Effectiveness of Early Intervention for Children with Autism in British Columbia: A Literature Review

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CHAPTER 1

Introduction

Aim of the Study

The intent of this project is to examine the literature regarding the effectiveness of early intervention for children diagnosed with autism in British Columbia, Canada, and to observe the benefits on the children’s future general development and life. Different research and intervention programs worldwide will be referenced, followed by a specific analysis of the research and intervention in British Columbia, Canada. The author will observe if current structures and programs offered in British Columbia are reflective of the research and knowledge regarding the effectiveness of early intervention for children diagnosed with autism.

This study will attempt to verify whether a gap exists between the knowledge and practices of early intervention in British Columbia, and will consider the challenges faced by the authority in their desire to offer the best programs for these children and their families. The study will finish with an investigation into measures for improving intervention in British Columbia for children on the spectrum of autism, to ensure they receive the best opportunity to achieve their full potential.

Problems Underlying the Study

Over the last few decades, autism has become of increasing interest and concern to health officials, social services workers, and education professionals in British Columbia, Canada. Across Canada, and specifically in the province of British Columbia, the health authority is reporting increases in the number of children diagnosed on the spectrum of autism, which poses a numbers of pressing questions regarding social policy, funding allocation, and health care initiatives. The health authority recognizes that the current delivery of services in British Columbia for young children on the spectrum of autism is in crisis, as the number of children requiring clinical attention has mushroomed, but diagnostic and treatment services have not kept pace with this increased demand. Agencies and government have also been inundated with requests for services, but the limited amount of programs offered and space availability is a major concern. The
province of British Columbia desires to offer adequate services that follow the best practices, but it is matter of structuring the system to enable this goal to be reached. In recent years, various agencies and government authorities have been researching the best and most efficient means of providing services and support to the children on the spectrum of autism and their families; however, they have not yet reached a solution.

The problem has recently become an important public issue, with parents and families advocating for funding of comprehensive treatment programs and for more support from the health authorities. In many cases, this concern and dissatisfaction is resulting in parents challenging the government through the courts, in order to receive what they perceive as being best for their child. Funding agencies and policy-makers must critically appraise the literature on intervention for children on the spectrum of autism, and create a system of support and services for these children and their families that will be plausible to implement and will adhere to the knowledge obtained from the literature.

Meanwhile, in the literature, the importance of early intervention for young children with autism has been well documented (Hurth, Shaw, Izeman, Whaley, & Rogers, 1999; National Research Council, 2001; Rogers, 1999, 1996; Simpson, 1999; Woods & Wetherby, 2003). Rogers (1996) found that some types of early intervention appear to reduce the debilitating impact of autism, and those young children may make gains more quickly than young children with other severe neurodevelopmental disorders. The results of a retrospective study corroborated the belief that children on the spectrum of autism have significantly better outcomes when intervention begins before age five (Frenske, Zalenski, Krantz, & McClannahahn, 1985). Although the importance of early intervention has widespread support, researchers and proponents of specific intervention methods continue to debate over which method is the most effective, making it even more challenging for the government and funding agencies to determine the optimum way to provide necessary services.

To speak to this dilemma, this project will attempt to validate the effectiveness of current programs in British Columbia, with the goal of verifying whether a gap exist between early intervention knowledge and practices. This project will also attempt to recommend improvements for the programs currently offered, as well as ways to ensure the satisfaction of parents and families of children on the spectrum of autism.
Research Methods

This project will consist of a review of the literature, analysis and discussion of the current research and programs offered in the area of early intervention for children with autism, both in general and in British Columbia, Canada. This review of literature will be conducted using hard copies and electronic resources. A variety of research studies and articles will be examined.

Significance of the Study

Most experts in autism now agree on the importance of early intervention for children on the spectrum of autism. Many different programs and program structures have been presented in literature. In British Columbia, the provincial government and funding agencies have been attempting to implement programs and services for these children and their families. None of the current programs or services seem to be satisfactory, and in a few scenarios, parents and families have challenged the government in court. Therefore, it is important to observe the effectiveness of the programs and services offered, and determine how to satisfy the parents and families in the future.

Definitions

For the purpose of this project, early intervention will be defined as intervention for children under the age of six with a diagnosis of autistic spectrum disorder, which is in accordance with the British Columbia provincial government’s official definition. (Ministry of Children and Family Development, 2005)

Limitations and Delimitations

Since this review is limited in length, the scope of the topic has been limited to the situation in British Columbia. It will not be possible for this project to report on all of the literature reviewed concerning the benefits of early intervention for children on the spectrum of autism. This project will not attempt to define the best way for the government to provide services, but instead will observe the challenge of trying to offer the best services and provide some suggestions.
CHAPTER 2

Literature Review

Providing effective early intervention to children on the spectrum of autism is a challenging task. Finding the best way to provide services and support the children and their families has always been very difficult. Upon examining the literature, more information is available on the types of intervention that will best serve these children, but as yet no preferred method has been provided. Based on the knowledge provided in the available literature, the British Columbia provincial government must decide how they can best meet the needs of these children.

What Is Autism?

Autism is a developmental disorder that is present from very early childhood, yet is often not diagnosed until much later. It is a perplexing disorder, characterized by impairments in social interaction and communication, along with restricted, repetitive, and stereotyped patterns of behavior (American Psychiatric Association, 2000). It is an enigmatic disorder with many possible etiological factors, including genetic factors, metabolic abnormalities, viral infection during pregnancy, and delivery complications, that will affect almost all areas of development and have major impacts on the lives of both the children affected and their families. Current understanding of this disorder is of an autistic spectrum, with degrees of involvement ranging from mild to severe.

Autism was first described by Dr. Leo Kanner in 1943; yet, there are many reports of the existence of this disorder well before it was formally recognized (Olley, 1999; Frith, 2003). As it is defined today, it is estimated that autism affects 13 in 1000 children (Fombonne, 2005). The Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) and the World Health Organization (WHO) classify autism as the most severe type of pervasive developmental disorder.

The lack of social relatedness is considered to be the main symptom and handicap in autism. This trait often manifests very early, with poor eye contact, and disinterest or dislike in being held. A lack of showing and sharing interests is often present, along with less desire to play with other children. Communication difficulties occur, with delayed
development of speech and language. Even when language develops, it is often rote, repetitive, and lacking communicative intent. The repetitive, rigid behaviour may be evident in flapping, rocking, or finger posturing, and also may be apparent in the presence of only a small number of activities and interests or in repetitive play, such as lining up objects. In very young children, behavioral rigidity may result in tantrums and distress.

The most striking feature of autism is its variability. Some children speak frequently and in complete sentences; others never learn to speak at all. Some children remain aloof and uninvolved; others are affectionate and interested in interactions with others. This variability is also found in children’s responses to intervention. Although some children show limited progress to intervention efforts, others make rapid and remarkable change (Lord & Schopler, 1989; Lovaas, 1987; Sigman & Ruskin, 1999).

Early Intervention - Globally

The increase in the number of children diagnosed with autism, along with treatment studies suggesting substantial gains when treatment is provided at a very early age (Lovaas, 1987; McGee, Daly, & Jacobs, 1994; McGee, Morier & Dali, 2000; Strain & Cordisco, 1994), has led to a greater emphasis on early intervention. Although no specific treatment has emerged as the established standard for all children on the spectrum of autism, several methods have demonstrated efficiencies in research settings. At this point, experts working with children on the spectrum of autism agree that early intervention is critical. There is a professional consensus about certain crucial aspects of treatment, such as intensity, family involvement, and focus on generalization, as well as empirical evidence for certain intervention strategies. This also precipitates a major increase in the importance of early identification, for without early identification, early intervention is not possible. Many studies have found that children on the spectrum of autism who receive services prior to the age of 48 months make greater improvements than older children who enter these programs in later years (Harris & Weiss, 1998; Sheinkopf & Siegel, 1998).
Importance of Early Diagnosis

It is very important for children to be diagnosed at a young age, so they can receive services that will answer their special needs and facilitate general development. The influence of the environment on brain structure and function is greatest during the first few years of life; thus, intervention may prevent the development of maladaptive behaviours (Prizant & Wetherby, 1998; Beitchman, 1985). One of the most exciting recent achievements in the field of autism is the ability to recognize the disorder at a very early age, which was not possible few years ago. A young child on the spectrum can now be recognized by difficulties in orienting to social stimuli, impoverished social gaze, and impairments in the areas of shared attention and motor imitation (Curcio, 1978; Dawson & Adams, 1984; Dawson, Meltzoff, & Osterling, 1995; Mundy, Sigman, Ungerer, & Sherman, 1986; Osterling & Dawson, 1994).

In much of the research, it is also now evident that signs of autism become apparent within the first two years of life (Oterling, & Dawson, 1994; Dawson, Osterling & Meltzoff, 2000). This has triggered a wide agreement that early detection and treatment of autism needs to be a health care priority. Recently, the American Society of Neurology recommended a screening for autism in children who fail to meet developmental milestones, a practice that will help to diagnose children early. A valid screen includes the following three components: the Checklist for Autism in Toddlers, which is to be used for infants and toddlers age 18 months and under; the Screening Tool for Autism in Two-Year-Olds; and the Autism Screening Questionnaire, for children older than four years of age (Stone, Coonrod, Turner & Pozdol, 2004; Filipek et al., 2000). Autism should be diagnosed by experienced clinicians using standardized diagnostic tools that focus on the symptoms of autism through observation of the child’s behavior rather than by examination of etiological factors. Two instruments that been developed for such a diagnostic observation are the Childhood Autism Rating Scale and the Autism Diagnostic Observation Schedule-Generic (ADOS-G) (Lord et al., 2000). There are a few other useful tools for diagnosis, which include the Gilliam Autism Rating Scale, the Parent Interview for Autism, the Pervasive Developmental Disorders Screening Test, and the Autism Diagnostic Interview-Revised (Filipek, Accardo, Ashwal, Baranek, Cook, Dawson et al., 2000). All of these systematic interview and observation schedules for diagnosis have the same purpose - they all seek to uncover typical autistic signs and
symptoms in a combination that would synergistically point to a Pervasive Developmental Disorder.

Various signs and symptoms of autism can be observed in young children. Some of these which could be exhibited are:

- a lack of social interest during the first year of age;
- significant impairment in social interaction characterized by a minimal eye contact, a lack of social reciprocity, and reluctance to form peer relationships (Volkmar & Pauls, 2003);
- failure to respond to verbalizations or to their name, as well as a tendency to be more interested in objects than in people (Volkmar, Chawarska & Klin, 2005);
- atypical eye contact and visual tracking; lack of visual attention, imitation, and reactivity (Zwaigenbaum et al, 2005).

A few studies demonstrate that impaired sensory-motor functioning, in the form of abnormal movement patterns, object manipulation, and postural adjustments also have the potential to serve as early markers of autism in infancy; however, these signs of impairment usually become more evident as the children become older (Baranek, 1999).

These young children on the spectrum will also present some difficulties in the area of communication, which include a lack of language with no attempt to compensate for communication, or, if language is present, echolalia and persistent pragmatic difficulties (Volkmar & Pauls, 2003) accompanied by an absence of gestures and facial expressions. A child with autism will be very different than a child who has a hearing impairment in that children who are hearing impaired will typically find alternate ways to communicate their needs whereas children with autism will not.

Young children with autism will also present other typical behaviours such as abnormal preoccupations, interests or activities; difficulties with changes in routine; and stereotypical mannerisms (Volkmar & Pauls, 2003). These children may also present very elaborate rituals or routines that are followed meticulously and may become obsessive tendencies. Different stereotypical behaviours can also be observed in young children with autism, such as odd finger movements or finger flicking, hand flapping, and body rocking or unusual posturing. Finally, many children with autism seem to exhibit either a
hyper or hyposensitivity to certain stimuli. This may result in either a heightened tolerance or sensitivity to pain, sound, smell taste, or sight (Frith, 2003).

Although much of the research has proven the possibility and importance of early diagnosis for young children with autism, a few challenges still have to be answered to accelerate this process. It is still a very complex procedure to diagnose a child with autism, and the time frame in which it is normally completed is lengthy. Even though children on the spectrum of autism can be reliably identified by experts at the age of 18 months (Baron-Cohen, Allen, & Gillberg, 1992) and the majority of parents report symptoms before the age of two (Baghdadli, Picot, Pascal, Pry, & Aussilloux, 2003), the average age of diagnosis in the United States is three to four years (Filipek et al., 1999). Early identification is especially important, given the growing amount of research documenting the significant positive effects (Connor, 1998; Koegel, Koegel, Frea, & Smith, 1995; Lovaas, 1997; Rogers, 1998). Some research already presents the likelihood of a more positive developmental trajectory for children on the spectrum of autism who receive early intervention, which can only happen with early diagnosis (Koegel, Bruinsma, & Koegel, in press).

Different Early Intervention Methods and Treatments

Despite early claims of a cure (for example, Lovaas, 1987), autism is a lifelong disability (Volkmar & Pauls, 2003). Due to links discovered between autism and various neurological signs, it is widely accepted to be a neurological disorder, despite the fact its etiology is yet to be established. In the absence of a cure, treatment for autism is based on behavioral, developmental, and cognitive approaches. Many questions still arise concerning the effectiveness of these intervention methods, as they cannot yet be methodologically tested (Howlin, 2005).

As mentioned previously, early diagnosis and intervention is the main factor for achieving the best outcome from any type of intervention for children on the spectrum of autism (Bryson, Rogers & Fombonne, 2003). It is becoming evident that one type of intervention will not be effective for all children on the spectrum of autism. Intervention needs to be adapted for each individual child, as each child has different needs to be met (Howlin, 1998). Many different types of intervention and treatment are now available and implemented. It is very important to individualize each of these interventions and
treatments to answer each child’s individual needs. It is likely, however that intervention or treatment consistently applied and which targets language and other areas of development will be very helpful in helping children on the spectrum to further develop their skills in these areas (Bryson, Rogers, & Fombonne, 2003).

Over the years, many intervention methods and treatments for children on the spectrum of autism have been made available and implemented. These include behavioral, developmental, and cognitive-behavioral interventions. All of these intervention methods are based on different philosophies and use a different and unique way to intervene with the children on the spectrum, but they also all overlap considerably in the components of their treatment. Most intervention methods agree on two important aspects: that to be most efficient, treatment should involve at least 15 to 25 hours of formal intervention per week (Dawson & Osterling, 1997), and that the younger the children are when they start receiving appropriate treatment, the better the results and improvements in the areas they are needing help will be (Harris & Handleman, 2000; Sheinkopf & Siegel, 1998).

Most of the different intervention methods now available to families of children on the spectrum of autism are designed for preschool children. Many challenging questions still remain to be answered, such as where these intervention methods should be offered and who should be responsible for offering them and ensuring their availability. Currently, many countries are working actively on finding answers for these difficult questions.

In the next few pages, the most well-known intervention methods will be presented and discussed, including the Developmental Intervention Model or Greenspan approach (Greenspan & Wieder, 1997); the TEACCH Model (Marcus, Lansing, Andrews, & Schopler, 1978; Mesibov, 1997; Schopler, Mesibov, & Baker, 1982); the UCLA Young Autism Project (Lovaas, 1987); the LEAP (Lifeskills and Education for students with Autism and other Pervasive Developmental Disorders) Program; and the Denver Model. Most of these programs have been developed for children preschool age or older. Before looking at these intervention methods individually, it is important to separate them into two categories, which share similar components in the application. The first group is the comprehensive intervention method, which includes the TEACCH,
Applied Behavioural Analysis, and LEAP methods. The second group is the developmental intervention method, which includes the Greenspan and Denver methods.

Observing the first group, although the methods differ in terms of their main philosophies, they all share an important basis. First, each of these intervention models is offered for children between the ages of 30 - 47 months. The families of the children in the program need to be involved, and treatment is very intensive, ranging from 12 - 36 hours per week. As well, each intervention method focuses on the development of skills and includes an ongoing objective assessment of progress. The intervention methods all use teaching strategies designed for the children to be able to generalize and maintain the skills they develop, and also use individualized intervention plans based on each child’s strengths and needs. Finally these intervention methods all plan the transition from preschool to school age.

**TEACCH Intervention Method**

The Treatment and Education of Autistic and Related Communication Handicapped Children Program (TEACCH) focuses on developing cognitive, academic, and prevocational skills in school-aged children (Ozonoff & Cathcart, 1998). This community-based intervention method was developed in 1966 at the University of North Carolina, and views the spectrum of autism as a lifelong disorder. From the beginning, it emphasizes skills that are important for future independence of children on the spectrum of autism, which is one of the strengths of the method. The TEACCH method provides a structured environment for skill acquisition. The purpose of this method is to gradually help the children gain independence in areas such as visual-spatial understanding and object manipulation (Scholpler & Reichler, 1971; Dawson & Oterling, 1997; Bryson, Rogers & Fombonne 2003). Also, this method involves the parents, giving them a role of co-therapists, in order to increase intervention time. The main weakness of this method is the lack of empirical studies, but despite the limited generalizations, these study results outline the effectiveness of the TEACCH intervention method for improving cognitive and developmental skills.
Applied Behavioral Analysis Method

Applied Behavioral Analysis (ABA) is based on a method developed by I.O. Lovaas, and is a very widely-known intervention method for children on the spectrum of autism. Children involved in this treatment are subjected to a reinforcement-based, intensive, one-on-one treatment for 20 to 40 hours per week over a span of two years (Lovaas, 1987). The focus of the first year is on imitation, interaction, play, and response to basic requests. In the second year, the focus shifts to continued work on language, descriptions of emotions, and pre-academic skills. To teach generalization, the children practice the skills in other situations and with other people, once they have mastered them in a one-on-one setting. The popularity of the Lovaas intervention method is partly as a result of his 1987 study (Lovaas, 1987), which provides accounts of remarkable improvements, and uses the term “normal functioning” in the best outcome group of children with autism who receive this intervention. Understandably, parents have been quite influenced by this study. Applied Behavioral Analysis is clearly beneficial to many children with autism, and although there is evidence for its efficacy, controversy still exists with regards to its true benefit. In a sense, Lovaas’ study in 1987 is methodologically stronger than other studies looking for similar outcomes (Bryson, Rogers & Fombonne, 2003), but Lovaas lacks the power to claim the achievement of normal functioning, making many researchers hesitant to accept his results (Basset, Green & Karajan, 2000). In the face of these limitations, several problems arise, such as the challenge of providing effective intervention, while simultaneously obtaining useful information regarding the facets of treatment and method intensity (Miller & Zwaigenbaum, 2000). After many more research studies investigating the possibility of “normal functioning”, researchers found higher post-treatment IQ scores, as well as decreases symptoms in those children who had received the treatment; however, all the children continued to meet the criteria for autism spectrum disorder (Sheinkopf & Siegal, 1998). From this evidence, it is clear that Applied Behavioural Analysis is effective and beneficial, but cannot provide a complete solution or “normal functioning”.

LEAP Intervention Method

Hoyson, Jamieson and Strain developed the LEAP Intervention Method in 1984, which includes about 15 hours per week of treatment (Dawson & Osterling, 1997). The
primary focus of this method is on the social development of children on the spectrum of autism. To achieve this goal, a combination of many different learning theories is used. Also, this method uses reinforcement and stimulus techniques, while creating an integrated, consistent learning environment at home and at school, along with peer-based learning. This intervention method is mostly individualized, taking into consideration the strengths, interests, needs, and cultural and social backgrounds of each child involved in the treatment (Erba, 2000). For this intervention method, the same situation appeared concerning its effectiveness. Some studies demonstrate the benefits of this method, such as increases in language, cognitive and motor skills for children involved in this treatment; however, only a few studies have been completed to validate any official results (Hoyson, Jamieson, & Strain, 1984).

The second group of intervention methods is the developmental intervention. First of all, developmental intervention is a specific term used to describe a philosophy and specific strategies for working with children on the spectrum of autism. The intervention methods included in this category share the idea that the intervention is child-directed. Therefore, the focus is to organize the environment to encourage or facilitate communication and social interaction. Because it is a child-directed intervention method, some limitation occurs in the intervention process, which can affect the results and success of the treatment. For efficient intervention, the child needs to get involved in activities or behaviours that permit the adult to react and respond, which is not necessarily always happening with children on the spectrum of autism. Also, it requires very good skills on the part of the therapist to know and recognize which behaviours to react to.

*The Greenspan Intervention Method*

The Greenspan intervention method is a difficult method to implement in the community, as success highly depends on the skills of the parents or professional to recognize a child’s actions and behaviours, and respond appropriately in the right time-frame. This method is very different from the three previous ones, which have a prescribed pattern of responses and adult-initiated teaching trials. It is recommended that children involved in this specific method spend at least four hours per day in spontaneous
play interaction with an adult, at least two hours per day in semi-structured skill-building activities with an adult, and at least one hour per day in sensory-motor play activities. It is also advised that children involved in this program spend time in an inclusive preschool program, as well as speech and occupational therapy. The goal of this intervention method is to help the children on the spectrum of autism to further develop interpersonal connections that will lead to the mastery of cognitive and developmental skills. Currently, no controlled studies of this program have been done.

The Denver Intervention Method

The Denver intervention method is also based on developmental intervention, which means it shares the same difficulties as the Greenspan intervention method. For this method, however, some studies have been conducted, which show developmental improvement in the areas of cognition, language, social and emotional development, perceptual and fine motor development, and gross motor development for children involved in this intervention method. This method is delivered within a classroom setting that is on a 12 month calendar, where the children attend four to five hours per day for five days each week. The goal of this intervention method is to use positive affect to increase a child’s motivation and interest in an activity or person by using reactive language strategies to facilitate the communication. In this intervention method, most of the activities are conducted within a play situation.

Early Intervention - British Columbia

Over the last few decades, the field of autism has become of increasing interest and concern in British Columbia. Health officials, social services workers, and education professionals all have been trying to determine the best practice to meet the needs of these children and families. The government is under intense pressure to create a system that will adequately satisfy the needs of these children, in accordance with the results of research done on autism. It is a major challenge, as the government must also deal with the pressure from parents of the children on the spectrum who advocate for their child. These parents have their own beliefs about how the government should provide services and have their own interpretation of the research and studies done on autism.
The government is currently offering different programs which attempt to follow the results of research about autism and the general belief concerning the benefits of early intervention, but parent advocates are still very unhappy with the services offered. This is the reason why autism has been the subject of substantial debate in British Columbia for the last several years. A large conflict exists between the families of children diagnosed with autism and the government of British Columbia. The parents are dissatisfied with the current system, do not feel properly supported by the government, and are requesting revisions to current policies and regulations to respect the needs and rights of children on the spectrum of autism. The government, in turn, claims the current services offered to children on the spectrum of autism are appropriate. The frustrated parents went as far as taking the Ministry of Health Services Authority, the Ministry of Children and Family Development, and the Ministry of Education to court. In response, the government created new programs and services for families affected by autism. These new programs and services, however, are still not meeting the parent advocates’ expectations, as they are very specific in their desire and in their beliefs and understanding of which program and intervention method is the best practice for their children. In the following pages, an overview of the point of view of the government of British Columbia concerning intervention methods and services for children on the spectrum of autism and programs implemented by the government will be presented, followed by an overview of the parent advocates’ point of view, desire, and request.

The Government of British Columbia’s Viewpoint on Early Intervention

The government of British Columbia finds itself in a difficult situation regarding children on the spectrum of autism. Court disputes have placed significant pressure on the government to introduce new programs in order to support and help children on the spectrum of autism and their families. After conducting its own research on autism, the government came to the conclusion that children on the spectrum of autism can and do benefit from early intervention, which can help the developing brain build new connections to compensate for the missing ones caused by autism (Autism Spectrum Disorder Parent Resource Directory, 2003). The government’s first step in reforming the current treatment programs was to re-organize current diagnosis procedures, as it is necessary to diagnose early for early intervention to be possible. The second step was to
create and implement different early intervention programs to respond to the families’ needs in a better and more effective manner. The government focus is on early intervention treatment, following the results of the research.

**Diagnosis Procedures**

The government decided to place the responsibility for assessing the current autism diagnosis procedures on the Ministry of Health Services, through the Provincial Health Services Authority. In April 2003, the government introduced the “Standards and Guidelines for the Assessment and Diagnosis of Young Children with Autism Spectrum Disorder in British Columbia”. In its new document, the government stated its overall goals as follows:

- To promote the application of evidence-based practices in the identification, assessment, and diagnosis of children with autism spectrum disorder;
- To provide health regions with tools that support the identification, assessment, and diagnosis of children with autism spectrum disorder; and
- To provide health regions with an approach to monitoring outcomes.

These standards and guidelines offer precise tools to direct and standardize the assessment and diagnosis of autism in British Columbia, guiding professionals involved in the screening, identification, assessment, and diagnosis of young children with autism.

The document specifies that as of April 1, 2003 the clinical diagnostic assessment must be conducted by a qualified specialist (registered psychologist, pediatrician, neurologist, or psychiatrist) with broad experience in diagnosing children with autism and developmental disabilities. The assessment must include and integrate information from multiple sources and various professionals from different disciplines. The assessment must also include: a psychological assessment of cognitive level and adaptive functioning, using standardized norm-referenced instructions; a comprehensive speech language communication evaluation, using standardized norm-referenced instruments; and a comprehensive medical evaluation by a pediatrician, including a detailed physical exam and appropriate laboratory investigations. Additional assessments may also include an occupational therapy assessment, a psychiatric assessment, or other specialty assessments as required.
Programs Implemented by the Government of British Columbia

Over the past few years, the government has been working hard on implementing programs to support the needs of families with children on the spectrum of autism. Currently, the government has three major programs in place. Two of these programs focus on early intervention and are geared for children on the spectrum of autism aged six and under, called Autism Funding: Under Age 6 and Early Intensive Behavioural Intervention (EIBI). The third program is for children on the spectrum of autism aged six and over, called Autism Funding: Ages 6-18. Information about these programs is available in the form of the Autism Programs Policies and Procedures Manual (2004) that can be downloaded from British Columbia government’s website or requested from the British Columbia Autism Society Centre library.

The main objectives behind the three autism programs are as follows:

- To provide funding to parents and legal guardians to assist with the cost of autism treatment and intervention for eligible children with autism spectrum disorder;
- To support and maintain the independence and integrity of the family;
- To build community capacity;
- To promote choice, innovation, and shared responsibility;
- To improve the ability of children with autism spectrum disorder to function in their homes, schools, and communities;
- To alleviate the features of autism spectrum disorder. (Autism Programs Policies and Procedures Manuel, 2004)

**Autism Funding: Under Age 6**

The goal of this program is to allocate up to C$20,000 annually to parents of children aged six and under who have been diagnosed with autism spectrum disorder. To be eligible, a family must reside in British Columbia and not be receiving contracted autism intervention services or government funding for any other autism treatment. Using the funding provided by this program, parents must select and purchase appropriate autism intervention treatments for their children. The program is strict, and demands good management skills from the parents. The parents must follow all the rules and regulations and use the funding in the manner prescribed by the program. All the services and interventions purchased by the parents must be administered by qualified service
providers included on a list issued by the Ministry of Children and Family Development. The funding may be used to cover the following:

- Autism intervention services;
- Administrative expenses and fees (maximum $100/month);
- Travel, training, and equipment (maximum 20% of total annual funding);

**Early Intensive Behavioural Intervention (EIBI)**

The goal of this program is to deliver autism treatment and intervention to children under six years of age through three contracted agencies serving eight British Columbia communities. The Early Intensive Behavioural Intervention program has been created and funded by the Ministry of Children and Family Development. Pat Mirenda, from the University of British Columbia, in her report “Autism Intervention Outcomes in B.C.: How Are the Children Doing and How Can We Tell?” (2004) stated the program consists of at least 20 hours of weekly one-on-one intervention for one year. The intervention is highly structured, and based on the principles of applied behavioural analysis. Occasionally, additional specialists are involved for speech-language therapy and occupational therapy. The program also involves an integration component, comprised of peer interaction in a preschool, day care, or playgroup. Positive behavioural support is used to correct unwanted behaviour, and the family is involved in the training and interventions. The same eligibility conditions apply for this program as for the previous program. The main difference between the two programs is that in EIBI the parents don’t have to choose the service and intervention, leaving the choice of intervention in the hands of government agencies. In order to participate in the program, families must reside in the vicinity of the three regional centres:

- Thompson Okanagan Autism Project (Kelowna, Penticton, Vernon, and Kamloops);
- Delta Association for Child Development – The Early Intensive Behavioural Intervention Program (Surrey, Delta, and Langley);
- Queen Alexandra Centre for Children’s Health – Autism Early Intervention Program (Greater Victoria).
Autism Funding: Ages 6 – 18

The goal of this program is to allocate up to $6,000 annually to parents of children on the spectrum of autism aged six to eighteen. This funding is for purchasing autism intervention programs, as recommended by a designated professional or specialist from the Ministry of Children and Family development’s list of service providers. The same eligibility conditions apply as for the two previous programs. This program is similar to the Autism Funding: Under Age 6 program. The same rules and regulations apply, and the funding can be used to cover the same services. After six years of age, the children in British Columbia will be involved in the education system, which will receive funding to provide services to answer the specific need of the student on the spectrum of autism.

The Parent Advocates’ Viewpoint

An interview with a group of parent advocates for the Families for Early Autism Treatment of British Columbia and the British Columbia Autism Society clarified the parents’ view of the situation between themselves and the government. These parents accuse the government of British Columbia of breaking the law, as they believe effective treatments for autism exist and that the provincial health care program should offer coverage for these treatments. The parents consider the exclusion of effective autism treatments from the Medical Services Plan of British Columbia to be a direct contravention of the federal statutes and constitutional law. They also think the right to medical care, one of the defining features of Canadian nationhood, must extend to medically necessary autism treatments for all children who require it. Thus, any family with a child diagnosed with autism should receive the medically necessary autism treatments for free, regardless of each family’s individual capacity to pay for the treatment.

The Parents’ Beliefs

The parents interviewed believe there is an effective treatment for children afflicted with autism. This treatment is behavioural, based on the work of Dr. Ivar Lovaas of U.C.L.A. (1987). The parents argue that, after 30 years of documented research, this treatment has been proven effective in helping young children with autism. The treatment by Dr. Lovaas is now widely used around the world, and is considered to be medically
necessary by a significant number of British Columbia psychiatrists. The method is designed to break down a task into smaller components, making it easier for children on the spectrum of autism to learn. Children are rewarded for successfully completing each component of the task, which boosts their confidence. The most valuable aspect of this treatment is that it gives children on the spectrum of autism the opportunity to learn appropriate language, behaviour, and reasoning techniques early in life.

These parent advocates support their argument using different scholarly sources, such as two important studies by Lovaas (1987), and McEachin, Smith, and Lovaas (1993). These studies state that children who receive intensive Lovaas autism treatment (a form of Applied Behavioural Analysis) significantly improve their condition. A landmark study carried out at the UCLA reports that 47% of children on the spectrum of autism who underwent early treatment achieved normal intellectual and educational functioning, 40% were assigned to classes for the language-delayed, and only 10% were put into retarded classes. In contrast, of the children on the spectrum of autism who received the standard treatment, only 2% achieved normal educational and intellectual function, 45% were put into language-delayed classes, and 53% were put into retarded classes. At the follow-up stage, when the Lovaas-treated children were a little over 11 years old, 44% were indistinguishable from average children in intelligence tests and adaptability behaviour. These children were categorized as “recovered” from autism.

Another strong argument in favour of the parent advocates is a statement by Dr. Jane Garland, MD, FRCP (C). Dr. Garland is the Associate Professor in the Department of Psychiatry at the University of British Columbia and a child psychiatrist at the Department of Psychiatry at British Columbia Children’s Hospital:

*Applied Behavioural Analysis is an autism treatment based on sound scientific principles, and studied over more than a decade with systematic research. ...This treatment approach...appears to produce remarkable outcomes. I reviewed the research literature systematically evaluating this treatment method, and it clearly demonstrates the effectiveness of this approach. As a result of this intensive early intervention, many children make exceptional gains, [and] as a result of this program, children could reach school age with normal language and social development, able to participate in an integrated regular school. (Garland, 1996)*
The parent advocators asked numerous British Columbian physicians and scientists their opinion of the Lovaas treatment. Sixty licensed psychiatrists responded to the parents, and stated they formally endorsed Lovaas’ autism treatment as the most effective treatment method. They also deemed it to be medically necessary and agreed it should be funded under the provincial health care plan (Freeman, 1997). The document signed by the licensed psychiatrists is available from the British Columbia Autism Society library.

The Parents’ Problem

The British Columbia Ministry of Health does not cover the costs of early intensive autism therapy. In fact, it is not currently possible to receive Lovaas autism treatment in British Columbia. The parents must pay for an American specialist to come to Canada and appropriately train a private therapist to administer the Lovaas treatment. Some families, determined to allow their children to undergo this treatment, have used up their life savings and borrowed extensively to fund the treatment. The lack of availability of the Lovaas treatment in Canada has caused serious financial problems for dozens of families with children on the spectrum of autism. These parents feel the government abandoned them to fight for their children’s future on their own. Two recent example of this controversy were documented in the media by John Ivison (November, 2004) and Janice Tibbettis (June, 2004).

The Parents’ Requests

The request of parent advocates to the government is simple. They are asking the government of British Columbia to assume the responsibility for children diagnosed with autism by covering the cost of Lovaas-style therapy under the Ministry of Health’s provincial health care plan. Currently, the medical services plan covers the cost of physical therapists such as massage therapists, chiropractors, naturopaths, and optometrists, even though none of these practitioners are medical doctors. The parent advocates are requesting that the government consider the Lovaas-style therapy as a health professional partner and cover this cost if prescribed by a family doctor.
CHAPTER 3

Analysis, Interpretation and Discussion of the Findings of the Literature

After reviewing the literature, there is obvious evidence from a variety of programs and studies suggesting that early intervention leads to better outcomes. As seen, a number of studies have demonstrated that children make greater gains when they enter a program at a younger age. It is important to keep in mind that although the importance of early intervention now has widespread support, researchers and proponents of specific methodologies continue to debate the effective ingredients when talking about early intervention for children on the spectrum of autism. Many questions still remain unanswered, specifically regarding the intensity, mode of delivery, age of implementation, and setting of the best program for these children and families. There are many strategies for working with children on the spectrum of autism, and unfortunately, not all of them are equally known or available. While there is evidence that certain strategies can be effective for teaching specific skills to children on the spectrum of autism, to date there is no evidence that proves one program is better than any other. To make it even more challenging for families and practitioners, many researchers in the literature have recently compiled areas of agreement and recommend that integrating a combination of different programs together will offer a better final service to the children (Hurth et al., 1999; National Research Council, 2001). This presents a new challenge for the authority in charge of offering services for children on the spectrum of autism, as it is important that the practice and services offered follow the acquired knowledge about early intervention, to ensure these children reach their full potential.

Although much more research needs to be pursued concerning autism spectrum disorder and early intervention, some big steps have already been reached, both around the world and in British Columbia. The first step to early intervention and best practice is early diagnosis, which makes early intervention possible.
Early Diagnosis

Challenges Related to Early Diagnosis - Globally

J. Osterling and G. Dawson have observed that autism can be detected within the first two years of life (Osterling & Dawson, 1994). Such findings, together with the relative merits of early intervention, all emphasize the importance of early diagnosis of children on the spectrum of autism. Indeed, there is wide agreement that early diagnosis is a health care priority (Bristol-Power & Spinella, 1999). Furthermore, early intervention provides support for parents. The confusion and stress experienced by families is often replaced by remarkable coping strategies, once a diagnosis is reached and parents are provided with recommendations for intervention.

With the advent of standardized diagnostic tools, notably the Autism Diagnostic Interview-Revised (ADI-R) (Le Couteur & Rutter, 1989; Lord, Rutter, & Le Couteur, 1994) and the Autism Diagnostic Observation Schedule-Generic (ADOS-G) (Lord, Risi, Lambrecht, Cook, et al., 2000), expert clinicians are now able to diagnose autism reliably by age three, and sometimes by age two (Lord, & Risi, 2001). Evidence indicates, however, that most children are not diagnosed before the age of four, which is typically at least two year after parents first seek professional advice because they are concerned about their child’s development (Howlin, & Moore, 1997; Siegel, Pliner, Eschler et al., 1988). In the time prior to receiving the diagnosis, most children are seen by at least three professionals, and parents experience significant distress and frustration. Unfortunately, this long delay also postpones the beginning of appropriate early intervention, which is known and proven has being effective and primordial for children on the spectrum of autism (Dawson & Osterling, 1997; Rogers, 1998). This leaves parents with the sense that precious time has been lost in their desire to ensure their child to reaches their full development.

This unfortunate situation may be caused by different factors and challenges concerning the diagnosis of children on the spectrum of autism. These include the broad range in normal developmental milestones, variability in the emergence of autistic behaviour in children, lack of appropriate referrals by professionals to whom parents express concern, and the family’s lack of knowledge regarding abnormal child development. Some studies suggest the problem may stem from the fear and consequences of labeling a young child with the wrong diagnosis. In fact, there are risks
involved in labeling all children with autistic-like behaviour as autistic, since inappropriate, unnecessary, or costly treatments may be implemented as a result. Professional practitioners need to be more aware of the spectrum of autism and its early signs, which, in turn, will increase the speed of appropriate investigation. Ideally, there should be a tiered approach to early identification of autism, which begins with developmental observation of all young children at birth and continues as part of periodic health exams. The family physician, community health nurse, or other appropriately trained and qualified health-care provider is in a position to attend to parents’ concerns, obtain relevant developmental history, monitor milestones, observe the child carefully, and then share his or her opinion with the parents. When there are concerns about communication and social differences, this process is assisted by screening at an early age with a recognize tool, or comparison with DSM-IV-TR criteria. This should be followed up, first with a review by a pediatrician or child psychiatrist, and then with a full diagnostic evaluation by a multidisciplinary team.

The second challenge with early diagnosis is the low number of professionals who are trained to diagnose children on the spectrum of autism. Parents often face long, frustrating waitlists before being able to have their child examined by a professional expert in early diagnosis. More professionals need to be trained specifically in the diagnosis of autism. Comprehensive diagnostic evaluation is best provided by a multidisciplinary team, skilled and experienced in the field of autism, which may include a pediatrician, psychiatrist, speech language pathologist, psychologist, and possibly an occupational therapist or social worker. In the absence of the availability of autism specialists, or while the child is waiting for an assessment, intervention should not be postponed if a screening tool indicates possible sign of autism. The situation is still positive, as remarkable progress has been made on the complex but important problem of detecting autism early in life. More still needs to be done to improve the efficiency of the diagnosis process, in order to make early intervention possible for more children on the spectrum of autism, and, thus, minimize or prevent the symptoms (Sigman, Dijamco, Gratier, & Rozga, 2004).
Challenges Related to Early Diagnosis - British Columbia

In British Columbia, the situation concerning autism is the same as that which is found in the literature. Identification and diagnosis of autism in very young children is considered to be difficult, but there is evidence it is possible. The two main challenges remain: professional fear of making a wrong diagnosis, and a lack of professional trained to administrate a diagnosis. The result is sad for the families affected by this problem, and results in many frustrations, as it is often years before their child receives a diagnosis. To improve this situation and constitute best practice, it is important to monitor the language and behaviour development in young children, assisted by screening tools or checklists, followed by referral to an experienced team. Family physicians and primary health care providers need to be more aware of the early warning signs of autism, in order to provide optimal care for children who are at risk. Physicians, teachers, and other health professionals who suspect the presence of typical autistic tendencies should refer the child for a specialized assessment with professionals trained in the diagnosis of autism spectrum disorder. To reduce waiting periods, more specialists should be trained and/or some early intervention methods should be available for children and families during the waiting period. This would serve to reduce stress for the family and also address the child’s needs. If a parent is concerned and a health professional refers the child to an assessment and diagnostic specialist, something is not functioning with the child, and even if the final diagnosis is not autism, the child will likely still benefit from some form of early intervention.

Effectiveness of Early Intervention Methods

Early intervention is primordial for children on the spectrum of autism, as mentioned by many different studies. Several different methods of early intervention have been implemented and evaluated over the years. The effectiveness of each of these methods and the decision as to which is the most helpful for children on the spectrum of autism have not yet been identified. In the following pages an observation and discussion regarding the effectiveness of each method of early intervention presented earlier will be discussed.
The Greenspan Intervention Method

The Greenspan intervention method for young children on the spectrum of autism has demonstrated positive social and developmental gains, although no standard assessment battery was included in the study (Greenspan & Weider, 1998). Other reports have also found positive results for this intervention method, specifically in the area of language development but also in all aspects of learning (Fenske, Zalenski, Krantz, & McClannahan, 1985). These results suggest signs of effectiveness for the Greenspan intervention method.

TEACCH Intervention Method

The Treatment and Education of Autistic and related Communication Handicapped Children program, which emphasizes instruction that teaches to the strengths children on the spectrum of autism have in visual-spatial understanding, object manipulation, and enjoyment of highly structured, independent, and routine activities, has had good success, as demonstrated by a few different studies (Ozonoff, S., Cathcart, K. (1998). After weeks of intervention, children on the spectrum of autism had made significant gains in several developmental areas, had significantly improved overall scores on the Psychoeducational Profile-Revised, and had improved imitation, nonverbal perception, cognition, and fine and gross motor skills (Schopler, E., Reichler, RJ., Bashford, A., Lansing, M., & Marcus, LM., 1990). These results also suggest signs of effectiveness for the TEACCH intervention method.

LEAP Intervention Method

The LEAP intervention method is a method that demonstrates a convergence of developmental and behavioral foundations. Again, different studies have been done to observe the effectiveness of this early intervention method, which suggest this is another positive intervention method for young children on the spectrum of autism. These studies demonstrated that developmental rates of treated children accelerated to normal levels, with significant gains in virtually all areas of development (Hoyson, M., Jamieson, B., & Strain, PS., 1989). These studies also had very positive results, with many children being able to attend regular school classes after intervention (Strain, PS., Kohler, FW., & Goldstein, H., 1996).
The Denver Intervention Method

The Denver intervention method has published research papers about the effectiveness demonstrated by the progress in children on the spectrum who received this intervention. This method focuses on the development of play skills, positive self-esteem, interpersonal relationships, and language development (Rogers, S.J., Hall, T., Reaven, J., & Herbison, J., 2000). These research papers demonstrated significant changes, such as gains in receptive and expressive language, symbolic play, and responsivity (Rogers, SJ., Lewis, HC., & Reis, K., 1987).

Applied Behavioral Analysis Method

The applied behavioral analysis method is considered to be the most influential and provocative method of early intervention for children on the spectrum of autism, and has also been the subject of different studies to observe effectiveness. This intervention method is an intensive, comprehensive behavioral method, which has shown good results, with remarkable gains in language and IQ, and an early result of a good rate of children recovering from the spectrum of autism (Lovaas, IO., 1987). This early published announcement created many discussions and questions in the autism field and gave hope to many families. Following these shocking results of possible recovery, more research has been done to thoroughly examine this intervention method, to observe if a full recovery was possible. To summarize these studies, children on the spectrum of autism who receive the Lovaas’s intensive behavioral treatment showed excellent gains in IQ and language, but the studies did not indicate a possible recovery as an outcome of the experimental treatment. Thus, until studies can prove or replicate this early finding of full recovery, the eventual outcome for the children receiving this intervention method needs to be put aside when discussing the effectiveness of this intervention method.

Elements for Effectiveness of Early Intervention Methods

With all the available evidence from a variety of research and studies, it is now possible to say that early intervention leads to better outcomes for children on the spectrum of autism. As has been presented, a number of studies have demonstrated that children make greater gains when they start intervention at a younger age. It is very important to keep in mind that there are many different intervention methods for children
on the spectrum of autism, but some are not very well known and are often not available. Most of the important studies have been conducted on the most popular and well-known intervention method – Lovaas’ Applied Behavioral Analysis. Even though there is evidence that some of these intervention methods are effective for teaching specific skills, there is not yet evidence that one intervention method is better than any other.

This situation leads to some complications when trying to recommend or implement the most effective intervention method to a family or a specific region - a challenge many different health organizations around the world are facing. After analyzing various studies, the different authorities seem to have reached some common consensus about certain elements that need to be present for an intervention method to be effective. These elements are: parental involvement, intensity, predictable environment, integration of the specific interests of the child, active engagement of the child, and focus on individualized developmental goals. They also agree it is important that professionals and parents are well-informed about the progress they can expect for their child. Most importantly, they all agree that most research does not support a cure or recovery from autism and that autism is a life-long disorder.

**Effectiveness of Early Intervention Methods in British Columbia**

In British Columbia, the situation is no different than anywhere else. While important strides have been made to improve the lives of children on the spectrum of autism and their families, the situation is far from perfect. The health authority is struggling with the questions of what are the most effective intervention methods, and how to best implement these methods to reach as many children in need as possible and provide the best services to enable them to develop to their full potential. The government also still needs to deal with the pressure from the parent advocates, who are extremely frustrated with the current situation. The debate between the two parties still rages, with no signs of letting up any time soon.

**Effectiveness of Programs and Services Offered**

Without giving in to parents’ demands, the government is taking its time to evaluate and explore the best possible process before offering funding, by actively conducting research on autism and keeping a close eye on developments in Europe and
the US. The government’s goal is to ensure they follow the actual research regarding the most effective early intervention method, and wants to offer the best practice in accordance with research-based funding. As no specific intervention method has been recognized as superior, it is tricky for the government to come up with services and program which will satisfy everyone concerned by the situation of autism. In March 2004, a conference was held in Richmond, British Columbia, to discuss and explore research, policy, and care for autistic children in the province and in Canada (Research to Policy and Care: Exploring Opportunities for Regional Networking on Autism Policy and Research, 2004). It is in the government’s best interest to offer the best services and programs possible for children on the spectrum of autism, because ensuring these children can eventually be included in the generic services in society will save the government the money that would have been required to support them over a lifespan. At the moment, the government is waiting for the results of an evaluation of the current programs, which was conducted by Dr. Pat Mirenda of the University of British Columbia. It is still too soon to know whether these programs are beneficial, but it is possible to confirm they follow the research and knowledge of early intervention for children on the spectrum of autism. The first program offered by the government for children under six years of age - The Autism Funding: Under Age 6 - gives families of children on the spectrum of autism some options and control on the direction of the programs and services the family want their child to receive. The families are responsible of choosing and purchasing which type of intervention will be the most effective for their child with the funds they receive from the government. The second program offered by the government - The Early Intensive Behavioral Intervention (EIBI) - is a program managed by the government. This program follows the general elements for effectiveness as presented earlier, including parental involvement, intensity, predictable environment, integration of the specific interest of the child, active engagement of the child, and focus on individualized developmental goals.

It is important to remember that autism research is moving quickly. With a better understanding of the disorder, the government will have more insight into the best services and programs. So far, the government of British Columbia is offering services and programs which reflect the knowledge gained in the last few years of research and studies on the spectrum of autism. No apparent gap exists between these. The issue in
British Columbia relates more to the way in which the government has implemented and managed the different programs, which is often not the most advantageous for the families in need. On a more positive note, a year ago, the government of British Columbia decided to become involved in a five-year Canada-wide study of children with autism spectrum disorder. This is an exciting opportunity for British Columbia to participate in a truly groundbreaking study, the goal of which is to help guide the development of policies, programs and interventions that will directly benefit children with autism and their families. The government hopes to learn more about how health professionals can diagnose children on the spectrum of autism in a more accurate and timely manner, and understand which interventions work best for them.

Parents’ Requests, Disappointments and Frustrations

It is sad, but not surprising, that parent advocates are not completely satisfied with the new programs offered by the government, because these do not address the parents’ demands directly. Their major complaint is with the Early Intensive Behavioural Intervention program. The parents are unhappy about the long waiting lists and the inaccessibility of services in some areas of the province, which the government needs to revise and improve. The government needs to find a way to offer this program throughout the province, rather than only in specific regions. This first modification will allow the families of children on the spectrum to choose the program that best suits their needs. Their second criticism is about The Autism Funding: Under Age 6. The parents find it very challenging to handle all of the responsibilities placed on them by the government and to respect the strict government guidelines for funding distribution. Finally, the government’s new regulations did not give the parents what they were requesting, and as a result, the parents are not completely satisfied with the new programs and are determined to fight the government until they get exactly what they want, which is the famous “Lovaas method”. They strongly believe in the results of early research studies by O.I. Lovaas in 1987, as this treatment mentioned results of recovery, which provides hope for these families. It is important for these parent advocates to remain aware that most children diagnosed with autism spectrum disorders continue to have significant functional difficulties throughout their life, regardless of which intervention method they receive (Howlin, P., & Goode, S., 1998; Nordin, V. & Gillberg, C., 1998).
Finally, the two main problems British Columbia has to overcome when discussing the autism spectrum disorder is the situation concerning early diagnosis of the disorder, and the belief and misinterpretation of the parents’ advocates in the “Lovaas method”. Although other problems also need to be addressed, as research in the field of autism continues, the government of British Columbia will likely continue to progress toward a best practice and services approach.
CHAPTER 4

Summary

After reviewing the literature, it is easy to see that lot of questions still remain regarding what is the best possible effective intervention method for young children on the spectrum of autism. Some steps have been accomplished, but more still needs to happen. There is no evidence to support the adoption of a single intervention method as the superior standard. Due to the complex nature of children with autism and the importance of defining the best practice possible, there is a great need for well-designed and implemented studies in these areas.

Although evidence of the most effective intervention methods is not yet available the research to date suggests some guiding principles when planning and implementing intervention methods for young children: parental involvement, intensity, predictable environment, integration of the specific interest of the child, active engagement of the child, and focus on individualized developmental goals.

The research also demonstrated the importance of early diagnosis, which is key to early intervention. Lots of work still needs to be accomplished in this area, and is probably the most urgent factor, as diagnosis needs to happen before intervention can occur.

The province of British Columbia, Canada, is up-to-date with its research on autism spectrum disorders. The province is facing the same challenges as other parts of the world, and is actively seeking to resolve these challenges by being involved in more research and studies.

Autism is a life-long neurobehavioural disorder, which benefits from early intervention as is recognized by the government. The government needs to answer their legal responsibility to provide adequate levels of services. The family advocates in British Columbia are within their rights to demand appropriate service and programs for their children, but they need to understand it is costly, unrealistic, and not a legal requirement for the government to deliver every service they desire. The government and the parent advocates need to reach an understanding of what is an acceptable level of service and an acceptable expenditure. It is essential for the government and the parent advocates to reach a consensus on which will be best practice for the children on the spectrum of
autism. Neither party should view the other as the enemy, as they share the same goal, which is ensuring young children on the spectrum of autism reach their full potential.
References


