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# Psychosocial and Executive Functioning of Children with Attention-Deficit/Hyperactivity Disorder: Impact of the "I Can Problem Solve" Program

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# Psychosocial and Executive Functioning of Children with Attention-Deficit/Hyperactivity Disorder: Impact of the "I Can Problem Solve" Program

by

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## ABSTRACT

Children with ADHD tend to exhibit interpersonal, adaptive, and cognitive difficulties. Previous research evaluating psychosocial interventions with this population has found inconsistent improvement in participants' interpersonal functioning, arguably because these programs do not effectively improve cognitive processes (e.g., self-regulation) that are critically related to this group's social difficulties. However, there is some evidence that the ICPS Program (Shure, 1992) is effective in improving psychosocial and executive functioning of children with ADHD. Five children, aged 10 to 12 and diagnosed with ADHD, and their parents, participated in a five-week intervention. The case study method was used. One participant showed marked improvement in social and executive functioning on cognitive and behavioural measures, while another showed some evidence of improved social relationships. The third participant was indistinguishable from the two control group participants on measures of social and executive functioning. These findings support the inconsistency of improvements in social skills in participants with ADHD.

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# CHAPTER I

# INTRODUCTION

## Background

A variety of child clinical populations are characterized by problems with adaptive and social functioning, including children diagnosed with autism, an intellectual disability, nonverbal learning disability, or Attention-Deficit/Hyperactivity Disorder (ADHD; Aberson, Shure & Goldstein, 2007; de Bildt, Sytema, Kraijer, Sparrow, & Minderaa, 2005; Liss et al., 2001; Semrud-Clikeman, & Hynd, 1990). In particular, Children with ADHD tend to display a host of interpersonal, adaptive, academic, and cognitive difficulties, including (but not limited to) problems with interpersonal relationships, behavioural inhibition, verbal mediation skills, problem-solving skills, and self-regulation (Aberson et al., 2007; Diamantopoulou, Rydell, Thorell, and Bohlin, 2007). Over the past thirty years, a number of intervention programs have been designed and implemented to help ameliorate the social and academic difficulties that tend to be experienced by children with ADHD. However, at best, these programs have been found to have inconsistent improvement in everyday interpersonal functioning of these children (e.g., Coleman, Wheeler, & Webber, 1993; Gresham et al., 2001; Greydanus, Pratt, Sloane, & Rappley, 2003), and, at worst, negligible improvement in the everyday interpersonal functioning of these children (Abikoff, 1991). Furthermore, it has been argued that social problem-solving programs are not effective in improving performance on academic, behavioural, or cognitive measures for children with ADHD (Abikoff & Gittelman, 1985; Gresham, 2001). It is arguable that the interventions based on coaching and behaviour modelling do not effectively address or improve important cognitive

processes related to these difficulties that tend to be abnormal or disrupted in children with ADHD (e.g., the development of self-regulation and inhibition). There is evidence that the development of self-regulation can be facilitated through the use of effective scaffolding (Diaz & Berk, 1995). That is, there is evidence that the internalization of private speech, which is facilitated by scaffolding, develops in childhood and plays a critical role in cognition, and particularly in self-regulation (Berk, 1992; Berk & Winsler, 1995; Vygotsky, 1962). There is a relatively sparse literature that focuses on investigating improvements in executive functioning (e.g., self-regulation, behavioural inhibition, goal-directed behavior) that occur concomitant to improvements in social functioning following the implementation of psychosocial interventions. This appears to be related to a number of issues and obstacles. Specifically, the theoretical foundations, and the assessment, of executive functioning presents a number of challenges, which include a lack of consensus regarding a cognitive model of executive functioning, the "task impurity problem" (described below), the lack of a "gold standard" measure or battery of measures to assess executive functioning, and issues related to the psychometric properties of some measures of executive functioning. Such issues have made the investigation of the impact of interventions on children's executive functioning rather challenging and this area of research remains relatively undeveloped (Aberson, 1996).

However, there is evidence that the I Can Problem Solve (ICPS) program, a psychosocial intervention that focuses on teaching social problem solving, has been effective in improving everyday psychosocial functioning of children diagnosed with ADHD (Conners, 2001). This intervention utilizes a dialoguing technique that is

employed across social contexts encountered by a child and it may promote effective scaffolding and the development of self-regulation and inhibition (Aberson, 1996; Aberson et al., 2007). The present study utilized the ICPS program, along with cognitive and behavioural measures of executive functioning, behavioural measures of social adjustment, and selected subtests of a widely-used intelligence test, with a sample of children with ADHD to investigate changes that occurred in these domains following the implementation of the ICPS intervention.

# CHAPTER II

# REVIEW OF LITERATURE

## Context of the Problem

**Defining and measuring executive functioning**. The domain of executive functioning is yet to be characterized by a single, widely-accepted, definitive model (Miyake et al., 2000). More than 30 definitions of executive functioning have been proposed and competition exists among theories and models of this cognitive domain (Eslinger, 1996; Meltzer, 2007). Areas of contention include reaching consensus regarding which cognitive processes fall within the domain of executive functioning, whether a hierarchy exists among the component cognitive processes of executive functioning, and whether the component processes reflect a unified construct, a diversity of relatively independent constructs, or a construct which is simultaneously unified and diverse (Meltzer, 2007; Miyake et al., 2000). However, executive functioning is presently generally agreed to be an umbrella construct which subsumes a number of cognitive components (Meltzer, 2007). In terms of commonalities among conceptualizations of executive functioning, two major themes have become apparent: executive functioning involves higher-order, complex cognitive processes, which can be measured, and executive functioning involves a "central-executive" component (Miyake et al., 2000), which is responsible for coordinating the execution of complex tasks (Royall et al., 2002). With respect to the former theme, the cognitive processes included under the umbrella of executive functioning are generally accepted to include the ability to plan, problem solve, inhibit inappropriate responses through self-regulation, flexibly shift mental set, and effectively organize goal-directed behaviour in short-term and long-term

timeframes. The attention and memory processes that guide these cognitive processes (e.g., working memory, selective attention, and sustained attention; Meltzer, 2007) are also included within this definition.

Given the difficulties that abound in achieving consensus in defining executive functioning, it is not surprising that research aiming to elucidate and map the maturation of executive functioning is also characterized by many challenges and difficulties. As a result of a number of obstacles, investigations geared toward tracking its development have been somewhat piecemeal, and progress in this area has been gradual. Obstacles include the lack of a "gold-standard" measure of executive functions, and the lack of a widely agreed-upon standard battery of tests to assess executive functioning (Royall et al., 2002). Furthermore, in the absence of a dominant cognitive model of executive functioning, researchers continue to propose new models, often at the same time as they investigate the development of executive functioning across developmental stages based on the results of various executive functioning tests. In the absence of a "gold-standard" measure (or battery of measures) and a "gold-standard" cognitive model of executive functioning, it seems that this area of research is "lift[ing] itself by its bootstraps" (Kraemer, Shrout, & Rubio-Stipec, 2007, p. 262). That is, there are numerous models of executive functioning and researchers use their findings to devise new models, support a particular model, or refine a particular model. Subsequently, the dimensions of executive functioning in new models, established models, or refined models can be measured over time to track their development to see how well they coincide with the model. Over time, models are refined based on new findings, and this area of research gradually moves

toward a clarified understanding of the cognitive dimensions of executive functioning and the maturation of each.

Additional challenges in measuring executive functioning and its development involve the psychometric properties of the measures themselves. A number of complex executive functioning measures are characterized by low internal validity or low test-retest reliability (Rabbitt, 1997a). There are several possibilities that may account for this, including a participant adopting different strategies on different occasions when solving a particular executive functioning task (Rabbitt, 1997b). Alternatively, since executive processes are widely held to operate most strongly during navigation of novel tasks and situations, repeated assessment with an executive functioning measure may diminish the measure's effectiveness in assessing this domain for that particular person, potentially resulting in low reliability (Rabbitt, 1997b).

Another measurement issue is the "task impurity problem" (Burgess, 1997; Willcutt et al., 2005), which acknowledges the necessity of invoking cognitive processes within other domains during tasks that assess executive functioning due to the nature of executive functioning (i.e., the way in which the processes within this domain operate on and coordinate the processes of other cognitive domains; Burgess, 1997). As such, poor performance on a single task of executive functioning may reflect a deficiency in executive functioning, or a deficiency in one or more of the processes within other cognitive domains involved in performing the task. As such, the interpretation of performances on a task of executive functioning may not be straightforward, and interpretation often requires taking performances on other cognitive tasks into account.

Additionally, it is a fairly robust finding that intercorrelations among various executive functioning tasks are low and are often non-significant (Miyake & Shah, 1999). It is unclear whether this finding means that executive functioning is comprised of relatively independent components (Miyake & Shah, 1999), if this finding is a result of low reliabilities (i.e., low reliability of a measure reduces the magnitude of its correlation with other measures; Miyake et al., 2000), or if the low intercorrelations are due to deficits in cognitive processes within other cognitive domains involved in particular executive functioning tasks. In the latter case, a low score on an executive functioning task due to a deficiency in a secondary cognitive process recruited for the task can mask underlying commonalities among executive tasks (Miyake et al., 2000).

Another measurement issue relates to the construct validity of some commonly-used measures of executive functioning. For example, the construct validity of the Wisconsin Card Sorting Test and the Tower of Hanoi is not well-established (Rabbitt, 1997a); there is a dearth of empirically-supported theoretical analysis addressing what these executive tests actually measure (Miyake et al., 2000). There is also variability in the terminology used to label the task requirements of various tests of executive functioning. For example, the Wisconsin Card Sorting Test has been reported by different researchers to measure "mental set shifting", "inhibition", "flexibility", "problem-solving", "categorization" or "abstract concept formation" (Miyake et al., 2000).

Compounding all of these challenges in investigating executive functioning is the evidence that the development of this domain is iterative in nature. There is evidence that suggests that executive functioning both scaffolds the development of other cognitive processes and controls and coordinates these functions (Denckla, 2007). That is, the

course of development of executive functioning involves a "constant back-and-forth, up-and-down, interactive, looping fashion" (Denckla, 2007, p. 7) that relies on and helps to develop the processes involved in other cognitive domains. For example, words constitute the fundamental units of thought that are manipulated by working memory; however, an adequately functioning working memory is a prerequisite for understanding complex sentences containing many words (Denckla, 2007). This complex course of development undoubtedly complicates its mapping over time.

However, research has identified some trends in the maturation of executive functioning in children. Several general themes have emerged among studies that have investigated and tracked the maturation of executive functions; there is evidence that the development of executive functions is gradual and stage-like (Lehto, Juujarvi, Kooistra & Pulkkinen, 2003), begins early in life (i.e., infancy; Welsh & Pennington, 1988), and exhibits spurts of growth that correspond with spurts in neurophysiological development of the frontal lobes (Welsh & Pennington, 1988). Specifically, spurts of frontal lobe development have been found to occur around ages 6-8, 10-12, and during adolescence (Anderson, Anderson, Northam, Jacobs & Catroppa, 2001; Fuster, 1993). There is also evidence that specific components have different rates and courses of development, providing further evidence that the components of executive functioning are somewhat separable (Klenberg, Korkman & Lahti-Nuutila, 2001). Specifically, in neurologically intact children, there is evidence of the emergence of planning skills and the ability to maintain a particular mental set within the first two years after birth (Bruner, 1973). The capacity of Working Memory gradually increases throughout childhood (Case, 1985). By age 10 to 12, many components of executive functioning, such as concept formation,

mental flexibility, planning, and problem solving, have matured to near adult or adult levels in neurologically intact children (Kirk & Keely, 1986; Levin et al., 1991).

**The development of verbal mediation and its role in regulating behavior**. In terms of the maturation of other cognitive processes in children, there is a well-established body of research that addresses the role of language in the development of thought processes, and specifically the development of self-directed speech and its role in the development of self-regulation (e.g., Berk, 1992; Berk & Winsler, 1995; Vygotsky, 1962). It is well-established that language plays a crucial role in cognition, learning, and adaptation (Marlowe, 2000; Vygotsky, 1962). Vygotsky (1962) posited that children learn complex activities and skills by interacting with mature, expert members of their culture. In particular, following the preschool years, the function of language expands from being primarily a tool for communication to a tool for self-regulation as well. Furthermore, there is a shift from the overt use of language to guide behaviour (which peaks in early childhood) to the covert use of language to guide behaviour (Berk & Winsler, 1995; Diaz & Berk, 1992). As children gain increasing competence with a skill and adults progressively provide less support in the joint performance of a task, children are posited to increasingly develop self-regulation and, following practice with the task through guided social interactions with others, they are eventually able to complete the task independently. The process through which overt private speech that is directed to the self transitions to covert internal speech is called internalization.

In normally developing children, there is a predictable developmental course of internalization that begins with overt speech that is irrelevant to the task, then progresses to overt speech that is relevant to the task and geared toward the regulation of behaviour,

and then to partly covert and partly overt speech (i.e., muttering or whispering) that guides task performance (Berk, 1992). Finally self-directed speech geared toward the completion of a task becomes primarily covert (Berk, 1992). However, when a child's resources are depleted due to fatigue or if the task being undertaken is particularly challenging, it is common for overt self-directed speech to re-occur (Berk, 1992).

It has been found that children with ADHD differ from normative samples in their development and use of private speech and internal covert speech (Winsler, 1998). In terms of patterns of communication among boys diagnosed with ADHD and their primary caregivers, it has been found that parents will engage in less effective scaffolding and less withdrawal of support during task completion compared with parents interacting with boys free from a diagnosis of ADHD when jointly completing a task (Winsler, 1998). Additionally, the interactions among boys with ADHD and their caregivers are characterized by more negativity and more direction from the adult (Winsler, 1998). It is also the case that boys with ADHD, compared to boys without this diagnosis, engage in more off-task behaviour, more inattentive behaviour, and more noncompliance during interactions with their caregivers, which tends to compel their caregivers to communicate with them in a more negative and directive manner (Winsler, 1998). Additionally, children with ADHD are delayed in their internalization of private speech (Berk & Potts, 1991; Winsler, 1998). Contrary to what may be expected, children with ADHD do not show a dearth of self-directing private speech. In fact, there is evidence that boys with ADHD tend to use more private speech (both task-irrelevant and self-directing speech) than controls (Winsler, 1998). However, they tend to use more task-irrelevant private speech than controls, their private speech coincides with their ongoing activity less than

that of controls, and they tend to show delayed internalization of private speech (Winsler, 1998).

Although several earlier attempts to mechanically teach children with ADHD scripts to be learned and used first as private speech and then as internal speech were found to have questionable effectiveness in improving self-regulation in everyday contexts, Diaz and Berk (1995) suggest that dialogue between primary caregivers or teachers, and children, at the appropriate developmental level, would be dramatically more effective in facilitating children's learning and internalization of self-directed speech. Similarly, Berk and Winsler (1995) suggest that primary caregivers or teachers should engage in scaffolding by, for example, engaging in verbal problem-solving strategies during a complex task, such as the use of conceptual questions in the format of a dialogue, to maximize children's use, and development, of private speech. These techniques are incorporated into the ICPS program.

**Definition of ADHD and its Subtypes**

Attention-Deficit/Hyperactivity Disorder is a neurobiological disorder that affects 5 to 12% of children throughout the world (Faraone, Sergeant, Gillberg, & Biederman, 2003; Tannock, 1998). Its etiology is complex, and research efforts geared toward uncovering the complete etiology of ADHD are ongoing. Current research points toward genetics, physiology, and an adverse environment as major etiological factors in ADHD (Biederman & Faraone, 2005; Goldstein & Kennemer, 2009; Waldman, 2007); evidence continues to accumulate that the cause of ADHD is rooted in abnormalities of frontal lobe arousal and deficits in frontal lobe functioning (Reynolds & Kamphaus, 2004).

Attention-Deficit/Hyperactivity Disorder, as defined by the text revision of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000), is divided into three types based on behavioural symptoms: ADHD Predominantly Hyperactive-Impulsive Type, ADHD Predominantly Inattentive Type, and ADHD Combined Type. The latter type involves a combination of the symptoms of the former two. The child must exhibit six or more symptoms from one (or both) symptom clusters (i.e., hyperactivity/impulsivity and inattention) within the last six months in order to qualify for a diagnosis of ADHD. Additionally, at least some symptoms of hyperactivity/impulsivity and/or inattention must have been present before age seven and must have resulted in impairment. Impairment must be evident in at least two settings, and impairment must significantly and negatively impact social, academic, and occupational functioning (American Psychiatric Association, 2000). ADHD is diagnosed between two and nine times more often in boys than girls, depending on the sub-type (i.e., there is some evidence that the Predominantly Inattentive Type has a more even gender ratio; American Psychiatric Association, 2000). There is some evidence that the ratio of occurrence of ADHD is actually more even between sexes, but that ADHD is under-diagnosed in girls due to its less conspicuous manifestation (i.e., hyperactivity is less common; Abikoff et al., 2002).

The Predominantly Hyperactive-Impulsive subtype is the least commonly diagnosed of the three (less than 10% of cases; CADDRA, 2006). This type is characterized by hyperactive behaviours, such as frequent fidgeting during situations in which the child is expected to sit still, as well as impulsive behaviours, such as interrupting others during a conversation (American Psychiatric Association, 2000).

The Predominantly Inattentive subtype constitutes approximately 35% of the diagnoses made (CADDRA, 2006). This type is characterized by problems with selective attention. Children appear to be passive and socially withdrawn. They may appear to be disengaged with their current surroundings (i.e., "daydreamy"), and lethargic. They also show cognitive lethargy, which is manifested through a slow rate of information processing, and they are characterized by a generally low level of activity (Naglieri & Goldstein, 2006).

The Combined subtype is the most commonly diagnosed of the three subtypes, constituting more than 50% of diagnoses made (CADDRA, 2006). This type incorporates symptoms of inattention and symptoms of hyperactivity/impulsivity.

**Identification of a Cognitive Profile of ADHD**

Attempts have been made to identify a cognitive profile and the core neuropsychological deficits that are characteristic of children diagnosed with ADHD (Barkley, 1997; Pennington & Ozonoff, 1996). However, a consistent, robust cognitive profile universal to children with ADHD has not been identified thus far, and evidence in support of the heterogeneity of the cognitive profiles of children with ADHD continues to accumulate (Castellanos, Sonuga-Barke, Milham, & Tannock, 2006). Furthermore, a core neuropsychological deficit common to all children diagnosed with ADHD has not been clearly and consistently identified (Willcutt, Pennington, Olson, Chhabildas, & Hulslander, 2005). Although not present in every child diagnosed with ADHD, a general pattern has emerged in the cognitive functions that tend to be weak in this population. Specifically, children with ADHD tend to exhibit slower processing speed than their

same-age peers without ADHD and lesser developed executive functions (e.g., working memory; Tannock, 1998).

In terms of processing speed, there is evidence that children with ADHD, as a group, tend to process both verbal and non-verbal information more slowly than their same-age peers (Chhabildas, Pennington & Willcutt, 2001). For example, studies investigating performance on tasks that require rapid naming (e.g., the control condition of the Stroop task) have found that children with ADHD consistently exhibit slower performance than control children (Nigg, Blaskey, Huang-Pollock, & Rappley, 2002; Rucklidge & Tannock, 2002).

In terms of non-verbal tasks, children with ADHD, as a group, have consistently been found to show slower processing speed than controls on tasks such as the Coding subtest of the WISC-R and total completion time for each of the two parts of the Trailmaking Test (Chhabildas, Pennington, & Willcutt, 2001). A number of studies have found that children with ADHD exhibit slow and variable reaction times compared to controls (Willcutt, Pennington, Olson, Chhabildas, & Hulslander, 2005; Nigg, 2001; Rucklidge & Tannock, 2002). However, not all studies have found significant differences in stop signal reaction time between normal controls and children with ADHD (Scheres, Oosterlaan, & Sergeant, 2001).

Moreover, it is well-established that ADHD is characterized by executive dysfunction (Barkley, 1997; Naglieri & Goldstein, 2006; Royall et al., 2002; Tannock, 1998). All subtypes are associated with deficits in executive functioning (Barkley, 1997; Willcutt, Doyle, Nigg, Faraone, & Pennington, 2005), although not all individuals diagnosed with ADHD exhibit weaknesses in executive functioning (Biederman,

Monuteaux, Doyle et al., 2004). Willcutt et al. (2005) asserts that evidence of executive functioning deficits in children with ADHD is not universal, and effect sizes tend to be medium. Furthermore, the pattern of executive functioning deficiencies across studies is not entirely consistent (Sergeant, Geurts, & Oosterlaan, 2002). In particular, previous research has identified executive impairments in a variety of processes, including working memory, inhibitory control, set shifting (i.e., flexibly changing from one mental strategy or rule-set to another in a multiple-task situation; Lehto, Juujarvi, Kooistra, & Palkkinen, 2003; Davidson, Amso, Cruess, Anderson, & Diamond, 2006), planning, letter fluency, vigilance, strategy production and application, and error correction (Hale et al., 2007; Porumb, 2007; Shallice et al., 2002). Persons diagnosed with ADHD tend to have poor planning and anticipation skills, as well as poor awareness of errors they have made. They experience difficulty with self-regulation, which is manifested through problems in developing, implementing, and monitoring organizational strategies, and poor organization in general. In addition, they tend to have deficits in verbal problem-solving and self-directed speech (Barkley, 2003)

A study by Martinussen, Hayden, Hogg-Johnson, and Tannock (2005) investigated the presence of working memory deficits in children with ADHD by performing a meta-analysis. The results of the meta-analysis, which included 26 studies, indicated that children with ADHD tend to show significant impairment in working memory, and the severity of the impairment depends on the component of working memory in use (i.e., verbal or visuospatial working memory). Compared to neurologically intact controls, children with ADHD show markedly lower performances

on tasks that tap spatial storage and the spatial central executive. Verbal storage and the verbal central executive, however, were found to show only modest deficits.

Similarly, a review of select research pertaining to ADHD and executive dysfunction (particularly in terms of inhibition, set shifting, working memory, planning and fluency) was done by Sergeant, Geurts, and Oosterlaan (2002). These authors found that there was clear evidence of inhibitory dysfunction in children with ADHD, and there was some evidence of a working memory deficit, but the review included only two studies which investigated this cognitive process. However, performances on tasks of planning a sequence of steps to achieve a goal (i.e., Tower of Hanoi and Tower of London) across several studies failed to yield a consistent, robust finding that children with ADHD perform differently than controls. In addition, in the majority of the studies included in the review (17 out of 26), performances on the Wisconsin Card Sorting Test were found to significantly differ between children with ADHD and controls, but as mentioned previously, it is unclear which cognitive process is consistently measured by this task. As such, it is difficult to draw conclusions about the nature of the component of executive functioning that differentiates the two groups in these studies.

Another meta-analysis by Willcutt, Doyle, Nigg, Faraone, and Pennington (2005) found that across 13 different executive functioning tasks which assessed a variety of components of executive functioning (including response inhibition, vigilance, set-shifting, planning, organization, verbal working memory, and spatial working memory) medium weighted mean effect sizes were found (Cohen, 1988) when comparing groups with ADHD to groups without ADHD. Moreover, the effect sizes that were largest and that were the most consistent were found on tasks tapping response inhibition, vigilance,

spatial working memory, and planning; these differences could not be attributed to group differences in intelligence, academic achievement, or other psychiatric disorders (Willcutt et al., 2005).

Willcutt et al. (2005) conclude that ADHD has a complex neuropsychological etiology that cannot be explained on the basis of a primary deficit in executive functioning, but that deficits of this nature are often a contributing factor to the disorder.

**ADHD and Deficits in Social Functioning**

There is a well-established literature that supports that ADHD is associated with interpersonal problems in addition to the cognitive weaknesses already discussed. Indeed, impairment in social functioning is a component of one of the diagnostic criteria of ADHD (American Psychiatric Association, 2000). Children with ADHD may exhibit aggressive, impulsive, and/or disruptive behaviours, and ineffective problem solving. Such factors can lead to peer rejection and other problems in social functioning, such as difficulty developing and maintaining relationships (Abikoff et al., 2004; Bagwell, Molina, Pelham, & Hoza, 2001; Maedgen & Carlson, 2000).

Diamantopoulou, Rydell, Thorell, and Bohlin (2007) found that symptoms of ADHD correlated negatively and significantly with prosocial behaviour, school performance, and peer ratings of likability (as measured by a social preference score). In addition, symptoms of ADHD were positively and significantly correlated with peer ratings of physical aggression and relational aggression. Furthermore, these authors found that ADHD symptoms significantly predicted physical aggression and relational aggression, and different subtypes of ADHD were found to have different implications for social skill deficits. Symptoms of hyperactivity/impulsivity (in the absence of

symptoms of inattention) significantly predicted relational aggression, whereas symptoms of inattention (in the absence of symptoms of hyperactivity/impulsivity) significantly predicted school performance.

Biederman et al. (2004) found that children with ADHD had significantly more impaired interpersonal functioning than controls in terms of poor social adjustment at school and difficulties in interactions with peers, siblings, and parents. These difficulties were found to be independent of executive functioning deficits.

**I Can Problem Solve Program**

Social skills training programs are a popular resource utilized by families to address interpersonal difficulties experienced by children diagnosed with ADHD (Abikoff, 1991); such programs tend to fall into one of four categories: coaching, behaviour modelling, selective reinforcement, or social problem solving (Ogilvy, 1994). The I Can Problem Solve Program (Shure, 1992) is a psychosocial intervention that focuses on strengthening social problem solving skills by teaching children a thought process for making decisions and for solving and preventing interpersonal problems (Aberson et al., 2007; Shure, 1992, 1996). The program focuses on teaching children to think independently, to generate multiple possible solutions to an interpersonal problem, and to evaluate which of their own ideas represents the best course of action to take. These skills are taught through games, stories, puppets, and role-playing. The program is designed for children between the ages of four and twelve; there are three specific program manuals for program facilitators (usually classroom teachers) and each is designed for a particular age group (i.e., preschool, kindergarten/primary grades, and intermediate elementary grades). The age groups were created based on research that

identified the thinking skills and behaviours that are important for optimal mental health at specific age spans (Shure, 2001).

The program has been implemented with entire classrooms and with small groups; children from a variety of racial and socio-economic backgrounds have participated (Shure, 1996). Within the curricula geared toward the preschool and kindergarten/primary grades, time is allocated initially to teaching early word concepts. Within the intermediate elementary grade curriculum for children ages 8 to 12, the ICPS word concepts specifically used by the program are incorporated into the games and dialogues instead of being taught separately. There are 77 formal lessons and three intervention elements. The program for this age group was originally designed to span a four month period with three weekly 40 minute sessions (Shure, 1996); however, evidence of immediate and lasting improvements in psychosocial functioning has been found with the implementation of abbreviated versions of the program that are as short as six weeks (i.e., Aberson, 1996).

Pre-problem solving thinking skills are the first intervention element and are taught first during program implementation. The central concept emphasized during this phase of the program is “there is more than one way” (Shure, 1996). This overarching concept is applied to a) explaining another’s behaviour, b) explaining another’s motivation, c) finding out other’s feelings and preferences (by watching, listening, or asking), and d) solving a problem (by generating various solutions and step-by-step plans; Shure, 1996). Depending on age, pre-problem solving skills also include developing an understanding of words that describe how people feel, such as happy, angry, sad, afraid, and jealous. Following this initial intervention element, the program

builds on previously learned skills and shifts its focus to problem solving thinking skills (i.e., the second intervention element). There are formal lessons that address five problem-solving skills (which are described in a subsequent section).

In addition to the formal lessons, another intervention element of the program involves "ICPS dialoguing." This aspect involves applying the concepts taught during formal lessons to spontaneously-occurring interpersonal conflict situations. The teacher, parent, or facilitator of the program guides the children through applying concepts from formal lessons to resolving the conflict to help children generalize the thinking skills to actual situations (Shure, 1996). Dialoguing is not a rigid process, but, rather, it involves following a somewhat flexible series of steps that are used to handle conflicts among children or between a child and an adult. Children are actively involved in the process. The facilitator poses questions that are related to a child's perception of the feelings of the other person in the conflict, the child's own feelings during the conflict, the consequences of actions, and possible alternative solutions or courses of action to avoid future conflict (Shure, 2001). Dialoguing is critical to successful outcomes because it applies the problem-solving skills learned in the formal lessons to actual interpersonal conflicts. Research supports that participating in formal lessons in the absence of dialoguing has a lesser impact on behaviour, likely because children are not making the connection between their newly acquired problem-solving skills and their everyday interactions with others (Weissberg & Gesten, 1982).

Dialoguing can be done with children as young as four, and involves five basic principles (Shure, 1992). Firstly, the problem must be mutually identified by the child and the dialogue facilitator. The dialogue facilitator should ask each child to explain his

or her understanding of the problem at hand. This prevents faulty assumptions on the part of the facilitator about the nature of the problem and helps each child to clarify the problem.

Secondly, dialoguing must focus on the problem in its entirety and in its context. That is, the facilitator must not define the problem based solely on his or her observations and/or assumptions. Rather, the facilitator must listen to each child's explanation of the problem and description of the preceding events in order to help all parties clarify and agree on the nature of the problem.

Thirdly, once the problem has been mutually identified, the facilitator must not impose modifications to the problem in order to meet his or her own needs (e.g., changing the definition of the problem in order to teach a previously specified "lesson" which may not fit with the true nature of the problem).

Fourthly, the facilitator must carefully guide the children in solving the problem through posing questions instead of imposing a solution to the problem on the children. The main objectives of dialoguing are to help children to develop the habit of thinking for themselves in terms of determining the cause of a problem, identifying the feelings of all persons involved in the problem situation, generating potential solutions, and seeing the likely consequences of implementing a particular solution.

Fifthly, dialoguing should focus on encouraging and praising each child's thought process as opposed to praising the specific conclusions the child reaches. Reinforcing a specific solution encourages children to think of solutions that they think will meet the approval of the facilitator and discourages divergent thinking in terms of generating

potential solutions, identifying potential consequences, and identifying the causes of problems.

**Theoretical Basis of ICPS: Interpersonal Problem-Solving Skills**

The theoretical basis for the ICPS Program is the approach to social problem-solving outlined by Spivack, Platt, and Shure (1976). The authors define interpersonal problem-solving as the process through which one resolves relationship problems. They emphasize that the thought process (as opposed to the thought content that comprises a particular solution) is critical to predicting long-term social adjustment. The authors acknowledge that how well one resolves interpersonal problems likely involves a number of interacting factors, such as available resources and the emotional demands of the situation (Spivack et al., 1976). They highlight the notion of a "problem-solving capacity" which reflects the efficiency and quality of the process a person adopts to resolve the problem. The process involves a set of age-dependent cognitive skills (rather than a single ability) which develop and change as a child matures. These skills are referred to as "interpersonal problem-solving skills" (Spivack et al., 1976, p. 4); they are not considered to be personality traits, but, rather, teachable skills. They assert that these skills play a mediating role in social adjustment and that they may differ in relative importance to social adjustment depending on a child's age (Spivack et al., 1976). Also, these skills appear to emerge at different times during maturation based on the cognitive capacity of a child at a given point in development and the cognitive demand of a given skill. The authors identify five critical interpersonal problem-solving skills. These skills are learned primarily through interactions with child-rearers, but also through interactions with other people. According to the authors, the way in which interpersonal conflicts are

resolved in a child's family environment probably has implications for the extent to which the child will develop his or her own problem-solving style.

The model described by the authors identifies awareness of interpersonal problems, alternative thinking, means-end thinking, consequential thinking, and causal thinking as the five interpersonal cognitive skills that are important to behavioural and social adjustment of children between the ages of nine and twelve.

A child's awareness of interpersonal problems is his or her perceptiveness of the potential for interpersonal problems to arise and of currently existing interpersonal problems. It involves a child's awareness that individuals have wants and needs, and that they may attempt to influence or use others to achieve their goals. As such, there is the potential for individuals to conflict with each other. This awareness also involves a sensitivity to the potentially changing nature of social interaction from moment-to-moment (e.g., that a comment by one person in a conversation can turn a pleasant interaction into an argument or bring an abrupt end to the interaction).

Alternative thinking involves the generation of numerous potential solutions to an identified problem that are not variations on a single theme, but rather are categorically different options. During this process, the ideas generated are not evaluated in terms of feasibility or desirability. Rather, the objective is to produce as many potential solutions as possible (Spivack et al., 1976).

Means-end thinking requires a child to engage in a process of formulating a step-by-step plan that will result in the realization of his or her particular interpersonal goal. This skill is more demanding than alternative thinking because it requires insightful prediction of potential obstacles, the definition of a sequence of steps to deal with or

avoid such obstacles, and the identification of alternative means to reach the identified goal if an obstacle cannot be overcome. Underlying this process is the realization that accomplishing a goal often does not occur instantaneously and that some times are more opportune than others for implementing all or part of a plan (Spivack et al., 1976). It can also involve anticipating the reactions of others and being able to effectively deal with those reactions in a fashion that will facilitate the resolution of a problem.

Consequential thinking involves incorporating logic into the interpersonal problem-solving process. Spivack et al. (1976) assert that there are two components to this skill: the proclivity to think in terms of consequences of enacting one's plan in terms of how others will be impacted and how they will react, as well as the propensity to recognize alternative possible consequences associated with any one problem solution.

Finally, causal thinking involves identifying cause-effect relationships between two or more social behaviours or events in time. This skill involves accurately inferring the cause of another person's present social behaviour or response, and taking this into account in order to appropriately react to that response. This complex skill involves several components: being adept at understanding another's perspective of the current situation, withholding drawing conclusions about cause and effect until a sufficient amount of information has been obtained, and realizing that there are multiple potential ways of solving social problems. Furthermore, it involves understanding the complex dynamic of social interactions—that is, how well a child is able to infer the cause of another's response and react in such a way as to manage the other's response in order to promote his or her own interpersonal goal (Spivack et al., 1976).

**Previous Research with ICPS**

Previous research investigating the effectiveness of the ICPS program has shown results that have been somewhat mixed. Coleman et al. (1993) conducted a descriptive review of nine studies in which the ICPS intervention was implemented. Some studies included samples of participants free from psychiatric diagnoses while others included samples of children diagnosed with mental retardation, emotional disturbances, or externalized behaviour problems. Seven studies utilized behaviour ratings as outcome measures; of these studies, significant post-treatment improvement in social behaviour was found in three studies. Another three of these studies showed no differences in social behaviour following the intervention and one study showed mixed results for improved social behaviour. The other two studies of the review used measures of knowledge of social problem solving and of application of problem-solving techniques through role-play; both found significant post-treatment improvements on these measures. Overall, the review concluded that improvements in social behaviour in the short- and long-term were inconsistent; fewer than half of the studies reviewed demonstrated significantly improved social behaviour for participants following the intervention.

In contrast, Shure (1993) investigated the impact of a three-month implementation of the ICPS program on social behaviour of children in kindergarten and preschool. Teachers of mainstream classrooms were trained to implement the ICPS program. Clear and consistent gains were found in social behaviour observed in the classroom: children with highly impulsive behaviour became less impatient and aggressive and generally withdrawn children became much less inhibited, more socially outgoing and better liked by peers. Gains were maintained six months and one year following the intervention.

The research study on which this project is based utilized the ICPS Program for a six week period with children with ADHD and the program was found to be effective in improving social skills; there was some evidence of improved executive functioning for some participants as well (Aberson, 1996). Aberson (1996) implemented the program and used the case study method with three eight year-old children diagnosed with ADHD (two of whom were male). One male participant who was taking medication was found to have improved social skills, as evidenced by his significant improvement on all subscales of the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992) following the intervention compared to his baseline level of functioning. He also exhibited significantly improved adaptive behaviour immediately following the intervention. The child indicated that he perceived significant improvement in his interpersonal relationships. This was corroborated by ratings that were significantly improved on the Parent Rating Scale (PRS) and the Teacher Rating Scale (TRS) of the BASC and ratings that were significantly lower on the Aggression scale of the TRS of the BASC. Improvements in executive functioning were supported by improvements in academic and conduct report card grades and the percentage of on-task behaviours during weekly systematic observations immediately following the intervention and six months later.

The female participant was not medicated during the study and experienced symptoms of inattention, but not of hyperactivity/impulsivity. She perceived significant improvement in her interpersonal relationships, and this was corroborated by significant improvement on the TRS of the BASC on all composite scales, with the exception of School Problems. There was evidence of improvement in executive functioning based on

significant improvements in conduct report card grades, spelling test grades, and percentage of on-task behaviours during weekly systematic observations immediately following the intervention and six months later.

The other male participant was not medicated during the study and had a diagnosed learning disability in addition to ADHD; he did not have an outcome that was as favourable as the other two participants. It was found that the severity of home problems significantly decreased immediately following the intervention. Also, in terms of executive functioning, conduct grades showed mild improvement, and there was significant improvement in percentage of on-task behaviours during weekly systematic observations and grades on spelling tests immediately following the intervention and six months later.

Previous research with the ICPS program has focused almost exclusively on changes in social-emotional behaviour (e.g., Malik, Balda & Punia, 2006; Rixon & Erwin, 1999). Although it has generally been found that the ICPS program is effective in improving the social problem-solving skills of children, there is a sparse literature investigating the mechanism of change in cognitive skills (Aberson et al., 2007; Erwin, Purves, & Johannes, 2005).

It has been noted that one of the primary methodological difficulties in research with ICPS is related to the criteria used to establish the success of the program in terms of assessing improvement in social problem-solving skills (Rixon & Erwin, 1999). The methods that have been used include changes in sociometic status of participants, participants' responses to vignettes which are scored on quantitative and qualitative dimensions by two or more raters (e.g., Malik et al., 2006), and systematic observations

of children in social settings (e.g., playground observation; Rixon & Erwin, 1999). These methods have been criticized (Rixon & Erwin, 1999). For example, sociometric status is not objective data. Additionally, previous research investigating the impact of the ICPS program on participant's executive function relied on effort and conduct report card grades and weekly measures of on-task behaviour of participants, and did not incorporate neuropsychological tests of executive functioning. The present study aims to address this gap in the research by incorporating cognitive and behavioural neuropsychological measures of executive functioning.

Furthermore, the case study method has often been relied upon (often with the use of a control group) in this area of research. Studies using the case study method without the inclusion of a control group or the use of the multiple baseline strategy are at risk of compromised internal validity (Morgan & Morgan, 2003). A control group serves to eliminate several possible confounds: societal events during the course of the intervention that may lead to the change in scores observed post-treatment, maturation of participants (i.e., processes of change within the individual that may lead to the change in scores observed post-treatment), and practice effects (i.e., repeated exposure to assessment may lead to the change in scores observed post-treatment; Morgan & Morgan, 2003).

Previous research has found that three conditions are necessary in order for ICPS to have an optimal impact on, and the greatest likelihood of achieving skill generalization to other settings for, children with ADHD: parents must be involved in the teaching of ICPS skills; parents must incorporate dialoguing and other ICPS techniques into their childrearing practices; and the child needs to internalize ICPS skills, applying them to

everyday situations (Aberson et al., 2007). Although the latter condition cannot be manipulated directly, the former two conditions can be manipulated directly.

**The Present Study**

The present study aims to extend previous research by employing standardized cognitive and behavioural measures to assess executive functioning prior to, and following, the implementation of the ICPS Program with children diagnosed with ADHD using the case study method. The present study used self-report norm-referenced measures to collect objective data and included a waiting list control group of children diagnosed with ADHD. To facilitate the generalization of social problem skills learned during intervention sessions, parents were included in teaching ICPS skills and they incorporated ICPS dialoguing into their everyday interactions with their children. It is hypothesized that administering the ICPS Program to a group of children with ADHD between the ages of 8 and 12 years old will result in improved psychosocial functioning (including adaptive behaviour, social and emotional adjustment, and aggression), as measured by composite scales on the BASC—II. It is also hypothesized that improvement in executive functioning will occur, as evidenced by improved scores on clinical and adaptive subscales of the BRIEF, the Executive Functioning Content Scale of the BASC—II, and the selected subtests of the NEPSY—II. Based on the principles that the ICPS program directly aims to teach (i.e., alternative thinking, means-end thinking, and consequential thinking), it is specifically hypothesized that three components of executive functioning—flexibility in shifting mental set, self-regulation, and inhibition of inappropriate impulsive behaviour—will improve following the intervention.

# CHAPTER III

# METHOD

## Participants

The participants were recruited from a local chapter of the Learning Disabilities Association of Ontario. The child participants were screened based on the answers provided by their guardian(s) to a series of questions (Appendix A). Six participants diagnosed with ADHD as defined by the DSM-IV-TR (American Psychiatric Association, 2000) and between the ages of 8 and 12 were recruited. Demographic information for the child and adult participants is provided in Tables 1 and 2 in Appendix D. Pseudonyms have been used to refer to each participant. To ensure that group sessions were held at a pace that was appropriate to all participants and to ensure that an adequate understanding was obtained by all participants during sessions, participants were required to meet a minimum level of intellectual ability, to have adequate language skills, and to be taking their prescribed medication regularly. Potential participants were excluded if they had been diagnosed with an Intellectual Disability or a language disorder, or if they did not adhere to a regular medication regimen. Previous research suggests that social problem solving training with children diagnosed with ADHD has an optimal chance of success when combined with prescribed medication (Aberson, 1996). Consistent with previous research, all participants demonstrated adequate language and cognitive skills (Aberson, 1996). Participants were administered the Vocabulary and Block Design subtests of the Wechsler Intelligence Scale for Children—Fourth Edition (WISC—IV; Wechsler, 2003) in order to provide a rough estimate of IQ (results are presented in Table 1 in Appendix D). One participant, April, was diagnosed with

Learning Disability NOS that was comorbid with ADHD. Erin was diagnosed with Generalized Anxiety Disorder and Oppositional Defiant Disorder in addition to ADHD. One participant in the waiting list group dropped out due to inability to attend post-intervention testing, resulting in a total of five children participating in the study. Pre- and post-intervention scores on all measures were collected from the five participants.

**Procedure**

Approval for this study was obtained from the University of Windsor Research Ethics Board prior to data collection. Written assent was obtained from all participants and written consent was obtained from each child's guardian(s) for data collection and participation in the study (Appendices F and G). Information provided by participants and their guardians was kept confidential; information presented in manuscripts and conference presentations will be done so in a manner that safeguards the identity of participants and their guardians. The principal researcher planned to conduct follow-up testing using the same measures as the present study with all child participants. A follow-up period of six months was planned, but this data was not included in this paper since it was not available at the time it was written.

**Confirmation of the Diagnosis of ADHD**. Copies of psychological reports were provided from the parents of all participants for the principal investigator to review. Copies of the reports of four child participants were retained by the principal investigator, with the permission of parents. Copies of psychological reports of two participants were not retained; however, the principal investigator reviewed a copy of a psychological report for each child participant and confirmed the diagnosis of ADHD for all participants. Specific details (where available) regarding the age of the children at

diagnosis and the professional who made the diagnosis are provided in the background information section of each child in the Results section and in Table 1 in Appendix D. Some participants were diagnosed with multiple disorders. Parents were asked during the post-intervention testing session if their child had been regularly taking his or her medication throughout the study. All parents indicated that their children adhered to their regular medication regimen.

**Problem Solving and Dialogue Training with Parents**. The study involved implementing the ICPS program (Shure, 1992) for a five week period. Six one-hour sessions were held at the office of the local Learning Disabilities Association of Ontario. The intervention focused on teaching children interpersonal problem-solving skills through weekly group sessions with the student researcher and on teaching parents dialoguing techniques to use during day-to-day interactions with their children to reinforce the principles of the ICPS program (parents met with an undergraduate research assistant). The topics covered during sessions with parents coincided with those used in previous research (i.e., Aberson, 1996), and are outlined in Appendix C. Parents were provided with, and asked to read, *Raising a Thinking Child* (Shure, 1996b). Parents were trained to use the dialoguing technique with their children to reinforce the vocabulary and concepts of the program, and to teach children to think and make choices while also being aware of the feelings of others involved in the situation. The sessions held for the children followed the curriculum of the ICPS program (Shure, 1992) that coincided with the curriculum followed by parents during their sessions. Sessions for children took place in a small group setting of three participants with the student researcher. The

lessons included activities from the curriculum created by Shure (1992); these focused on words and feelings, as well as problem solving activities.

**Training of Facilitators.** The principal investigator facilitated the child sessions and a third year undergraduate student and research assistant who was majoring in Psychology facilitated the parent sessions. Although neither of the facilitators had previous experience with facilitating the ICPS program, the parent and teacher manuals have been written in a straightforward manner and no specialized training is required in order to facilitate the program (Shure, 1996a). The principal investigator sent the research assistant an outline of information to be covered during each session; the outlines were developed by summarizing chapters of *Raising a Thinking Child* (Shure, 1996b) and they are included in Appendix C. The principal investigator and the research assistant debriefed following each session with the children and parents to determine if the outline was followed closely, to identify parents` concerns and to gain information about how the parents were adjusting to using the program with their children during everyday interactions. The principal investigator used lessons from Shure`s (1992) teacher curriculum during each session with the children.

## Method of Data Analysis

Data was be analyzed through visual analysis of a graphic display of the data. Clinically significant change was determined based on the comparison method, in which the criteria for change are similarity of participants to normative samples following the intervention and dissimilarity (statistical difference from) of participants from a clinical sample. This method, particularly the comparison of the participants to a normative sample following the intervention, is the predominant measure of clinical significance

currently employed in clinical research (Morgan & Morgan, 2003). Clinically significant change is defined by this method as participants falling within the range of a normative, well-functioning sample on the neuropsychological measures following the intervention.

Consistent with the recommendations of Morgan and Morgan (2003) regarding the use of multiple measures of a given construct (i.e., clinical significance in this case), the comparison method of determining clinically significant change will be augmented by an index of absolute change: statistical difference between the confidence intervals of pre- and post-intervention standard scores. This is a common approach; although it has relatively low power, it has been shown to have a type-1 error rate as low as .005 (Lo, 1994; Nelson, 1989). In cases where confidence intervals are not provided by the clinical manual of the measure (i.e., NEPSY-II), two standard deviations of change over the course of the intervention will be used as an index of absolute change (Morgan & Morgan, 2003). Scaled scores (i.e., normative scores with a mean of 10 and a standard deviation of three) for the WISC—IV (Wechsler, 2003) subtests and the NEPSY—II (Korkman, Kirk & Kemp, 2007a) subtests were interpreted using the system described by Sattler (2008; i.e., scaled scores of 1 through 7 inclusive represent below average performance, scaled scores of 8 through 12 inclusive represent average performance, and scaled scores of 13 though 20 inclusive represent above average performance).

In some cases, participants may not achieve standard scores within the nonclinical range, continuing to have clinically elevated standard scores following the intervention. However, the participant may have experienced improvements in the measured areas that translate into a practical improvement in their level of everyday functioning (Kazdin, 2003); this would not be captured by the comparison method. In such a case, an absolute

index of change may be more relevant in determining if clinically significant change has occurred. In the present study, ninety percent confidence intervals were provided for BRIEF scores (the most stringent level provided in the manual; Gioia, Isquith, Guy, & Kenworthy, 2000c). Ninety-five percent confidence intervals were provided for BASC—II clinical scales, adaptive scales, and composite scores. Ninety-five percent confidence intervals are also provided for the *T* score of the Executive Functioning content scale.

## Case Study Method

The case study method was used. This design does not aim to combine data from participants for data analysis; each participant serves as his or her own control. Behaviour change of each participant is evaluated relative to benchmarks he or she sets for him- or herself (Morgan & Morgan, 2003). Three children (and their parents) were randomly chosen to immediately participate in the program and two children (and their parents) were randomly placed on a waiting list. Baseline testing was done with all children. Although the intervention was offered to the children and parents on the waiting list in order to comply with ethical standards, data from the second intervention were not incorporated into the results of the present study.

## Measures

**NEPSY—II**. The NEPSY—II (Korkman, Kirk & Kemp, 2007a) is a flexible neuropsychological test battery for children between the ages of 3 and 16; it assesses six cognitive domains (i.e., Attention and Executive Functioning; Language; Memory and Learning; Sensorimotor; Social Perception; and Visuospatial Processing) and it is designed so that individual subtests, groups of subtests, or the entire battery of 32 subtests can be administered (Brooks, Sherman & Strauss, 2009). The NEPSY—II was normed

on a national, stratified random sample of 1200 children in the U.S.A. between the ages of 3 and 16; the sample was stratified on the basis of age, race/ethnicity, parents' level of education, and geographic location; normative data was collected between 2005 and 2006 (Brooks et al., 2009). Several subtests of the NEPSY—II were not re-normed and the normative data from the NEPSY (Korkman, Kirk, & Kemp, 1997) is used for these subtests; however, none of the subtests that require the use of the previous norms from the NEPSY were administered during the present study.

Since this study focused heavily on executive functioning, selected subtests from the Attention and Executive Functioning domain of the NEPSY—II were administered. Animal Sorting, Auditory Attention and Response Set, and Inhibition were used. Animal Sorting is a task that involves sorting cards; it taps concept formation, application of concepts to sort cards into a category, and mental set shifting (Brooks et al., 2009; Harcourt Assessment Inc., 2007).

Auditory Attention and Response Set has two component tasks. During Auditory Attention and Response set, the examinee is required to listen to a list of words. When a target word is heard, the child must touch the appropriate circle. Auditory Attention taps the examinee's selective auditory attention and vigilance. Response Set is a task that requires the examinee to listen to a list of words, and to touch the appropriate circle when a target word is heard. However, in this task, the child is required to maintain a more complex mental set that involves inhibition of the previously employed mental set, responding in ways that are inconsistent with a well-learned mental set (i.e., touching the red circle when he or she hears the word "yellow"), and using a well-learned mental set to respond, depending on the target word that is heard (i.e., touching the blue circle when

he or she hears the word "blue"). In short, the mental set that is employed depends on the target word that is heard; in Auditory Attention, only one target word is used (Harcourt Assessment Inc., 2007).

Inhibition is a task that is timed and involves three components. Naming involves presenting the examinee with shapes that must be identified rapidly by name (circles and squares) or by their directional orientation (arrows pointing up or down). Inhibition involves presenting the examinee with shapes that must be named rapidly with an opposite label (e.g., saying "square" when a circle is present) or identified with the opposite directional orientation (e.g., saying "up" when the arrow is pointing down). Switching involves identifying the correct name (in the case of circles and squares) or orientation (in the case of arrows) of the object if it is white in color and identifying the "opposite" name or orientation of the object if it is black in color. In short, this task requires the examinee to switch between well-learned and novel response sets, and to inhibit automatic responses while employing a novel response set (Brooks et al., 2009; Harcourt Assessment Inc., 2007).

The NEPSY—II yields five types of scores: Primary scores, Combined scores, Contrast scores, Process scores, and Behavioral Observations. Each subtest yields a primary score—a scaled score (mean=10, standard deviation=3) that is age-adjusted and provides information about the main abilities tapped by that subtest. Combined scores, also scaled scores, are total scores that take into account two scores within a subtest, and provide information about performance on two variables. Process scores and Behavioral Observations will not be examined during the present study since they use percentile ranks for interpretation and they are not as readily comparable. The present study will

include the analysis of Primary scores and Combined scores. Pre-intervention scores will be compared to post-intervention scores.

Test-retest reliability indicates the consistency of test performance over time (Brooks et al., 2009). The test-retest reliability coefficients of the three subtests vary; the battery was re-administered to the test-retest sample following an average retest interval of 21 days. For the 7-8 year old age group, the test-retest reliability coefficients are as follows: Animal Sorting Total Correct Sorts yielded a coefficient of .68; Auditory Attention Total Correct yielded a coefficient of .42; Response Set Total Correct yielded a coefficient of .84; Inhibition-Naming Total Completion Time yielded a coefficient of .82; Inhibition-Inhibition Total Completion Time yielded a coefficient of .81; Inhibition-Switching Total Completion Time yielded a coefficient of .82; and Inhibition Total Errors yielded a coefficient of .66. For the 9-10 year old age group, the test-retest reliability coefficients are as follows: Animal Sorting Total Correct Sorts yielded a coefficient of .73; Auditory Attention Total Correct yielded a coefficient of .62; Response Set Total Correct yielded a coefficient of .53; Inhibition-Naming Total Completion Time yielded a coefficient of .74; Inhibition-Inhibition Total Completion Time yielded a coefficient of .66; Inhibition-Switching Total Completion Time yielded a coefficient of .78; and Inhibition Total Errors yielded a coefficient of .57 (Brooks et al., 2009).

Evidence for the validity of the NEPSY—II is generally strong; there is evidence of acceptable convergent and discriminant validity (D'amato, Titley, & Napolitano, 2010; Napolitano, 2010). The NEPSY—II Clinical and Interpretive Manual (Korkman, Kirk, & Kemp, 2007b) includes information about the content, concurrent, and construct validity of the instrument. Content validity was established based on a number of sources: an in-

depth literature review, feedback from consumers, reviews of pilot studies, and the clinical and research experience of the test authors (Napolitano, 2010). Evidence of construct and concurrent validity was supported by a number of studies utilizing special populations and correlations with other measures of specific functions (Napolitano, 2010).

**BRIEF.** The Behavior Rating Inventory of Executive Function (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000b) is a rating scale that has three forms: the Parent Form, the Teacher Form, and the Self-report Form. The Self-report Form will not be used because the norms available for this measure will not accommodate the age of the participants in the present study. The parent and teacher forms consist of 86 items that tap everyday executive abilities in the areas of emotion regulation, behaviour regulation, and metacognition. Items are in the form of "forced-choice" responses (i.e., "never", "sometimes" or "often") and the measure is designed for children aged 5 to 18. The responses give rise to scores on eight non-overlapping clinical scales (i.e., Inhibit, Shift, Emotional Control, Initiation, Working Memory, Planning, Organization of Materials, and Monitoring scales) on which *T* scores are obtained. Inhibit taps the child's ability to resist impulses and stop behaviour; Shift taps the ability to flexibly adopt a different problem-solving strategy and to transition smoothly from one activity to the next; Emotional Control reflects the ability to regulate emotions appropriately; Initiation reflects the child's tendency to generate ideas and to begin tasks; Working Memory taps the ability to keep information "online" in order for it to be used in completing a task; Planning assesses the ability to anticipate events, develop goals, and create step-by-step plans in order to attain identified goals; Organization of Materials reflects the ability to

maintain an orderly workspace and personal space; Monitoring reflects the child's tendency to check over work and to monitor his or her own progress on an ongoing basis (Gioia, Isquith, Guy, & Kenworthy, 2000c).

Normative data are based on responses from 1419 parents and 720 teachers within urban, suburban, and rural school areas in the U.S.A. The normative sample is representative of the U.S. population in terms of gender, socioeconomic status, race/ethnicity, age, and geographic population distribution (i.e., urban, suburban, and rural; Baron, 2004). Children with a history of psychotropic drug usage or special education were not included in the normative sample (Gioia, Isquith, Guy & Kenworthy, 2000a).

The clinical scales give rise to two summary indices (i.e., the Behavioral Regulation Index, or BRI, is comprised of the former three clinical scales listed, and the Metacognition Index, or MI, is comprised of the latter five). The BRI measures the extent to which children can manage their emotions and behaviour through inhibitory control, as well as how well children can shift between cognitive sets (Gioia, Isquith, & Kenworthy, 2000c). The MI measures how well children can cognitively manage activities or tasks as well as the extent to which they monitor their performance on them (Gioia, Isquith, & Kenworthy, 2000c).

Additionally, the scores on the BRI and MI can be combined to yield a Global Executive Composite (Donders, 2002). When *T* scores obtained on the BRI and the MI are within 13 *T* score points (on the Parent Form), or 19 *T* score points (on the Teacher Form), the Global Executive Composite is considered to be a meaningful summary measure of overall executive functioning (Gioia, Isquith, & Kenworthy, 2000c).

To interpret the results obtained on the BRIEF, raw scores on the clinical scales are converted into *T* scores by using normative conversion tables provided in the BRIEF manual (Gioia, Isquith, Guy, & Kenworthy, 2000c). *T* scores are normative scores with a mean of 50 and a standard deviation of 10. *T* scores of 65 or higher on a particular scale or index indicate potential clinical significance (i.e., significant dysfunction).

The psychometric properties of the BRIEF have been soundly supported (i.e., Baron, 2004; Gioia, Isquith, Guy & Kenworthy, 2000a). The test-retest reliability is adequate. The test-retest coefficient for the clinical scales was $r = .81$ for the Parent Form; the retest correlation coefficients of the Behavioral Regulation Index, Metacognitive Index, and Global Executive Composite were found to be .84, .88, and .86, respectively. These finding was based on a normative sub-sample for the Parent Form over a retest interval of two weeks. The test-retest coefficient for the clinical scales was $r = .79$ for the Teacher Form; the retest correlation coefficients of the Behavioral Regulation Index, Metacognitive Index, and Global Executive Composite were found to be .80, .83, and .81, respectively. These finding was based on a normative sub-sample for the Teacher Form over a retest interval of three weeks. *T* scores were found to be stable over a two to three week period, thus supporting that the BRIEF is suitable for repeat administration (Gioia, Isquith, Guy & Kenworthy, 2000a).

Evidence of the construct validity of the BRIEF is provided by results of confirmatory factor analysis and patterns of correlations of the scales of the BRIEF with a variety of other outcome measures (Schraw, 2003). Results of confirmatory factor analyses support the test authors' conceptualization of what the BRIEF measures (e.g., working memory, behaviour regulation; Fitzpatrick, 2003). However, there has been

difficulty establishing the validity of the Metacognitive Index of the BRIEF, since there are few existing measures that examine metacognitive functioning. Evidence for this construct has been provided only indirectly. As such, this represents a weakness in the assessment of the validity of the BRIEF (Fitzpatrick, 2003).

**BASC—2.** The Behavior Assessment System for Children—second edition (BASC—2; Reynolds & Kamphaus, 2004) is a measure of adaptive and maladaptive behaviour and of self-perception of persons aged 2 to 25 (Tan, 2007); it includes five components (i.e., Teacher Rating Scale, Parent Rating Scale, Self-Report of Personality, Structured Developmental History, and the Student Observation System to directly classify behaviour observed in the classroom), which can be used independently, or in any combination with each other (Reynolds & Kamphaus, 2004). For the purposes of this study, the Parent Rating Scale and Self-Report of Personality were administered. The Teacher Rating Scale was not administered since the research was conducted over the summer months.

The Teacher Rating Scale (TRS) has rating forms for three age groups (i.e., 2-5, 6-11, and 12-21). The rating form for children between the ages of 6 and 11 consists of 139 items that tap the domains of Externalizing Problems, Internalizing Problems, School Problems, and Adaptive Skills. A composite can be calculated for each of these domains based on scores obtained on Primary scales; other composites that can be derived include the School Problems composite and the Behavioral Symptoms Index. The Behavioral Symptoms Index provides information about the overall level of problematic behaviours (Reynolds & Kamphaus, 2004). Each item is rated on a forced-choice, four-point scale

(i.e., “never”, “sometimes”, “often”, and “almost always”) that identifies the frequency of certain behaviours (e.g., “refuses to join group activities”) in the school setting.

The Parent Rating Scale (PRS) focuses on behaviours in community and home settings. It also has rating forms for three age groups (i.e., 2-5, 6-11, and 12-21). The rating form for children between the ages of 6 and 11 consists of 160 items that tap the domains of Externalizing Problems, Internalizing Problems, and Adaptive Skills. Composite scores can be derived for each of these domains based on scores obtained on Primary scales; the Behavioral Symptoms Index can also be derived. The PRS provides information about the performance of activities involved in daily living, which is not within the scope of the TRS. However, given that the PRS focuses on assessing behaviour in the community and home settings, the PRS does not assess two areas assessed by the TRS (i.e., Study Skills and Learning Problems), nor does it provide the information required to calculate the School Problems composite. The same forced-choice, four-point response format is used by the PRS. Both the PRS and the TRS have an Executive Functioning content scale, which provides supplemental information about self-regulation in terms of anticipating events, formulating plans, inhibiting, sustaining goal-directed behaviour, and reacting to feedback within the environment in an appropriate, purposeful, and meaningful manner (Reynolds & Kamphaus, 2004).

The Self-Report of Personality is a rating form that broadly assesses personality and requires dichotomous “true” or “false” responses to some items and frequency ratings (i.e., the same four options as on the TRS and PRS) on other items. Primary scales give rise to composite scores across the following domains: Inattention/Hyperactivity, Internalizing problems, Personal Adjustment, and School Problems. In addition, the

Emotional Symptoms Index can be calculated; this composite provides information about overall presence of adaptive and maladaptive behaviours or personality variables. There are three forms of this measure available: one for ages 8 to 11, one for ages 12 to 21, and one for ages 18 to 25. The STP does not contain an Executive Functioning content scale.

To interpret the results obtained on the forms of the BASC—II, raw scores on the scales and composites were converted into *T* scores by using a scoring software program. *T* scores are normative scores with a mean of 50 and a standard deviation of 10. *T* scores of 60 through 69 inclusive on the clinical scales and composites indicate areas that are "At-Risk" and *T* scores of 70 or higher indicate an area that is "Clinically Significant." On the adaptive scales and composite, *T* scores of 31 through 40 inclusive indicate areas that are "At-Risk" and *T* scores of 30 or less indicate areas that are "Clinically Significant" (Reynolds & Kamphaus, 2004).

The norms available for the TRS, PRS, and SRP include norms for a clinical group and a general group. Participants in this study will have a diagnosis of ADHD (and potentially other diagnoses as well); the nonclinical norms will be used since clinically significant change has been defined in this study as functioning within the normative range (i.e., having scores indistinguishable from the normative group) following the intervention. The nonclinical norms are subdivided by age, and reflect data collected from children in the U.S.A. between the ages of 4 and 18. The sample sizes for the clinical norms are 4650 for the TRS; 4800 for the PRS; and 3400 for the SRP (Tan, 2007).

Test-retest reliabilities for the composite scales of the child form of the TRS are based on ratings made by the same teacher over a retest interval that ranged from 8 to 65

days; the test-retest reliabilities of the composite scores were found to be acceptable, ranging from .81 and .93. Similarly, ratings for the PRS were obtained twice from the same parent over a retest interval that ranged from 9 to 70 days. Composite scores of the child form of the PRS were found to range between .78 and .92. Finally, the SRP ratings were obtained from the same child over a retest interval that ranged from 13 to 66 days. Composite scores of the child form of the SRP were found range between .75 and .82.

There is evidence in support of the construct and criterion-related validity of the BASC—2. Construct validity is supported by the clinical scale, and composite score, profiles obtained by children and adolescents (of the TRS, PRS, and SRP); these profiles generally indicate patterns of strengths and weaknesses that would be expected within clinical groups (Stein, 2007). Construct validity has also been established on the basis of factor analysis; specifically, factor analyses of the three forms of the BASC—2 yielded moderate to high loadings of the scales of the three forms with the components (Tan, 2007). Intercorrelations among the BASC—2 and measures that purport to measure similar constructs (e.g., the Achenbach System of Empirically Based Assessment) generally reveal expected relationships, particularly with respect to the scales that tap externalizing problems; the majority of scales tapping similar constructs correlate moderately to highly, except for scales that tap anxiety (Stein, 2007). Such evidence supports the criterion-related validity of the BASC—2 (Stein, 2007).

**Selected Subtests of the WISC—IV**. To provide an estimate of the participants' intellectual status, a short form of the WISC—IV (i.e., the Block Design and Vocabulary subtests; Wechsler, 2003) were administered. A number of valid short-form combinations of subtests from the WISC—IV have been identified, including short-forms

comprised of two, three, or four subtests (Sattler, 2008). The two subtest combination that includes Block Design and Vocabulary has been found to have acceptable reliability and validity for estimating IQ (i.e., coefficients of .916 and .874 respectively; Sattler, 2008).

**Qualitative Questionnaire for Parents**. During the post-intervention testing, parents filled in an evaluation form that asked questions pertaining to their perceptions of changes in their children's social skills (Appendix B). This questionnaire was adapted from a questionnaire developed by Aberson (1996) by the principal investigator. Similar questions were used in the present questionnaire, but a forced multiple choice format was adopted for some of the questions to aid in comparison of results among participants.

# CHAPTER IV

# RESULTS

Data are presented in the following manner for each case: a description of background information, presentation of quantitative pre-intervention data for all measures, and presentation of quantitative post-intervention data for all measures (including a comparison of changes in scores from pre- to post-intervention). Following the presentation of pre- and post-intervention quantitative data, there is a section that describes qualitative data from the Parent Evaluation Form, which was filled out by the parents of participants in the intervention group. Qualitative findings for April, Ben, and Charlie (i.e., the intervention group) are presented in this section.

## Case 1

**Background information.** April is a 10-year old girl from an intact family. Previous psychological reports stated that her birth was without complication and that her overall development occurred at an average rate, reaching most developmental milestones within the expected period. However, speech problems were noted early on; her mother reports that at 13 months of age, April stopped talking. April received speech-language services for a period of time beginning prior to her entry into Junior Kindergarten due to problems with articulation, core language abilities, expressive language, vocabulary, grammatical structure of written work, and speech organization. April has had academic difficulties since grade one. She has been formally diagnosed with Learning Disorder NOS and ADHD Combined type (based on DSM-IV criteria) by a psychologist in 2009. Her diagnoses were confirmed based on previous psychological reports. She takes 32 milligrams of Concerta every day to manage her symptoms of

ADHD. Although April took a six-week vacation from taking her prescribed medication prior to the beginning of the study, she adhered to her regular medication regimen for the duration of the study, including the days of both testing sessions. April's mother reported that April is in good health overall. In terms of recent major stresses to the family, April's great grandmother died within the past year.

April has been in a special education class—partially integrated, with modifications provided in for Math and English—since grade two. She attends tutoring for Math and English at the local Learning Disabilities Association on a regular basis (i.e., weekly during the school year). Her mother has requested that the school place her in a mainstream classroom with an appropriate Individualized Education Plan during the upcoming school year. Results of the assessments completed over the course of this study were corroborated by the results of previous psychological reports. Both sources indicate that April shows overall intellectual functioning that is average compared to her same-age peers. As such, April meets the minimum eligibility requirements for this study in terms of intellectual functioning.

April's mother's primary concerns about her daughter included making additional lasting friendships and using a less aggressive tone of voice when expressing her opinion. Her mother also noted that April has a friend with whom she has been close for the past year, but this friend will move to a different city very soon. April's parents use time-outs, grounding, and removal of privileges as their primary parenting strategies. In general, April often responds to these methods since she knows that the punishments will become more severe if she does not comply with her parents' requests.

**Pre-intervention data.** Data collected were based on parent and child ratings on normed behaviour inventories as well as the administration of standardized neuropsychological measures. Pre-intervention data were collected the week before the program began.

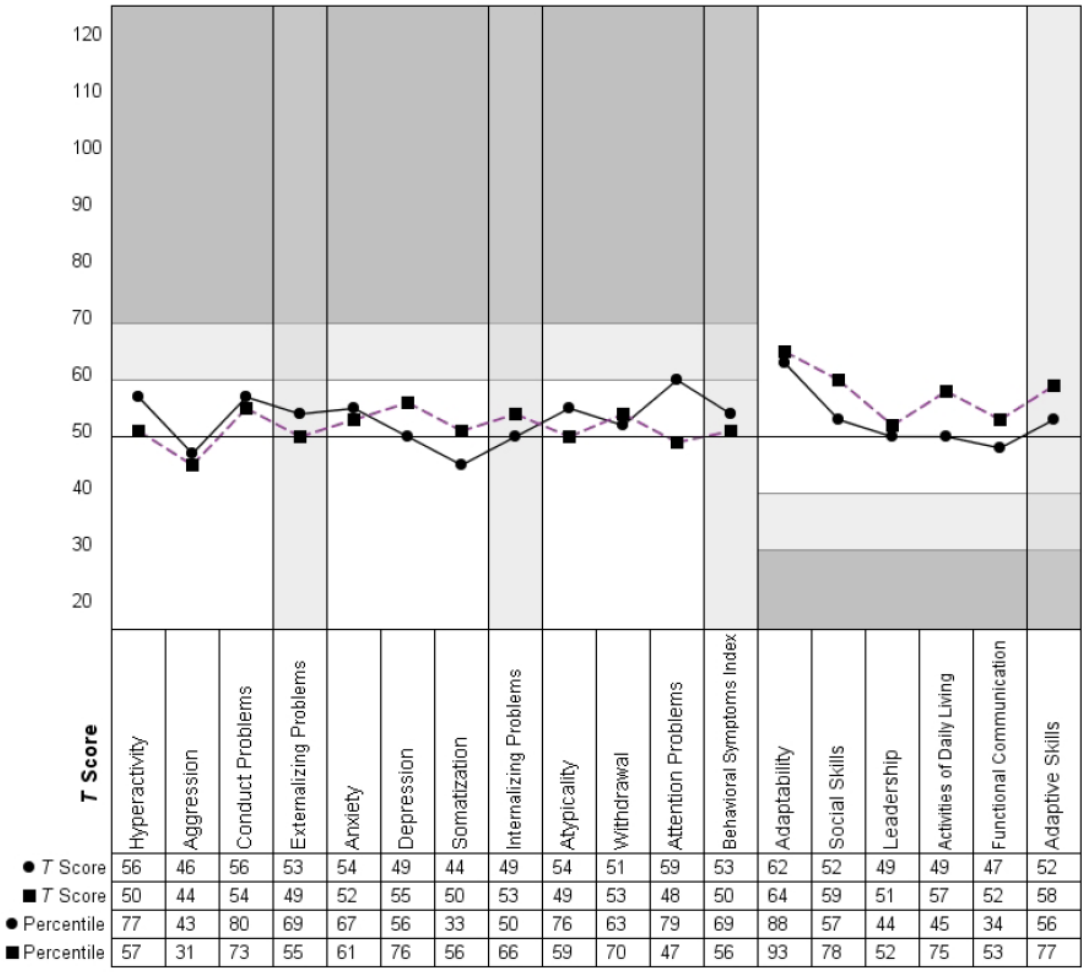
***Behaviour Assessment System for Children—2.*** April's mother completed the Parent Rating Scales-Child (PRS-C) form of the BASC—2. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range and support the validity of the profile. None of the *T* score values obtained on the clinical scales, adaptive scales, composite scores, or content scales were within the At-Risk or Clinically Significant ranges (Figure 1, Tables 9 and 10 in Appendix H).

April completed the Self-Report of Personality (SRP-C) form of the BASC—2. The validity indicators (F Scale, L Scale, V Scale, Consistency, and Response Pattern) were all within the acceptable range. As such, the profile was deemed to be valid. April's responses to the BASC—2 reflected no *T* scores on the clinical scales, adaptive scales, composite scores, or content scales that were within the Clinically Significant or At-Risk ranges (Figure 2, Tables 31 and 32 in Appendix I).

**Validity Index Summary**

| F | Response Pattern | Consistency |
|---|---|---|
| Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 108 | Acceptable<br>Raw Score: 6 |

**PRS Progress Report T Score Profile**




| T Score | Hyperactivity | Aggression | Conduct Problems | Externalizing Problems | Anxiety | Depression | Somatization | Internalizing Problems | Atypicality | Withdrawal | Attention Problems | Behavioral Symptoms Index | Adaptability | Social Skills | Leadership | Activities of Daily Living | Functional Communication | Adaptive Skills |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● T Score | 56 | 46 | 56 | 53 | 54 | 49 | 44 | 49 | 54 | 51 | 59 | 53 | 62 | 52 | 49 | 49 | 47 | 52 |
| ■ T Score | 50 | 44 | 54 | 49 | 52 | 55 | 50 | 53 | 49 | 53 | 48 | 50 | 64 | 59 | 51 | 57 | 52 | 58 |
| ● Percentile | 77 | 43 | 80 | 69 | 67 | 56 | 33 | 50 | 76 | 63 | 79 | 69 | 88 | 57 | 44 | 45 | 34 | 56 |
| ■ Percentile | 57 | 31 | 73 | 55 | 61 | 76 | 56 | 66 | 59 | 70 | 47 | 56 | 93 | 78 | 52 | 75 | 53 | 77 |

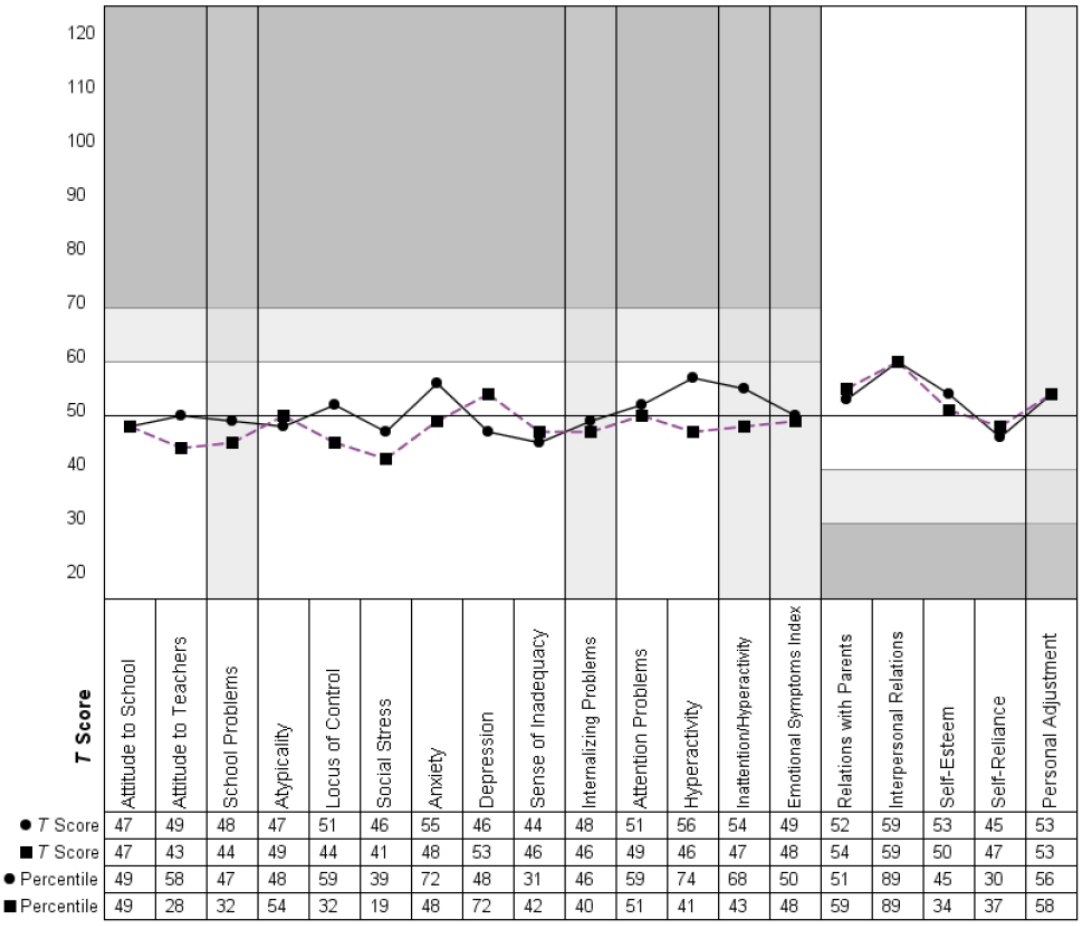
**Figure 1: April's Pre- and Post-intervention PRS-C T score Profile on the BASC—II**

*Note*. Broken lines represent pre-intervention *T* scores; solid lines represent post-intervention *T* scores

**Validity Index Summary**

| F | Response Pattern | Consistency | L | V |
|---|---|---|---|---|
| Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 86 | Acceptable<br>Raw Score: 4 | Acceptable<br>Raw Score: 2 | Acceptable<br>Raw Score: 1 |

**SRP Progress Report T Score Profile**




| T Score | Attitude to School | Attitude to Teachers | School Problems | Atypicality | Locus of Control | Social Stress | Anxiety | Depression | Sense of Inadequacy | Internalizing Problems | Attention Problems | Hyperactivity | Inattention/Hyperactivity | Emotional Symptoms Index | Relations with Parents | Interpersonal Relations | Self-Esteem | Self-Reliance | Personal Adjustment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● *T* Score | 47 | 49 | 48 | 47 | 51 | 46 | 55 | 46 | 44 | 48 | 51 | 56 | 54 | 49 | 52 | 59 | 53 | 45 | 53 |
| ■ *T* Score | 47 | 43 | 44 | 49 | 44 | 41 | 48 | 53 | 46 | 46 | 49 | 46 | 47 | 48 | 54 | 59 | 50 | 47 | 53 |
| ● Percentile | 49 | 58 | 47 | 48 | 59 | 39 | 72 | 48 | 31 | 46 | 59 | 74 | 68 | 50 | 51 | 89 | 45 | 30 | 56 |
| ■ Percentile | 49 | 28 | 32 | 54 | 32 | 19 | 48 | 72 | 42 | 40 | 51 | 41 | 43 | 48 | 59 | 89 | 34 | 37 | 58 |

**Figure 2: April's Pre- and Post-intervention SRP-C T score Profile on the BASC—II**

*Note*. Broken lines represent pre-intervention *T* scores; solid lines represent post-intervention *T* scores

***Behaviour Rating Inventory of Executive Function.*** April's mother completed the Parent Form of the BRIEF. The scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. None of the clinical scales were found to be within the clinical range. Similarly, the Behavior Regulation Index (BRI) and the Metacognitive Index (MI) were not found to fall within the clinical range. The BRI (*T* score of 47) and the MI (*T* score of 50) were within 3 *T* score points of each other. Since these two indexes were within 13 *T* score points of each other, it is permissible to use the Global Executive Composite (GEC) score as a summary measure of overall executive functioning (Gioia, Isquith, & Kenworthy, 2000c); the GEC (*T* score of 49) was also found to be within the nonclinical range, suggesting that April did not have significant executive dysfunction prior to beginning the study (Figure 3; 90% confidence intervals are presented in Table 45 in Appendix J).

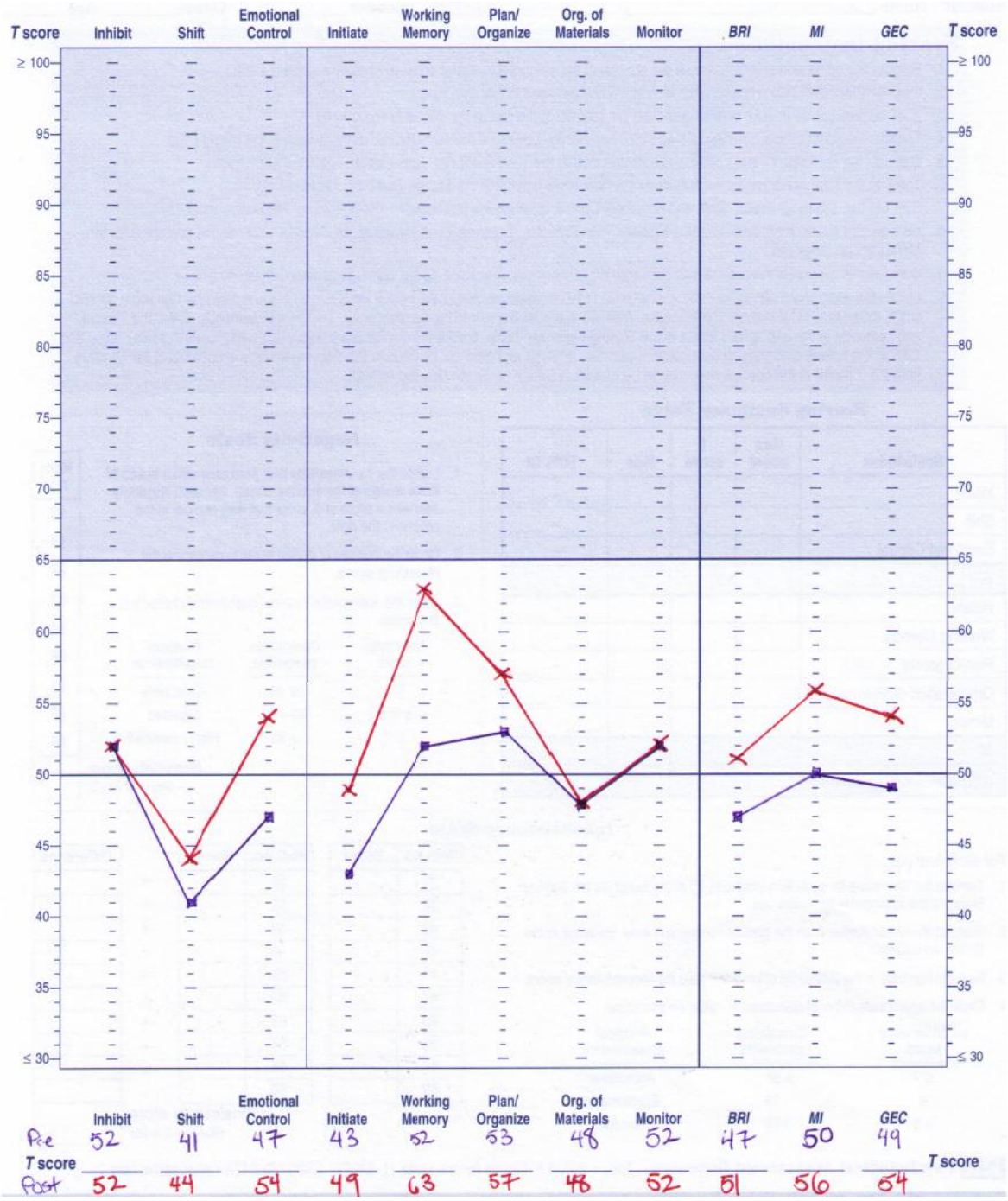



**Figure 3: April's Pre- and Post-intervention BRIEF T score profile**

*Note*. Points marked with "X" represent post-intervention *T* scores.

***NEPSY—II.*** April completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Pre-intervention scores on these selected subtests of the NEPSY—II are provided in Table 3 in Appendix E.

**Post-intervention data.** Post-intervention data were collected during the week of the last formal session of the intervention.

***Behaviour Assessment System for Children—2.*** April's mother completed the Parent Rating Scales-Child form of the BASC—2 following the intervention. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range. None of the clinical scales, adaptability scales, composite scores, or content scales fell within the At-Risk or Clinically Significant ranges on the PRS-C and the SRP-C (Figure 1). However, the Attention Problems clinical scale (*T* score of 59) was on the verge of falling in the At-Risk range.

Comparisons of the confidence intervals of the *T* scores from the PRS-C before and after the intervention revealed no significant differences on the clinical scales, the adaptability scales, the composite scores, or the content scales (Tables 9, 10, 11, and 12 in Appendix H).

The SRP-C was completed by April following the intervention. The validity indicators (F Scale, L Scale, V Scale, Consistency, and Response Pattern) were all within the acceptable range; the profile was deemed to be valid. April's responses to the SRP-C reflected no clinical scales, adaptability scales, or composite scores within the At-Risk or Clinically Significant ranges (Figure 2). Comparisons of the confidence intervals of the *T* scores from the SRP-C before and after the intervention revealed no significant

differences on the clinical scales, the adaptability scales, or the composite scores (Tables 31, 32, 33 and 34 in Appendix I).

***Behaviour Rating Inventory of Executive Function.*** April's mother again completed the BRIEF Parent Form. As before, the scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. None of the clinical scales were found to be within the clinical range. However, the Working Memory Scale (*T* score of 63) was on the verge of clinical significance. The BRI (*T* score of 51) and the MI (*T* score of 56) were not clinically elevated and were within 5 *T* score points of each other; the GEC (*T* score of 54) suggests that overall, April continued to not show significant executive dysfunction (Figure 3; Table 45 in Appendix J).

Although the GEC, all clinical scales, and both indexes were in the non-clinical range in both the Pre-intervention and post-intervention data from the BRIEF, comparisons of Pre-intervention and post-intervention data revealed two significant differences in ratings. By comparing the overlap between confidence intervals of the Pre-intervention and post-intervention data, significant differences (i.e., non-overlapping confidence intervals) that indicated greater executive dysfunction were found on the Working Memory Scale and the GEC after the intervention (Figure 3, Table 45 in Appendix J).

***NEPSY—II.*** April completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Post-intervention scores on these selected subtests of the NEPSY—II are provided in Table 3 in Appendix E. There

were no changes in pre-intervention to post-intervention scores that were at least two standard deviations (i.e., 6 scaled score points).

**Case 2**

**Background information.** Ben is a 10 year old boy from an intact family. His birth was without complication and at term. His developmental milestones in the areas of speech and language and gross motor skills were achieved within the expected timeframe; overall, his development occurred at an average rate. However, Ben did have some fine motor difficulties in early childhood, particularly with holding scissors properly. He continues to have difficulty printing neatly and tying his shoes well.

As confirmed by previous psychological reports, Ben has been formally diagnosed with ADHD by a psychologist. He takes 45 mg of Concerta and 15 mg of Risperidone daily to manage his symptoms of ADHD. Ben took his medication on both days that he was assessed, and adhered to his regular medication schedule throughout the study. Ben has not had any serious medical conditions in the past, and is reported to be in overall good health. Also, within the past year, there have been no significant or extreme stresses on Ben's family.

Ben will be entering a mainstream grade five class in September this year. In the past, he has received numerous suspensions for misbehaviour during class. He is involved in a program that requires children who misbehave to go to a different room and work with a social worker there. The social worker uses a variety of programs to resolve the behavioural issues of the child. In September, there is also an informal plan for a professional to work with Ben in the regular classroom on a regular basis. Unfortunately, Ben.'s mother could not provide more information about this at the time, but this will be

discussed during a six month follow-up with Ben's family. Results of the assessments completed over the course of this study were corroborated by the results of previous psychological reports. Both sources indicate that Ben shows overall intellectual functioning that is above average compared to his same-age peers. As such, Ben meets the minimum eligibility requirements for this study in terms of intellectual functioning.

Ben's mother's primary concerns were Ben's lack of friendships, his behavioural "outbursts" (both verbal and physical) at school, and his "overall negative reactions to most things." Ben's mother notes that his family has been working to help Ben improve his behaviour and social skills for a long time, but that there has been relatively little improvement in these areas. Ben has never had a close friendship, although he would like to have close friends. In the past, when he has invited other children to his house to spend time with him, he quickly tires of their company. At school, other children will not play with Ben and he often feels left out. Ben is often unhappy; he is aware that teachers are often displeased with him and that he has no close friendships.

**Pre-intervention Data**. Data collected were based on parent and child ratings on normed behaviour inventories as well as the administration of standardized neuropsychological measures. Pre-intervention data were collected the week before the program began.

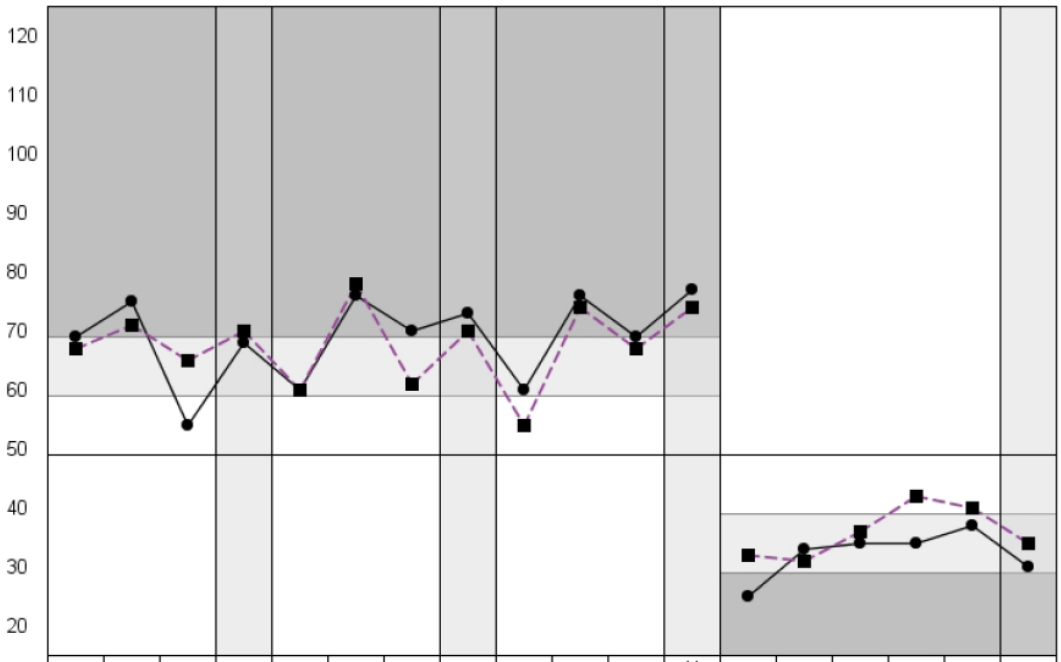
***Behaviour Assessment System for Children—2.*** Ben's mother completed the Parent Rating Scales-Child form of the BASC—2. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range and support the validity of the profile. Five of the *T* score values obtained on the clinical scales fell within the At-Risk range (i.e., Hyperactivity, Conduct Problems, Anxiety, Somatization,

and Attention Problems). Three fell within the Clinically Significant range (i.e., Aggression, Depression, and Withdrawal). Three Composite Scales fell within the Clinically Significant Range (i.e., Externalizing Problems, Internalizing Problems, and Behavioral Symptoms Index). The score obtained on the Executive Functioning content scale (*T* score of 74, with a 95% chance that the true value is between 66 and 82) was within the Clinically Significant range. For the adaptability scales, four fell within the At-Risk Range (i.e., Adaptability, Social Skills, Leadership and Functional Communication). Also, the composite scale (Adaptive Skills) fell within the At-Risk Range (Tables 13 and 14 in Appendix H, and Figure 4). The At-Risk range denotes potential or developing problems that should be monitored; scores in this range can also indicate problems that are significant and that may require treatment, but that do not fit specific diagnostic criteria for a disorder. Scores within the Clinically Significant range signify a high level of maladaptive behaviour in that particular area, or a deficit in, or an absence of, adaptive behaviours in that area (Reynolds & Kamphaus, 2004).

**Validity Index Summary**

| F | Response Pattern | Consistency |
|---|---|---|
| Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 105 | Acceptable<br>Raw Score: 10 |

**PRS Progress Report T Score Profile**




| T Score | Hyperactivity | Aggression | Conduct Problems | Externalizing Problems | Anxiety | Depression | Somatization | Internalizing Problems | Atypicality | Withdrawal | Attention Problems | Behavioral Symptoms Index | Adaptability | Social Skills | Leadership | Activities of Daily Living | Functional Communication | Adaptive Skills |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● *T* Score | 69 | 75 | 54 | 68 | 60 | 76 | 70 | 73 | 60 | 76 | 69 | 77 | 25 | 33 | 34 | 34 | 37 | 30 |
| ■ *T* Score | 67 | 71 | 65 | 70 | 60 | 78 | 61 | 70 | 54 | 74 | 67 | 74 | 32 | 31 | 36 | 42 | 40 | 34 |
| ● Percentile | 95 | 97 | 73 | 94 | 85 | 97 | 96 | 98 | 86 | 98 | 96 | 98 | 1 | 5 | 5 | 7 | 11 | 3 |
| ■ Percentile | 94 | 96 | 92 | 95 | 85 | 98 | 86 | 96 | 76 | 97 | 93 | 97 | 5 | 3 | 8 | 20 | 17 | 6 |

**Figure 4: Ben`s Pre- and Post-intervention PRS-C T score Profile on the BASC—II**

*Note*. Broken lines represent pre-intervention *T* scores; solid lines represent post-intervention *T* scores

Ben completed the Self-Report of Personality form of the BASC—2. Although the Response Pattern, Consistency, and L Scales were within the acceptable ranges, the F Scale and the V Scale were within the Caution range, indicating that the SRP-C data should be interpreted cautiously. The F Scale measures the extent to which the examinee responds in an overly negative fashion. It can also indicate that respondents are trying to appear to be deeply disturbed (Reynolds, & Kamphaus, 2004). Responding to items in an overly negative fashion is consistent with Ben's mother's statement that Ben is overly negative about most things. The V Scale includes items that are nonsensical in nature (Reynolds, & Kamphaus, 2004); Ben's responses on items of this scale suggest that the validity of the SRP-C protocol is highly questionable and likely indicates that Ben was not cooperative with this aspect of the assessment. Such behaviour would be consistent with previous psychological reports that confirm that Ben has a significant history of oppositional defiant and conduct problems. Since the validity of this protocol is highly questionable, it was not interpreted clinically for the purposes of this study.

***Behaviour Rating Inventory of Executive Function***. Ben's mother completed the Parent Form of the BRIEF. The scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. The BRI, MI, GEC and all of the clinical scales (except for the Organization of Materials scale) were clinically elevated (i.e., *T* score of 65 or greater). That is, the Inhibit scale, Shift scale, Emotional Control scale, Initiate scale, Working Memory scale, Plan/Organize scale, Monitor scale, Behavior Regulation Index, Metacognitive Index, and Global Executive Composite all fell within the clinically significant range (Figure 5 displays *T* scores of the scales and indexes; Table 46 in Appendix J displays 90% confidence

intervals for all clinical scales, the BRI, the MI, and the GEC). The BRI (*T* score of 72) and the MI (*T* score of 70) were within 2 *T* score points of each other. Since these two indexes are within 13 *T* score points of each other, it is permissible to use the Global Executive Composite (GEC) score as a summary measure of overall executive functioning (Gioia, Isquith, & Kenworthy, 2000c); the GEC (*T* score of 72) was found to be within the clinically significant range, suggesting that Ben displayed significant dysfunction in a number of aspects of executive functioning prior to his participation in this study.

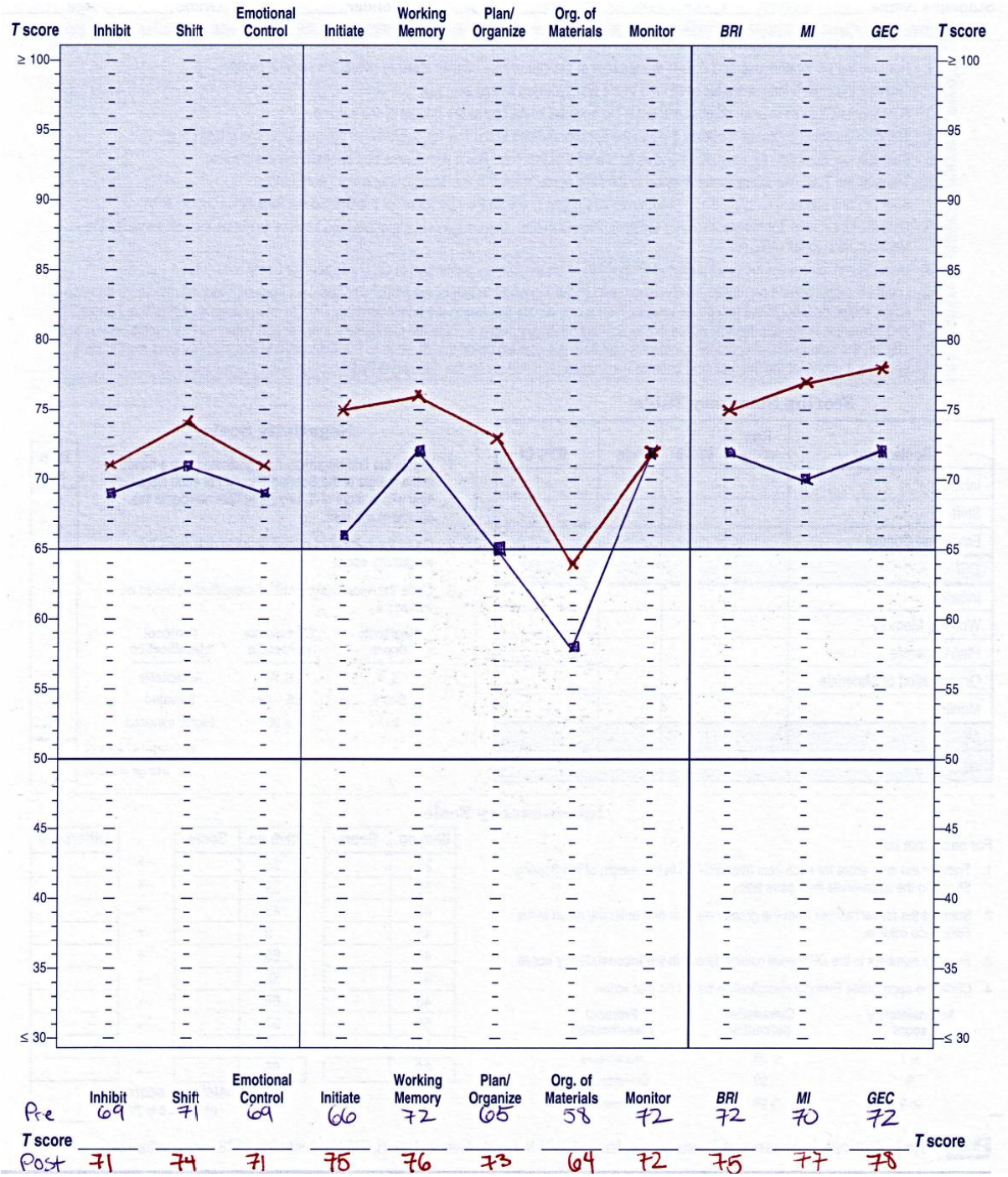



**Figure 5: Ben's Pre- and Post-intervention BRIEF T score profile**

*Note*. Points marked with "X" represent post-intervention *T* scores.

***NEPSY—II.*** Ben completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Pre-intervention scores on these selected subtests of the NEPSY—II are provided in Table 4 in Appendix E.

**Post-intervention data.** Post-intervention data were collected during the week of the last session of the intervention.

***Behaviour Assessment System for Children—2***. Ben's mother completed the Parent Rating Scales-Child form of the BASC—2 following the intervention. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range. Four of the *T* score values obtained on the clinical scales fell within the Clinically Significant range (i.e., Aggression, Depression, Somatization, and Withdrawal). Four clinical scales fell within the At-Risk range (i.e., Hyperactivity, Anxiety, Atypicality, and Attention Problems). Three Composite Scales fell within the Clinically Significant Range (i.e., Internalizing Problems, Adaptive Skills and Behavioral Symptoms Index). The score obtained on the Executive Functioning content scale (*T* score of 71, with a 95% chance that the true value is between 63 and 79) was within the Clinically Significant range. For the adaptability scales, The *T* score of one fell within the Clinically Significant range (i.e., Adaptability) and the *T* scores of four fell within the At-Risk range (i.e., Social Skills, Leadership, Activities of Daily Living, and Functional Communication; Tables 15 and 16 in Appendix H, and Figure 4).

Comparisons of the confidence intervals of the *T* scores from the PRS-C before and after the intervention revealed no significant differences on the clinical scales, the adaptability scales, the composite scores, or the content scales (Figure 4; Tables 13, 14, 15 and 16 in Appendix H). However, several *T* scores did change categories from pre-

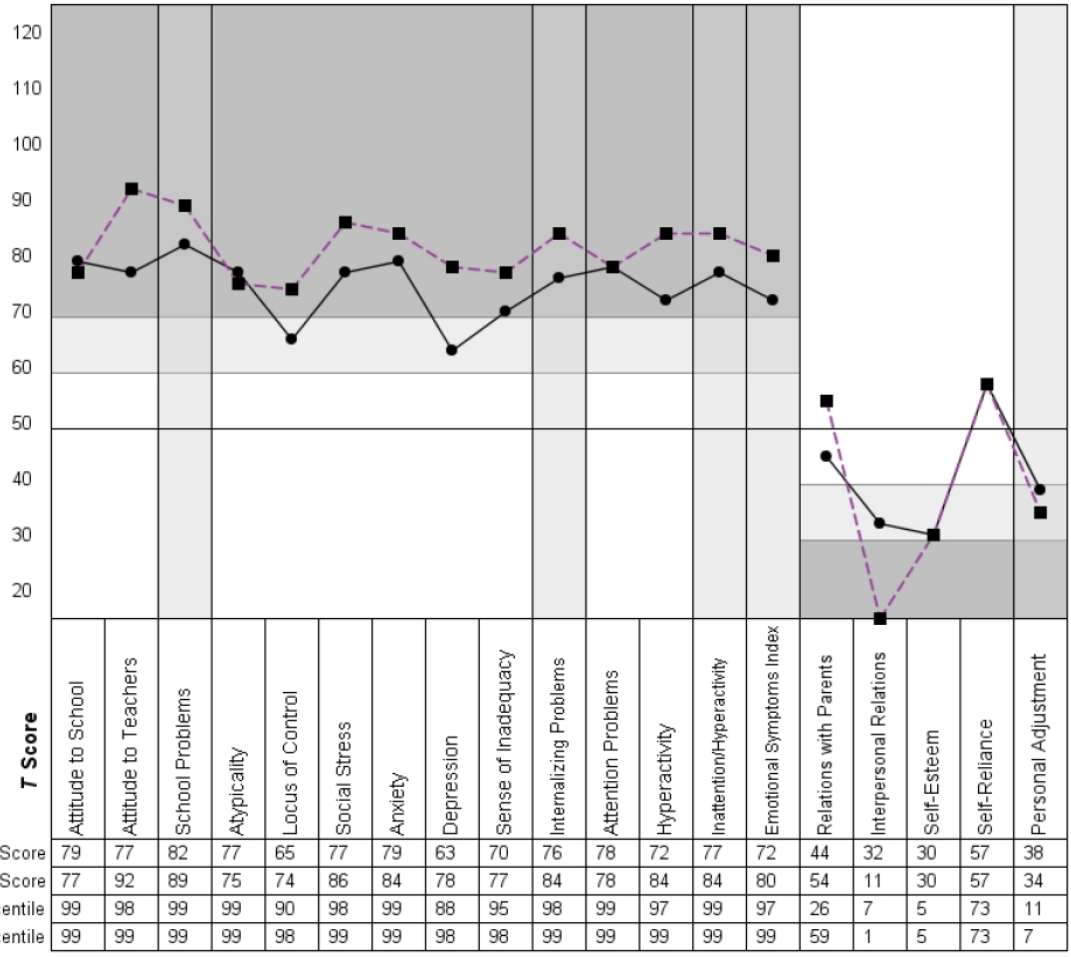
intervention to post-intervention testing. Two *T* scores that were in the At-Risk range during pre-intervention testing moved to the Clinically Significant range in post-intervention testing (i.e., Adaptability and Somatization); one *T* score that was in the nonclinical range moved to the At-Risk range (i.e., Atypicality). Notably, the Conduct Problems scale, which showed a *T* score of 65 and was in the At-Risk category during pre-intervention testing moved to the nonclinical range (i.e., *T* score of 54), suggesting that there was some improvement in behaviour following the intervention.

The SRP-C was completed by Ben following the intervention. The validity indicators (F Scale, L Scale, V Scale, Consistency, and Response Pattern) were all within the acceptable range. As such, the profile was deemed to be valid. Ben's responses to the SRP-C reflected eight clinical scales within the Clinically Significant range (i.e., Attitude to School, Attitude to Teachers, Atypicality, Social Stress, Anxiety, Sense of Inadequacy, Attention Problems, and Hyperactivity), two clinical scales within the At-Risk range (Locus of Control and Depression); one adaptive scale in the Clinically Significant range (Self-Esteem); one adaptive scale in the At-Risk range (Interpersonal Relations); one composite scale within the At-Risk range (Personal Adjustment) and four composite scales within the Clinically Significant range (School Problems, Internalizing Problems, Inattention/Hyperactivity, and the Emotional Symptoms Index; all *T* scores are presented visually in Figure 6 and 95% confidence intervals appear in Tables 35 and 36 in Appendix I).

**Validity Index Summary**

| F | Response Pattern | Consistency | L | V |
|---|---|---|---|---|
| Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 92 | Acceptable<br>Raw Score: 5 | Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 2 |

**SRP Progress Report T Score Profile**




| T Score | Attitude to School | Attitude to Teachers | School Problems | Atypicality | Locus of Control | Social Stress | Anxiety | Depression | Sense of Inadequacy | Internalizing Problems | Attention Problems | Hyperactivity | Inattention/Hyperactivity | Emotional Symptoms Index | Relations with Parents | Interpersonal Relations | Self-Esteem | Self-Reliance | Personal Adjustment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● *T* Score | 79 | 77 | 82 | 77 | 65 | 77 | 79 | 63 | 70 | 76 | 78 | 72 | 77 | 72 | 44 | 32 | 30 | 57 | 38 |
| ■ *T* Score | 77 | 92 | 89 | 75 | 74 | 86 | 84 | 78 | 77 | 84 | 78 | 84 | 84 | 80 | 54 | 11 | 30 | 57 | 34 |
| ● Percentile | 99 | 98 | 99 | 99 | 90 | 98 | 99 | 88 | 95 | 98 | 99 | 97 | 99 | 97 | 26 | 7 | 5 | 73 | 11 |
| ■ Percentile | 99 | 99 | 99 | 99 | 98 | 99 | 99 | 98 | 98 | 99 | 99 | 99 | 99 | 99 | 59 | 1 | 5 | 73 | 7 |

**Figure 6: Ben`s Pre- and Post-intervention SRP-C T score Profile on the BASC—II**

*Note*. Broken lines represent pre-intervention *T* scores; solid lines represent post-intervention *T* scores

Since a valid profile for the SRP-C was not obtained prior to the intervention, comparisons of the confidence intervals of the *T* scores from the Pre-intervention and post-intervention data were not be performed.

Behaviour Rating Inventory of Executive Function. Ben's mother completed the BRIEF Parent Form. The scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. The *T* scores of all of the clinical scales (except for the Organization of Materials scale) were clinically elevated. Similarly the BRI, MI, and GEC all remained clinically elevated (Figure 5).

Comparisons of 90% confidence intervals of Pre-intervention and post-intervention BRIEF data for Ben revealed no significant differences in ratings (Table 46 in Appendix J). The categories (i.e., clinically elevated or not) remained the same for all scores from pre- to post-intervention testing, suggesting no changes in aspects of executive functioning in the context of day-to-day situations.

***NEPSY—II.*** Ben completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Post-intervention scores on these selected subtests of the NEPSY—II are provided in Table 4 in Appendix E. There were no changes in pre-intervention to post-intervention scores that were at least two standard deviations (i.e., 6 scaled score points).

**Case 3**

**Background Information.** Charlie is a 12-year old boy from an intact family. His mother reported that his birth was without complication and that his overall development occurred at an average to faster-than-average rate. Developmental milestones in the domains of gross motor functioning, fine motor functioning, and

language occurred at the expected rate, although it took Charlie longer than most other children to learn to tie his shoes well. Previous psychological reports confirm that Charlie has been diagnosed with ADHD Combined type by a paediatrician and that he exhibits significant oppositional and defiant behaviours. Charlie takes 25 mg of Adderall daily to manage his symptoms of ADHD. Charlie adhered to his regular medication regimen for the duration of the study, including the two days on which he was tested. Charlie`s mother reports that, overall, he is in excellent health.

In terms of recent stresses on the family, Charlie`s father has recently undergone a career change, transitioning from being a carpenter to a part time student. Charlie`s father now spends a lot more time at home than he used to. The career change and additional time at home during the day have placed emotional strain on the family and have disrupted the daily routine at home. Some of the parenting strategies that were typically used at home included removal of privileges, earning rewards, and verbal reprimands. Generally, Charlie complies quite well with these strategies, except when he is highly symptomatic.

At school, Charlie spends time daily with the Learning Support Services Teacher in a separate room from the regular classroom. He also speaks with a social worker on a weekly basis. These supports have been put in place for the upcoming school year as well. Results of the assessments completed over the course of this study indicate that Charlie shows overall intellectual functioning that is average to above average compared to his same-age peers. As such, Charlie meets the minimum eligibility requirements for this study in terms of intellectual functioning.

Charlie`s mother`s main concerns related to Charlie`s social skills and functioning. She is also concerned that if Charlie does not improve in these skills, he will experience a significant drop in self-esteem (although she notes that presently he rebounds quickly from setbacks and is generally optimistic) and he may develop additional problematic externalizing behaviours. She also noted that one area of social functioning in which Charlie is particularly weak is inferring the intentions of others. Charlie often misinterprets others` intentions, partially because he often reacts to situations before thoroughly thinking through his actions and perceiving what is going on around him. He sometimes blurts things out without thinking about what the consequences will be. Although Charlie used to have a number of friends and he had confidence in social situations, his impulsive actions have caused his friendships to be strained. As a result, his confidence in such situations is waning.

**Pre-intervention data.** Data collected were based on parent and child ratings on normed behaviour inventories as well as the administration of standardized neuropsychological measures. Pre-intervention data were collected the week before the program began.

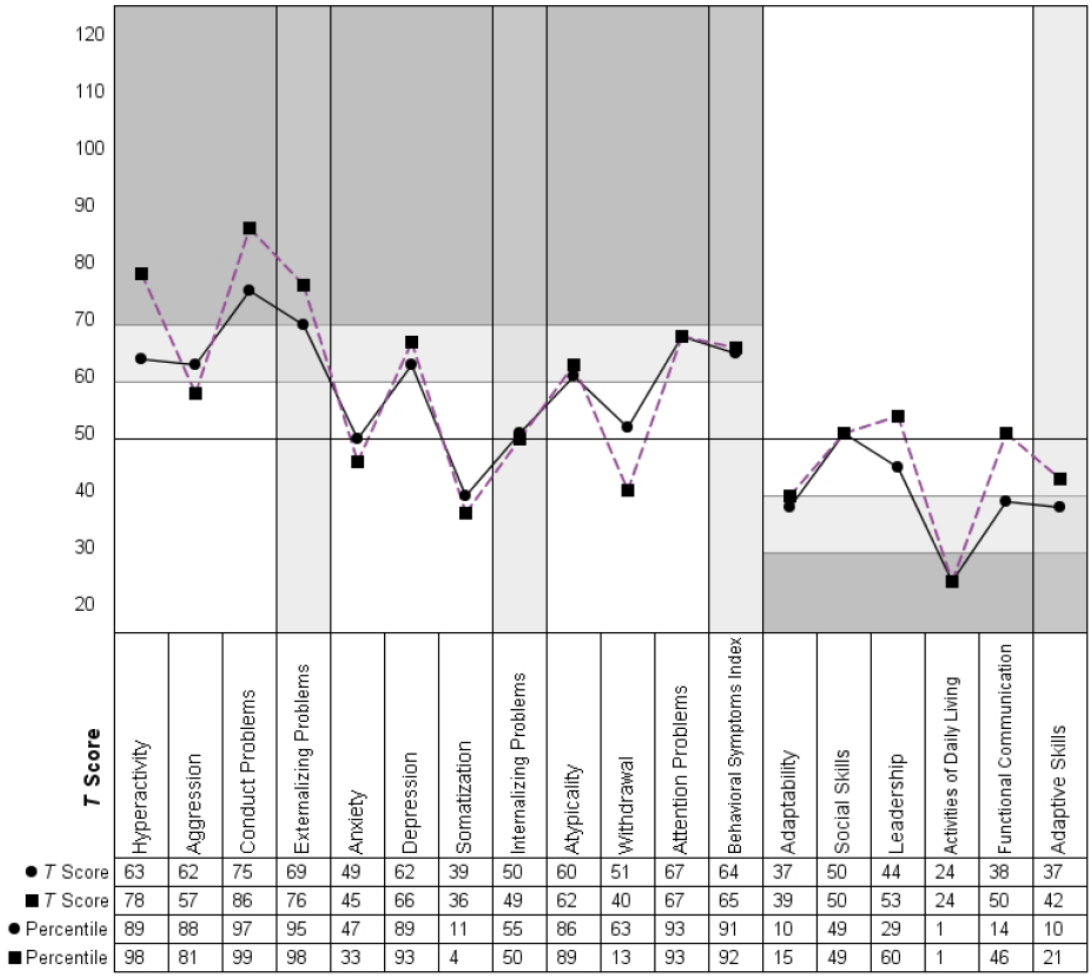
***Behaviour Assessment System for Children—2.*** Charlie's mother completed the Parent Rating Scales-Child form of the BASC—2. Although Charlie is 12 years old, he and his mother completed the SRP-C and PRS-C, respectively, which are test forms that are designed to assess children between the ages of 8 and 11 years old. Adolescent versions of the BASC—II forms were not available; as such, the norms for a child aged 11 years 11 months were used to score the SRP-C and the PRS-C. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range

and support the validity of the profile. One composite score was within the Clinically Significant range (i.e., Externalizing Problems) and one composite score was within the At-Risk range (i.e., Behavioral Symptoms Index). The *T* scores obtained on the clinical scales reflected clinically significant elevations on the Hyperactivity scale and the Conduct Problems scale. The *T* scores obtained on the Depression, Atypicality, and Attention Problems clinical scales fell within the At-Risk range. The *T* scores obtained on the adaptive scales reflected one scale in the Clinically Significant range (i.e., Activities of Daily Living) and one scale in the At-Risk range (i.e., Adaptability). *T* scores are presented visually in Figure 7 and 95% confidence intervals for all of the clinical scales, adaptive scales, and composite scores are presented in Tables 17 and 18 in Appendix H. The score obtained on the Executive Functioning content scale (*T* score of 69, with a 95% chance that the true value is between 61 and 77) was within the At-Risk range.

**Validity Index Summary**

| F | Response Pattern | Consistency |
|---|---|---|
| Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 107 | Acceptable<br>Raw Score: 8 |

**PRS Progress Report T Score Profile**




| T Score | Hyperactivity | Aggression | Conduct Problems | Externalizing Problems | Anxiety | Depression | Somatization | Internalizing Problems | Atypicality | Withdrawal | Attention Problems | Behavioral Symptoms Index | Adaptability | Social Skills | Leadership | Activities of Daily Living | Functional Communication | Adaptive Skills |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● *T* Score | 63 | 62 | 75 | 69 | 49 | 62 | 39 | 50 | 60 | 51 | 67 | 64 | 37 | 50 | 44 | 24 | 38 | 37 |
| ■ *T* Score | 78 | 57 | 86 | 76 | 45 | 66 | 36 | 49 | 62 | 40 | 67 | 65 | 39 | 50 | 53 | 24 | 50 | 42 |
| ● Percentile | 89 | 88 | 97 | 95 | 47 | 89 | 11 | 55 | 86 | 63 | 93 | 91 | 10 | 49 | 29 | 1 | 14 | 10 |
| ■ Percentile | 98 | 81 | 99 | 98 | 33 | 93 | 4 | 50 | 89 | 13 | 93 | 92 | 15 | 49 | 60 | 1 | 46 | 21 |

**Figure 7: Charlie`s Pre- and Post-intervention PRS-C T score Profile on the BASC—II**

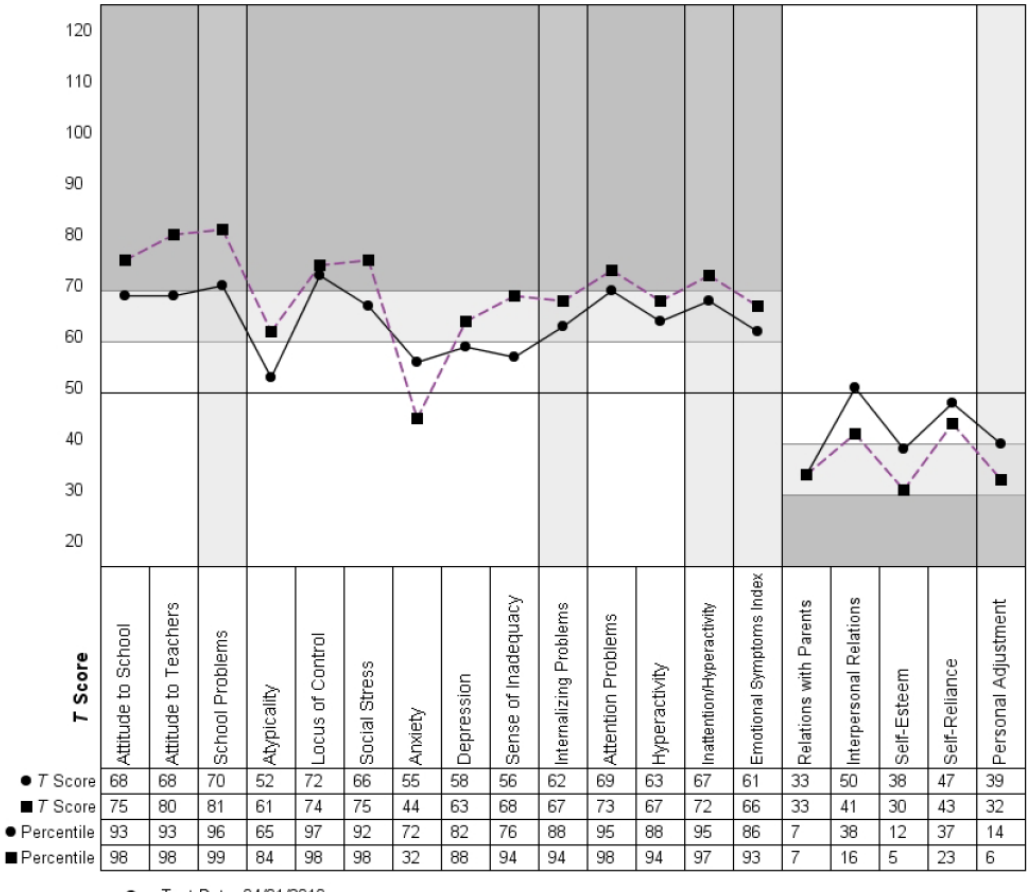
*Note*. Broken lines represent pre-intervention *T* scores; solid lines represent post-intervention *T* scores.

Charlie completed the Self-Report of Personality form of the BASC—2. The validity indicators (F Scale, L Scale, V Scale, Consistency, and Response Pattern) were all within the acceptable range. As such, the profile was deemed to be valid. The *T* scores of five clinical scales were within the Clinically Significant range (i.e., Attitude to School, Attitude to Teachers, Locus of Control, Social Stress and Attention Problems); the *T* scores of four clinical scales were within the At-Risk range (Atypicality and Depression). The composite scores reflected two composites with *T* scores in the Clinically Significant range (School Problems and Inattention/Hyperactivity) and two composites with *T* scores within the At-Risk range (i.e., Internalizing Problems and Emotional Symptoms Index). *T* scores obtained on two adaptive scales fell within the At-Risk range (Self-Esteem and Relations with Parents). All *T* scores are presented visually in Figure 8 and 95% confidence intervals for all of the clinical scales, adaptive scales, and composite scores are presented in Tables 37 and 38 in Appendix I.

**Validity Index Summary**

| F | Response Pattern | Consistency | L | V |
|---|---|---|---|---|
| Acceptable<br>Raw Score: 1 | Acceptable<br>Raw Score: 82 | Acceptable<br>Raw Score: 12 | Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 1 |

**SRP Progress Report T Score Profile**




| T Score | Attitude to School | Attitude to Teachers | School Problems | Atypicality | Locus of Control | Social Stress | Anxiety | Depression | Sense of Inadequacy | Internalizing Problems | Attention Problems | Hyperactivity | Inattention/Hyperactivity | Emotional Symptoms Index | Relations with Parents | Interpersonal Relations | Self-Esteem | Self-Reliance | Personal Adjustment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● *T* Score | 68 | 68 | 70 | 52 | 72 | 66 | 55 | 58 | 56 | 62 | 69 | 63 | 67 | 61 | 33 | 50 | 38 | 47 | 39 |
| ■ *T* Score | 75 | 80 | 81 | 61 | 74 | 75 | 44 | 63 | 68 | 67 | 73 | 67 | 72 | 66 | 33 | 41 | 30 | 43 | 32 |
| ● Percentile | 93 | 93 | 96 | 65 | 97 | 92 | 72 | 82 | 76 | 88 | 95 | 88 | 95 | 86 | 7 | 38 | 12 | 37 | 14 |
| ■ Percentile | 98 | 98 | 99 | 84 | 98 | 98 | 32 | 88 | 94 | 94 | 98 | 94 | 97 | 93 | 7 | 16 | 5 | 23 | 6 |

**Figure 8: Charlie`s Pre- and Post-intervention SRP-C T score Profile on the BASC—II**

*Note*. Broken lines represent pre-intervention *T* scores; solid lines represent post-intervention *T* scores.

***Behaviour Rating Inventory of Executive Function***. Charlie's mother completed the Parent Form of the BRIEF. The scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. All of the clinical scales (except for the Initiate scale) were clinically elevated (Figure 9). The two Indexes (BRI and MI) and the composite summary score (GEC) were also clinically elevated (*T* scores and 90% confidence intervals of all clinical scales, Indexes, and the GEC are shown in Table 47 in Appendix J). The BRI (*T* score of 80) and the MI (*T* score of 77) were within 3 *T* score points of each other. Since these two indexes are within 13 *T* score points of each other, it is permissible to interpret the GEC score.

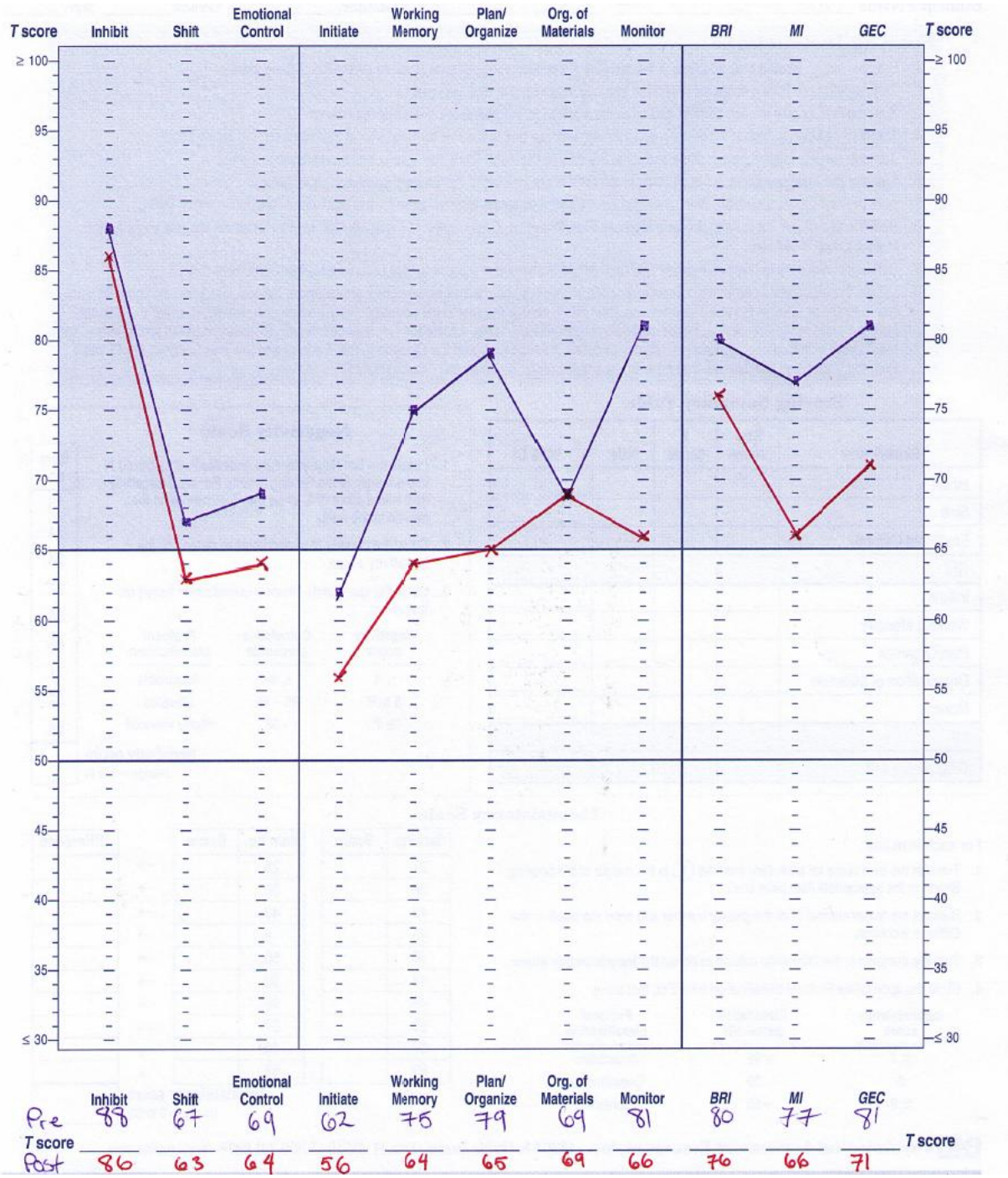



**Figure 9: Charlie's Pre- and Post-intervention BRIEF *T* score profile**

*Note*. Points marked with "X" represent post-intervention *T* scores.

***NEPSY—II.*** Charlie completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Pre-intervention scores on these selected subtests of the NEPSY—II are provided in Table 5 in Appendix E.

**Post-intervention data.** Post-intervention data were collected during the week of the last formal session of the intervention.

***Behaviour Assessment System for Children—2***. Charlie's mother completed the Parent Rating Scales-Child form of the BASC—2 following the intervention. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range. The *T* scores of one clinical scale (Conduct Problems) and one adaptive scale (Activities of Daily Living) fell within the Clinically Significant range. The *T* scores of five clinical scales (i.e., Hyperactivity, Aggression, Atypicality and Attention Problems) and two adaptive scales (Adaptability and Functional Communication) fell within the At-Risk range. Two composite scores (Externalizing Problems and the Behavioral Symptoms Index) fell within the At-Risk range. The *T* score of the Executive Functioning content scale fell within the At-Risk range. *T* scores are presented visually in Figure 7 and 95% confidence intervals for all of the clinical scales, adaptive scales, and composite scores are presented in Tables 19 and 20 in Appendix H.

Comparisons of the confidence intervals of the *T* scores from the PRS-C before and after the intervention revealed one significant difference in the Hyperactivity clinical scale. Following the intervention, the *T* score on the Hyperactivity scale was significantly lower (Figure 7; Tables 17, 18, 19, and 20 in Appendix H). A significant change was not found for the Executive Functioning content scale.

Charlie Completed the SRP-C following the intervention. The *T* score of one clinical scale was found to be within the Clinically Significant range (Locus of Control) and *T* scores of five clinical scales were within the At-Risk range (Attitude to School, Attitude to Teachers, Social Stress, Relations with Parents, and Hyperactivity). The *T* scores of two of the adaptability scales were within the At-Risk range (i.e., Relations with Parents and Self-Esteem). One composite score was within the Clinically Significant range (i.e., School Problems) and three composite scores were within the At-Risk range (Internalizing Problems, Inattention/Hyperactivity, and the Emotional Symptoms Index; Figure 8; Tables 39 and 40 in Appendix I).

Comparisons of the confidence intervals of the *T* scores from the SRP-C before and after the intervention revealed no significant differences (Tables 37, 38, 39 and 40 in Appendix I).

***Behaviour Rating Inventory of Executive Function***. Charlie's mother again completed the BRIEF Parent Form. The scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. Four of the clinical scales were found to be within the clinical range (Inhibit, Plan/Organize, Organization of Materials, and Monitor). The BRI and MI, as well as the composite summary score (GEC) were also clinically elevated (*T* scores are presented in Figure 9 and 90% confidence intervals of all clinical scales, Indexes, and the GEC are shown in Table 23). The BRI (*T* score of 76) and the MI (*T* score of 66) were within 10 *T* score points of each other. Since these two indexes are within 13 *T* score points of each other, it is permissible to interpret the GEC score.

Comparisons of pre-intervention and post-intervention data revealed five significant differences in ratings. By comparing the overlap between 90% confidence intervals of the pre-intervention and post-intervention data, significant differences indicating improved functioning following the intervention were found on the Working Memory, Plan/Organize, and Monitor scales, as well as the MI and the GEC (Table 47 in Appendix J).

***NEPSY—II.*** Charlie completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Post-intervention scores on these selected subtests of the NEPSY—II are provided in Table 5 in Appendix E. There were no changes in scores from pre-intervention to post-intervention that were at least two standard deviations (i.e., 6 scaled score points).

**Case 4**

**Background information**. Erin was a member of the control group and did not participate in the initial offering of the ICPS program. She is a 9-year old girl from an intact family. Previous medical reports indicate that Erin was born through Cesarean section. Developmentally, Erin was late in achieving some milestones. Although Erin achieved fine and gross motor milestones within the expected time frame, she was late in beginning to speak (age 2). She displayed expressive speech and articulation difficulties in early childhood, and had some difficulty when first learning the alphabet and numbers.

Previous medical reports confirm that Erin has been diagnosed with ADHD Combined Type, Oppositional Defiant Disorder (ODD), and Generalized Anxiety Disorder (GAD). She was diagnosed with ADHD, ODD and GAD by a Child Psychiatrist in Scarborough, Canada in December of 2006. Erin takes 20 mg of Adderall

XR every morning to help manage her symptoms of ADHD. Erin adhered to her medication regimen for the duration of the study, including days on which she was assessed. Her mother describes Erin as being in overall good health.

Within the past year, Erin and her family experienced stress related to the death of the father of a friend of the family. According to Erin`s mother, this appears to have triggered separation anxiety for Erin. This is consistent with Erin`s behaviour during the pre-intervention testing; she protested with tears when her mother got up to leave the assessment room so the testing could begin. To convince Erin to participate in the testing, it was agreed that her mother would sit in a chair visible through a window in the assessment room. Erin periodically looked at the window to check if her mother was still sitting and waiting for her during the assessment.

Erin does not receive special help at school. Results of the assessments completed over the course of this study indicate that Erin shows overall intellectual functioning that is in the average to below average compared to her same-age peers. As such, Erin meets the minimum eligibility requirements for this study in terms of intellectual functioning. At age three, she participated in a program entitled "Talk to me," and she later participated in the B.E.S.T. program offered by the Learning Disabilities Association of Windsor-Essex County. Her mother notes that Erin has shown improvement in her ability to socialize with others at school, but she still has difficulty entering group play situations and she has low self-confidence in social situations.

Erin`s mother`s primary concerns related to Erin`s tantrums that occur when she is frustrated; Erin often becomes frustrated and has arguments with other children when

playing with them. Erin`s mother indicated that Erin is weak in the area of social problem solving and that she tends to become aggressive with others when she does not get her way or when she is unsure how to react in a social situation. She often acts impulsively in social situations, without processing her emotions and thinking about possible solutions to problems first.

Parenting strategies that are used at home include removal of privileges and grounding. Erin usually responds well to these strategies.

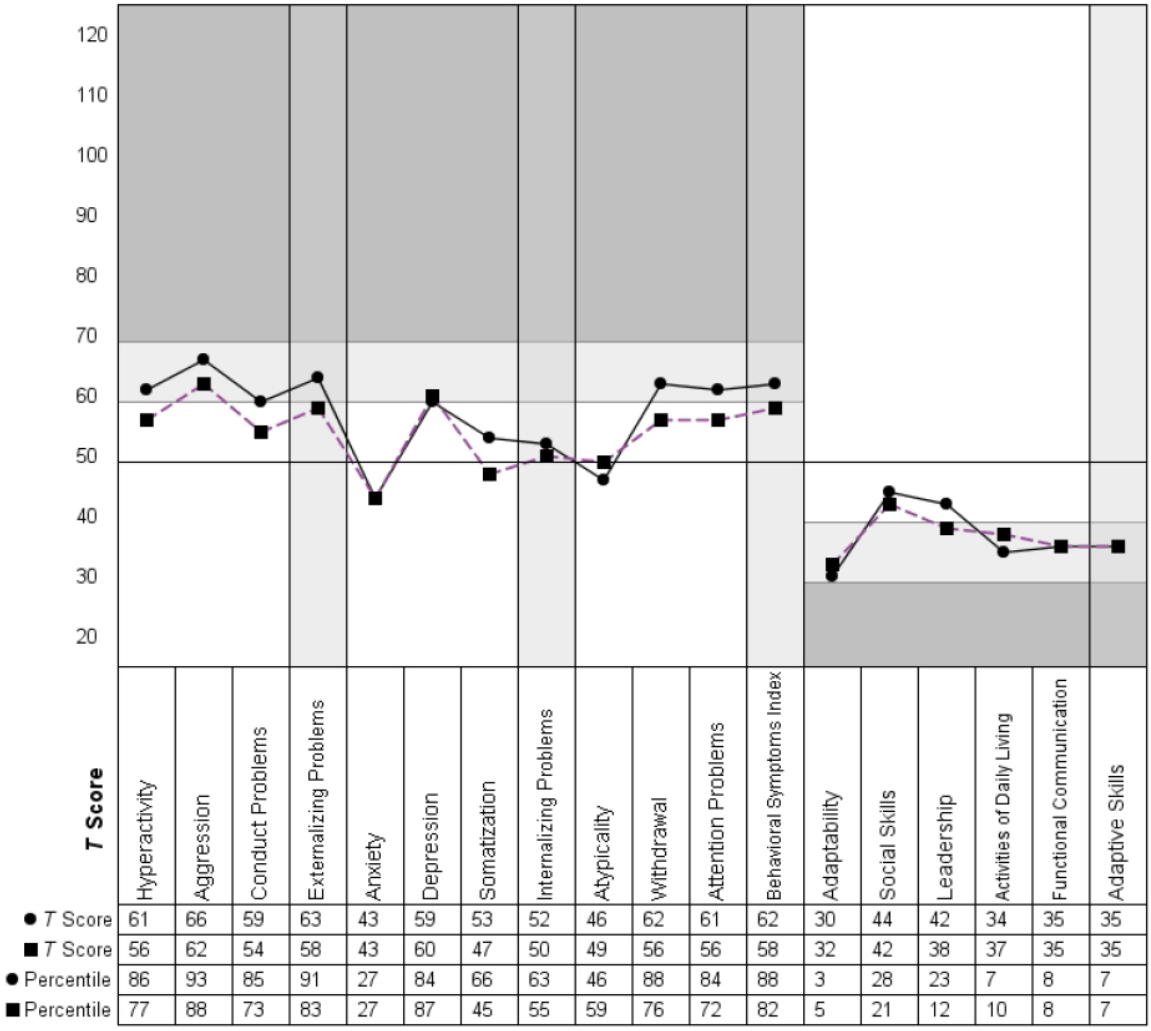
**Pre-intervention data.** Data collected were based on parent and child ratings on normed behaviour inventories as well as the administration of standardized neuropsychological measures. Pre-intervention data were collected the week before the program began.

***Behaviour Assessment System for Children—2***. Erin's mother completed the Parent Rating Scales-Child form of the BASC—2. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range and support the validity of the profile. One composite score was within the At-Risk range (i.e., Adaptive Skills). The *T* scores of two clinical scales (i.e., Aggression and Depression) and three adaptive scales (Adaptability, Leadership and Activities of Daily Living) fell within the At-Risk range. *T* scores are presented visually in Figure 10 and 95% confidence intervals for all of the clinical scales, adaptive scales, and composite scores are presented in Tables 21 and 22 in Appendix H. The score obtained on the Executive Functioning content scale (*T* score of 63, with a 95% chance that the true value is between 55 and 71) was within the At-Risk range.

**Validity Index Summary**

| F | Response Pattern | Consistency |
|---|---|---|
| Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 102 | Acceptable<br>Raw Score: 6 |

**PRS Progress Report T Score Profile**




| T Score | Hyperactivity | Aggression | Conduct Problems | Externalizing Problems | Anxiety | Depression | Somatization | Internalizing Problems | Atypicality | Withdrawal | Attention Problems | Behavioral Symptoms Index | Adaptability | Social Skills | Leadership | Activities of Daily Living | Functional Communication | Adaptive Skills |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● *T* Score | 61 | 66 | 59 | 63 | 43 | 59 | 53 | 52 | 46 | 62 | 61 | 62 | 30 | 44 | 42 | 34 | 35 | 35 |
| ■ *T* Score | 56 | 62 | 54 | 58 | 43 | 60 | 47 | 50 | 49 | 56 | 56 | 58 | 32 | 42 | 38 | 37 | 35 | 35 |
| ● Percentile | 86 | 93 | 85 | 91 | 27 | 84 | 66 | 63 | 46 | 88 | 84 | 88 | 3 | 28 | 23 | 7 | 8 | 7 |
| ■ Percentile | 77 | 88 | 73 | 83 | 27 | 87 | 45 | 55 | 59 | 76 | 72 | 82 | 5 | 21 | 12 | 10 | 8 | 7 |

**Figure 10: Erin`s Pre- and Post-intervention PRS-C T score Profile on the BASC—II**

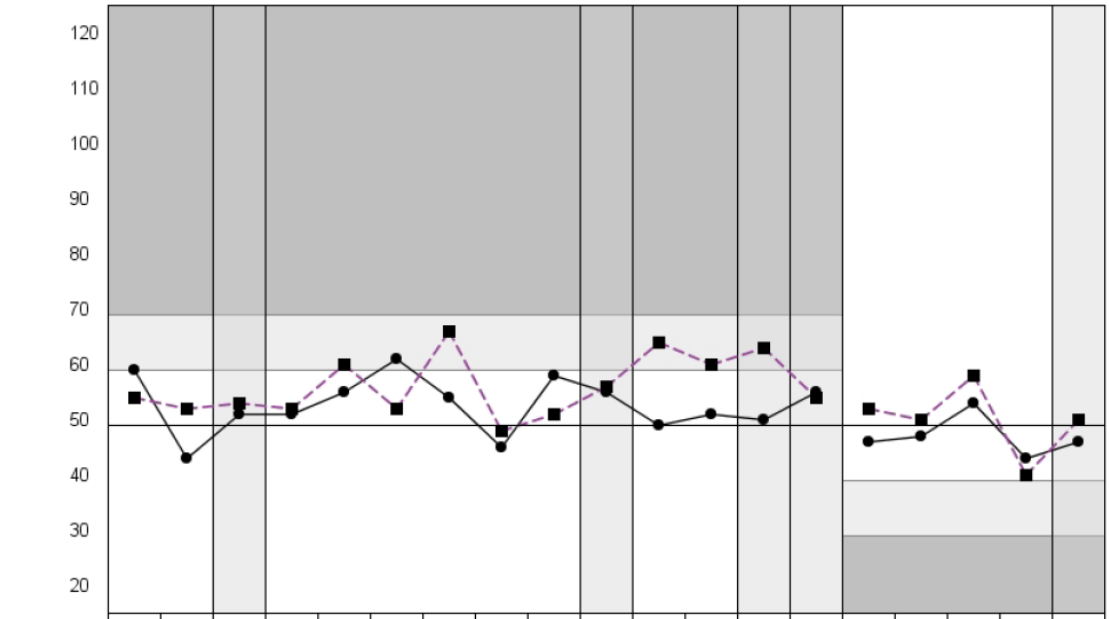
*Note*. Broken lines represent pre-intervention *T* scores; solid lines represent post-intervention *T* scores.

Erin completed the Self-Report of Personality form of the BASC—2. The validity indicators (F Scale, L Scale, V Scale, Consistency, and Response Pattern) were all within the acceptable range. The profile was deemed to be valid. The *T* scores of four clinical scales were within the At-Risk range (i.e., Locus of Control, Anxiety, Attention Problems, and Hyperactivity); the *T* scores of one adaptability scale fell within the At-Risk range (Self-Reliance). The composite scores reflected one composite with a *T* score in the At-Risk range (Inattention/Hyperactivity). All *T* scores are presented visually in Figure 11 and 95% confidence intervals for all of the clinical scales, adaptive scales, and composite scores are presented Tables 41 and 42 in Appendix I.

**Validity Index Summary**

| F | Response Pattern | Consistency | L | V |
|---|---|---|---|---|
| Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 65 | Acceptable<br>Raw Score: 7 | Acceptable<br>Raw Score: 5 | Acceptable<br>Raw Score: 1 |

**SRP Progress Report T Score Profile**




| T Score | Attitude to School | Attitude to Teachers | School Problems | Atypicality | Locus of Control | Social Stress | Anxiety | Depression | Sense of Inadequacy | Internalizing Problems | Attention Problems | Hyperactivity | Inattention/Hyperactivity | Emotional Symptoms Index | Relations with Parents | Interpersonal Relations | Self-Esteem | Self-Reliance | Personal Adjustment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● *T* Score | 59 | 43 | 51 | 51 | 55 | 61 | 54 | 45 | 58 | 55 | 49 | 51 | 50 | 55 | 46 | 47 | 53 | 43 | 46 |
| ■ *T* Score | 54 | 52 | 53 | 52 | 60 | 52 | 66 | 48 | 51 | 56 | 64 | 60 | 63 | 54 | 52 | 50 | 58 | 40 | 50 |
| ● Percentile | 81 | 28 | 61 | 60 | 73 | 87 | 67 | 39 | 81 | 72 | 51 | 59 | 54 | 73 | 31 | 29 | 45 | 23 | 30 |
| ■ Percentile | 70 | 69 | 69 | 65 | 83 | 66 | 93 | 56 | 61 | 75 | 90 | 84 | 90 | 71 | 51 | 38 | 88 | 17 | 44 |

**Figure 11: Erin`s Pre- and Post-intervention SRP-C T score Profile on the BASC—II**

*Note*. Broken lines represent pre-intervention *T* scores; solid lines represent post-intervention *T* scores.

***Behaviour Rating Inventory of Executive Function***. Erin's mother completed the Parent Form of the BRIEF. The scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. Two of the clinical scales (Emotional Control and Monitor) were clinically elevated (Figure 12). The BRI was also clinically elevated (*T* scores and 90% confidence intervals of all clinical scales, Indexes, and the GEC are shown in Table 48 in Appendix J). The BRI (*T* score of 66) and the MI (*T* score of 78) were within 12 *T* score points of each other. Since these two indexes are within 13 *T* score points of each other, it is permissible to interpret the GEC score.

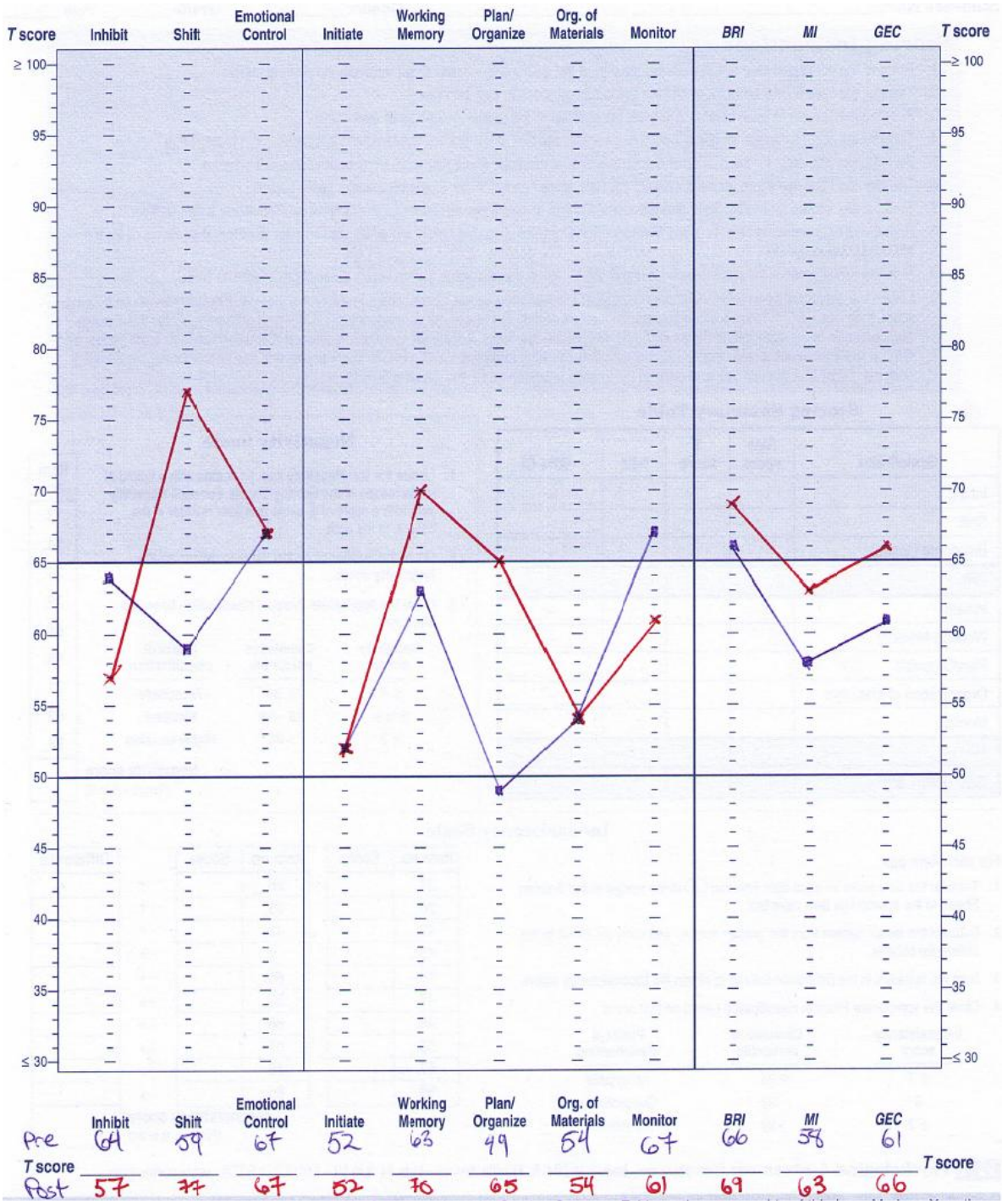



**Figure 12: Erin's Pre- and Post-intervention BRIEF *T* score profile**

*Note*. Points marked with "X" represent post-intervention *T* scores.

***NEPSY—II.*** Erin completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Pre-intervention scores on these selected subtests of the NEPSY—II are provided in Table 6 in Appendix E.

**Post-intervention data**. Post-intervention data were collected during the week of the last formal session of the intervention.

***Behaviour Assessment System for Children—2.*** Erin's mother completed the Parent Rating Scales-Child form of the BASC—2 following the intervention. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range. The *T* scores of one adaptive scale (Adaptability) fell within the Clinically Significant range. The *T* scores of four clinical scales (i.e., Hyperactivity, Aggression, Withdrawal and Attention Problems) and two adaptive scales (Activities of Daily Living and Functional Communication) fell within the At-Risk range. Three composite scores (Externalizing Problems, the Behavioral Symptoms Index and Adaptive Skills) fell within the At-Risk range. The *T* score of the Executive Functioning content scale (67 with a 95% chance that the true value is between 59 and 75) fell within the At-Risk range. *T* scores are presented visually in Figure 10 and 95% confidence intervals for all of the clinical scales, adaptive scales, and composite scores are presented Tables 23 and 24 in Appendix H.

Comparisons of the 95% confidence intervals of the *T* scores from the PRS-C before and after the intervention revealed no significant differences of the clinical scales, adaptability scales, composite scores, or the Executive Functioning content scale (Tables 21, 22, 23 and 24 in Appendix H).

Erin Completed the SRP-C following the intervention. The validity indicators (F Scale, L Scale, V Scale, Consistency, and Response Pattern) were all within the acceptable range. The profile was deemed to be valid. The *T* score of one clinical scale was found to be within the At-Risk range (Social Stress; refer to Figure 11, and Tables 41, 42, 43 and 44 in Appendix I). Comparisons of the confidence intervals of the *T* scores from the SRP-C before and after the intervention revealed no significant differences.

***Behaviour Rating Inventory of Executive Function***. Erin's mother completed the BRIEF Parent Form. The scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. Four of the clinical scales were found to be within the clinical range (Shift, Emotional Control, Working Memory, and Plan/Organize). The BRI and the composite summary score (GEC) were also clinically elevated (*T* scores are presented visually in Figure 12 and 90% confidence intervals of all clinical scales, Indexes, and the GEC are shown in Table 48 in Appendix J). The BRI (*T* score of 69) and the MI (*T* score of 63) were within 6 *T* score points of each other. Since these two indexes are within 13 *T* score points of each other, it is permissible to interpret the GEC score.

Comparisons of pre-intervention and post-intervention data revealed three significant differences in ratings. By comparing the overlap between 90% confidence intervals of the re-intervention and post-intervention data, significant differences indicating greater dysfunction were found on the Shift and Plan/Organize scales, as well as the GEC (Table 48 in Appendix J).

***NEPSY—II.*** Erin completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Post-intervention scores on

these selected subtests of the NEPSY—II are provided in Table 6 in Appendix E. There changes in pre-intervention to post-intervention combined scaled scores of at least two standard deviations on the Inhibition-Naming, Inhibition-Inhibition, and Inhibition-Switching tasks. Erin displayed significantly improved performance on these tasks during post-intervention testing.

**Case 5**

**Background information**. Jeff was a member of the control group and did not participate in the initial offering of the ICPS program. He is an 8-year old boy and he lives with his adoptive family. He was adopted at two years of age. At birth, Jeff suffered from Torticollis and clubfoot, as well as a cocaine addiction. Overall, Jeff`s development has occurred at a pace that is slower than average compared to other children. His adoptive mother does not have information about when he first met fine and gross motor milestones, but Jeff presently cannot tie his shoes well and he has a lot of difficulty with printing neatly. In terms of language milestones, he first spoke at the age of 2.5 years, indicating that his development is slower than average. Previous psychological reports confirm that Jeff has been diagnosed with ADHD by a psychologist. He takes 30 mg of Adderall each day to manage his symptoms of ADHD. Jeff took his medication on both days that he was assessed. Jeff`s mother indicates that, overall, Jeff is in good health.

Jeff`s mother reported that in the last year, there were no significant stresses experienced by her family. However, she reported that in September, 2010, Jeff will be attending a new school and a new daycare, which may be stressful for him. He was in a Learning Disabilities classroom during grades one and two. A plan has been put in place

for him to receive similar supports at his new school in the fall. Jeff also received speech therapy from Children First for a year between the ages of two and three. Results of the assessments completed over the course of this study indicate that Jeff shows overall intellectual functioning that is in the Average range compared to his same-age peers. As such, Jeff meets the minimum eligibility requirements for this study in terms of intellectual functioning.

Jeff`s mother reported that he has good relationships with all members of his family. Her primary concerns related to Jeff`s difficulty in making and keeping friends. Although Jeff has a few friends at school and at daycare, he often has difficulty forming friendships with other children. Also, Jeff tends to be inhibited and withdrawn in group situations. He attended the B.E.S.T. program in the past, and Jeff did improve somewhat in his social skills, but his mother is still concerned about his level of social functioning. She is also concerned about helping Jeff manage his hyperactivity and helping him deal with fears of failing and making mistakes.

Parenting strategies that are used at home include removal of privileges, earning rewards and "time on your own" (i.e., "time-out"). Jeff usually responds well to earning rewards. Removal of privileges seems to be effective only when Jeff is behaving in a way that is unacceptable to his parents. Time-out is effective when Jeff is very hyperactive and emotionally aroused.

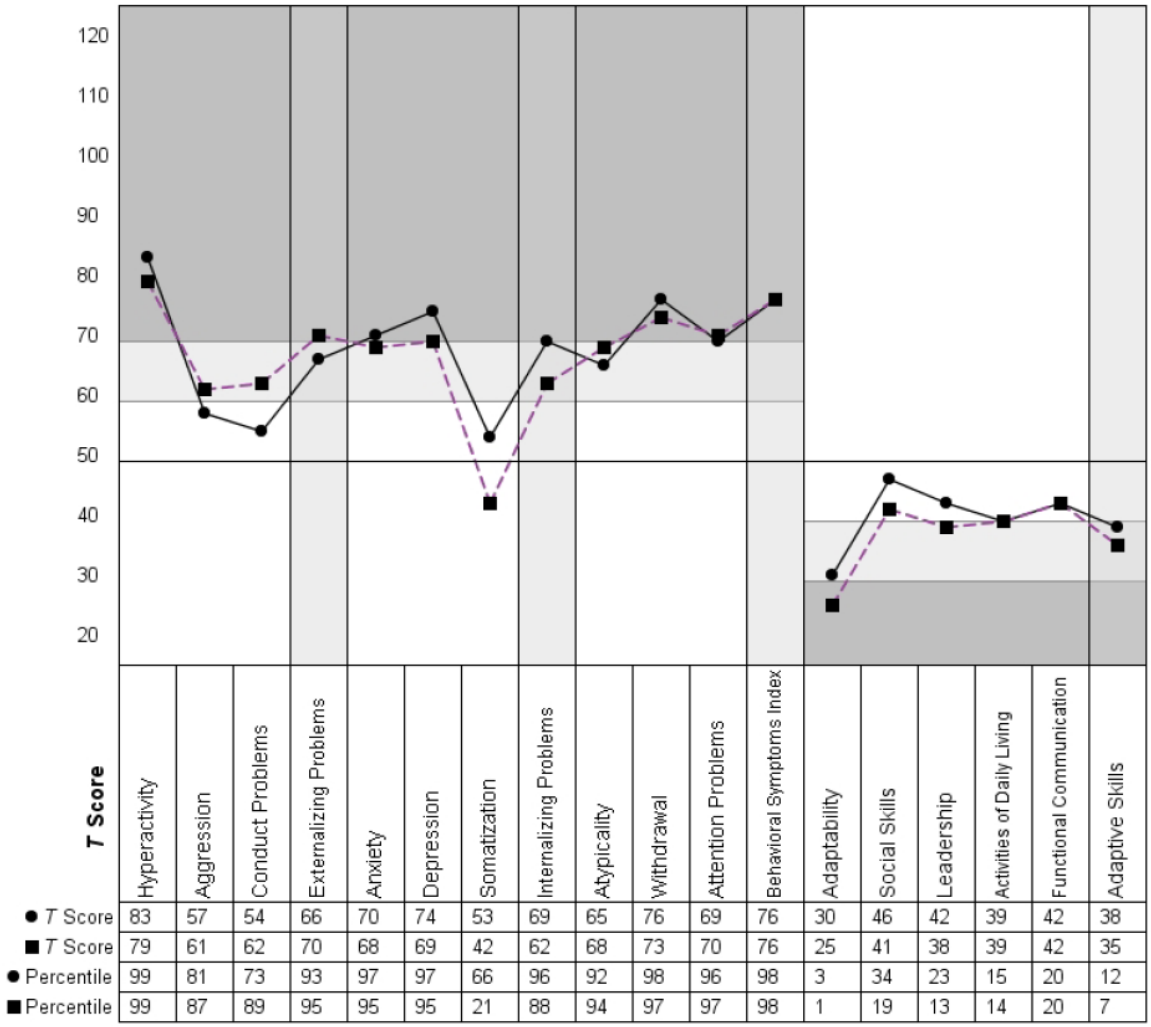
**Pre-intervention data.** Data collected were based on parent and child ratings on normed behaviour inventories as well as the administration of standardized neuropsychological measures. Pre-intervention data were collected the week before the program began.

***Behaviour Assessment System for Children—2.*** Jeff's adoptive mother completed the Parent Rating Scales-Child form of the BASC—2. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range and support the validity of the profile. Two composite scores were within the Clinically Significant range (i.e., Externalizing Problems, and the Behaviour Symptoms Index) and the other two composite scores were within the At-Risk range (Internalizing Problems and Adaptive Skills). The *T* scores of three clinical scales (i.e., Hyperactivity, Withdrawal and Attention Problems) and one adaptive scale (Adaptability) fell within the Clinically Significant range. The *T* scores of two of the adaptive scales (Leadership and Activities of Daily Living) and five of the clinical scales (Aggression, Conduct Problems, Anxiety, Depression and Atypicality) fell within the At-Risk range. *T* scores are presented visually in Figure 13 and 95% confidence intervals for all of the clinical scales, adaptive scales, and composite scores are presented Tables 25 and 26 in Appendix H. The score obtained on the Executive Functioning content scale (*T* score of 75, with a 95% chance that the true value is between 66 and 84) was within the Clinically Significant range.

**Validity Index Summary**

| F | Response Pattern | Consistency |
|---|---|---|
| Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 114 | Acceptable<br>Raw Score: 9 |

**PRS Progress Report T Score Profile**




| T Score | Hyperactivity | Aggression | Conduct Problems | Externalizing Problems | Anxiety | Depression | Somatization | Internalizing Problems | Atypicality | Withdrawal | Attention Problems | Behavioral Symptoms Index | Adaptability | Social Skills | Leadership | Activities of Daily Living | Functional Communication | Adaptive Skills |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● *T* Score | 83 | 57 | 54 | 66 | 70 | 74 | 53 | 69 | 65 | 76 | 69 | 76 | 30 | 46 | 42 | 39 | 42 | 38 |
| ■ *T* Score | 79 | 61 | 62 | 70 | 68 | 69 | 42 | 62 | 68 | 73 | 70 | 76 | 25 | 41 | 38 | 39 | 42 | 35 |
| ● Percentile | 99 | 81 | 73 | 93 | 97 | 97 | 66 | 96 | 92 | 98 | 96 | 98 | 3 | 34 | 23 | 15 | 20 | 12 |
| ■ Percentile | 99 | 87 | 89 | 95 | 95 | 95 | 21 | 88 | 94 | 97 | 97 | 98 | 1 | 19 | 13 | 14 | 20 | 7 |

**Figure 13: Jeff`s Pre- and Post-intervention PRS-C T score Profile on the BASC—II**

*Note*. Broken lines represent pre-intervention *T* scores; solid lines represent post-intervention *T* scores.

Jeff completed the Self-Report of Personality form of the BASC—2. Although the scores obtained on the F scale, Consistency scale, and L scale were within the acceptable range, scores on the Response Pattern Scale fell within the Caution Low range. Upon further review of the protocol, it appeared that Jeff was responding in a patterned fashion. Also, scores on the V scale fell within the Extreme Caution range, further calling into question the validity of the profile. Due to the scores obtained on the validity indicators, the profile was deemed to not be valid and it was not interpreted clinically for the purposes of this study.

***Behaviour Rating Inventory of Executive Function***. Jeff's adoptive mother completed the Parent Form of the BRIEF. The scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. All of the clinical scales (except for the Inhibit scale) were clinically elevated (Figure 14). The BRI, MI, and GEC were also clinically elevated (*T* scores and 90% confidence intervals of all clinical scales, Indexes, and the GEC are shown in Table 49 in Appendix J). The BRI (*T* score of 73) and the MI (*T* score of 75) were within 2 *T* score points of each other. Since these two indexes are within 13 *T* score points of each other, it is permissible to interpret the GEC score.

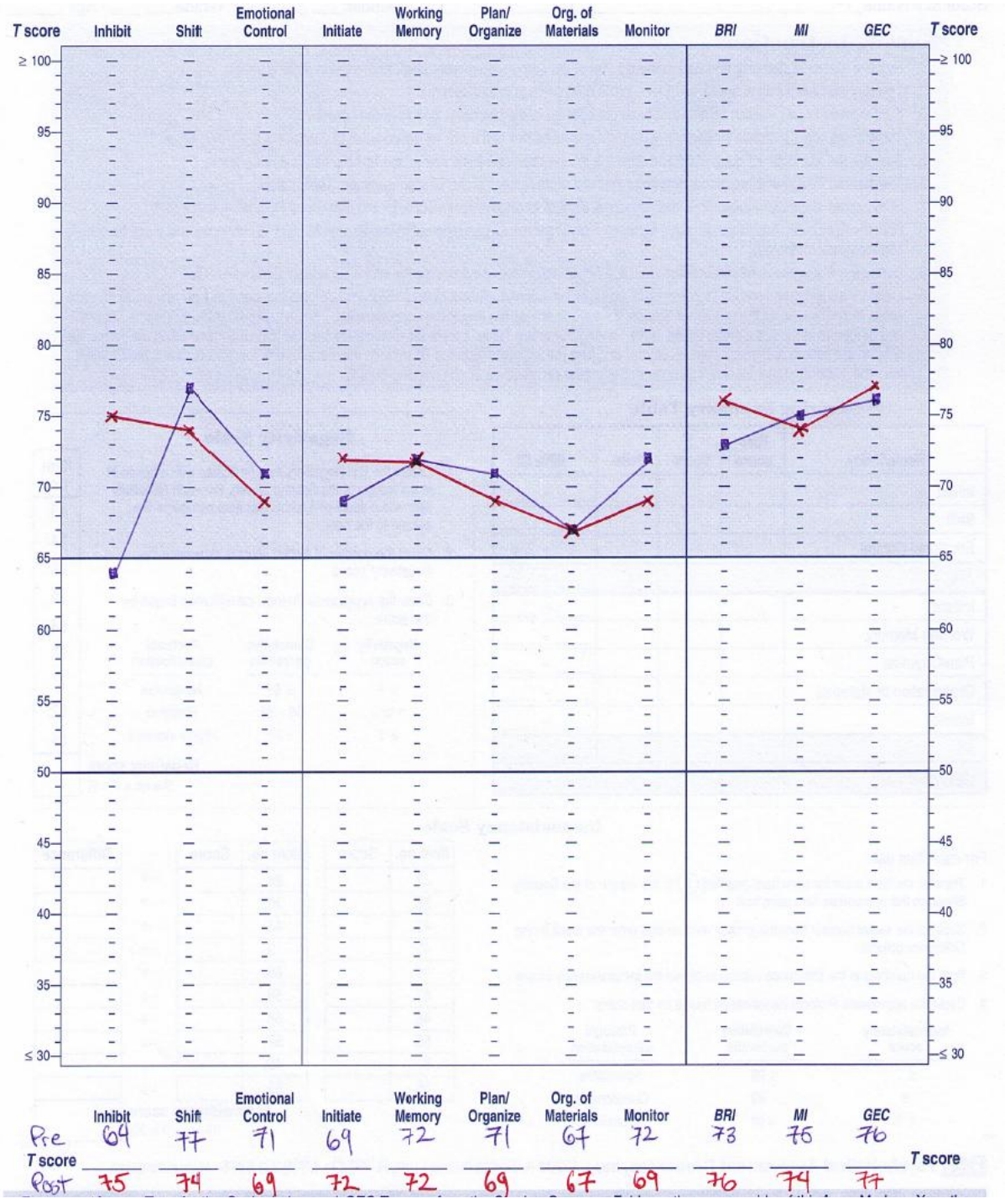



**Figure 14: Jeff's Pre- and Post-intervention BRIEF *T* score profile**

*Note*. Points marked with "X" represent post-intervention *T* scores.

***NEPSY—II***. Jeff completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Pre-intervention scores on these selected subtests of the NEPSY—II are provided in Table 7 in Appendix E. .

**Post-intervention data.** Post-intervention data were collected during the week of the last formal session of the intervention.

***Behaviour Assessment System for Children—2***. Jeff's mother completed the Parent Rating Scales-Child form of the BASC—2 during the second testing session. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range. The *T* scores of one adaptive scale (Adaptability) and four clinical scales (Hyperactivity, Anxiety, Depression, and Withdrawal) fell within the Clinically Significant range. The *T* scores of two clinical scales (i.e., Atypicality and Attention Problems) and one adaptive scale (Activities of Daily Living) fell within the At-Risk range. One composite score fell within the Clinically Significant range (the Behavioral Symptoms Index). Three composite scores (Externalizing Problems, Internalizing Problems and Adaptive Skills) fell within the At-Risk range. The *T* score of the Executive Functioning content scale (78 with a 95% chance that the true value is between 70 and 86) fell within the At-Risk range. *T* scores are presented visually in Figure 13 and 95% confidence intervals for all of the clinical scales, adaptive scales, and composite scores are presented Tables 27 and 28 in Appendix H.

Comparisons of the confidence intervals of the *T* scores from the PRS-C before and after the intervention revealed no significant differences of the clinical scales, adaptability scales, composite scores, or the Executive Functioning content scale (Tables Tables 25, 26, 27 and 28 in Appendix H).

Jeff completed the Self-Report of Personality form of the BASC—2. Although the score obtained on the L scale was within the acceptable range, scores on the F scale and Consistency Scale fell within the Caution range. Additionally, scores on the Response Pattern Scale fell within the Caution Low range, and scores on the V scale fell within the Extreme Caution range. Upon further review of the protocol, it appeared that Jeff was responding in a patterned fashion. The profile was deemed to not be valid and it was not interpreted clinically.

***Behaviour Rating Inventory of Executive Function***. Jeff's adoptive mother completed the BRIEF Parent Form. The scores on the Inconsistency Scale and Negativity Scale were within the acceptable range, supporting the validity of the BRIEF profile. All of the clinical scales were found to be within the clinical range. Additionally, the BRI, MI, and GEC were also clinically elevated (*T* scores are presented visually in Figure 14 and 90% confidence intervals of all clinical scales, Indexes, and the GEC are shown in Table 41). The BRI (*T* score of 76) and the MI (*T* score of 74) were within 2 *T* score points of each other. Since these two indexes are within 13 *T* score points of each other, it is permissible to interpret the GEC score.

Comparisons of pre-intervention and post-intervention data revealed one significant difference in ratings. By comparing the overlap between 90% confidence intervals of the pre-intervention and post-intervention data, a significant difference indicating greater dysfunction emerged on the Inhibit scale (Table 49 in Appendix J).

***NEPSY—II.*** Jeff completed the Animal Sorting, Auditory Attention and Response Set, and Inhibition subtests of the NEPSY—II. Post-intervention scores on these selected subtests of the NEPSY—II are provided in Table 7 in Appendix E. He

displayed significantly improved performance on the Inhibition-Naming subtest (scaled score of 10 during post-intervention testing), and his performance significantly declined on the Response Set task (combined scaled score of 2 during post-intervention testing). The Inhibition-Switching task was not completed since Jeff made too many errors on the practice items. Jeff appeared bored and restless during the time in which the subtests of the NEPSY—II were administered. These subtests were administered at the end of the assessment; after each subtest, Jeff asked how many tasks were left before he could go home. As such, caution should be exercised when interpreting the scores obtained on the NEPSY—II subtests, since there is some evidence that Jeff was not putting forth his best effort on these tests during the second test administration.

**Case 6**

**Background information**. Ken was a member of the control group and did not participate in the initial offering of the ICPS program. Ken dropped out of the study and, as a result, little background information was able to be collected. Ken is an 11-year old boy who lives with his father and step-mother. No specific information regarding Ken`s birth was provided. Ken's step-mother indicated that, overall, Ken`s development has occurred at a pace that is slower than average compared to other children. Specific information regarding the achievement of fine and gross motor skills was not provided. His achievement of language milestones was delayed.

Previous psychological reports confirm that Ken has been diagnosed with ADHD. He was diagnosed in 2007 by a Child Psychiatrist in Windsor, Ontario. Ken was also diagnosed with Oppositional Defiant Disorder at that time. Ken's mother allowed the principal investigator to briefly review the report, but a copy of the report was not

retained. Ken was also assessed in June, 2010 at the Regional Children`s Center in Windsor to investigate the presence of a language-based learning disability, but results from that assessment were not provided to the principal investigator. Ken takes 15 mg of Adderall each day to manage his symptoms of ADHD. He has been taking 10 mg of Citalopram HBr (an antidepressant) per day, but the dosage was reportedly going to increase to 20 mg per day. According to Ken`s step-mother, he took his medication on the day of the pre-intervention assessment. Ken`s step-mother did not provide any information about his overall health. Little information was provided regarding the number of close friendships that Ken has or his relationships with other family members. However, his step-mother indicated that sometimes he complains that he has no friends.

Ken was functioning at a grade 4 level in the areas of reading and writing in grade 6. He had an IEP in place during grade 6. Modifications were made for English. He spent half of the school day learning English and Math in a separate room with the special education teacher. He spent the remainder of the day in his regular classroom. Ken's step-mother did not report that Ken has received any other specific interventions. Results of the assessment completed at the beginning of this study indicate that Ken shows overall intellectual functioning that is in the Average to Below-Average range compared to his same-age peers. As such, Ken meets the minimum eligibility requirements for this study in terms of intellectual functioning

**Pre-intervention data.** Data collected were based on parent and child ratings on normed behaviour inventories as well as the administration of standardized neuropsychological measures. Pre-intervention data were collected the week before the program began.

***Behaviour Assessment System for Children—2.*** Ken's step-mother completed the Parent Rating Scales-Child form of the BASC—2. The validity indicators (i.e., Response Pattern, Consistency, and F Scale) were all within the acceptable range and support the validity of the profile. Three composite scores were within the Clinically Significant range (i.e., Externalizing Problems, the Behaviour Symptoms Index, and Adaptive Skills). The *T* scores of five clinical scales (i.e., Hyperactivity, Aggression, and Conduct Problems) and three adaptive scales (Adaptability, Activities of Daily Living, and Functional Communication) fell within the Clinically Significant range. The *T* scores of two of the adaptive scales (Leadership and Social Skills) and one of the clinical scales (Depression) fell within the At-Risk range. *T* scores are presented visually in Figure 15 and 95% confidence intervals for all of the clinical scales, adaptive scales, and composite scores are presented Tables 29 and 30 in Appendix H. The score obtained on the Executive Functioning content scale (*T* score of 83, with a 95% chance that the true value is between 75 and 91) was within the Clinically Significant range.

Ken did not complete the Self-Report of Personality form of the BASC—2. This inventory was the last task to be completed during testing; Ken refused to complete the inventory, stating that he already completed it for his assessment at the Regional Children`s Center. Ken's willingness to cooperate with the examiner diminished as testing proceeded. Near the end of the testing session, he put his head down on the table and indicated that he didn`t want to complete any other tasks. He asked how much longer the testing would last several times. He quit participating before all of the assessment tasks had been completed.

## Validity Index Summary

| F | Response Pattern | Consistency |
|---|---|---|
| Acceptable<br>Raw Score: 0 | Acceptable<br>Raw Score: 123 | Acceptable<br>Raw Score: 9 |

## PRS T Score Profile

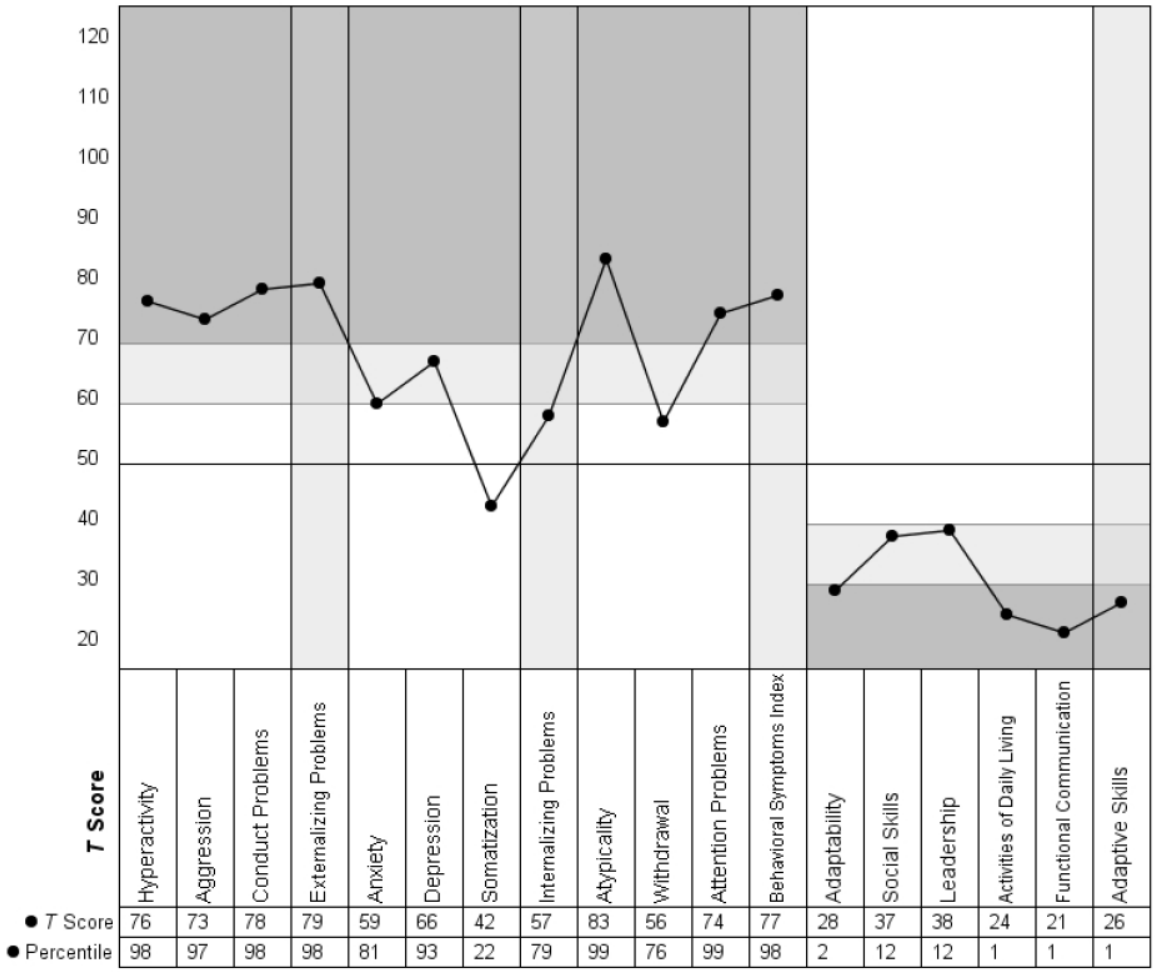



**Figure 15: Ken`s Pre-intervention PRS-C *T* score Profile on the BASC—II**

***Behaviour Rating Inventory of Executive Function***. Ken`s step-mother completed the Parent Form of the BRIEF. The scores on the Inconsistency Scale were within the acceptable range. However, the scores on the Negativity Scale were highly elevated, indicating that Ken's step-mother responded to the items in an unusually negative fashion (Gioia, Isquith, Guy, & Kenworthy, 2000c). An elevated Negativity Scale suggests that the BRIEF protocol should be carefully reviewed, taking into account other information that is known about the child, and that it may not be valid. The BRIEF manual notes that such an elevated score may be due to a respondent's excessively negative view of a child, or to the child's considerable executive dysfunction (Gioia, Isquith, Guy, & Kenworthy, 2000c). It is unclear which explanation is more likely to be accurate in this case, given the relatively limited background information that was provided about Ken. As such, it is unclear whether the BRIEF profile is valid or not, but the results will be described. All of the clinical scales were clinically elevated (Figure 16). The BRI, MI, and GEC were also clinically elevated (*T* scores and 90% confidence intervals of all clinical scales, Indexes, and the GEC are shown in Table 50 in Appendix J). The BRI (*T* score of 90) and the MI (*T* score of 80) were within 10 *T* score points of each other. Since these two indexes are within 13 *T* score points of each other, it is permissible to interpret the GEC score.

***NEPSY—II.*** Pre-intervention scores on selected subtests of the NEPSY—II are provided in Table 8 in Appendix E.

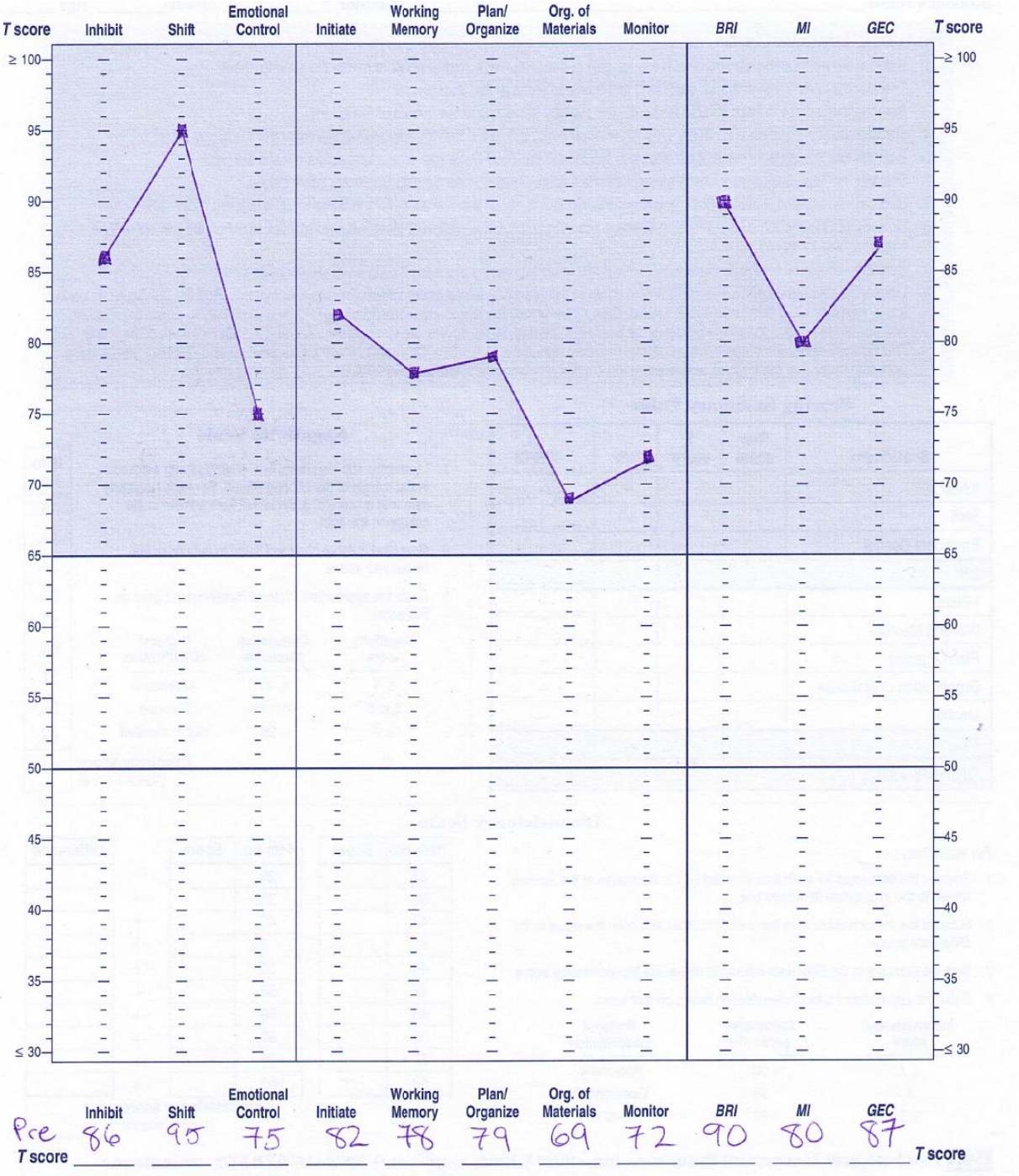



**Figure 16: Ken's Pre-intervention BRIEF *T* score profile**

*Note*. Only pre-intervention *T* scores were available for Ken.

**Qualitative data for participants in the intervention group**

**April.** April's mother rated her as improving "very much" in her relationships with her siblings and friends. She also would "very much" recommend the ICPS program to the parents of other children. She rated April as improving "pretty much" in her ability to describe her feelings and in her display of concern for the feelings of others; she rated April as improving "just a little" in her attitude toward school. Other comments included that April seems to be pausing more before acting and showing a lot of effort in expressing herself and her feelings. She recommended extending the length of the program in order to allow the children to have more time to absorb and integrate the information and techniques. Overall, she rated April as having "done well" in the program.

**Ben.** Ben's mother rated him as improving "just a little" in his relationships with his two siblings, in his ability to describe his feelings, and in his concern for the feelings of others. She stated that she would "pretty much" agree that she would recommend the ICPS program to the parents of other children. Other comments included that the beginning sessions of the program were not age-appropriate for Ben since he was already very aware of the vocabulary words which were introduced during the first two weeks of the program. Ben's mother noted that this was somewhat of a stumbling block for her family and caused some frustration. However, she has noticed Ben taking more time to think of ways to solve a conflict. She anticipates that with further practice the process will become a habit and have a positive impact on Ben's social functioning. Finally, she stated that she wished that she would have know about this program when Ben was younger and that she can see how it can work for anyone.

**Charlie**. Charlie's mother rated Charlie as improving "pretty much" in his ability to describe his feelings. She has noticed "just a little" improvement in Charlie`s relationships with his siblings and friends and in his concern for the feelings of others. She also would "very much" recommend the ICPS program to the parents of other children. Charlie`s mother noted that it will take time for her family to fully and effectively integrate ICPS techniques into their daily routine, but she is hopeful about the results. She notes that she can see that this program can be very helpful when it is regularly applied. She anticipated that the start of the school year will help her family to establish a routine and provide opportunities to regularly use ICPS techniques.

# CHAPTER V

# DISCUSSION

## Discussion of Results

The purpose of this study was to investigate the impact of a brief implementation of the ICPS program on the social skills and components of executive functioning of several children diagnosed with ADHD. It was hypothesized that child participants involved in the intervention would improve their social skills (including adaptive behaviour, social and emotional adjustment, and aggression) as measured by the composite, clinical, and adaptive scales of a standardized behavioural inventory, the BASC—2. Additionally, it was hypothesized that the children involved in the intervention would improve in their ability to shift mental sets, self-regulate, engage in goal planning, and inhibit inappropriate behaviour, as measured by standardized cognitive and behavioural neuropsychological tests: the BRIEF, the Executive Function content scale of the BASC—II, and selected subtests of the NEPSY—II.

April, after participating in the ICPS intervention, showed some evidence of improved social functioning, but few changes in her executive functioning. She did not show a clinically elevated profile on the PRS-C or the SRP-C of the BASC—II, or on the BRIEF prior to the intervention, suggesting that she did not experience significant social or executive dysfunction respectively prior to the intervention. She also did not show notable changes (i.e., of at least two standard deviations) in her performance on cognitive measures of executive functioning (i.e., the selected subtests of the NEPSY—II). Interestingly, her mother's ratings of April's everyday working memory functioning indicated greater dysfunction following the intervention (as reflected by *T* score increases

that were significant and that neared, but did not reach, the clinically significant range). It is unclear what this finding means, or if it represents clinically significant change that reflects greater dysfunction. It is notable that April's mother indicated that April's relationship with her sister has improved "very much," providing some evidence that April has experienced significant improvements in her social functioning in at least one relationship.

Ben, after participating in the ICPS intervention, overall showed few changes in his executive functioning and some indication of changes (some positive and some negative) in social functioning. Changes in performance on subtests of the NEPSY—II were negligible; there were no significant changes in *T* scores obtained on the BRIEF or the PRS-C of the BASC—II (the SRP-C forms were not compared since the pre-intervention form was deemed to be invalid). There was some evidence of improvement in his conduct as reflected by parental ratings on the PRS-C that indicated improvement on the Conduct Problems scale, which moved from the Clinically Significant range to the At-Risk range; this indicates fewer or less severe antisocial and rule-breaking behaviours. At the same time, there were several scores on the PRS-C that changed from being within the At-Risk range to the Clinically Significant range (i.e., Somatization, Atypicality, and Adaptability). Also, there were scores on two scales that moved from the nonclinical range to the At-Risk range (i.e., Activities of Daily Living and Functional Communication). Such findings do not provide a clear interpretive picture. It is possible that the shifting of ranges (in both the positive and negative directions) do not reflect clinically significant change, since *T* scores hovered around the thresholds of the At-Risk and Clinically Significant ranges in pre-intervention testing.

Charlie showed the most clearly interpretable and consistent evidence of improvement in social and executive functioning following the intervention. The ratings on the BRIEF reflected considerable improvement in Charlie's working memory; ratings on the Working Memory scale no longer were clinically elevated following the intervention and the change was statistically significant. Such findings support that clinically significant change occurred and that Charlie is better able to hold information in mind as he works to complete a task. Furthermore, several other clinical scales of the BRIEF that were clinically elevated fell within the non-clinical range following the intervention (i.e., the Plan/Organize and Monitor scales, as well as the MI and GEC). Such a pattern suggests that Charlie's overall level of executive functioning improved, and specifically his ability to carry out goal-directed behaviour, as well as to evaluate his own performance and modify it as necessary during task completion. Changes in performance on the subtests of the NEPSY—II were negligible. Furthermore, the Hyperactivity scale of the PRS-C was significantly less elevated post-intervention, providing some evidence that Charlie demonstrated less impulsivity following the intervention, and more effort to think through possible courses of action before acting.

Erin was a member of the waiting list group; she showed a mixed pattern of results at post-intervention testing. There were no notable changes on ratings on the PRS-C or SRP-C, suggesting no notable changes in social functioning. In terms of executive functioning, Erin showed improvement in some aspects of this cognitive domain and declines in others. Her performance on the NEPSY—II subtests revealed improved sustained attention, cognitive flexibility in shifting from one mental set to another, and inhibition of impulsive responses. These changes were reflected in

improvements of at least two standard deviations on the combined scaled scores of each task of the Inhibition subtest. It appears that during post-testing, Erin completed the tasks of the Inhibition subtest more efficiently, making fewer errors on each task while still working relatively quickly. However, Erin's mother's ratings on the BRIEF revealed greater executive dysfunction overall, with greater dysfunction in particular in managing her behaviour in order to progress toward and reach a goal, as well as in making smooth transitions from one activity to another one with different demands. The BRIEF ratings reflected statistically significant change as well as shifts from the nonclinical range to the clinically significant range. This presents a seemingly contradictory picture, and is perhaps illustrative of the disconnect that has been found between standardized cognitive measures of executive functioning and behavioural inventories that assess executive functioning in the context of everyday functioning (Miyake & Shah, 1999; Petrauskas, McKay, Stewart, & Casey, 2010).

Jeff was another member of the waiting list group. His pattern of results was also variable. His social functioning appeared to remain relatively stable. There were some changes in categories of *T* scores on the PRS-C (e.g., At-Risk to Clinically Significant, etc.), but these changes likely do not reflect clinically significant changes since many pre-intervention scores hovered around category boundaries. Additionally, there were no significant differences among the 95% confidence intervals of pre- and post-intervention scores on the PRS-C. The ratings from the BRIEF indicated significantly poorer ability to inhibit impulsive behaviour—the Inhibit scale moved to the clinically significant range at post-intervention testing and the change in *T* score from pre- to post-intervention testing was statistically significant. His performance on the NEPSY—II subtests showed

further variability. His performance on a task of sustained auditory attention, and a task of sustained auditory attention as well as inhibition and mental-set shifting, were significantly lower (i.e., a minimum of two standard deviations). However, he performed significantly better on a task of sustained attention and naming of objects. This variability can at least partly be explained by his impatience and boredom during the post-intervention testing session. He was eager to finish testing, completing tasks as fast as he could, and often asking the examiner how soon the testing would be over. As such, the testing results may not be an accurate reflection of his true ability.

The children showed a very positive response to the intervention sessions in which they participated. At the end of each session, the principal investigator asked the child participants, "How was today's session?" She consistently received positive, excited responses, such as "It was awesome!" She also asked at the end of several sessions if the children had fun, and they all nodded or said "yes." When asked what their favourite parts of the sessions were, Charlie said that role-playing was the best part of the sessions. The other children agreed (by nodding or verbalizing their agreement) that role-playing interpersonal problems and ways in which to solve them was their favourite part of the sessions and the most fun activity that they did during the sessions.

**General Discussion**

A clear trend did not emerge in the findings of this study. One participant showed a clear and consistent pattern of improvement in both social functioning and aspects of executive functioning; the results from the other participants are not as easily interpreted. Indeed, it is difficult to distinguish the results of Ben from those of Jeff and Erin (the waiting list group). April did show some gains in social functioning by achieving a

significantly improved relationship with her sister. The improvements observed in Charlie in both areas are consistent with findings of previous research by Aberson (1996), in which clear evidence of improvement in social and executive functioning following the intervention and at six month follow-up was found for three early elementary school-aged children who had behavioural histories consistent with ADHD. However, the pattern of results for Ben and April perhaps fits best with reviews that have found that children and adolescents, including those with learning disabilities, mental retardation, and ADHD, who participate in social problem solving interventions tend to further develop and improve upon the cognitive skills taught by the intervention. However, their application of these skills to effect positive changes in their social behaviour is inconsistent (Coleman et al., 1993; Frauenknecht & Black, 2004; Gresham, Sugai, & Horner, 2001; Pelligrini & Urbain, 1985). Data collected at six month follow-up may help to clarify the extent to which April and Ben successfully translate the skills taught by the ICPS intervention into positive changes in everyday social behaviour or if they continue to fit with the overall pattern that has been identified in the social problem solving research.

It is noteworthy that a dose-response relationship has been identified for the ICPS program, such that greater gains in generating alternative solutions, consequential thinking, and behavioural competence have been observed following two year implementations of the program by teachers compared to a one year implementation of the program by parents (Shure, 1993). Although gains in social and executive functioning have been identified for three participants following a six week implementation of the program (Aberson, 1996), it is possible that shorter implementations, such as the present five week implementation, are simply not long

enough to effect clear consistent improvements in the above mentioned skills for some children.

Notably, the present study addressed several gaps in the current literature. Studies that have investigated the impact of the ICPS program (including those that have included participants with ADHD) have predominantly been done with children under the age of eight (e.g., Aberson, 1996; Shure 1993, 1997). The present study investigates the impact of the ICPS program on a group of children who are less often studied and at the upper limit of the ages for which the program was designed. Parents noted that the early sessions of the program, which focused on the importance of reinforcing ICPS vocabulary, were not age appropriate for their children and that this was somewhat of a stumbling block. The principal researcher, who facilitated the sessions with the children, also noticed that the lessons from the manual (Shure, 1992) often included content suited to the social problems encountered by children younger than those involved in the present study; this observation was supported by comments from the children as well. As a result, children were often invited to raise examples from their own experience and to anticipate problems they were likely to face.

In light of the dose-response relationship that has been identified for the effects of the ICPS program, past research has called for a systematic investigation of different levels of intensity, frequency, and duration of social skills training with groups of children with learning disabilities, emotional disturbances, mental retardation or ADHD (Gresham et al., 2001). The present study utilized the briefest implementation of ICPS (i.e., six one-hour sessions in five weeks) that has demonstrated clinically significant improvements in the social and executive functioning of at least one participant (Charlie).

Finally, this study assessed changes in executive functioning of participants with both cognitive and behavioural neuropsychological measures. Previous research investigating concomitant changes in these areas following the implementation of the ICPS program is sparse; Aberson (1996) is the only one to have investigated this and that study employed proxy measures of executive functioning (i.e., spelling test grades), weekly observations of on-task behaviour, and qualitative interviewing with participants to investigate their use of verbal mediation.

**Limitations and Recommendations for Future Research**

Some limitations of the present study should be noted. Since post-intervention testing occurred immediately following the intervention, instead of four to five weeks following it (which was done by Aberson, 1996), the current findings may be somewhat premature. It is possible that some participants required more time to integrate the skills taught by the program in order to apply them to everyday situations. It will be interesting to see the results during the six month follow-up testing to determine if further improvements in Ben and April's social and executive functioning have occurred.

In terms of interpreting the changes in scores that occurred from pre- to post-intervention for all participants, it should be noted that individual variability in performance on neuropsychological tests occurs in normative populations of adults and that a score that falls within the "impaired" range on one test does not necessarily mean that significant dysfunction is present (Binder, Iverson, & Brooks, 2009). Furthermore, there's an example in the literature of a neurologically intact adolescent obtaining a pattern of results on a test of tactile perception and performance that suggested substantial impairment in his upper-left extremity. However, in the context of all of the

other available information, this "impaired" score was deemed to be a result of variability in test performance that did not reflect neurologic dysfunction (Baron, 2004). In the present study, making comparisons of scores from pre- to post-intervention testing, an absolute index of change of two standard deviations is quite generous to allow for intra-individual variability in test performance. However, taking the research that addresses individual variability in performance on neuropsychological tests into account, changes in scores on standardized cognitive tests (for example changes that reflect Average performance prior to the intervention, and Below Average performance following the intervention) do not necessarily indicate that a clinically significant decline in ability occurred. Conversely, changes in scores in the direction of improved performance may not necessarily reflect clinically significant improvement in a particular ability. As such, the possibility that changes in scores on the subtests of the NEPSY—II for some participants may reflect intra-individual variability in performance instead of clinically significant change cannot be ruled out.

Another potential limitation is that data were collected during the summer and children did not have a classroom teacher during the time of the intervention. As such, teachers could not provide ratings on the behavioural inventories and this study had to rely solely on parent ratings on these measures. There is some evidence that teachers` ratings and parents' ratings often do not correspond well and that teachers' ratings are more useful that parents` ratings in predicting subsequent adjustment of children (Deater-Deckard, & Plomin, 1999).

Related to this, there is some evidence that parent ratings of behaviour may be influenced by a "placebo effect", whereby their knowledge that their child is participating

in a social skills intervention (and taking their medication) may positively influence their post-intervention behaviour ratings. Specifically, Klassen, Miller, Raina, Lee, and Olsen (1999) reviewed the efficacy of a number of different techniques used to manage the behaviour of children diagnosed with ADHD. These authors found that behaviourally based psychosocial interventions, when combined with prescription medication to manage symptoms of ADHD, were efficacious in managing children's behaviour compared to placebo or no treatment conditions, according to behaviour ratings provided by parents, but not to behaviour ratings provided by teachers. Additionally, this combination of intervention elements was found to be more efficacious than behaviourally based psychosocial interventions alone according to behaviour ratings of parents, but not teachers. Teacher ratings indicated that only medication was efficacious in managing children's symptoms of ADHD. These findings suggest that parents' ratings of behaviour may be susceptible to the influence of expectations that behaviourally based psychosocial interventions will be effective in improving their children's behaviours more so than teachers' ratings. This underscores the importance of including teacher's ratings of behaviour in research investigating the impact of psychosocial interventions on the behaviours of children diagnosed with ADHD.

Future research should investigate the impact of a brief implementation of the ICPS program with behaviour ratings of social and executive functioning from both parents and teachers in conjunction with the use of standardized cognitive neuropsychological measures of executive functioning. Additionally, in light of the findings that some of the content of the ICPS lessons were not age-appropriate for children 10 to 12 years old, future research should focus on modifying the content of the

ICPS lessons to better represent the problems encountered by children in the upper age range. Alternatively, the program creator may consider separating the program manual for intermediate elementary grades into two age ranges: a manual for eight to nine year olds, and a manual for ten to twelve year olds with more age appropriate content.

# APPENDICES

## APPENDIX A

### Appendix A: Screening Questions for Recruitment of Participants

Please answer the following questions to determine if you and your child are eligible to participate in this study:

1.) Has your child been diagnosed with Attention-Deficit/Hyperactivity Disorder?
□Yes □ No

If so, which subtype of the disorder does the child have?
□ Predominantly Inattentive Type
□ Predominantly Hyperactive-Impulsive Type
□ Combined Type

When was the diagnosis made? Who made the diagnosis?
_____
_____
_____

2.) Has your child been prescribed medication to control his or her Attention-Deficit/Hyperactivity Disorder?
□Yes □ No

3.) If so, which medication has been prescribed for the child?
a. Adderall XR
b. Concerta
c. Strattera
d. Other _____

4.) When does the child take his or her medication?
□ Morning
□ Afternoon
□ Evening
□ Other _____

5.) How often does the child take his or her medication?
□ Daily during the week, but not on weekends
□ Every day of the week
□ Other _____
_____
_____

6.) Has your child been diagnosed with an Intellectual Disability?
□Yes □ No

If so, when was the diagnosis made? Who made the diagnosis?

_____
_____
_____

7.) Has your child been diagnosed with a language disorder?
□Yes □ No

If yes, which disorder does the child have? When was the diagnosis made? Who made the diagnosis?

_____
_____
_____
_____
_____
_____

8.) Has your child been diagnosed with a learning disability?
□Yes □ No

If yes, which one(s) (please check all that apply)?
□ Reading Disability
□ Math Disability
□ Writing Disability
□ Other _____

9.) Does your child have vision problems?
□Yes □ No

If yes, is the vision problem corrected (e.g., with glasses)?
□Yes □ No

10.) Does your child have a hearing impairment?
□Yes □ No

If yes, is the hearing impairment corrected (e.g., with a hearing aid)?
□Yes □ No

## APPENDIX B

### Appendix B: Parent Evaluation of the Program

Parent Evaluation Form
Adapted from Aberson (1996)

Name:_____ Date:_____

Your child has participated in a program to improve his/her problem solving skills in interpersonal situations. I would appreciate it if you would complete this form and provide any additional comments regarding the extent to which this program has effected any changes in your child's behaviour at home.

Please rate how much you agree with the following statements regarding your child after he or she has completed the program:

| | Not at all | Just a little | Pretty much | Very much |
|---|---|---|---|---|
| 1. My child is better able to describe his/her feelings. | | | | |
| 2. My child shows more concern for the feelings of others. | | | | |
| 3. I have noticed improvement in my child's relationships with siblings or friends. | | | | |
| 4. I have noticed an improvement in my child's attitude toward school. | | | | |
| 5. I would recommend this program to the parents of other children. | | | | |

What other comments do you wish to make regarding your feelings about your child's response to this program?

_____
_____
_____
_____
_____
_____
_____

What recommendations do you have for the implementation of this program in the future?

_____
_____
_____
_____
_____
_____
_____

Additional comments:

_____
_____
_____
_____
_____
_____

## APPENDIX C

### Appendix C: Parent Training Sessions

Session I

- Hand out the books and handout to each family
- Ask them to bring their book to each session
- Overview and rationale of the program.
  - Discuss the extent of the research supporting the effectiveness of ICPS
    - The ICPS approach is research-based, clinically proven, and child-tested
    - ICPS has been identified as a model program for mental health prevention by the American Psychological Association and the National Mental Health Association in the U.S.A.
  - ICPS offers a practical approach to help children learn to evaluate and deal with interpersonal problems
  - The underlying goal of the ICPS program is to help children learn how to think and not what to think

- Some immediate benefits that parents may experience with ICPS:
  - Increase your awareness that your child's view may differ from your own
  - See that helping your child think a problem through may in the long run help more than immediate action to stop what (s)he is doing
  - Provide a model of problem-solving thinking for your children—as a thinking parent, you may inspire your child to think

- ICPS is designed to help children:
  - Think about what to do when they face a problem with another person
  - Think about different ways to solve the same problem
  - Think about the consequences of what they do
  - Decide whether or not an idea is a good one
  - Realize that other people have feelings and think about their own feelings too

- Briefly discuss the handout – ask parents to read it for next week and to bring any questions that they have to the next session

- The use of vocabulary words in everyday problem situations will be explained (this is the first pre-problem-solving skill)
  - There are six word pairs that form the basis of ICPS dialogues: is/is not, same/different, and/or, some/all, before/after, now/later
  - Other ICPS words include: do, do not, fair, because, might, and maybe.
  - Although your child may be familiar with all or most of these words, they are used in a special way with ICPS and they are introduced with game-like activities

- These words are used in game form because when children learn to associate particular words with play, they are more likely to use them when it's time to settle disputes.
- Vocabulary words should be used in everyday conversation and emphasized
- Also, try to make a game out of it and make it somewhat challenging for the child
- For example, when looking at pictures ask questions about the scene that require ICPS words to be used (see examples on page 25)

• Guardians will discuss a specific problem which they had with their children at home and how they handled it.
- Go over the problem situation described on pages 16 and 17 as an example (these are two contrasting approaches to handling the same problem)
- Ask the group to share a situation that involved an interpersonal problem their child had, such as an argument between siblings or friends
- Ask them what parenting strategies they used to solve the problem (e.g., lecturing, withdrawal of privileges, etc.) and if they were happy with the outcome or frustrated/disappointed with how their child behaved after the problem was resolved (e.g., did the same problem occur at a later time?)
- Brainstorm (as a group) how the ICPS vocabulary could have been used in that situation (see the top of pg 34, the "Responding to Behaviour" section on pg 38, and pg 188 for examples of applying the vocabulary to problem situations)

• Guardians will be asked to apply the ICPS vocabulary during a conflict before the next session

Session II
• The importance of the use of feelings vocabulary during problem solving and everyday conversations with children will be explained.
- Teaching children the importance of recognizing their own and other's feelings helps to build a foundation for children to appreciate that different people may feel different ways about the same thing
- It also helps children to develop the habit of thinking about their feelings and the feelings of others as they solve their daily problems
- Thinking about their own and others' feelings may later help them to come up with more problem-solving options that are not available to children who think only of their own needs at the moment, including options that are fair and considerate of everyone's needs

• Use of feeling words in specific situations with the child will be explained and modeled (happy, sad, angry, worried, frustrated, proud, scared, embarrassed)
- While watching T.V., reading books together, or when observing an everyday situation, stop at various points to ask children to infer how someone is feeling
- Ask your children to think of and describe a time when they felt the same way
- Include questions about how to tell how someone feels. Remind them that there is more than one way to tell how someone else feels (this was discussed during the first session your child attended):
  - Observing their facial expression or actions

- Listening to their tone of voice and the words they use
- Asking another person how (s)he feels

• Parents will be asked to describe situations which occurred during the past week at home in which they applied the ICPS techniques discussed during the previous session (i.e., applying the ICPS vocabulary during a conflict)

o Discuss if they thought they successfully used ICPS techniques or brainstorm as a group how they could have been applied more effectively

o Parents will be asked to help each other with ways to use ICPS dialoguing with specific problems

• The creator of the ICPS program developed it with the goal of helping you teach your children how to think and how to see your point of view, but also to help you become more sensitive to your children's points of view.

• Parents will be asked to privately reflect over the week about how well they consider the feelings of others in their own lives. Think about what your child does to make you feel happy, sad, and angry. Also think about what you do or say that might make your child feel happy, sad, and angry.

Session III

• This session marks the beginning of moving from pre-problem solving skills to problem solving skills (for both the children and the adults)

• This week in the session with the children, they are learning about generating alternative solutions; this should be practiced with parents throughout the week

• Problem-solving skills are the most important part of ICPS; this session will focus on finding alternative solutions to a problem

• Introduce dialoguing (not all aspects of dialoguing will be discussed during this session, only problem identification and generation of alternative solutions when problem solving will be explained and demonstrated).

- Dialoguing involves applying the concepts taught during formal lessons to spontaneously-occurring interpersonal conflict situations; children are actively involved in the process
- The adult guides the children in applying concepts from formal lessons to resolving a conflict by posing questions.
- Dialoguing is not a rigid process, but, rather, it involves following a somewhat flexible series of steps.

• Principles of dialoguing child-child problems: (Shure, 1996, p. 167)

1. Find out the child's view of the problem
2. Remember that the child, not the adult, must solve the problem
3. Focus on reinforcing the process of thinking more than particular conclusions a child draws

• Principles of dialoguing parent-child problems (Shure, 1996, p. 176)

1. Help your child understand your feelings about the problem
2. Help your child understand why the end goal is not always going to be a choice

- Parents will be trained to accurately identify problems by asking what happened before the reported problem occurred.
  - See examples on pages 96 and 99
  - Persons involved in the problem situation may perceive the problem differently
  - It is important to clarify how children perceive the problem since finding a solution depends on each person's view of the problem
  - As the adult, you may be accustomed to being the one who defines the problem for the children involved in a conflict, but in ICPS the emphasis is on helping children to solve their own problems. This means it is important not to impose your definition of the problem during a dialogue.

- Parents practice dialoguing with the child to get him or her to think of alternative solutions to peer problems before the next session.
  - The premise of this skill is that there's more than one way to solve a problem
  - The first solution that a child comes up with may not always be appropriate or successful
  - The goal is to communicate to children that if the first way does not work, then they can try another way; they do not have to give up
  - The goal in generating alternative solutions is to think of as many different solutions as possible
  - Praise children for coming up with a new/different solution
  - Right now, the thinking process is more important than the content of the solutions
  - It may be tempting to explain why an idea is not a good one, but the child will later be guided to consider consequences and whether an idea is or is not a good one
  - Refer to pages 90 and 91 for additional tips to help children find alternative solutions

- Parents will be asked to share situations in which they used ICPS during the week (i.e. using feeling and other ICPS vocabulary words).
  - Discuss if they thought they successfully used ICPS techniques or how they think they could have applied the techniques more effectively

Session IV

- Parents will be asked to share situations in which they used ICPS during the week (i.e. helping children to think of alternative solutions and including children in defining the nature of an interpersonal problem, instead of assuming what the problem is).
  - Discuss if they thought they successfully used ICPS techniques or how they think they could have applied the techniques more effectively

- Consequential thinking is the final ICPS problem-solving skill (the children will practice this skill during today's session).
  - This skill will help children to respond to their daily conflicts in reasonable and responsible ways

o When dialoguing with children, first identify the problem with them, elicit alternative solutions, and then stop at a solution that is conducive to asking for consequences (i.e., “What might happen next?”)
 Parents may want to focus initially on asking about consequences of solutions that they think are not a good idea in order to help children think about the negative impacts that particular solution may have on others
o Ask for lots of different responses about what might happen next

• Some hints to help with eliciting consequences (see pages 115-118, 123) (Cut this discussion short if you’re running low on time)
o Encourage children to think of more than one possible consequence without implying that their first response is “wrong” by praising their thought process
o When eliciting consequences, make sure the child gives only consequences that may directly result from an action/possible solution
 Children may give “chain reaction consequences”, but that is not the primary focus of this ICPS skill
 An example of a chain reaction consequence: If Jon pushes Patricia, a direct consequence is that Patricia might push him back. When you ask for another consequence, your child might say, “Then Jon might throw a block at her.” However, Jon’s throwing a block at her is not the direct act of his first act of pushing Patricia—it’s a chain reaction to being pushed back by Patricia.
o Keep the child on track by pointing out a chain reaction consequence and making sure (s)he states only direct consequences
o Sometimes children will give different variations on a theme that are not really different responses
 If this happens when you\re asking for consequences, point out that all of those are “kind of the same because they’re all _____.” Then ask for something that might happen that is different.

• The ultimate goal of ICPS problem-solving is for children to evaluate the solutions they think of by inferring their consequences and then deciding if the solution is or is not a good one (based on the probable consequences)
o ICPS dialogues focus on helping children decide whether a solution is a good one or not by helping children think about possible consequences of their solutions and about how others will be affected (particularly how others’ feelings will be affected)
o Children are guided to think of solutions with fewer negative impacts on others (see pg 124 for sample questions that encourage children to think about how the consequences of potential solutions will impact others)
o If children try one solution and it does not solve the problem, encourage them to try a different solution that they deemed to be a good one
o Evaluating solutions by considering consequences is especially important for impulsive problem solvers. Practicing this skill of thinking before doing anything can greatly improve the way an impulsive child’s interacts with others.

• Full dialogues

o Full dialogues help children think about the problem, their own and others' feelings, the consequences of what they do, and what else they can do
o refer to pages 129-130 for the steps in full dialogues
o Ask everyone to turn to pages 174-175 to the Summary: Child-Child Problems and Parent-Child Problems sections
 These are questions that can be used as a guide for ICPS dialogues. These questions will become more automatic and flexible as parents practice using ICPS dialogues
o There will be more practice and examples of full dialogues in the next session.

Session V

Full dialogues
o Full dialogues help children think about the problem, their own and others' feelings, the consequences of what they do, and what else they can do
o Steps in full dialogues (pg 129-130)
 Identify the problem together with the child
 Ask questions that help the child to consider how (s)he and others involved feel
 Ask the child to think of possible solutions to solve the problem
 Ask the child to anticipate consequences of a solution that they offer
 "Is that solution a good idea, or not a good idea?"
 If the solution does not work, encourage the child to try another one

o (if not completed in Session 4) Ask everyone to turn to pages 174-175 to the Summary: Child-Child Problems and Parent-Child Problems sections
 These are questions that can be used as a guide for ICPS dialogues. These questions will become more automatic and flexible as parents practice using ICPS dialogues

o Ask two parents to volunteer to act out a dialogue (e.g., the one on the bottom of page 185, or any of the ones on pages 177-186)
o Let parents choose one that they commonly have to deal with
o Afterward, allow them to discuss any thoughts or concerns they had about the dialogue they just role played
 Let parents know that there is a list of common problems and page reference numbers on pg 191
 This will allow them to quickly flip to examples of ICPS dialogues for a number of different interpersonal problems that their children may experience

• Parents will be asked to share situations in which they used ICPS during the week (especially considering consequences)
o Discuss if they thought they successfully used ICPS techniques or how they think they could have applied the techniques more effectively

Means-end thinking

- ICPS dialogues can be modified in order to help children solve more complex problems that require a series of steps in order to reach an interpersonal goal.
  - These types of dialogues use "means-end thinking"
  - Means-end thinking will:
    - Draw on children's understanding of cause and effect, and the sequencing of events
    - help children to gain insight that will allow them to work around or work through potential obstacles
    - allow children to generate and implement alternative solutions (if obstacles are too great to overcome)
    - help children understand that goals are not always immediately realized
    - help children understand that certain times are more advantageous than others for action
  - Components of a means-end dialogue with children
    - identify the problem and the end goal
    - ask children to identify the first step toward the goal
    - ask children if they anticipate any obstacles to achieving that first step
    - ask for possible ways to deal with that (e.g., implementing another solution if the first one is blocked by an obstacle)
    - repeat this sequence of questioning for each step until the goal is realized

Session VI

- Components of a means-end dialogue with children (briefly review)
  - identify the problem and the end goal
  - ask children to identify the first step toward the goal
  - ask children if they anticipate any obstacles to achieving that first step
  - ask for possible ways to deal with the identified obstacle (e.g., implementing another solution if the first one is blocked by an obstacle)
  - repeat this sequence of questioning for each step until the child has a step-by-step plan to realize the goal

- Invite two parents (or fill one role yourself) to volunteer to read/role-play a means-end dialogue (see pages 2 and 3 for script)

- After the sessions are over, parents may want to take some time to review the basics of the ICPS program to evaluate themselves in terms of how well they are helping their children further develop ICPS skills and how well they are carrying out ICPS dialogues.
  - Appendix A on page 193 has a quick checklist with questions to use as a way to evaluate themselves in terms of how well they are implementing ICPS skills and dialogues

- Ask parents to share situations in which they used ICPS during the week (i.e., subtly discourage story-telling about situations in which ICPS was not used). Have the group pick one situation to verbally re-enact/role-play.

- Ask two parents to volunteer (or fill one role yourself) to verbally re-enact/role-play the chosen situation
- After the role-play, discuss as a group how well it went (i.e., how satisfied parents were with the outcome) and how successfully ICPS techniques were used
  - Refer to Appendix A and pose those questions to the group for discussion. Decide as a group how well ICPS techniques were used.
  - These questions will structure the discussion and discourage digression.

## APPENDIX D

## Appendix D: Demographic Information for Participants

**Table 1: Demographic information for child participants**

| | Case 1: April | Case 2: Ben | Case 3: Charlie | Case 4: Erin | Case 5: Jeff | Case 6: Ken |
|---|---|---|---|---|---|---|
| Sex | F | M | M | F | M | M |
| Age at outset of study (years) | 10 | 10 | 12 | 9 | 7 | 11 |
| Age at diagnosis of ADHD (years) | 8 | 7 | N/A | 5 | 5 | 8 |
| Grade entered in September 2010 | 5 | 5 | 6 | 4 | 3 | 6 |
| WISC—IV, scaled scores pre-intervention | | | | | | |
| Block Design | 7 | 12 | 13 | 7 | 5 | 10 |
| Vocabulary | 5 | 16 | 10 | 9 | 11 | 5 |
| WISC—IV, scaled scores post-intervention | | | | | | |
| Block Design | 9 | 11 | 13 | 8 | 8 | N/A |
| Vocabulary | 8 | 14 | 11 | 9 | 11 | N/A |

**Table 2: Demographic characteristics of parents who consented to participate**

| | Parent Case 1: April | Parent Case 2: Ben | Parent Case 3: Charlie | Parent Case 4: Erin | Parent Case 5: Jeff | Parent Case 6: Ken |
|---|---|---|---|---|---|---|
| Relationship to child participant | Mother | Mother | Mother | Mother | Adoptive Mother | Step-Mother |
| Sex | F | F | F | F | F | F |
| Occupation | Personal Support Worker | Home-maker | Hair Stylist | N/A | Real-estate appraiser | Nurse |

## APPENDIX E

## Appendix E: NEPSY—II Tables

**Table 3: April's Pre- and Post-intervention scores on selected subtests of the NEPSY--II**

| | Case 1: April | | | |
|---|---|---|---|---|
| | Pre-intervention | | Post-intervention | |
| Attention/Executive Function Subtest | Scaled Score | Combined Scaled Score | Scaled Score | Combined Scaled Score |
| Auditory Attention | 13 | 13 | 13 | 13 |
| Response Set | 13 | 10 | 11 | 9 |
| Inhibition | | | | |
| Naming | 11 | 6 | 12 | 8 |
| Inhibition | 11 | 8 | 14 | 10 |
| Switching | 12 | 6 | 12 | 6 |
| Animal Sorting | 9 | 9 | 9 | 10 |

*Note.* Scores of 1 – 7 indicate below average performance compared to same-age peers, scores of 8 – 12 indicate average performance compared to same-age peers, and scores of 12 – 20 indicate above average performance compared to same-age peers.

**Table 4: Ben's Pre- and Post-intervention scores on selected subtests of the NEPSY--II**

| | Case 2: Ben | | | |
|---|---|---|---|---|
| | Pre-intervention | | Post-intervention | |
| Attention/Executive Function Subtest | Scaled Score | Combined Scaled Score | Scaled Score | Combined Scaled Score |
| Auditory Attention | 13 | 13 | 13 | 13 |
| Response Set | 9 | 7 | 10 | 6 |
| Inhibition | | | | |
| Naming | 11 | 9 | 10 | 6 |
| Inhibition | 10 | 9 | 14 | 9 |
| Switching | 10 | 9 | 11 | 5 |
| Animal Sorting | 6 | 7 | 7 | 7 |

*Note.* Scores of 1 – 7 indicate below average performance compared to same-age peers, scores of 8 – 12 indicate average performance compared to same-age peers, and scores of 12 – 20 indicate above average performance compared to same-age peers.

**Table 5: Charlie's Pre- and Post-intervention scores on selected subtests of the NEPSY--II**

| | Case 3: Charlie | | | |
|---|---|---|---|---|
| | Pre-intervention | | Post-intervention | |
| Attention/Executive Function Subtest | Scaled Score | Combined Scaled Score | Scaled Score | Combined Scaled Score |
| Auditory Attention | 12 | 12 | 9 | 8 |
| Response Set | 7 | 11 | 8 | 10 |
| Inhibition | | | | |
| Naming | 8 | 10 | 6 | 6 |
| Inhibition | 7 | 3 | 8 | 5 |
| Switching | 9 | 6 | 9 | 7 |
| Animal Sorting | 14 | 14 | 13 | 13 |

*Note.* Scores of 1 – 7 indicate below average performance compared to same-age peers, scores of 8 – 12 indicate average performance compared to same-age peers, and scores of 12 – 20 indicate above average performance compared to same-age peers.

**Table 6: Erin's Pre- and Post-intervention scores on selected subtests of the NEPSY--II**

| | Case 4: Erin | | | |
|---|---|---|---|---|
| | Pre-intervention | | Post-intervention | |
| Attention/Executive Function Subtest | Scaled Score | Combined Scaled Score | Scaled Score | Combined Scaled Score |
| Auditory Attention | 5 | 3 | 4 | 5 |
| Response Set | 8 | 8 | 4 | 4 |
| Inhibition | | | | |
| Naming | 3 | 1 | 7 | 8 |
| Inhibition | 3 | 1 | 5 | 9 |
| Switching | 4 | 3 | 8 | 10 |
| Animal Sorting | 11 | 11 | 14 | 14 |

*Note.* Scores of 1 – 7 indicate below average performance compared to same-age peers, scores of 8 – 12 indicate average performance compared to same-age peers, and scores of 12 – 20 indicate above average performance compared to same-age peers.

**Table 7: Jeff's Pre- and Post-intervention scores on selected subtests of the NEPSY--II**

| | Case 5: Jeff | | | |
|---|---|---|---|---|
| | Pre-intervention | | Post-intervention | |
| Attention/Executive Function Subtest | Scaled Score | Combined Scaled Score | Scaled Score | Combined Scaled Score |
| Auditory Attention | 8 | 7 | 4 | 1 |
| Response Set | 8 | 8 | 3 | 2 |
| Inhibition | | | | |
| Naming | 4 | 7 | 10 | 9 |
| Inhibition | 7 | 6 | 8 | 8 |
| Switching | 12 | 6 | | |
| Animal Sorting | 6 | 5 | 6 | 5 |

*Note.* Inhibition-Switching was not administered during post-intervention testing because Jeff made too many errors on the qualifying items to administer the test.
*Note.* Scores of 1 – 7 indicate below average performance compared to same-age peers, scores of 8 – 12 indicate average performance compared to same-age peers, and scores of 12 – 20 indicate above average performance compared to same-age peers.

**Table 8: Ken's Pre-intervention scores on selected subtests of the NEPSY--II**

| | Case 6: Ken | | | |
|---|---|---|---|---|
| | Pre-intervention | | Post-intervention (N/A) | |
| Attention/Executive Function Subtest | Scaled Score | Combined Scaled Score | Scaled Score | Combined Scaled Score |
| Auditory Attention | 12 | 12 | | |
| Response Set | 12 | 9 | | |
| Inhibition | | | | |
| Naming | 10 | 13 | | |
| Inhibition | 7 | 9 | | |
| Switching | | | | |
| Animal Sorting | 16 | 17 | | |

*Note.* Inhibition-Switching was not administered during pre-intervention testing because Ken refused to complete the subtest.
*Note.* Scores of 1 – 7 indicate below average performance compared to same-age peers, scores of 8 – 12 indicate average performance compared to same-age peers, and scores of 12 – 20 indicate above average performance compared to same-age peers.

# APPENDIX F

## Appendix F: Letter of Information and Consent Form for Adult Participants

CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Psychosocial and Executive Functioning of Children with ADHD: The Impact of the "I Can Problem Solve" Program (Parent/Guardian consent).

You are being asked to participate in a research study conducted by Selena Hodsman and Dr. Joseph Casey, from the Department of Psychology at the University of Windsor. This study will comprise Selena Hodsman's Master's thesis and it is funded by the Canadian Institutes of Health Research.

If you have any questions or concerns about the research, please feel to contact Selena Hodsman from 9:00 a.m. to 5 p.m. at 519-915-8005 or Dr. Joseph Casey from at 519-253-3000 ext. 2220.

PURPOSE OF THE STUDY

It is well-established that children who have been diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) tend to have behavioral and emotional difficulties that interfere with establishing and maintaining peer relationships, and that are associated with cognitive difficulties, such as difficulty adhering to a plan in order to reach a self-identified goal, difficulty holding information in mind while working on a problem, or difficulty in inhibiting inappropriate behaviour. A recent body of research has found that the "I Can Problem Solve" (ICPS) program has resulted in improved behaviour and emotional functioning of children with ADHD; there is some evidence that this program may improve some of the cognitive difficulties that often accompany ADHD as well. This study is designed to determine the effectiveness of the ICPS program in improving the social skills and the cognitive difficulties experienced by many children who have been diagnosed with ADHD.

PROCEDURES
Eligibility:

- You and your child(ren) will be screened for your eligibility to participate in the study based on your responses to the screening questions.
- Children will be excluded if they have been diagnosed with an Intellectual Disability or a language disorder, or if they do not regularly take medication to manage their ADHD symptoms.
- You and your child(ren) will be asked to participate in group sessions or in the waiting list control group for a period of six weeks.
- Your family will be randomly assigned to the intervention or control group.

Psychological testing:

- All child participants will undergo approximately 1.5 hours of neuropsychological testing prior to, and following the intervention.
- You and your child(ren)'s teachers will be asked to complete behaviour inventories that will take approximately 30 minutes to fill out prior to and following the six week period of the intervention.

Group sessions for children and group sessions for parents:

- The parents/guardians and children participating in the intervention group right away will meet for approximately 40 minutes per week for six weeks at the office of the Learning Disabilities Association of Windsor-Essex county (647 Ouelette Avenue, suite 101).
- Child participants will meet with the principal investigator and the parent participants will meet with the research assistant.
- Sessions with the children will involve teaching the ICPS skills through games, stories, puppet shows, and role-plays
- Children will learn to generate multiple solutions to interpersonal problems, evaluate which idea is the best course of action, and think independently).
- Sessions with the you will involve discussions of ways to implement the ICPS program in everyday situations at home as well as discussions to address questions you have about the program.
- You will be provided with a book that explains the ICPS program and provides examples of how to use the program at home. Although it is not mandatory for you to read the book to participate in the study, the book may you to practice the program effectively with your children; this may improve your child(ren)`s social outcome following the intervention.

Waiting list group:

- Children in the waiting list control group will be invited to participate in the second implementation of the ICPS intervention.
- If your family is assigned to the control group, you will be asked to participate in the research study for a minimum of 12 weeks and a maximum of 18 weeks (i.e., at least six weeks on the waiting list and six weeks during the second implementation of the intervention).

Follow up:

- Your family may be contacted six months after you complete the intervention and asked to participate in follow-up testing with the same measures to determine if the effects of the program on social skills and cognitive functioning of the children have remained stable.

POTENTIAL RISKS AND DISCOMFORTS

The foreseen risks of participating in this study are no greater than those you and your child(ren) would face in everyday life. Potential risks for your child(ren) include social exclusion by, or interpersonal conflicts with, other group members. However, the facilitator will encourage inclusion and equal participation of all children, and will use

principles of the program to facilitate the resolution of interpersonal problems. Potential risks for you include being identified in the community as participating in the program if confidentiality is breached by some participants. Children may also face some psychological/emotional risks, such as feeling uncomfortable or anxious during group discussions and activities. If your child(ren) is/are noticeably uncomfortable or anxious during discussions or activities, the facilitator will encourage all children to participate equally and will manage interpersonal problems using the dialoguing method of the ICPS program.

## POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

Children may experience enhanced social skills (e.g., enhanced understanding of ways to initiate and maintain friendships, enhanced skills in resolving interpersonal problems), enhanced cognitive functioning (e.g., flexibility in thinking, goal-directed behaviour, enhanced social problem-solving), and new peer relationships. You may experience improved communication with your child(ren) and you will learn an effective method for teaching your child(ren) to manage interpersonal problems.

## COMPENSATION FOR PARTICIPATION

For each week that your family attends a session, you will receive a $5 Tim Horton's gift certificate at the time you leave the session. . Once you receive the certificate, it is yours to keep. Your family will receive a gift certificate only for those sessions that you attend.

## CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission.

You and your child(ren) will be asked to maintain other group members' confidentiality by not sharing identifying information of other members with persons not involved in the study. This project will involve data in the form of hard copies of test record forms and electronic files containing participants' results. Participants` electronic data will be stored securely and indefinitely at the university, and so will hard copies of the consent/assent forms. Hard copies of test record forms will be securely stored and retained for five years following the completion of publications arising from the data; they will then be disposed of in a secure manner (i.e., shredded). Consent forms with personally identifying information will be stored in a separate physical location from the test record forms. Only the principal investigator and the faculty supervisor will have direct access to the data. The research assistant will not be given access to the raw data, but will be given information regarding the results of the study. Data that is released for presentation, publication, or other professional uses will not contain identifying information of participants (e.g., names, initials, etc.).

## PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you do not want to answer and still remain in the study. The investigator may withdraw you and your child(ren) from this research without regard to the family's consent if circumstances arise which warrant doing so Participants are able to remove their data from the study at any time before October 2010, when the defense of this thesis project will occur.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE SUBJECTS

The results of this study will be available to you and your child(ren) on a website. A summary and interpretation of each participant`s individual data will be provided on the website, but no identifying information will be included with the data.

Web address: Please click on the "Programs" link at the top of the http://www.ldawe.ca/ website
Date when results are available: It is anticipated that results will be available by September 30, 2010.

SUBSEQUENT USE OF DATA
This data will be used in subsequent studies.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. If you have questions regarding your rights as a research subject, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCH SUBJECT/LEGAL REPRESENTATIVE

I understand the information provided for the study Psychosocial and Executive Functioning of Children with ADHD: The Impact of the "I Can Problem Solve" Program as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

_____
Name of Subject

_____ _____
Signature of Subject Date

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

_____ _____

Signature of Investigator Date

LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Psychosocial and Executive Functioning of Children with ADHD: The Impact of the "I Can Problem Solve" Program. (Parent/Guardian letter of information)

You are being asked to participate in a research study conducted by Selena Hodsman and Dr. Joseph Casey, from the Department of Psychology at the University of Windsor. This study will comprise Selena Hodsman's Master's thesis and it is funded by the Canadian Institutes of Health Research.

If you have any questions or concerns about the research, please feel to contact Selena Hodsman from 9:00 a.m. to 5 p.m. at 519-915-8005 or Dr. Joseph Casey from at 519-253-3000 ext. 2220.

PURPOSE OF THE STUDY

It is well-established that children who have been diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) tend to have behavioral and emotional difficulties that interfere with establishing and maintaining peer relationships, and that are associated with cognitive difficulties, such as difficulty adhering to a plan in order to reach a self-identified goal, difficulty holding information in mind while working on a problem, or difficulty in inhibiting inappropriate behaviour. A recent body of research has found that the "I Can Problem Solve" (ICPS) program has resulted in improved behaviour and emotional functioning of children with ADHD; there is some evidence that this program may improve some of the cognitive difficulties that often accompany ADHD as well. This study is designed to determine the effectiveness of the ICPS program in improving the social skills and the cognitive difficulties experienced by many children who have been diagnosed with ADHD.

PROCEDURES

Eligibility:

- You and your child(ren) will be screened for your eligibility to participate in the study based on your responses to the screening questions.
- Children will be excluded if they have been diagnosed with an Intellectual Disability or a language disorder, or if they do not regularly take medication to manage their ADHD symptoms.
- You and your child(ren) will be asked to participate in group sessions or in the waiting list control group for a period of six weeks.
- Your family will be randomly assigned to the intervention or control group.

Psychological testing:

- All child participants will undergo approximately 1.5 hours of neuropsychological testing prior to, and following the intervention.
- You and your child(ren)'s teachers will be asked to complete behaviour inventories that will take approximately 30 minutes to fill out prior to and following the six week period of the intervention.

Group sessions for children and group sessions for parents:

- The parents/guardians and children participating in the intervention group right away will meet for approximately 40 minutes per week for six weeks at the office of the Learning Disabilities Association of Windsor-Essex county (647 Ouelette Avenue, suite 101).
- Child participants will meet with the principal investigator and the parent participants will meet with the research assistant.
- Sessions with the children will involve teaching the ICPS skills through games, stories, puppet shows, and role-plays
- Children will learn to generate multiple solutions to interpersonal problems, evaluate which idea is the best course of action, and think independently).
- Sessions with the you will involve discussions of ways to implement the ICPS program in everyday situations at home as well as discussions to address questions you have about the program.
- You will be provided with a book that explains the ICPS program and provides examples of how to use the program at home. Although it is not mandatory for you to read the book to participate in the study, the book may help you to practice the program effectively with your child(ren); this may improve your child(ren)'s social outcome following the intervention.

Follow up:

- Your family may be contacted by the student researcher 6 months after you and your child(ren) complete the "I Can Problem Solve" program to see if changes in your behaviour are stable.
- Your child will be asked to participate in approximately 1.5 hours of psychological testing (with the same tests that were used at the beginning of the study).
- You will be asked to fill out the rating scales again.

POTENTIAL RISKS AND DISCOMFORTS

The foreseen risks of participating in this study are no greater than those you and your child(ren) would face in everyday life. Potential risks for your child(ren) include social exclusion by, or interpersonal conflicts with, other group members. However, the facilitator will encourage inclusion and equal participation of all children, and will use principles of the program to facilitate the resolution of interpersonal problems. Potential risks for you include being identified in the community as participating in the program if confidentiality is breached by some participants. Children may also face some psychological/emotional risks, such as feeling uncomfortable or anxious during group discussions and activities. If your child(ren) is/are noticeably uncomfortable or anxious during discussions or activities, the facilitator will encourage all children to participate equally and will manage interpersonal problems using the dialoguing method of the ICPS program.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

Children may experience enhanced social skills (e.g., enhanced understanding of ways to initiate and maintain friendships, enhanced skills in resolving interpersonal problems), enhanced cognitive functioning (e.g., flexibility in thinking, goal-directed behaviour, enhanced social problem-solving), and new peer relationships. You may experience improved communication with your child(ren) and you will learn an effective method for teaching your child(ren) to manage interpersonal problems.

COMPENSATION FOR PARTICIPATION

For each week that your family attends a session, you will receive a $5 Tim Horton's gift certificate at the time you leave the session. . Once you receive the certificate, it is yours to keep. Your family will receive a gift certificate only for those sessions that you attend.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission.

You and your child(ren) will be asked to maintain other group members' confidentiality by not sharing identifying information of other members with persons not involved in the study. This project will involve data in the form of hard copies of test record forms and electronic files containing participants' results. Participants` electronic data will be stored securely and indefinitely at the university, and so will hard copies of the consent/assent forms. Hard copies of test record forms will be securely stored and retained for five years following the completion of publications arising from the data; they will then be disposed of in a secure manner (i.e., shredded). Consent forms with personally identifying information will be stored in a separate physical location from the test record forms. Only the principal investigator and the faculty supervisor will have direct access to the data. The research assistant will not be given access to the raw data, but will be given information regarding the results of the study. Data that is released for presentation, publication, or other professional uses will not contain identifying information of participants (e.g., names, initials, etc.).

PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you do not want to answer and still remain in the study. The investigator may withdraw you and your child(ren) from this research without regard to the family's consent if circumstances arise which warrant doing so Participants are able to remove their data from the study at any time before October 2010, when the defense of this thesis project will occur.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE SUBJECTS

The results of this study will be available to you and your child(ren) on a website. A summary and interpretation of each participant`s individual data will be provided on the website, but no identifying information will be included with the data.

Web address: Please click on the "Programs" link at the top of the http://www.ldawe.ca/ website
Date when results are available: It is anticipated that results will be available by September 30, 2010.

SUBSEQUENT USE OF DATA

This data will be used in subsequent studies.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. If you have questions regarding your rights as a research subject, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario N9B 3P4; Telephone: 519-253-3000, ext. 3948; e mail: ethics@uwindsor.ca

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

_____ _____

Signature of Investigator Date

# APPENDIX G

## Appendix G: Letter of Information and Assent Form for Child Participants

LETTER OF INFORMATION FOR ASSENT TO PARTICIPATE IN RESEARCH

Title of Study: Psychosocial and Executive Functioning of Children with ADHD: The Impact of the "I Can Problem Solve" Program (Child assent).

You are being asked to participate in a research study. This study is being done by Selena Hodsman as a research project for the University of Windsor.

If you have any questions about the study, you can ask your parents to contact Selena Hodsman from 9:00 a.m. to 5 p.m. at 519-915-8005 or Dr. Joseph Casey from at 519-253-3000 ext. 2220.

PURPOSE OF THE STUDY

Selena Hodsman is doing a study with children who have Attention-Deficit/Hyperactivity disorder. This study focuses on solving "people" problems and solving other problems at home and at school by making a plan. You are being asked to participate in group activities with Selena Hodsman in order to improve your on-task behaviour and to do better at home and at school.

PROCEDURES

Eligibility:

- You will be asked some questions to see if you are allowed to participate in this study (you will be allowed to participate in the study if you have not been diagnosed with an Intellectual Disability or a language disorder; you also must regularly take medication to manage your symptoms of ADHD).
- If you can participate, you may be asked to start the program right away, or you may have to wait a couple of months before beginning the program (this will be randomly decided).

Psychological Testing:

- Once the study starts, you will be asked answer questions from some rating scales
- Your teacher and parents will answer similar questions to measure the way you feel about yourself and the way your parents and teachers see your behaviour.
- You will also meet with Selena to do some activities, such as working with blocks or cards, and answering some questions that she will ask.

Group Sessions:

- You will participate in weekly 40-minute sessions with Selena and the other children in the program for six weeks.

- You will learn about the "I Can Problem Solve" program through games, stories, puppet shows, and role-plays with Selena.
- When Selena is finished talking with all the children who agree to be in the study, she will write a report on what she has learned and her teachers will read it.

Follow Up:
- Your family may be contacted by Selena 6 months after the "I Can Problem Solve" program is over to see if changes in your behaviour have lasted.
- You may be asked to do some activities with the student researcher and fill out the rating scales again.

POTENTIAL RISKS AND DISCOMFORTS

The risks of participating in this study are likely no greater than those you face every day at school or at home. You may feel like you're being left out by the other children in the program or you may have disagreements with other group members at first. However, the Selena will teach everyone in the group about including everyone and we will use principles of the "I Can Problem Solve" program to resolve any problems between members of the group. You may also feel uncomfortable or anxious during group discussions and activities. If that happens, you should tell Selena and she will help me to feel comfortable participating in the group activities and discussions.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

As a result of participating in this program, you may gain a better understanding of ways to make friends, and ways to solve interpersonal problems with other people. You also may learn new and better ways to think, such as ways to set a goal for yourself and then achieve it.

COMPENSATION FOR PARTICIPATION

For each week that your family attends a session, they will receive a $5 Tim Horton's gift certificate. Once your family receives the certificate, it is theirs to keep.

CONFIDENTIALITY

The student researcher will not be telling my teachers or parents or any other children what you answer. The only exception is if you tell her that someone has been hurting you. If she thinks that you are being hurt or abused she will need to tell your parents or someone else who can help you. Otherwise, she promises to keep everything that you tell her private. In return, you will not tell other children who aren`t a part of the group about things that group members say when everyone meets together with Selena.

You will not get into any trouble if you decide not to answer the rating scales. Even if you decide to answer the questions, you can stop answering them at any time, and you do not have to answer any question you do not want to answer. It is entirely up to you.

Whether you decide to answer any questions or not, your family will still receive the Tim Horton`s gift certificate when you leave that day.

PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without any consequences. You may also refuse to answer any questions you do not want to answer and still remain in the study. The investigator may withdraw you from this research if my family misses 3 or more sessions. Your parents/guardians or you can remove your data from the study at any time before October, 2010.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE SUBJECTS

The results of this study will be available on a website. A summary and interpretation of each participant`s information will be provided on the website, but no identifying information *(i.e., names, initials, etc.) will be included with the data.

Web address: Please click on the "Programs" link at the top of the http://www.ldawe.ca/ website
Date when results are available: It is anticipated that results will be available by September 30, 2010.

SUBSEQUENT USE OF DATA
This data will be used in subsequent studies.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without any negative consequences. If you have questions about you rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e mail: ethics@uwindsor.ca

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

_____ _____
Signature of Investigator Date

ASSENT TO PARTICIPATE IN RESEARCH

Title of Study: Psychosocial and Executive Functioning of Children with ADHD: The Impact of the "I Can Problem Solve" Program (Child assent).

You are being asked to participate in a research study. This study is being done by Selena Hodsman as a research project for the University of Windsor.

If you have any questions about the study, you can ask your parents to contact Selena Hodsman from 9:00 a.m. to 5 p.m. at 519-915-8005 or Dr. Joseph Casey from at 519-253-3000 ext. 2220.

PURPOSE OF THE STUDY

Selena Hodsman is doing a study with children who have Attention-Deficit/Hyperactivity disorder. This study focuses on solving "people" problems and solving other problems at home and at school by making a plan. You are being asked to participate in group activities with Selena Hodsman in order to improve your on-task behaviour and to do better at home and at school.

PROCEDURES

Eligibility:

- You will be asked some questions to see if you are allowed to participate in this study (you will be allowed to participate in the study if you have not been diagnosed with an Intellectual Disability or a language disorder; you also must regularly take medication to manage your symptoms of ADHD).
- If you can participate, you may be asked to start the program right away, or you may have to wait a couple of months before beginning the program (this will be randomly decided).

Psychological Testing:

- Once the study starts, you will be asked answer questions from some rating scales
- Your teacher and parents will answer similar questions to measure the way you feel about yourself and the way your parents and teachers see your behaviour.
- You will also meet with Selena to do some activities, such as working with blocks or cards, and answering some questions that she will ask.

Group Sessions:

- You will participate in weekly 40-minute sessions with Selena and the other children in the program for six weeks.
- You will learn about the "I Can Problem Solve" program through games, stories, puppet shows, and role-plays with Selena.
- When Selena is finished talking with all the children who agree to be in the study, she will write a report on what she has learned and her teachers will read it.

Follow Up:

- Your family may be contacted by Selena 6 months after the "I Can Problem Solve" program is over to see if changes in your behaviour have lasted.
- You may be asked to do some activities with the student researcher and fill out the rating scales again.

POTENTIAL RISKS AND DISCOMFORTS

The risks of participating in this study are likely no greater than those you face every day at school or at home. You may feel like you're being left out by the other children in the program or you may have disagreements with other group members at first. However, the Selena will teach everyone in the group about including everyone and we will use principles of the "I Can Problem Solve" program to resolve any problems between members of the group. You may also feel uncomfortable or anxious during group discussions and activities. If that happens, you should tell Selena and she will help me to feel comfortable participating in the group activities and discussions.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

As a result of participating in this program, you may gain a better understanding of ways to make friends, and ways to solve interpersonal problems with other people. You also may learn new and better ways to think, such as ways to set a goal for yourself and then achieve it.

COMPENSATION FOR PARTICIPATION

For each week that your family attends a session, they will receive a $5 Tim Horton's gift certificate. Once your family receives the certificate, it is theirs to keep.

CONFIDENTIALITY

The student researcher will not be telling my teachers or parents or any other children what you answer. The only exception is if you tell her that someone has been hurting you. If she thinks that you are being hurt or abused she will need to tell your parents or someone else who can help you. Otherwise, she promises to keep everything that you tell her private. In return, you will not tell other children who aren`t a part of the group about things that group members say when everyone meets together with Selena.

You will not get into any trouble if you decide not to answer the rating scales. Even if you decide to answer the questions, you can stop answering them at any time, and you do not have to answer any question you do not want to answer. It's entirely up to you. Whether you decide to answer any questions or not, your family will still receive the Tim Horton`s gift certificate when you leave that day.

PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without any consequences. You may also refuse to answer any questions you do not want to answer and still remain in the study. The investigator may withdraw you from this research if my family misses 3 or more sessions. Your parents/guardians or you can remove your data from the study at any time before October, 2010.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE SUBJECTS

The results of this study will be available on a website. A summary and interpretation of each participant`s information will be provided on the website, but no identifying information *(i.e., names, initials, etc.) will be included with the data.

Web address: Please click on the "Programs" link at the top of the http://www.ldawe.ca/ website
Date when results are available: It is anticipated that results will be available by September 30, 2010.

SUBSEQUENT USE OF DATA
This data will be used in subsequent studies.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without any negative consequences. If you have questions about you rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCH SUBJECT/LEGAL REPRESENTATIVE

By signing below, you are stating that you understand the information provided for the study Psychosocial and Executive Functioning of Children with ADHD: The Impact of the "I Can Problem Solve" Program as described herein, that your questions have been answered to your satisfaction, and that you agree to participate in this study. You will be given a copy of this form.

_____
Name of Subject

_____ _____
Signature of Subject Date

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

_____ _____

Signature of Investigator Date

# APPENDIX H

## Appendix H: BASC—II PRS-C Tables

Case 1: April

**Table 9: April`s Pre-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 148 | 49 | 55 | 44-54 |
| Internalizing Problems | 157 | 53 | 66 | 47-59 |
| Behavioral Symptoms Index | 299 | 50 | 56 | 46-54 |
| Adaptive Skills | 283 | 58 | 77 | 54-62 |

**Table 10: April`s Pre-intervention PRS-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 7 | 50 | 57 | 43-57 |
| Aggression | 3 | 44 | 31 | 37-51 |
| Conduct Problems | 6 | 54 | 73 | 47-61 |
| Anxiety | 14 | 52 | 61 | 44-60 |
| Depression | 9 | 55 | 76 | 48-62 |
| Somatization | 5 | 50 | 56 | 41-59 |
| Atypicality | 3 | 49 | 59 | 41-57 |
| Withdrawal | 8 | 53 | 70 | 44-62 |
| Attention Problems | 5 | 48 | 47 | 41-55 |
| Adaptability | 22 | 64 | 93 | 55-73 |
| Social Skills | 19 | 59 | 78 | 52-66 |
| Leadership | 14 | 51 | 52 | 43-59 |
| Activities of Daily Living | 19 | 57 | 75 | 47-67 |
| Functional Communication | 28 | 52 | 53 | 45-59 |

**Table 11: April`s Post-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 158 | 53 | 69 | 48-58 |
| Internalizing Problems | 147 | 49 | 50 | 43-55 |
| Behavioral Symptoms Index | 315 | 53 | 69 | 49-57 |
| Adaptive Skills | 259 | 52 | 56 | 48-56 |

**Table 12: April`s Post-intervention PRS Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 10 | 56 | 77 | 49-63 |
| Aggression | 4 | 46 | 43 | 39-53 |
| Conduct Problems | 7 | 56 | 80 | 49-63 |
| Anxiety | 15 | 54 | 67 | 46-62 |
| Depression | 6 | 49 | 56 | 42-56 |
| Somatization | 3 | 44 | 33 | 35-53 |
| Atypicality | 5 | 54 | 76 | 46-62 |
| Withdrawal | 7 | 51 | 63 | 42-60 |
| Attention Problems | 9 | 59 | 79 | 52-66 |
| Adaptability | 21 | 62 | 88 | 53-71 |
| Social Skills | 16 | 52 | 57 | 45-59 |
| Leadership | 13 | 49 | 44 | 41-57 |
| Activities of Daily Living | 16 | 49 | 45 | 39-59 |
| Functional Communication | 25 | 47 | 34 | 40-54 |

Case 2: Ben

**Table 13: Ben`s Pre-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 203 | 70 | 95 | 65-75 |
| Internalizing Problems | 199 | 70 | 96 | 64-76 |
| Behavioral Symptoms Index | 411 | 74 | 97 | 70-78 |
| Adaptive Skills | 181 | 34 | 6 | 30-38 |

**Table 14: Ben`s Pre-intervention PRS-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 15 | 67 | 94 | 60-74 |
| Aggression | 15 | 71 | 96 | 64-78 |
| Conduct Problems | 10 | 65 | 92 | 58-72 |
| Anxiety | 19 | 60 | 85 | 52-68 |
| Depression | 21 | 78 | 98 | 71-85 |
| Somatization | 9 | 61 | 86 | 52-70 |
| Atypicality | 5 | 54 | 76 | 46-62 |
| Withdrawal | 17 | 74 | 97 | 65-83 |
| Attention Problems | 12 | 67 | 93 | 60-74 |
| Adaptability | 8 | 32 | 5 | 23-41 |
| Social Skills | 6 | 31 | 3 | 24-38 |
| Leadership | 7 | 36 | 8 | 28-44 |
| Activities of Daily Living | 13 | 42 | 20 | 32-52 |
| Functional Communication | 21 | 40 | 17 | 33-47 |

**Table 15: Ben`s Post-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 198 | 68 | 94 | 63-73 |
| Internalizing Problems | 206 | 73 | 98 | 67-79 |
| Behavioral Symptoms Index | 425 | 77 | 98 | 73-81 |
| Adaptive Skills | 163 | 30 | 3 | 26-34 |

**Table 16: Ben`s Post-intervention PRS-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 16 | 69 | 95 | 62-76 |
| Aggression | 17 | 75 | 97 | 68-82 |
| Conduct Problems | 6 | 54 | 73 | 47-61 |
| Anxiety | 19 | 60 | 85 | 52-68 |
| Depression | 20 | 76 | 97 | 69-83 |
| Somatization | 12 | 70 | 96 | 61-79 |
| Atypicality | 7 | 60 | 86 | 52-68 |
| Withdrawal | 18 | 76 | 98 | 67-85 |
| Attention Problems | 13 | 69 | 96 | 62-76 |
| Adaptability | 5 | 25 | 1 | 16-34 |
| Social Skills | 7 | 33 | 5 | 26-40 |
| Leadership | 6 | 34 | 5 | 26-42 |
| Activities of Daily Living | 10 | 34 | 7 | 24-44 |
| Functional Communication | 19 | 37 | 11 | 30-44 |

Case 3: Charlie

**Table 17: Charlie`s Pre-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 221 | 76 | 98 | 71-81 |
| Internalizing Problems | 147 | 49 | 50 | 43-55 |
| Behavioral Symptoms Index | 370 | 65 | 92 | 61-69 |
| Adaptive Skills | 216 | 42 | 21 | 38-46 |

**Table 18: Charlie`s Pre-intervention PRS-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 20 | 78 | 98 | 71-85 |
| Aggression | 9 | 57 | 81 | 50-64 |
| Conduct Problems | 18 | 86 | 99 | 79-93 |
| Anxiety | 10 | 45 | 33 | 37-53 |
| Depression | 15 | 66 | 93 | 59-73 |
| Somatization | 0 | 36 | 4 | 27-45 |
| Atypicality | 8 | 62 | 89 | 54-70 |
| Withdrawal | 2 | 40 | 13 | 31-49 |
| Attention Problems | 12 | 67 | 93 | 60-74 |
| Adaptability | 11 | 39 | 15 | 30-48 |
| Social Skills | 15 | 50 | 49 | 43-57 |
| Leadership | 15 | 53 | 60 | 45-61 |
| Activities of Daily Living | 6 | 24 | 1 | 14-34 |
| Functional Communication | 27 | 50 | 46 | 43-57 |

**Table 19: Charlie`s Post-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 200 | 69 | 95 | 64-74 |
| Internalizing Problems | 150 | 50 | 55 | 44-56 |
| Behavioral Symptoms Index | 365 | 64 | 91 | 60-68 |
| Adaptive Skills | 193 | 37 | 10 | 33-41 |

**Table 20: Charlie`s Post-intervention PRS-C Composite Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 13 | 63 | 89 | 56-70 |
| Aggression | 11 | 62 | 88 | 55-69 |
| Conduct Problems | 14 | 75 | 97 | 68-82 |
| Anxiety | 12 | 49 | 47 | 41-57 |
| Depression | 13 | 62 | 89 | 55-69 |
| Somatization | 1 | 39 | 11 | 30-48 |
| Atypicality | 7 | 60 | 86 | 52-68 |
| Withdrawal | 7 | 51 | 63 | 42-60 |
| Attention Problems | 12 | 67 | 93 | 60-74 |
| Adaptability | 10 | 37 | 10 | 28-46 |
| Social Skills | 15 | 50 | 49 | 43-57 |
| Leadership | 11 | 44 | 29 | 36-52 |
| Activities of Daily Living | 6 | 24 | 1 | 14-34 |
| Functional Communication | 20 | 38 | 14 | 31-45 |

Case 4: Erin

**Table 21: Erin`s Pre-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 172 | 58 | 83 | 53-63 |
| Internalizing Problems | 150 | 50 | 55 | 44-56 |
| Behavioral Symptoms Index | 339 | 58 | 82 | 54-62 |
| Adaptive Skills | 184 | 35 | 7 | 31-39 |

**Table 22: Erin`s Pre-intervention PRS-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 10 | 56 | 77 | 49-63 |
| Aggression | 11 | 62 | 88 | 55-69 |
| Conduct Problems | 6 | 54 | 73 | 47-61 |
| Anxiety | 9 | 43 | 27 | 35-51 |
| Depression | 12 | 60 | 87 | 53-67 |
| Somatization | 4 | 47 | 45 | 38-56 |
| Atypicality | 3 | 49 | 59 | 41-57 |
| Withdrawal | 9 | 56 | 76 | 47-65 |
| Attention Problems | 8 | 56 | 72 | 49-63 |
| Adaptability | 8 | 32 | 5 | 23-41 |
| Social Skills | 11 | 42 | 21 | 35-49 |
| Leadership | 8 | 38 | 12 | 30-46 |
| Activities of Daily Living | 11 | 37 | 10 | 27-47 |
| Functional Communication | 18 | 35 | 8 | 28-42 |

**Table 23: Erin`s Post-intervention PRS-C Scale Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 186 | 63 | 91 | 58-68 |
| Internalizing Problems | 155 | 52 | 63 | 46-58 |
| Behavioral Symptoms Index | 355 | 62 | 88 | 58-66 |
| Adaptive Skills | 185 | 35 | 7 | 31-39 |

**Table 24: Erin`s Post-intervention PRS-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 12 | 61 | 86 | 54-68 |
| Aggression | 13 | 66 | 93 | 59-73 |
| Conduct Problems | 8 | 59 | 85 | 52-66 |
| Anxiety | 9 | 43 | 27 | 35-51 |
| Depression | 11 | 59 | 84 | 52-66 |
| Somatization | 6 | 53 | 66 | 44-62 |
| Atypicality | 2 | 46 | 46 | 38-54 |
| Withdrawal | 12 | 62 | 88 | 53-71 |
| Attention Problems | 10 | 61 | 84 | 54-68 |
| Adaptability | 7 | 30 | 3 | 21-39 |
| Social Skills | 12 | 44 | 28 | 37-51 |
| Leadership | 10 | 42 | 23 | 34-50 |
| Activities of Daily Living | 10 | 34 | 7 | 24-44 |
| Functional Communication | 18 | 35 | 8 | 28-42 |

Case 5: Jeff

**Table 25: Jeff`s Pre-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 202 | 70 | 95 | 65-75 |
| Internalizing Problems | 179 | 62 | 88 | 56-68 |
| Behavioral Symptoms Index | 420 | 76 | 98 | 71-81 |
| Adaptive Skills | 185 | 35 | 7 | 30-40 |

**Table 26: Jeff`s Pre-intervention PRS-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 22 | 79 | 99 | 71-87 |
| Aggression | 11 | 61 | 87 | 53-69 |
| Conduct Problems | 9 | 62 | 89 | 54-70 |
| Anxiety | 22 | 68 | 95 | 60-76 |
| Depression | 16 | 69 | 95 | 62-76 |
| Somatization | 2 | 42 | 21 | 33-51 |
| Atypicality | 10 | 68 | 94 | 60-76 |
| Withdrawal | 16 | 73 | 97 | 64-82 |
| Attention Problems | 13 | 70 | 97 | 62-78 |
| Adaptability | 5 | 25 | 1 | 17-33 |
| Social Skills | 11 | 41 | 19 | 33-49 |
| Leadership | 8 | 38 | 13 | 30-46 |
| Activities of Daily Living | 11 | 39 | 14 | 29-49 |
| Functional Communication | 21 | 42 | 20 | 34-50 |

**Table 27: Jeff`s Post-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 194 | 66 | 93 | 61-71 |
| Internalizing Problems | 197 | 69 | 96 | 63-75 |
| Behavioral Symptoms Index | 424 | 76 | 98 | 72-80 |
| Adaptive Skills | 199 | 38 | 12 | 34-42 |

**Table 28: Jeff`s Post-intervention PRS-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 22 | 83 | 99 | 76-90 |
| Aggression | 9 | 57 | 81 | 50-64 |
| Conduct Problems | 6 | 54 | 73 | 47-61 |
| Anxiety | 25 | 70 | 97 | 62-78 |
| Depression | 19 | 74 | 97 | 67-81 |
| Somatization | 6 | 53 | 66 | 44-62 |
| Atypicality | 9 | 65 | 92 | 57-73 |
| Withdrawal | 18 | 76 | 98 | 67-85 |
| Attention Problems | 13 | 69 | 96 | 62-76 |
| Adaptability | 7 | 30 | 3 | 21-39 |
| Social Skills | 13 | 46 | 34 | 39-53 |
| Leadership | 10 | 42 | 23 | 34-50 |
| Activities of Daily Living | 12 | 39 | 15 | 29-49 |
| Functional Communication | 22 | 42 | 20 | 35-49 |

Case 6: Ken

**Table 29: Ken`s Pre-intervention PRS-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Externalizing Problems | 227 | 79 | 98 | 74-84 |
| Internalizing Problems | 167 | 57 | 79 | 51-63 |
| Behavioral Symptoms Index | 428 | 77 | 98 | 73-81 |
| Adaptive Skills | 148 | 26 | 1 | 22-30 |

**Table 30: Ken`s Pre-intervention PRS-C Scale Score Summary on the BASC—II**

## Scale Score Summary

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Hyperactivity | 19 | 76 | 98 | 69-83 |
| Aggression | 16 | 73 | 97 | 66-80 |
| Conduct Problems | 15 | 78 | 98 | 71-85 |
| Anxiety | 18 | 59 | 81 | 51-67 |
| Depression | 15 | 66 | 93 | 59-73 |
| Somatization | 2 | 42 | 22 | 33-51 |
| Atypicality | 16 | 83 | 99 | 75-91 |
| Withdrawal | 9 | 56 | 76 | 47-65 |
| Attention Problems | 15 | 74 | 99 | 67-81 |
| Adaptability | 6 | 28 | 2 | 19-37 |
| Social Skills | 9 | 37 | 12 | 30-44 |
| Leadership | 8 | 38 | 12 | 30-46 |
| Activities of Daily Living | 6 | 24 | 1 | 14-34 |
| Functional Communication | 10 | 21 | 1 | 14-28 |

# APPENDIX I

## Appendix I: BASC—II SRP-C Tables

Case 1: April

**Table 31: April`s Pre-intervention SRP-C Composite Score Summary on the BASC—II**

### Composite Score Summary

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| School Problems | 90 | 44 | 32 | 36-52 |
| Internalizing Problems | 281 | 46 | 40 | 42-50 |
| Inattention/Hyperactivity | 95 | 47 | 43 | 39-55 |
| Emotional Symptoms Index | 291 | 48 | 48 | 43-53 |
| Personal Adjustment | 210 | 53 | 58 | 46-60 |

**Table 32: April`s Pre-intervention SRP-C Scale Score Summary on the BASC—II**

### Scale Score Summary

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Attitude to School | 4 | 47 | 49 | 39-55 |
| Attitude to Teachers | 1 | 43 | 28 | 33-53 |
| Atypicality | 6 | 49 | 54 | 41-57 |
| Locus of Control | 3 | 44 | 32 | 34-54 |
| Social Stress | 2 | 41 | 19 | 32-50 |
| Anxiety | 10 | 48 | 48 | 41-55 |
| Depression | 8 | 53 | 72 | 45-61 |
| Sense of Inadequacy | 4 | 46 | 42 | 37-55 |
| Attention Problems | 6 | 49 | 51 | 39-59 |
| Hyperactivity | 5 | 46 | 41 | 36-56 |
| Relations with Parents | 23 | 54 | 59 | 45-63 |
| Interpersonal Relations | 16 | 59 | 89 | 50-68 |
| Self-Esteem | 16 | 50 | 34 | 41-59 |
| Self-Reliance | 14 | 47 | 37 | 36-58 |

**Table 33: April`s Post-intervention SRP-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| School Problems | 90 | 44 | 32 | 36-52 |
| Internalizing Problems | 281 | 46 | 40 | 42-50 |
| Inattention/Hyperactivity | 95 | 47 | 43 | 39-55 |
| Emotional Symptoms Index | 291 | 48 | 48 | 43-53 |
| Personal Adjustment | 210 | 53 | 58 | 46-60 |

**Table 34: April`s Post-intervention SRP Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Attitude to School | 4 | 47 | 49 | 39-55 |
| Attitude to Teachers | 1 | 43 | 28 | 33-53 |
| Atypicality | 6 | 49 | 54 | 41-57 |
| Locus of Control | 3 | 44 | 32 | 34-54 |
| Social Stress | 2 | 41 | 19 | 32-50 |
| Anxiety | 10 | 48 | 48 | 41-55 |
| Depression | 8 | 53 | 72 | 45-61 |
| Sense of Inadequacy | 4 | 46 | 42 | 37-55 |
| Attention Problems | 6 | 49 | 51 | 39-59 |
| Hyperactivity | 5 | 46 | 41 | 36-56 |
| Relations with Parents | 23 | 54 | 59 | 45-63 |
| Interpersonal Relations | 16 | 59 | 89 | 50-68 |
| Self-Esteem | 16 | 50 | 34 | 41-59 |
| Self-Reliance | 14 | 47 | 37 | 36-58 |

Case 2: Ben

**Table 35: Ben`s Post-intervention SRP-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| School Problems | 156 | 82 | 99 | 74-90 |
| Internalizing Problems | 431 | 76 | 98 | 72-80 |
| Inattention/Hyperactivity | 150 | 77 | 99 | 69-85 |
| Emotional Symptoms Index | 402 | 72 | 97 | 67-77 |
| Personal Adjustment | 163 | 38 | 11 | 31-45 |

**Table 36: Ben`s Post-intervention SRP-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Attitude to School | 18 | 79 | 99 | 71-87 |
| Attitude to Teachers | 12 | 77 | 98 | 67-87 |
| Atypicality | 22 | 77 | 99 | 69-85 |
| Locus of Control | 12 | 65 | 90 | 55-75 |
| Social Stress | 18 | 77 | 98 | 68-86 |
| Anxiety | 32 | 79 | 99 | 72-86 |
| Depression | 14 | 63 | 88 | 55-71 |
| Sense of Inadequacy | 14 | 70 | 95 | 61-79 |
| Attention Problems | 19 | 78 | 99 | 68-88 |
| Hyperactivity | 16 | 72 | 97 | 62-82 |
| Relations with Parents | 18 | 44 | 26 | 35-53 |
| Interpersonal Relations | 7 | 32 | 7 | 23-41 |
| Self-Esteem | 9 | 30 | 5 | 21-39 |
| Self-Reliance | 18 | 57 | 73 | 46-68 |

Case 3: Charlie

**Table 37: Charlie`s Pre-intervention SRP-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| School Problems | 155 | 81 | 99 | 73-89 |
| Internalizing Problems | 385 | 67 | 94 | 63-71 |
| Inattention/Hyperactivity | 140 | 72 | 97 | 64-80 |
| Emotional Symptoms Index | 377 | 66 | 93 | 61-71 |
| Personal Adjustment | 147 | 32 | 6 | 25-39 |

**Table 38: Charlie`s Pre-intervention SRP-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Attitude to School | 16 | 75 | 98 | 67-83 |
| Attitude to Teachers | 13 | 80 | 98 | 70-90 |
| Atypicality | 13 | 61 | 84 | 53-69 |
| Locus of Control | 16 | 74 | 98 | 64-84 |
| Social Stress | 17 | 75 | 98 | 66-84 |
| Anxiety | 7 | 44 | 32 | 37-51 |
| Depression | 14 | 63 | 88 | 55-71 |
| Sense of Inadequacy | 13 | 68 | 94 | 59-77 |
| Attention Problems | 17 | 73 | 98 | 63-83 |
| Hyperactivity | 14 | 67 | 94 | 57-77 |
| Relations with Parents | 12 | 33 | 7 | 24-42 |
| Interpersonal Relations | 10 | 41 | 16 | 32-50 |
| Self-Esteem | 9 | 30 | 5 | 21-39 |
| Self-Reliance | 12 | 43 | 23 | 32-54 |

**Table 39: Charlie`s Post-intervention SRP-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| School Problems | 136 | 70 | 96 | 62-78 |
| Internalizing Problems | 359 | 62 | 88 | 58-66 |
| Inattention/Hyperactivity | 132 | 67 | 95 | 59-75 |
| Emotional Symptoms Index | 350 | 61 | 86 | 56-66 |
| Personal Adjustment | 168 | 39 | 14 | 32-46 |

**Table 40: Charlie`s Post-intervention SRP-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Attitude to School | 13 | 68 | 93 | 60-76 |
| Attitude to Teachers | 9 | 68 | 93 | 58-78 |
| Atypicality | 8 | 52 | 65 | 44-60 |
| Locus of Control | 15 | 72 | 97 | 62-82 |
| Social Stress | 13 | 66 | 92 | 57-75 |
| Anxiety | 15 | 55 | 72 | 48-62 |
| Depression | 11 | 58 | 82 | 50-66 |
| Sense of Inadequacy | 8 | 56 | 76 | 47-65 |
| Attention Problems | 15 | 69 | 95 | 59-79 |
| Hyperactivity | 12 | 63 | 88 | 53-73 |
| Relations with Parents | 12 | 33 | 7 | 24-42 |
| Interpersonal Relations | 13 | 50 | 38 | 41-59 |
| Self-Esteem | 12 | 38 | 12 | 29-47 |
| Self-Reliance | 14 | 47 | 37 | 36-58 |

Case 4: Erin

**Table 41: Erin`s Pre-intervention SRP-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| School Problems | 106 | 53 | 69 | 45-61 |
| Internalizing Problems | 329 | 56 | 75 | 52-60 |
| Inattention/Hyperactivity | 124 | 63 | 90 | 55-71 |
| Emotional Symptoms Index | 319 | 54 | 71 | 49-59 |
| Personal Adjustment | 200 | 50 | 44 | 43-57 |

**Table 42: Erin's Pre-intervention SRP-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Attitude to School | 7 | 54 | 70 | 46-62 |
| Attitude to Teachers | 4 | 52 | 69 | 42-62 |
| Atypicality | 8 | 52 | 65 | 44-60 |
| Locus of Control | 10 | 60 | 83 | 50-70 |
| Social Stress | 7 | 52 | 66 | 43-61 |
| Anxiety | 23 | 66 | 93 | 59-73 |
| Depression | 5 | 48 | 56 | 40-56 |
| Sense of Inadequacy | 6 | 51 | 61 | 42-60 |
| Attention Problems | 13 | 64 | 90 | 54-74 |
| Hyperactivity | 11 | 60 | 84 | 50-70 |
| Relations with Parents | 22 | 52 | 51 | 43-61 |
| Interpersonal Relations | 13 | 50 | 38 | 41-59 |
| Self-Esteem | 19 | 58 | 88 | 49-67 |
| Self-Reliance | 11 | 40 | 17 | 29-51 |

**Table 43: Erin`s Post-intervention SRP-C Composite Score Summary on the BASC—II**

**Composite Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| School Problems | 102 | 51 | 61 | 43-59 |
| Internalizing Problems | 324 | 55 | 72 | 51-59 |
| Inattention/Hyperactivity | 100 | 50 | 54 | 42-58 |
| Emotional Symptoms Index | 322 | 55 | 73 | 50-60 |
| Personal Adjustment | 189 | 46 | 30 | 39-53 |

**Table 44: Erin`s Post-intervention SRP-C Scale Score Summary on the BASC—II**

**Scale Score Summary**

| | Raw Score | T Score | Percentile Rank | 95% Confidence Interval |
|---|---|---|---|---|
| Attitude to School | 9 | 59 | 81 | 51-67 |
| Attitude to Teachers | 1 | 43 | 28 | 33-53 |
| Atypicality | 7 | 51 | 60 | 43-59 |
| Locus of Control | 8 | 55 | 73 | 45-65 |
| Social Stress | 11 | 61 | 87 | 52-70 |
| Anxiety | 14 | 54 | 67 | 47-61 |
| Depression | 3 | 45 | 39 | 37-53 |
| Sense of Inadequacy | 9 | 58 | 81 | 49-67 |
| Attention Problems | 6 | 49 | 51 | 39-59 |
| Hyperactivity | 7 | 51 | 59 | 41-61 |
| Relations with Parents | 19 | 46 | 31 | 37-55 |
| Interpersonal Relations | 12 | 47 | 29 | 38-56 |
| Self-Esteem | 17 | 53 | 45 | 44-62 |
| Self-Reliance | 12 | 43 | 23 | 32-54 |

Case 5: Jeff

# APPENDIX J

## Appendix J: BRIEF Tables

Case 1: April

**Table 45: April`s Pre- and Post-intervention BRIEF *T* score profile with 90% CI**

| | Pre-intervention | | Post-intervention | |
|---|---|---|---|---|
| Scale/Index | *T* score | 90% CI | *T* score | 90% CI |
| Inhibit | 52 | [47, 57] | 52 | [47, 57] |
| Shift | 41 | [35, 47] | 44 | [38, 50] |
| Emotional Control | 47 | [42, 52] | 54 | [49, 59] |
| BRI | 47 | [43, 51] | 51 | [47, 55] |
| Initiate | 43 | [36, 50] | 49 | [42, 56] |
| Working Memory | 52 | [47, 57] | 63 | [58, 68] |
| Plan/Organize | 53 | [48, 58] | 57 | [52, 62] |
| Organization of Materials | 48 | [43, 53] | 48 | [43, 53] |
| Monitor | 52 | [46, 58] | 52 | [46, 58] |
| MI | 50 | [47, 53] | 56 | [53, 59] |
| GEC | 49 | [47, 51] | 54 | [52, 56] |

Case 2: Ben

**Table 46: Ben`s Pre- and Post-intervention BRIEF T score profile with 90% CI**

| | Pre-intervention | | Post-intervention | |
|---|---|---|---|---|
| Scale/Index | *T* score | 90% CI | *T* score | 90% CI |
| Inhibit | 69 | [64, 74] | 71 | [66, 76] |
| Shift | 71 | [63, 79] | 74 | [66, 82] |
| Emotional Control | 69 | [64, 74] | 71 | [66, 76] |
| BRI | 72 | [68, 76] | 75 | [71, 79] |
| Initiate | 66 | [58, 74] | 75 | [67, 83] |
| Working Memory | 72 | [67, 77] | 76 | [71, 81] |
| Plan/Organize | 65 | [59, 71] | 73 | [67, 79] |
| Organization of Materials | 58 | [52, 64] | 64 | [58, 70] |
| Monitor | 72 | [64, 80] | 72 | [64, 80] |
| MI | 70 | [66, 74] | 77 | [73, 81] |
| GEC | 72 | [69, 75] | 78 | [75, 81] |

Case 3: Charlie

**Table 47: Charlie`s Pre- and Post-intervention BRIEF T score profile with 90% CI**

| | Pre-intervention | | Post-intervention | |
|---|---|---|---|---|
| Scale/Index | *T* score | 90% CI | *T* score | 90% CI |
| Inhibit | 88 | [83, 93] | 86 | [81, 91] |
| Shift | 67 | [59, 75] | 63 | [55, 71] |
| Emotional Control | 69 | [63, 75] | 64 | [58, 70] |
| BRI | 80 | [75, 85] | 76 | [71, 81] |
| Initiate | 62 | [55, 69] | 56 | [49, 63] |
| Working Memory | 75 | [70, 80] | 64 | [59, 69] |
| Plan/Organize | 79 | [74, 84] | 65 | [60, 70] |
| Organization of Materials | 69 | [63, 75] | 69 | [63, 75] |
| Monitor | 81 | [74, 88] | 66 | [59, 73] |
| MI | 77 | [74, 80] | 66 | [63, 69] |
| GEC | 81 | [78, 84] | 71 | [68, 74] |

Case 4: Erin

**Table 48: Erin`s Pre- and Post-intervention BRIEF T score profile with 90% CI**

| | Pre-intervention | | Post-intervention | |
|---|---|---|---|---|
| Scale/Index | *T* score | 90% CI | *T* score | 90% CI |
| Inhibit | 64 | [59, 69] | 57 | [52, 62] |
| Shift | 59 | [53, 65] | 77 | [71, 83] |
| Emotional Control | 67 | [62, 72] | 67 | [62, 72] |
| BRI | 66 | [62, 70] | 69 | [65, 73] |
| Initiate | 52 | [45, 59] | 52 | [45, 59] |
| Working Memory | 63 | [58, 68] | 70 | [65, 75] |
| Plan/Organize | 49 | [44, 54] | 65 | [60, 70] |
| Organization of Materials | 54 | [49, 59] | 54 | [49, 59] |
| Monitor | 67 | [61, 73] | 61 | [55, 67] |
| MI | 58 | [55, 61] | 63 | [60, 66] |
| GEC | 61 | [59, 63] | 66 | [64, 68] |

Case 5: Jeff

**Table 49: Jeff`s Pre- and Post-intervention BRIEF T score profile with 90% CI**

| | Pre-intervention | | Post-intervention | |
|---|---|---|---|---|
| Scale/Index | *T* score | 90% CI | *T* score | 90% CI |
| Inhibit | 64 | [59, 69] | 75 | [70, 80] |
| Shift | 77 | [69, 85] | 74 | [66, 82] |
| Emotional Control | 71 | [66, 76] | 69 | [64, 74] |
| BRI | 73 | [69, 77] | 76 | [72, 80] |
| Initiate | 69 | [61, 77] | 72 | [64, 80] |
| Working Memory | 72 | [67, 77] | 72 | [67, 77] |
| Plan/Organize | 71 | [65, 77] | 69 | [63, 75] |
| Organization of Materials | 67 | [61, 73] | 67 | [61, 73] |
| Monitor | 72 | [64, 80] | 69 | [61, 77] |
| MI | 75 | [71, 79] | 74 | [70, 78] |
| GEC | 76 | [73, 79] | 77 | [74, 80] |

Case 6: Ken

**Table 50: Ken`s Pre-intervention BRIEF T score profile with 90% CI**

| | Pre-intervention | | Post-intervention (N/A) | |
|---|---|---|---|---|
| Scale/Index | *T* score | 90% CI | *T* score | 90% CI |
| Inhibit | 86 | [81, 91] | | |
| Shift | 95 | [87, 103] | | |
| Emotional Control | 75 | [69, 81] | | |
| BRI | 90 | [85, 95] | | |
| Initiate | 82 | [75, 89] | | |
| Working Memory | 78 | [73, 83] | | |
| Plan/Organize | 79 | [74, 84] | | |
| Organization of Materials | 69 | [63, 75] | | |
| Monitor | 72 | [65, 79] | | |
| MI | 80 | [77, 83] | | |
| GEC | 87 | [84, 90] | | |

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