sensory activities are (Fast, 2018):

- Using shaving cream to 'draw' on a window or mirror (caution requires some clean up)
 - Whipped cream or pudding can also be used for those children who tend to put things in their mouth
- Finger painting
- Guess that scent games – different scented items are hidden in a box and children are asked to make predictions on what each item is
- Peep boxes with differently textured materials – student place their hand through a hole in the box to feel different textures such as cotton balls, sandpaper, felt, etc.
- Water play and sandboxes

Educational Based Activities:

For community programs that have an educational component, it is important to make learning fun! Using themes or characters that the children enjoy in teaching and learning activities will help to capture attention and keep children interested. For example, having free write activities based on 5 minutes of building in Minecraft. Functional skills are also important for children with ASD, consider activities like baking to learn math and reading concepts.

Fidget Kits (Fast, 2018):

For times when you need a child with ASD to focus on a quiet activity to sit for a longer period (e.g. a bus ride), fidget kits are very useful. These can be made using a small bag or box filled with quiet items that the child can squeeze, pull or play with that will not distract others and will help to keep them focused. Some examples of such items are; stress balls, silly putty, and strands of beads, fidget cubes or spinners. Most of these items can be purchased from the dollar store.

Movement Activities:

See Appendix F for a full list of movement activities and materials needed.

Always try to include movement activities proactively for those students who need them, these activities can be done as a whole group or used in the form of a 'movement break' where individual children or pairs step out of the group space for some short movement activities.

10 Key Reminders for Community Partners Working with Children with ASD (Fast, 2018)

1. Every child with ASD is different and possesses different needs and strengths.
2. Not all strategies will be successful for every child. Additionally, not every strategy is necessary for every child. Try to include a variety of strategies in your programing in order to meet the needs of each child with ASD.
3. It is important to try and be consistent! Try to keep consistency between the places the student frequents by keeping an open line of communication with parents and caregivers.
4. Be patient! Success does not come over night, try and try again it will be worth the wait!
5. ROUTINE! A lack of surprise is always a good thing for a student with ASD, try and keep the routine in your program as consistent as possible and warn children with ASD about any surprises that may be coming along.
6. Visuals are necessary for some but helpful for ALL. This about the visuals you use in your everyday life. Do not limit visuals to an individual schedule or choice board. Incorporate visuals in your program space, on items or objects you store or in a full group schedule – be creative!
7. Reinforcement and praise should be given **throughout** your time with the child to encourage expected behaviours and good choices.
8. Movement breaks are essential for some children. Make sure to incorporate these proactively for those who may need them – add them to the schedule do not wait until an unexpected behaviour occurs.
9. Make expectations clear – let the child know what you want. This can include making sure that the start and end point of each activity is clear. Rules and expectations can also be posted visually in the program space.
10. **Get to know each child.** Chances are these children with ASD are some of the coolest kids you will meet. Take the time to read information and books on their diagnosis and stories about other kids with ASD. Notice the little things, and learn from them – they may be able to teach you more than you would ever imagine possible!

Functions of Behaviour Visual

Please refer to the follow chart for an easy to access visual on the functions of behaviour for children with ASD.

Function of Behaviour	Description
<i>Access to Attention</i>	A display of problem behaviour often results in immediate attention from others; this serves to reinforce the behaviour. These behaviours often occur in a situation where attention is other wise infrequent.
<i>Access to Tangible</i>	A display of problem behaviour resulting in access to reinforcing materials or stimuli (e.g. iPad or TV). These problem behaviours develop when they consistently produce a desired item or event.
<i>Escape</i>	Problem behaviours are learned as a result of their effectiveness in terminating or postponing aversive events.
<i>Automatic</i>	These problem behaviours do not depend on the actions of others to provide an outcome (i.e. thumb sucking). A behaviour is assumed to be maintained by automatic reinforcement only after social reinforces have been ruled out.

Adapted from: Cooper, Heron & Howard (2007)

Resource Guide

The following is a list of helpful books, websites and community programs which can help with further questions about the ASD diagnosis as well as some tips and trips for incorporating these children into your programming.

Books:

Answering Autism A-Z

By: Karen J Crystal

"Answering Autism From A-Z provides parents, caregivers, teachers and families with informative details on how to deal with Autism on a daily basis. This book is written in an A-Z format for easy access to find exactly what you need in a moments notice."

Explaining Autism (Emerald Explaining)

By: Clare Lawrence

"What is autism? With perhaps one in a hundred of our population now receiving a diagnosis of Autism, this is a question that more and more people are asking. Explaining Autism is the Second Edition of this highly successful book in the Explaining series and provides a clear and concise introduction to this fascinating and perplexing subject. Written in accessible, non-specialist language, it provides an ideal introduction for parents, carers, teachers and employers - for anyone coming across this intriguing condition - on ways to understand what is Autism."

The Autism Book: Answers to Your Most Pressing Questions

By: Jhonna Robledo and Dawn Ham-Kucharski

"Addresses one hundred top concerns pertaining to autism, sharing objective and compassionate advice for parents on the condition's causes, manifestations, treatment options, lifestyle challenges, and more."

Practical Ideas That Really Work For Students with Autism Spectrum Disorder *Second Edition*

By: Kathleen McConnell and Gail R. Ryser

"This updated edition contains 40 practical, easy-to-use classroom ideas designed for teachers to help them improve the social interactions and communication skills of students with autism spectrum disorder (ASD). The projects and activities included were created for children with ASD in preschool through grade 12, and they include concepts ranging from showing enthusiasm and problem solving to making requests and demonstrating independent behaviour. The book provides an explanation for each idea, along with reproducible worksheets, illustrations, tips, and materials lists. The strategies are based on research and the collective experience of the authors, and were developed after additional input from other educators. The book also includes skills checklists that can be used to evaluate students' skills as well as plan effective instruction."

The Official Autism 101 Manual

By: Karen L. Simmons with contributions by Temple Grandin, Anthony Attwood, Darold A. Treffert, Bernard Rimland, Jed E. Baker, and more

“When you need answers to your questions about anything related to autism, including early diagnosis, therapies, the buzz about vaccinations, social skills, self-esteem, planning for the future, coping skills, music therapy or solving reading problems, this master collection gives you practical and proven answers.”

Understanding Children and Families with Autism Spectrum Disorder

By: Renee (Rivki) Silverberg

“Understanding Children & Families with Autism Spectrum Disorders provides an OBJECTIVE, informative, and helpful view of ASD. There is a great need for a book on autism spectrum disorder that provides OBJECTIVE information that will allow families and professionals to provide a high quality, pro-social life for children with ASD. The book discusses the various issues, developmental processes, possible therapies, DSM-IV-TR, the current DSM-5, and educational approaches.”

Activity Schedules for Children with Autism: Teaching Independent Behaviour *Second Edition*

By: Lynn McClannahan and Patricia Krantz

“Like the bestselling first edition, this new edition of Activity Schedules will show thousands of parents and service providers how to use this teaching tool to help children and adults successfully engage in self-directed and purposeful activities. “

A Pictures Worth: PECS and Other Visual Communication Strategies in Autism *Second Edition*

By: Andy Bondy Ph.D and Lori Frost M.S., CC-SLP

“ This user-friendly guide introduces PECS, a simple and empowering communication tool in which partners exchange cards with photos or line drawings representing objects, attributes, and actions. A child or adult who has delayed or no speech can easily express his basic desires (e.g., “Ice cream”) or needs using a PECS card without prompting from another. And as a person’s PECS usage progresses, he or she learns to put pictures together in sentences to express desires (e.g., “I want chocolate ice cream.”), to comment, and ask questions.”

Movies:

Rain Man (1988)

I Am Same (2001)

Mozart and the Whale (2005)

Journals/Journal Articles:

Journal of Applied Behaviour Analysis

Journal of Autism and Developmental Disorders

Journal of Autism & Other Developmental Disabilities

Websites:

www.autismontario.com - Autism Ontario website

www.autism.net - Geneva Centre for Autism

www.autismtoday.com

www.autismspeaks.org

<http://www.autisminternetmodules.org/>

<http://www.autism-society.org/>

<http://www.asdatoz.com/info.html>

<http://www.nationalautismcenter.org/>

<http://www.positivelyautism.com/>

<http://www.teacch.com> -TEACCH

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Appendix A Data Collection

Sample ABC Chart – Blank

Date: _____ Name of Person Observed: _____ Observer: _____

Behaviour: _____

Date	Time	Antecedent	Behaviour	Consequence	Possible Function

Appendix E- *This data chart may have more rows depending on the number of dates/times being observed. Typically data is taken for a set period of time – for example 1 program session, or 1 week. Possible functions of behaviour include access to attention, access to tangible, escape and automatic (positive reinforcement)*

Sample ABC Chart – Filled in

Date	Time	Antecedent	Behaviour	Consequence	Possible Function
October 6/91	5:30pm	Program leader announces that it is time for a game of tag	Chris hides behind the bookcase	Program leader does not force Chris to play tag	Escape

Appendix B

Visual Schedule Sample

Typically pictures will be attached to the visual schedule by hook and loop fastener (Velcro) so that the child can rip the picture off when the activity is complete. Other fasteners such as a sticky tack or tape would also work well (See Figure 1 below).

Below is a sample of a visual schedule for a community based after-school program. When the child comes in they will be handed this schedule and will know that they are going to play ball, sit for circle, colour, have a snack, play with musical instruments and then it will be home time. This helps to provide predictability and reduce anxiety.



Use Boardmaker™ to place Picture Communication Symbols® here.

VELCRO

VELCRO

VELCRO

VELCRO

VELCRO

Paste Envelope Here

Suggested Use:

Put title, symbol representing the activity, individual's name, or individual's picture in the first cell. Laminate sheet and attach cells above with velcro. As each task is completed, remove the corresponding symbol and place it in the envelope.

Figure 1. Visual Schedule Outline
http://visuals.autism.net/main.php?g2_itemId=140)

Appendix C First-Then Board

For more information on how to use a first-then board see:

<https://www.erinoakkids.ca/getattachment/Resources/Growing-Up/Autism/Visual-Supports/First-Then-Board.pdf.aspx>

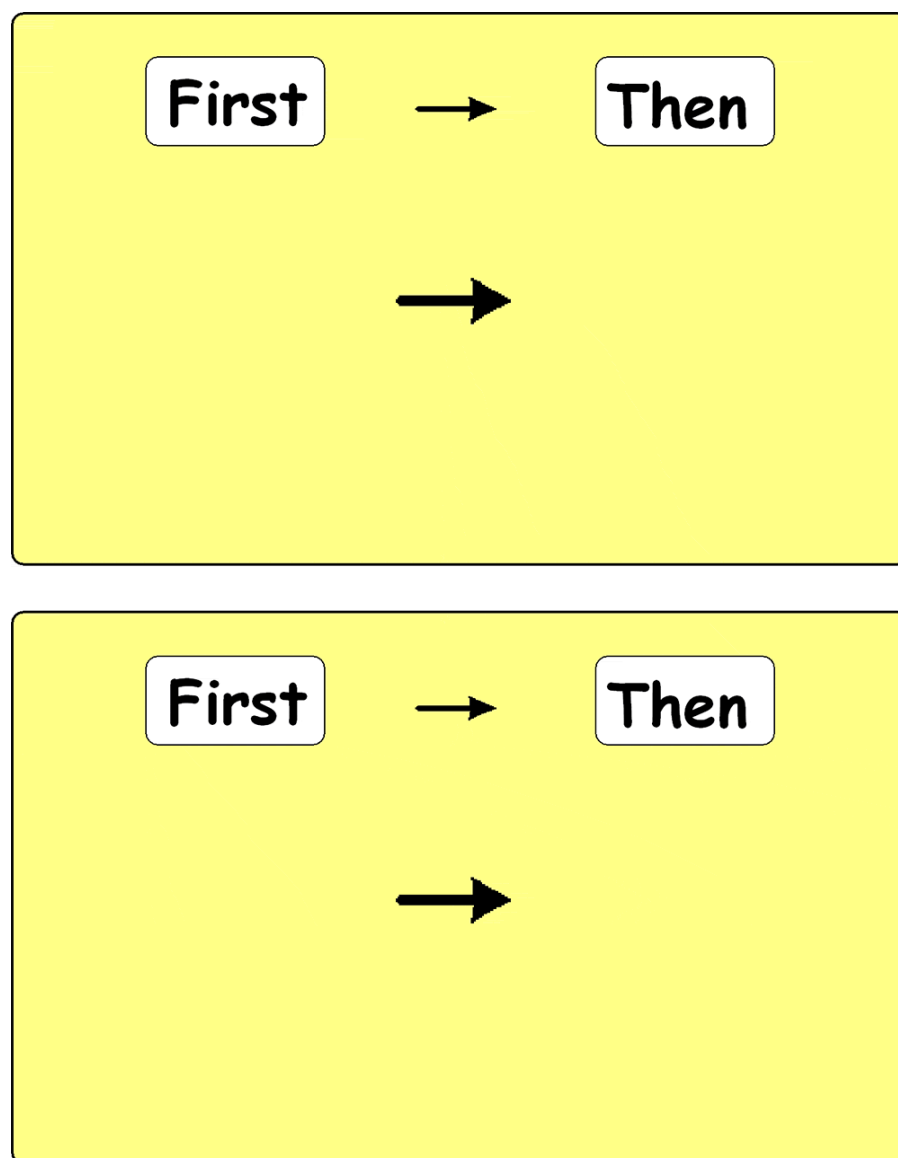


Figure 2. First-Then Board
(http://visuals.autism.net/main.php?g2_itemId=45)

Appendix D Choice Board

For more information on how to use a choice board please see:

<https://www.autism.net/images/servicesforadults/pdp/Choice-Boards.pdf>

Choice Board		

Figure 3. Choice Board

(http://visuals.autism.net/main.php?g2_itemId=109)

Appendix E

Reward / Token Board

Token Boards can be used as a positive behaviour support to increase an expected behaviour. Staff and the child will agree upon a 'reward' (usually a free choice, or an edible reward) that will be earned upon receipt of a specific number of tokens. It is important that the expectations for receiving a token be clear to both staff and the child. Tokens can be visual pictures, check marks or any other simple marking system.

For additional sample token board downloads see:

<http://www.autismcircuit.net/tool/token-board>

I am working for:

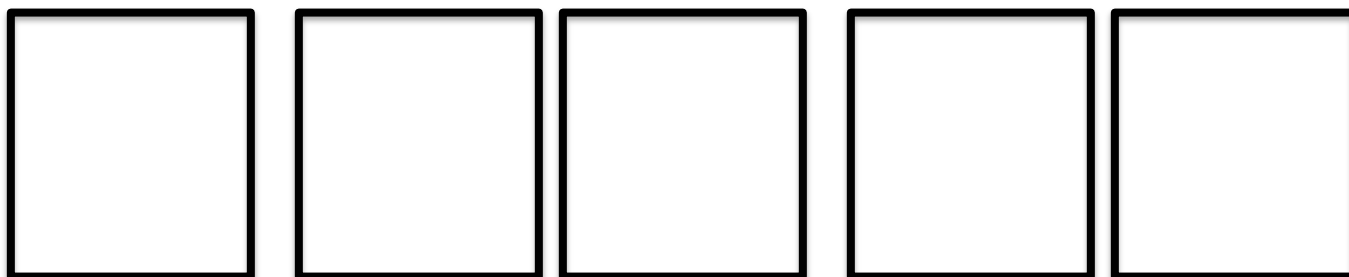
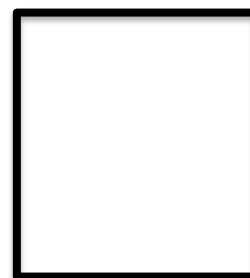


Figure 4. Sample Token Board (Fast, 2018)

Appendix F

Movement Activity Samples

The following are some author created samples of movement-based activities, which can be used during movement, breaks in any community based program. Materials are basic and can be placed in a bag and/or box which can be stored in the program space. The following chart can also be kept in the bag/box for reference.

Activity	Description	Equipment Needed
Fine Motor Skills	<ul style="list-style-type: none"> • Blow bubbles and have the child try to catch them • Use sidewalk chalk to colour on the pavement or on the side of a building • Make knots in a length of rope and have students try to untie them (this can be timed or untimed) • Have students try to insert a number of straw into a Pringles can (hole punch holes in the lid) • Beading 	<ul style="list-style-type: none"> • Bubbles and bubble wands • Sidewalk chalk • Length of rope and timer (optional) • Pringles can and straws • String/twine and beads
Gross Motor Skills	<ul style="list-style-type: none"> • Pulling and stretching a therapy band – staff can also hold onto one end and have a ‘tug of war’. The child can do this activity standing or sitting • Towels can also be used to pull and stretch • Skipping with a thick rope – this can be done individually or with a group • Obstacle course • Hopscotch • Jumping over rods/pylons laid along the ground 	<ul style="list-style-type: none"> • Therapy bands • Towels • Skipping rope(s) • Pylons, steps, hoola hoops, etc. to create a course • Hopscotch court and rock/throwing piece • Rods/pylons
Sending and Receiving	<ul style="list-style-type: none"> • Passing a ball back and forth between children or child and staff. This can be done with any type of ball and with any body part – the ball can be rolled, bounced, kicked or 	<ul style="list-style-type: none"> • A variety of balls – small, medium and large as well as different weights and firmness

	<p>thrown. To increase the level of difficulty increase the distance between participants</p> <ul style="list-style-type: none"> You can have either to child or the staff choose the number of passes or leave it open ended 	
Mirroring/Copying	<ul style="list-style-type: none"> Games such as Simon Says and Follow the Leader can help to increase these skills. Children will preform different movements with their bodies that match the verbal or visual directions 	<ul style="list-style-type: none"> Music can be added
Hand/Eye or Foot/Eye Coordination	<ul style="list-style-type: none"> Pylons can be set up and balls can be kicked or dribbled around them. Balls and scoops can be sued for throwing and catching A ball can be set in the middle of a parachute and a group can work together to keep it on as the wave the parachute up and down Beanbag toss into hoops Balance beams or benches can be walked or crawled across Hand and foot cutouts can encourage children to move in different patterns 	<ul style="list-style-type: none"> Pylons and balls Scoops and balls Parachutes Hoops and beanbags Laminated hand and foot cutouts
Races and Games	<ul style="list-style-type: none"> Set up a defined start and end point with pylons – have children use different locomotion to move from one end to the other as fast as they can (running, walking, jumping, backwards walking, crawling, leaping, etc.). It is important to make this activity challenging but not so difficult that it can not be enjoyed Students can race to beat a clock or beat their own time – 	<ul style="list-style-type: none"> Pylons

	<p>do not have students race to beat their peers</p> <ul style="list-style-type: none">• Tag games can be played such as – freeze tag, animal tag, What Time is it Mr. Wolf, Red Light Green Light, etc.• It is important to play games where there is not one winner and one loser – for example in games like What Time is it Mr. Wolf make sure the task of being the wolf is emphasized as enjoyable	
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CHAPTER FIVE: SUMMARY, RECCOMENDATIONS, AND CONCLUSIONS

Currently, there are many major challenges for those providing service in a community setting to children diagnosed with Autism Spectrum Disorder (ASD) which include, but are in no way limited to: knowledge of and access to up to date information on the diagnosis itself and its components, current information on the best practices and evidence-based intervention programs for working with children with ASD, and reliable, easy to access and informative resources to provide information on working with children with ASD in a community setting (Anagnostou et al.,2014). Thus, it was imperative to investigate and assemble information regarding the previously stated challenges into one easily accessible document to help make providing community-based services to children with ASD more successful. Based on the identified needs an through the information gathered from a Needs Assessment in Chapter Three, the research problem in this project was to develop a purpose driven and meaningful handbook for those in our community providing service to children with ASD.

The purpose of this project was to:(1) develop an informative collection of evidence-based resources and scientifically based intervention programs for children with ASD and; (2) to enable and empower community partners in their daily interactions with children with ASD through a user-friendly handbook filled with resources and information on how to best support these children in community based programs.

Evaluation of the Handbook

Once complete, the handbook was evaluated by four community partners currently providing service to children with ASD within their community agencies. These partners were sent, through their agency administrator, a letter detailing the purpose of this project and, specifically the intent of the handbook (Appendix B), a copy of the completed handbook, and a questionnaire regarding the benefits and concerns with the handbook itself (Appendix E). A list of the evaluating community partners is reviewed in Table 2. Their education and a short description of their work are also listed.

The results of the evaluative questionnaire are delineated below:

Question 1: *Overall, do you feel that this handbook would be beneficial for community partners working with children with ASD? Please explain.*

Overall, all participants agreed that this handbook would be beneficial to community partners. Participants #1 (Kelly) stated that it would be an excellent addition to the toolbox of those working with individuals with ASD as it educates on basic evidence-based strategies for supporting these individuals. Kelly reported that the handbook is a good introductory for community partners to learn the basic information that may be covered in introductory courses to ASD. Participants #2 (Josh) felt that the handbook would be of particular benefit to those with no prior formal education in ASD in order to help them learn strategies for successful interactions.

Participant #3 (Molly) indicated that the handbook would be of benefit to community partners as it provides a wealth of background information on the ASD

diagnosis. Molly provided feedback regarding the fact that the handbook gave some insight into what one may see when working with individuals with ASD and there can often be a lot of uncertainty when working with a new client with ASD for the first time. Finally, participant #4 (Lexie) felt that the handbook served as a great reference, as well as a review of ASD and the basic principles and evidence-based intervention methods for those with prior education. Lexie stated that the key reminders page, the sample activities and the function of behaviour visual were particularly practical.

Question 2: *Do you feel that this handbook would be helpful for community partners both with and without experience working with students with ASD? Please explain.*

All participants reported this handbook would be helpful for community partners both with and without experience. Participant #1 (Kelly) stated that the strategies would be helpful for all as community partners are constantly needing to adapt to the needs of those they are serving whether they have experience or not. Participant #2 (Josh) reported that those with experience will benefit from the reinforcement of previously learned principles, as well as a gain deeper understanding of some behaviours they may have experiences and some ideas for the future. Additionally, Josh stated that the benefits for those without experience are great in that the handbook provides a good overview of the subject including what can potentially be expected and several strategies that have been proven successful. Participant #3 (Molly) stated that due to the spectrum nature of ASD it is always helpful for community partners to have an easily accessible resource to consult.

Table 2

Demographics of the Sample [Evaluative Questionnaire]

Participant Number	Participant Pseudonym	Highest Education Level	Community Partnership
1	Kelly	Bachelors of Education	Runs an after-school drama, dance and reading program
2	Josh	Masters of Biochemistry	Volunteer in a Sunday School program for children with special needs.
3	Molly	Masters of Education	Works for an organization that runs after-school and summer programming for typical children and those with exceptionalities.
4	Lexie	Autism and Behaviour Science Diploma with BCABA designation.	Works as an IBI/ABA therapist for children with ASD.

Molly stated communication strategies as an example of the usefulness of the handbook expressing that if an experienced staff had only ever used sign language to communicate they could find the handbook helpful in outlining the Picture Exchange Communication System. Molly also reported that she found the activity ideas, particularly the fine motor and sensory activity suggestions to be very useful for both the experienced and the new. Participant #4 (Lexie) stated that for those with experience this handbook could serve as a quick refresher and provide quick resources to refer to. Additionally, for those without experience, Lexie reported that the handbook serves to provide a general understanding of ASD as well as the basic principles of ABA, which will better equip them when working with individuals with ASD.

Question 3: *What section/information do you feel was most helpful from this handbook? Additionally, is there a section you feel could have been left out?*

The responses to this question varied, and some of the participants provided responses that contradicted another, suggesting that the handbook provided different uses for different practitioners. Participant #1 (Kelly) reported that the section on the functions of behaviour was the most beneficial as this is something that many community partners may not have a background in, yet that is extremely important for understanding individuals with ASD. Kelly indicated that she did not think that anything needed to be left out. Participant #2 (Josh) felt that the suggestions for implementation at the end of each section (i.e. ways to include ABA principles in practice) were of great benefit, as well as the 10 key reminders for community

partners. Josh felt that nothing should have been left out, but that some sections on the specific intervention strategies (ABA, EIBI) could have been abbreviated.

Participant #3 (Molly) stated that many sections in the handbook were of great value for community partners including: the lists of ABA principles that can be applied in community programs, examples of communication (PECS, sign language), the section on sensory integration intervention, sample activities, the 10 key reminders for community partners, and the appendices including the choice board and first-then chart. Molly agreed with Josh in expressing that the section on ABA could have been abbreviated as not all community partners will have to carry out a full ABA program. In contrast, participant #4 (Lexie) indicated that the section on ABA was the most helpful as understanding those concepts/principles will help community partners to better understand programming and how to work with an individual with ASD more effectively. Lexie expressed that the section on augmented communication could have been abbreviated.

Question 4: *Do you feel that there is anything that could be added to this handbook to make it more valuable and beneficial for community partners working with children with ASD?*

Many participants provided some helpful insight on potential additions to the handbook. Participant #1 (Kelly) reported that the functions of behaviour section could be improved by adding some detailed and specific examples that may arise on different community settings such as camp, soccer, drama class, dance class, etc. Participant #2 (Josh) did not report that anything could be added to the handbook but suggested a follow up one-page handout (tip sheet) summarizing some key reminders

could be helpful for community partners. Participant #3 (Molly) did not indicate that anything could be added to the handbook at this time. Finally, participant #4 (Lexie) suggested the resource guide include a list of local agencies that work with children with ASD that community partners could contact if they would like to connect their clients with other opportunities for support.

Question 5: *Would you use this handbook as a resource for your personal program/career and/or share it with colleagues?*

All four participants agreed that they would use this handbook in practice and share it with colleagues. Participants #1 (Kelly) indicated that she would also share this handbook with the parents of the children she supports. Participants #2 (Josh) stated that he has already begun to put some of the concepts from the handbook into practice with the individuals he supports in his community program. Participant #3 (Molly) stated that she would share it with colleagues as she feels that there is often a lack of understanding regarding why individuals with ASD are displaying certain behaviours; Molly stated that the handbook is a good tool for enlightening community partners as well as to provide them with practical tools which they can easily incorporate into their programming. Participant #4 (Lexie) simply stated "Absolutely!"

Implications for Theory

The theoretical framework used for this project focused on social-cognitive theory, specifically Bandura's (1986) theory of triadic reciprocity and reciprocal determinism. Social-cognitive theory was used to frame this project as the project factors in consideration of the development of future behaviour, and the fact that

behaviour must be evaluated in the context of normal development (Kaufmann & Landrum, 2013). That is, what may be appropriate and adaptive behaviour in one setting, or at a specific age, will not be adaptive or developmentally appropriate in another context or at another point in development. As seen through the development and feedback on this handbook, when examining ASD, it is important to explore behaviour, as this is the basis of most intervention strategies for children and youth with ASD (Anagnostou et al., 2014; Boutot & Hume, 2012; Estes et al., 2012).

Social- cognitive theory places an emphasis on personal agency, which is the ability of humans to use symbols for communication, to anticipate future events, to learn from observation or vicarious experiences, to evaluate and regulate themselves and to be relatively self- conscious (Kaufmann & Landrum, 2013). This personal agency takes place in three specific contexts that are constantly interacting to influence a final outcome in the individual; these include the environment (social and physical), personal factors (such as thoughts, feelings, and perceptions), and the individual's behaviour itself (Woods & Bandura, 1989).

When investigating ASD, and beneficial intervention strategies, as was done through the completion of this handbook it is important to look at the child as a whole, with a set of interacting environments, personal variables, and behaviours that are specific to them as well as changing each day. With that being said, the effectiveness of this handbook was based on the whole child, as well as the whole practitioner, and sought to take into account the interactions between what is said, what is done, what is autonomously decided and which outside factors are making decisions for children and youth with ASD within community programs.

The purpose of this handbook was to create an easy to follow and comprehensive document detailing the best practices for support children and youth with ASD in community programs, while also providing current research, resources, and information to practitioners. More specifically, the handbook was created to provide community partners with the most current, empirically based information to help them become familiar and knowledgeable in the most effective intervention strategies for children and youth with ASD. Finally, practical and easy to use activity and resource guides were provided throughout the handbook, to empower community partners to support the whole child through their community-based programming.

Implications for Practice

This project has helped to support several implications for practice for community-based programs supporting individuals with ASD. As a result of the increasing number of individuals with an ASD diagnosis (Chen et al., 2015), professional development in the diagnostic indicators of and intervention of ASD is necessary in order to support and engage students with ASD in community programs in the way which best supports their social, cognitive and behavioural education. Additionally, this handbook was created with the intention of alleviating some of the anxiety or concern community partners may have had with regard to supporting children with ASD.

Limitations of the Project

There were several limitations of this project. First, this project was limited in sample size. Though recruitment posters were sent out to the administrators of a number of community agencies there was only response received from four

participants during the time research was being conducted. It is important that the handbook is evaluated by more community partners from varying agencies and with varying degrees of experience supporting children with ASD. Additionally, in order to develop the handbook further, it would be very beneficial to pilot the effectiveness of the handbook with a number of community partners currently active in the field and supporting children with ASD within their current programs. Community partners would be given a copy of the handbook at the beginning of their program sessions (i.e. summer camp) and the researcher would examine how often the handbook was consulted, how the handbook was helpful to those community partners during their session and what information they may have been looking for that could be added to the handbook upon revision. Unfortunately, due to the time constraints of this project, a longer evaluation period as such was not achievable for this project.

It is important to note that the information contained in this handbook is current as up to date as of late 2017. As evidenced in the review of literature in Chapter Two, the ASD diagnosis is continuously changing, and increasing in prevalence; new and innovative research continues to be published and new concepts and strategies discussed each year. In order for a handbook, such as this, to be kept up to date revision will need to be made on a yearly basis to include new information and strategies for supporting those with an ASD diagnosis in community programs

Recommendations for Future Research

This handbook on the best practices for children with ASD for community partners is just the beginning of the materials and information that is needed by the larger community to provide meaningful and fulfilling community support that

provides for the social, cognitive and behavioural education of children and youth with ASD. Given the vast amount of research being done on ASD, it is imperative that more comprehensive documents be created and made readily available to community partners. Future research could have the aim of creating documents specific to individual aspects or diagnosis and intervention; for example, a handbook that is solely based on ABA, or a handbook focusing on different communication strategies. The creation of free and easily accessible workshops and presentations on the ASD diagnosis and specific intervention strategies for community organizations supporting children with ASD would also be a valuable future research project.

Additionally, in order to create effective and successful community-based programming opportunities for children and youth with ASD, it is imperative for community partners, support staff, and families to become familiar with effective, evidence-based intervention programs and strategies currently available for individuals with ASD. The creation of regularly updated, online resource and programming guides could serve all of these stakeholders effectively and would be a beneficial next step for future research. With any of these projects in place, the community will be more equipped to help children and youth with ASD reach their maximum social, behavioural and cognitive potential.

Conclusions

The goal of this project was multi-faceted: (1) develop an informative collection of evidence-based resources and scientifically based intervention programs for children with ASD and; (2) to enable and empower community partners in their daily interactions with children with ASD through a user-friendly handbook filled with

resources and information on how to best support these children in community based programs. To create the handbook, a needs assessment questionnaire was created and completed by four community partners working with children with ASD. Then, based on the information gathered, a comprehensive handbook was created which incorporated information and evidence-based strategies regarding the best practices and intervention techniques for children and youth with ASD. Following its creation, the completed handbook was sent out via email to the administrators of community-based programs in order to have each participant review and critique the handbook based on an evaluative questionnaire.

Upon reviewing the completed questionnaires, it is evident that the created handbook was of benefit to community partners from varying community-based programs. Participants in the study reported both an increased knowledge of the ASD diagnosis and intervention strategies and a beneficial review of previously learned concepts. They also expressed the desire to use the completed handbook in their own practices as well as to share it with colleagues and even parents based on its usefulness and value to community-based programming. The findings of the present project indicate the need for an increased number of informative professional development resources and opportunities for community partners working with children and youth with ASD.

Thus, the data from the Needs Assessment, Evaluative Questionnaire, and review of empirical research indicated that with proper professional development and opportunities for increased education, professionals working with children and youth with ASD in community settings can significantly impact the social, cognitive and

behavioural success of these individuals. This type of early intervention can have a long-term positive effect on skills acquisition, removal of barriers to learning, and the improvement of functional skills and quality of life for children with ASD spending time in community-based settings (Anagstou et al., 2014).

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Appendix A

Needs Assessment Questionnaire for the ASD Handbook for Community Partners

1. Can you discuss your knowledge related to the characteristics and behaviors of a child with Autism Spectrum Disorder?
2. What resources are available to you through your organization, relating to children and youth with ASD? What does your organization offer in terms of resources for working with children with ASD?
3. Are there any professional development workshops/seminars offered by your organization?
4. Does your organization provide professional development opportunities external to your organization?
5. What aspects do you find the most challenging working with children/youth with ASD?
6. What do you feel would be most beneficial to include in a handbook for community partners working with children with ASD (e.g., content information on the characteristics, symptoms, treatment of ASD, teaching strategies and behavioral management, for working with children with ASD)?
7. What resources do you feel would be most beneficial for you to support the social, cognitive and behavioural education of children with ASD in your community program?
8. Is there any other information you would like to share that has not been discussed above?

Important – please keep a copy for your personal records

Appendix B

Handbook Evaluation Questionnaire

1. Overall, do you feel that this handbook would be beneficial for community partners working with children with ASD? Please explain.
2. Do you feel that this handbook would be helpful for community both with and without experience working with students with ASD? Please explain.
3. What section/information do you feel was the most helpful from this handbook? Additionally, is there a section you feel could have been left out?
4. Do you feel that there is anything that could be added to this handbook to make it more valuable and beneficial for community partners working with children with ASD?
5. Would you use this handbook as a resource in your personal program/ career and/or share it with colleagues?

Important – please keep a copy for your personal records