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THE IMPACT OF A COGNITIVE BEHAVIORAL SELF-CONTROL PROGRAM ON
BEHAVIORS OF CHILDREN DIAGNOSED WITH
ATTENTION-DEFICIT HYPERACTIVITY DISORDER

By

KEALEY A. HESTER

B.Soc.Sci, B.A., University of Ottawa, 2002

THESIS

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Abstract

Medication and psychotherapy have been used traditionally to treat the symptoms of Attention-Deficit Hyperactivity Disorder (ADHD). The purpose of this research was to evaluate the use of a cognitive behavioural self-control program, Orlick's (1998) *Positive-Living Skills (PLS)* program on three male children ages 8 to 9-years-old with ADHD.

The *PLS* program teaches children skills including relaxation, focus and distraction control. A multiple case study method was administered to determine (a) whether the participants enjoyed the *PLS* programs; (b) the extent to which the skills were implemented by the children on a daily basis; and (c) the effectiveness of the skills in facilitating self-control behaviour management by the participants.

Results indicated that the participants learned relaxation, focus and distraction control skills to manage ADHD behaviours. Two of the three participants were able to generalize the skills to daily life, and the third participant found the skills worked for him, but that he sometimes had difficulty applying the skills independently.

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The impact of a Cognitive Behavioural Self-Control Program on
behaviours of children diagnosed with Attention-Deficit Hyperactivity Disorder

CHAPTER I

Introduction

Extensive research has been compiled surrounding the use of stimulant medications in managing the behaviours of children diagnosed with Attention-Deficit Hyperactivity Disorder (ADHD), however only a small number of have endeavoured to examine the use of self-modulated programs in managing this disorder. Initially recognized in the Diagnostic and Statistical Manual for Mental Disorders in 1980 (American Psychiatric Association, DSM-III, 1980), ADHD is a behavioural disorder recognized by two core characteristics, inattention and impulsivity/hyperactivity. The symptoms of ADHD can be manifested at varying degrees and are identified by behaviours that impede academic performance, social interactions, and the completion of developmental tasks (Krueger & Kendall, 2001). Children diagnosed with ADHD often exhibit aggression, frustration, lack of internal control, diminished intrinsic motivation, and limited reaction to external motivators. Subsequently, depression and low self-esteem become secondary symptoms (Leipold & Bundy, 2000). Children diagnosed with ADHD are also subject to poor peer relations due to aggressive conduct, and are often rejected due to their overzealous and insensitive behaviours (Blachman & Hinshaw, 2002). The inability to maintain attention and the exhibition of impulsive behaviours also limit the learning abilities of the child, which become increasingly detrimental to academic achievement and result in lower I.Q. scores (Kerns, McInerney & Wilde, 2001; Kruger & Kendall, 2001). An ADHD diagnosis also impacts on the family situation, sometimes causing disruption and hostility in parent and sibling relationships with the diagnosed child (Lobar & Phillips, 1995). Discipline concerns and low family

cohesiveness contribute to an increased potential for a conflict-ridden situation, often resulting in increased frequency of maternal depression, marital conflict, and elevated intensity of maternal discipline (Bor, Sanders, & Markie-Dadds, 2002; Lavigne, Arend, Rosenbaum, Binns, Christoffel, & Gibbons, 1998; (National Institute of Health), 2000). ADHD often persists into adulthood, with most children experiencing a decrease in symptoms during mid- to late adolescence (Hupp & Reitman, 1999; Wood, 1999). The effects of an ADHD-diagnosis that persist into adolescence and adulthood are likely to result in low employment and socio-economic status, antisocial behaviours and mood problems (Waschbusch, Pelham, Jennings, Greiner, Tarter, & Moss, 2002; Wood, 1999).

ADHD is diagnosed by assessing a series of pre-established characterizing factors administered by a physician and/or child psychiatrist (Pillow, Pelham, Hoza, Molina & Stulz, 1998). The diagnostic criteria requires that the child experience six or more specified symptoms of inattention and/or hyperactivity-impulsivity for at least six months to an extent that is maladaptive and inconsistent with the characteristic developmental level (American Psychiatric Association, 1994).

ADHD remains the most frequently diagnosed behavioural disorder in children within North America, with a boy-to-girl proportion of 3:1 (Wood, 1999). Although the precise cause remains unknown, many factors have been studied as possible contributing causes, including environmental toxins, genetic factors, smoking, and alcohol or illegal drug use by the mother during pregnancy and breastfeeding (Johnson, 2002). Early problems in parental-child attachment may also influence the timing and type of the deficit, further impacting the social and academic performance of the child (Halasz & Vance, 2002).

Traditional treatment methods have targeted the medical community and medical practitioners as the most appropriate to manage ADHD. Few attempts have been made to teach children mental skills that may help them manage their own ADHD behaviours, perhaps because they are considered too young to be able to administer any form of self-directed treatment. Despite the controversial diagnosis and treatment protocols, ADHD remains the most commonly diagnosed behavioural disorder in children (NIH, 2000). Currently, between 5 and 10% of school-aged children in North America have been diagnosed with ADHD (Hoagwood, Kelleher, Feil, & Comer, 2000; Johnston, 1996; Waschbusch et al., 2002) stimulating research to effectively manage the behaviours. These numbers alone provide support for the need to conduct research on appropriately designed programs to teach children skills to effectively manage their own behaviours.

While research on relevant self-control programs for children with ADHD is clearly warranted, no reports have utilized a cognitive behavioural self-control program in an attempt to teach children with ADHD skills for relaxation, focusing and distraction control. Relaxation, focusing, and distraction control are important skills lacking in children with ADHD display a deficit (Hupp & Reitman, 1999; Hupp, Reitman, Northup, O'Callaghan, & LeBlanc, 2002; Pelham, Vodde-Hamilton, Murphy, Greenstein & Vallano, 1991; Reitman, Hupp, O'Callaghan, Gulley & Northup, 2001).

The purpose of the current study was to introduce and evaluate the effectiveness of select skills from Orlick's *Positive-Living Skills (PLS)* program (1998), a cognitive behavioural self-control program for children, to determine; (a) whether the participants with ADHD enjoyed the *PLS* programs; (b) the extent to which the skills were implemented by children diagnosed with

ADHD on a daily basis; and (c) the effectiveness of the skills in facilitating self-control behaviour management by the participants with ADHD.

Until recently, children diagnosed with ADHD have been limited to treatments that are administered primarily by professionals or guardians. Regardless of whether they are using therapeutic medication or psychotherapy, children have been provided with little self-directed training in managing ADHD and the associated symptoms. The implementation of a cognitive behavioural self-control program, such as *PLS*, while maintaining existing treatments has potential advantages. It may allow children to identify situations where the behaviours associated with ADHD are surfacing, and provide children with effective means or strategies to immediately implement skills to manage those behaviours. By providing ownership of the disorder and teaching children how to relax, focus, and control distractions, children with ADHD may acquire valuable skills and may, in turn, benefit daily.

CHAPTER II

Review of Literature

The literature review will examine various therapeutic strategies for treating behaviours associated with ADHD in children. The review explores both medication therapy and alternative treatments as current possibilities for managing ADHD. Previous research in cognitive therapies and positive-living skills programs are also discussed.

Medication Therapy

Research estimates that 3 to 5% of school-aged children are currently undergoing psycho-stimulant medication therapy to control and manage behaviour symptoms associated with ADHD (Blachman & Hinshaw, 2002; Hoagwood et al., 2000; Janetti, 2000; Johnston & Leung, 2001). Methylphenidate, also recognized as Ritalin®, Concerta®, and Metadate®, is the most commonly prescribed psycho-stimulant medication for ADHD. Over 70% of ADHD-diagnosed children are using this medication, with a significant increase over the last two decades (Klein-Schwartz, 2002). Less commonly used psycho-stimulant treatments for ADHD include dextroamphetamine and pemoline (NIH, 2000). Race, sex, age, socio-economic status, and family relations do not appear to impact the effectiveness of methylphenidate, although low intelligence may be associated with an inferior response to treatment (Wood, 1999). Methylphenidate serves the child by blocking dopamine transporters and increasing attention signaling, resulting in a decrease in activity while increasing concentration (Vastag, 2001). Use of the medication has been reported to result in dramatic improvements in attentiveness, reduced aggressive behaviours, and more self-control of emotional reactions, measured by teacher and parent observation. Psycho-stimulants also reportedly improve cognitive abilities and emotional maturity, seemingly “normalizing” the ADHD behaviours of diagnosed children (Hoagwood &

al., 2000; Spencer, Biederman, & Wilens, 2000). The medication has varying results in improving academic achievement, with the most recent studies concluding that increased academic achievement is due to improved attentiveness and is not a direct result of the psycho-stimulant (Moline & Frankenberger, 2001). While methylphenidate is effective in the management of ADHD symptoms in a large number of cases, it is not without negative side effects. Side effects of this medication with children include nervousness, headaches, insomnia, anorexia, dizziness, dry mouth, irritability, and weight loss (Wood, 1999). The medical community has also expressed concern regarding the potential for overdose with children who are prescribed methylphenidate, as the tablets may be abused when used orally, injected, or snorted (Klein-Schwartz, 2002). Moline and Frankenberger (2001) confirmed that 34% of children who are prescribed methylphenidate to control ADHD symptoms have been approached by other students to either sell or trade the medication.

The immediate effects of methylphenidate use have been well documented, however the long-term effects are less well known. Vastag (2001) reported that only two large studies attempted to determine the long-term effects of methylphenidate use. One study stated that drug addiction was more prevalent while the other study demonstrated an opposing conclusion. The Canadian Pharmacists Association (2001) indicated that, not unlike other psycho-stimulant medications, methylphenidate should be administered cautiously to patients with emotional instability, as the patient may develop dependency. Vigilant individual supervision during drug withdrawal is imperative, as depression and chronic over-activity may occur.

Alternative Treatments

Recent evidence suggests that medication to treat ADHD is more effective when paired with alternative treatment strategies, such as cognitive behaviour therapy, psychotherapy, stress

management training and emotional counseling (Klein-Schwartz, 2002; Pelham, Vodde-Hamilton, Murphy, Greenstein & Vallano, 1991; Stubbe, 2000). Methylphenidate is used to decrease the occurrence of inappropriate behaviours, but does not serve to increase positive social behaviours in children diagnosed with ADHD (Hupp et al., 2002).

Diverse research presents alternatives for potentially effective means for managing the treatment of ADHD-diagnosed children and adults. These include dietary management, herbal and homeopathic treatments, biofeedback, meditation, and perceptual stimulation and training. The success of these treatments and therapies is primarily observed when paired with methylphenidate (NIH, 2000). The Compendium of Pharmaceuticals and Specialties states, "Methylphenidate is indicated as an integral part of a total treatment program which typically includes other remedial measures (psychological, educational, social) for a stabilizing effect in children with a behavioural syndrome" (Canadian Pharmacists Association, 2001). Children demonstrated improved behavioural control when psychotherapy or cognitive behaviour therapy was paired with methylphenidate use, often reducing the prescribed dosage of the psycho-stimulant medication (Janetti, 2002; Wood, 1999).

Reitman, Hupp, O'Callaghan, Gulley and Northup (2001) completed preliminary research to determine the value of psycho-stimulant medication and a token-economy treatment program on ADHD-diagnosed children. In this program participants were provided with tokens for appropriate behaviours which could then be redeemed for desired items. The participants displayed improved behavioural self-management and decreased disruptive actions in a sports environment, demonstrating that the token system did improve behaviour when paired with methylphenidate. Hupp and Reitman (1999) researched how sports performance and sportsmanship can be improved with the use of a skills and behaviour management program at a

sports camp. A token economy implemented to promote sportsmanship resulted in significant positive effects on both game performance and participant behaviour (Hupp & Reitman, 1999; Reitman et al., 2001). The research of token economies was furthered by Reitman et al. who implemented the use of a token economy paired with methylphenidate to manage disruptive behaviour in sports for ADHD-diagnosed children. Findings indicated that combined, the two components helped children manage their behaviours. However, when the token economy and the methylphenidate were compared in isolation, the token economy emerged as more efficient in reducing disruptive behaviour in two of three study participants.

More recently, Hupp et al. (2002) conducted a study to measure the effects of delayed rewards, the introduction of tokens and stimulant medication (methylphenidate) on sportsmanlike behaviour with children diagnosed with ADHD. The research found that a delayed rewards system and the stimulant medication (methylphenidate) produced little to no effect on sportsmanlike behaviour in the participants. The medication served to decrease inappropriate behaviour, but failed to increase positive social behaviours when used in isolation. The use of tokens, however, demonstrated increased sportsmanlike behaviour in all participants and was observable each time the token program was reintroduced to the participants, particularly in situations where the delayed rewards had previously been in use. Slusarek, Velling, Bunk and Eggers (2001) supported the research done by Hupp et al. (2002), stating that children with ADHD perform similar to non-ADHD children in high-incentive environments, but perform significantly inferior in low-incentive situations than the control group.

Pelham, Vodde-Hamilton, Murphy, Greenstein, and Vallano (1991) observed that methylphenidate dosages could be reduced from 6mg/kg to 3mg/kg in boys 7 to 14 years of age with the introduction of a summer treatment program that included scheduled psychotherapy.

Johnson and Rosen (2000) evaluated the effectiveness of sports participation in regulating behaviour and reducing aggressive tendencies in ADHD-diagnosed children. Results indicated that participation did contribute to decreased emotional reactivity and a decrease in aggressive behaviours. Similarly, male children manifested improved and sustained attentiveness following consistent participation in a karate program. Participation also resulted in lower occurrences of hyperactivity and impulsivity during participation in karate, as compared to activities in daily life (Felmet, 1998).

Further research has introduced metronomes, a computer-based program, paired with physical activity as a means to police behavioural control, facilitate attention, motor-control, and select academic skills in boys with ADHD (Shaffer, Jacokes, Cassily, Greenspan, Tucjman, & Stemmer, 2001). Early research suggested that metronomes can significantly increase central nervous system processing capacities, facilitating academic tasks, motor control and attention in boys with ADHD.

Definition of Self-Control Cognitive Behaviour Therapy

Self-control therapy allows children to learn to identify situations under which they must control and be responsible for their own actions and reactions. Intrapyschic Humanism has previously established correlations between self-control and alternative therapies, resulting in behaviour enhancement through environmental reinforcement teaching for children with ADHD (Tyson , 2000). Cognitive behaviour therapy is the process of teaching children to think before they act, allowing the analysis and choice of a behaviour before demonstrating an action. Often referred to as “smart thinking”, cognitive behavioural therapy has been demonstrated to aid in the behaviour treatment of children diagnosed with ADHD by providing appropriate behaviour choices (Miranda & Presentacion, 2000). Self-control therapy teaches children to identify situations in

which they are responsible for their actions, and cognitive therapy teaches them to analyze and choose their actions.

Cognitive Therapy

Cognitive therapy has been found to be effective in the self-control of children with ADHD when paired with methylphenidate. Self-assessment and parental consultation indicated significant improvements in aggressive behaviours, socialization, hyperactivity-impulsivity and attention in children who participated in a cognitive behavioural self-control training program (Miranda & Presentacion, 2000). The study did not, however, demonstrate significant differences in ADHD-diagnosed children who present with or without aggressive tendencies, concluding that self-control is as effective for both groups of ADHD-diagnosed children. Tyson (2000) applied a modified self-control method with the application of an Intrapsychic Humanism approach, teaching the child about their choices and that reinforcement is not contingent or immediate. The Intrapsychic Humanism program provided participants with autonomy in choices, resulting in improved behaviour and enhanced learning abilities in the classroom. Research on Executive Function treatments, which teaches self-regulatory behaviours to children and adults with ADHD and Tourette's syndrome, has observed significant improvements in on-task performance and inhibition of inappropriate thoughts (Mahone, Cirino, Cutting, Cerrone, Hagelthorn, Hiemenz, Singer, & Denckla, 2002).

One form of cognitive therapy is mental skills training, used by many populations, including elite athletes. Canadian athletes in the 1984 Olympics were administered interviews and questionnaires to assess mental readiness and mental control for competition. Results indicated that sports performance outcome was associated with strong mental skills (Orlick & Partington, 1988). Athletes with injuries were also examined to determine if mental training and

mental skills can be associated with healing rates. A survey was used to assess positive attitude, outlook, stress and stress control, social support, goal setting, positive self-talk, and mental imagery. The slowest healing group was noted as having the lowest scores on the assessment. Nineteen percent of the participants had remarkably quick recovery rates, all of whom had high scores on the tested mental variables. Fast recovery rates were primarily attributed to mental skills, including goal setting, positive self-talk, and healing imagery (Ievleva & Orlick, 1991). The effectiveness of mental skills for child-athletes was evaluated using three groups of tennis players aged 7-10 years old. The use of mental imagery, videotaped images and relaxation contributed to improved performance in accuracy and technical quality (Li-Wei, Qi-Wei, Orlick & Zitzelsberger, 1992). From a broader lifestyle perspective, it is interesting to note that children who establish clear, attainable and non-conditional goals have been shown to be happier and at a lesser risk of being diagnosed as clinically depressed (Street, Nathan, Durkin, Morling, Azahar Dzahari, Carson & Durkin, 2004).

Positive-Living Skills Program

The advantages of using mental skills training are not limited to the playing field or the performance arena. *Positive-Living Skills (PLS)* taken from the book *Feeling Great, Teaching children to excel at living* (Orlick, 1998) provides a basic mental skills program designed for children, through a cognitively based approach that may be self-administered following the initial teaching. The *PLS* program provides adults, living or working with children, with activities to help children learn positive-living skills. Created by Dr. Terry Orlick, the *PLS* program was refined using feedback from children and professionals in the area of child development. *PLS* is targeted at children ages 4 to 12-years-old. The program teaches positive-living skills including relaxation, stress control, highlights, positive thinking, focusing, and

positive imagery. The manual provides step-by-step instructions to introduce the skills to children, activities for practicing the skills, an audio compact disc (CD) of all the programs, and homework suggestions.

Gilbert and Orick (2002) introduced Orlick's *PLS* program, from the book *Feeling Great* (1998), into three classrooms of children in first grade, a combined first and second grade class, and a combined fifth and sixth grade class. An experimental group in each classroom received four or five, 15-20 minute *PLS* intervention sessions a week, taught by their teacher, for a period of nine weeks. The control group maintained the habitual classroom schedule during the intervention sessions. Using pre- and post-tests, the researchers were able to determine that by using the *PLS* program, the teachers were successful in teaching their students to relax themselves, to apply stress control strategies to their lives, and to identify and increase the positive or meaningful events and occurrences in their day. A comparable study in an alternative school, one which incorporated many ages of children into one classroom, found similar results. Administered by the teachers to first through sixth grade students, relaxation and stress control skills were successfully integrated into real world situations by the students. Teachers and students both reported having enjoyed the program and felt they had been positively affected by the experience (Taylor & Orlick, 2004). Cox and Orlick (1996) found, using heart-rate monitors, that children from Kindergarten to sixth grade could lower their heart-rates following a 10-week intervention using the *PLS* skills, while the control displayed no improvements. They also reported that 96% of the children applied the relaxation and stress control skills learned in daily life and found them to be very effective.

The benefits of mental skills training were also demonstrated in select or special populations, including children with chronic illness (Koudys & Orlick, 2002). A four-month

intervention was used to teach the *PLS* skills to a child with cancer and their primary caregiver with field notes and interviews used to assess the program. The child learned a variety of mental training skills and was able to use them both inside the hospital environment, and in other situations. The researchers also reported a decrease in crying and an increase in proactive responses to pain when the child was undergoing treatment for cancer. The case study also determined that early introduction of the *PLS* skills, including muscle relaxation, diaphragm breathing and imagery, enhanced the child's ability to cope with treatment and improved their overall quality of life. The care giver also found the skills allowed her to manage her fear and stress better, thereby being better able to provide more effective assistance to her child (Koudys & Orlick, 2002). Klingenberg and Orlick (2002) introduced skills from the *PLS* to a family with a child with a physical disability and a cognitive delay. Ten weekly interventions were conducted to teach the skills adapted from the *PLS* program. Interviews were conducted during week 5 and week 10 of the intervention program. The results indicated that the family perceived better overall family functioning and reported improved coping skills. Perhaps most important, the family recognized that regardless of the demands of each family member, the interventions served as an opportunity for the family to re-energize and spend enjoyable time together.

Teaching children mental skills related to personal development, at school or at home, leads to overall growth of children, particularly when someone who cares is guiding the learning process (Orlick, 2002). Based on this series of research on the *PLS* program, and extensive applied work using the *PLS* activities with children, Orlick concluded that teaching children positive-living skills (mental skills related to personal development) has been extremely effective (Orlick, 2002). This study will assess whether these findings holds true for children diagnosed with ADHD.

CHAPTER III

Methodology

The objective of the study was to assess the enjoyment, application, and effectiveness of the cognitive behavioural self-control *PLS* program (Orlick, 1998) for children with ADHD. A qualitative method was selected to allow the researcher to listen to, and more importantly, hear, the children and their parents express their ideas, opinions and experiences within a structured interview (Rubin & Rubin, 1995). Each case was presented independently, avoiding a comparison of the individual experiences of each child and their parents.

Sample

The qualitative, multiple case study, was comprised of 3 male children diagnosed with ADHD. Two participants were 8 years old and one was 9 years old. Children in this age group have a greater ability than younger children to verbally express their personal observations and experiences with respect to the research intervention (Abikoff, 2001).

The participant selection was completed by posting information in a facility frequented by families of children with ADHD. A participation criteria was established previously and all interested parties who contacted the researcher by phone and fulfilled the criteria were accepted. Of the inquiries received by the researcher, 3 participants met the criteria for participation. Two interested parties were not accepted for the intervention. One potential participant had been introduced to a new medication treatment for less than one month, which would likely result in dose modifications and on-going side-effects. The second child was not accepted for the study due to age, as the child was 4 years old. The materials and design were created for an older child and were not as suitable for younger participant. A case study format was also adopted at this point in the research, differing from the originally proposed group intervention, due to a failure

to coordinate schedules of the three children and their families to participate at a specific time and location. Initial ethics approval for the proposed research was received by the ethics committee of the University of Ottawa (Appendix A). With the approved modification of the research by the thesis supervisor and the ethics committee of the University of Ottawa (Appendix B), a multiple case study was completed to allow participation of all parties at individually scheduled times.

The participants had been previously diagnosed as having ADHD by their family physician or child psychologist, as per the criteria established in the Diagnostic and Statistical Manual for Mental Disorders, 4th edition (DSM-IV, 1994). The participants were undergoing physician-supervised treatment for the symptoms of ADHD using medication, and had maintained their prescription for a minimum of four months, thereby providing for a bodily adjustment to the medication (Canadian Pharmacists Association, 2001). None of the children were under medical care for other medical conditions or had previously participated in research related to the topic. The consent of each participant and their legal parent(s) or guardian(s) was obtained prior to the research commencement (Appendix C).

The participant's parents were also part of the sample, as they too participated in the pre-intervention and post-intervention interviews, both with their child, and without their child present. The criteria established for the parents to participate in the study was that their child had fulfilled the above-listed participant criteria, and that the parent's be willing, and able to participate in the interviews.

PLS Program

The *PLS* program was administered by the researcher to each of the participants individually. The researcher, in conjunction with her supervisor, selected the skills to be taught

and was very familiar with their teaching and implementation. The skills selected were those identified to teach relaxation, focus, and distraction control. The 11 selected intervention exercises all focused, either in part or in full, on skills to increase relaxation, strengthen focus, or limit distractions. Some intervention exercises incorporated more than one of these skills.

The researcher had 10 years of experience working with children in recreational and academic settings, and had training in behavioural and cognitive disorder, and interventions. For the purposes of this study, the researcher also underwent a police records check due to the sensitivity of working with children. The parents were presented with a copy at the first session.

The intervention consisted of 10 35 to 45-minute sessions, with two sessions each week for a 5 week period. The one-on-one intervention sessions were conducted in either the ADHD parent resource centre or in the participant's home, with parents present in the room or in a nearby room. The scheduling of the sessions was planned with each individual family, and was organized not to interfere with either academic or extracurricular commitments. Sessions occurred on weeknights, mostly in the two hours directly following the child's return from school.

The sessions served to teach the participants selected skills from *PLS* (Orlick, 1998). The intervention activities were centered on building skills for relaxation, focusing and distraction control. The relaxation component of the program taught children how to relax and calm down. The focusing component taught children to concentrate and direct their focus. The distraction-control component taught the children skills to maintain focus during distractions. A brief overview of the intervention activities can be found in Table 1.

The initial four sessions introduced the participants to the intervention activities, and provided an opportunity for the children to practice the skills. Each participant and the researcher

listened to the selected audio CD exercises. The researcher then asked the child to identify what they thought was the purpose of the exercise, for example, the purpose might have been to relax, to focus, or to stop distractions. The participant then practiced the skill without the use of the CD with guidance from the researcher.

Table 1. Activities Used from the *PLS* Intervention activities (Orlick, 1998)

<u>Activity</u>	<u>Length (mins.)</u>	<u>Description</u>
Basic Spaghetti Toes	6:07	Tense and relax their muscles
Treasure Hunting for Highlights	6:16	Focus on finding happy things everyday
Umbalakiki	5:51	Learn to shift focus
Changing Channels	5:10	Switching from negative to positive thoughts by using an internal remote
The Great Little Listener	4:43	Listen to a story and learn to focus
One-Breath Relaxation	5:35	A slow breath, exhaling stress and tension
Tree It and Changing Channels	4:14	Focus on one of two stories being told
Focusing Through Distraction	5:43	Perform a math task, with distractions
Special Place Relaxation	4:11	Image calm and beautiful places
Jelly Belly	6:39	Relax by controlling abdominal breathing
Quiet Lake	3:54	Use imagery to relax the mind and body

Approximately three audio CD exercises were presented in each session for the initial four sessions. The children also used their log books to identify their level of relaxation and focus prior to, and following each CD exercise. For the next six sessions, the child and the researcher repeated specific CD exercises and together identified, and discussed specific situations where the program skills might be used in daily life. The participant and the researcher

listened to the exercises on CD and then practiced the exercise without the CD. An outline of CD activities used for each session is shown in Table 2.

Table 2. Session Schedule for the PLS Intervention

Session	Intervention Activities	Method
Session 1	Basic Spaghetti Toes Treasure Hunting for Highlights Umbalakiki	Introduction and Teaching
Session 2	Changing Channels The Great Little Listener One-Breath Relaxation	Introduction and Teaching
Session 3	Tree-It and Changing Channels Focusing Through Distraction Special Place Relaxation	Introduction and Teaching
Session 4	Jelly Belly Quiet Lake	Introduction and Teaching
Session 5	Basic Spaghetti Toes Treasure Hunting for Highlights	Practice and Discussion
Session 6	Umbalakiki Changing Channels	Practice and Discussion
Session 7	The Great Little Listener One-Breath Relaxation	Practice and Discussion
Session 8	Tree-It and Changing Channels Focusing Through Distraction	Practice and Discussion
Session 9	Special Place Relaxation Jelly Belly Quiet Lake	Practice and Discussion
Session 10	Reviewed all exercises with CD	Discussed activities

Sometimes distractions were introduced, such as an open window, the TV on, or the researcher fidgeting with paper to further simulate and practice the use of the exercises in daily situations. The researcher used the log book in the last six sessions to allow the children to identify their level of relaxation and focus before and following the use of the skills, both with and without the audio CD. The log book was also used to illustrate situations where they had used or may use the skills in daily situations.

During sessions, reinforcement for on-task behaviours, such as listening and sitting appropriately, was provided in the form of verbal praise, such as “good listening, I like your sitting, great paying attention”. Verbal prompts, such as “listen carefully, time to pay attention”, were used to regain the attention of children if they appeared to be distracted.

Role of Parents

Each participant and parent received an outline of the selected intervention activities (Appendix D) from *PLS* (Orlick, 1999) and the audio CD to use at home and share with their family. Parents were encouraged to remind their child to use the skills in daily life. The researcher briefed the parents at the end of each session about the skills discussed during that session, and some of the situations the child had identified as areas where they may be implemented. The researcher then informed the parents that they could practice the skills with their child and encouraged the parents to provide verbal prompts to their child for using the skills, if they identified an opportunity.

During intervention sessions, parents were encouraged to join in and listen to the CD, but were discouraged from participating in the discussions. They were provided with a note pad and pen where they could make notes of ideas or suggestions relating to the log book activities or the

intervention activities completed. At the end of the session parents could then share their ideas with the researcher and their child. This was done to limit disruption during the sessions.

Pre-intervention Interview

The purpose of the pre-intervention interview was to gain a general understanding of the participant's treatment history, their particular behaviours associated with ADHD, their ability to remain focused and their general ability to control distraction.

The researcher conducted the pre-intervention interview the week prior to the start of the intervention. The participant interview had parent(s) present while the child responded to open-ended questions (Appendix E). The participant was also asked questions about their ability to focus in different situations, times when they were distracted and their own description of not being able to focus.

The participant then left the room and the parents were interviewed regarding situations when their child was able to concentrate, strategies used by the family to manage the behaviours, and their description of the ADHD behaviours they observed in their child (Appendix F).

Post-intervention Interview

Following the completion of the 10 session, 5-week intervention, the participants and their parent(s) engaged in a post-intervention interview (Appendix G). The post-interview was scheduled 2 to 3 weeks after the completion of the five-week intervention. The participants were asked to respond to questions that related to whether or not the participants enjoyed the *PLS* program, whether or not the participants used the skills, and the participant's perspective on the effectiveness of the skills that they did use.

The parents were also interviewed, again in the absence of their child. They were asked questions about their perception of their child's enjoyment of the program, the effectiveness of

the program skills for their child, and the child's application of the skills to daily life (Appendix H).

The researcher audio taped the pre-intervention and post-intervention interviews and transcribed the interviews verbatim. The participants and parents were provided with a written copy of the transcripts to read and review together, and all confirmed the accuracy of the content. The audiotape, the transcript and all related materials were assigned a reference number to uniquely identify each participant for the purpose of confidentiality. All of the documentation that linked the participant and parent's identity to a reference number will be preserved in the professor's office, under lock, for five years following the publication of the research.

Log book

A log book was introduced as part of the intervention. Each participant decorated his own log books with pictures and colouring. One or two log book pages were completed by the participants per session to target the specific mental skills being learned or practiced that session. The pages completed during that sessions were either paired with listening to the intervention exercise on CD or after practicing the skill without the CD. The researcher collected the log books at the end of each session and kept them until the following session. During the log book exercises, participants often requested that the researcher write out longer responses for them due to their inability to spell correctly. In these cases, the researcher transcribed the participants' responses verbatim, and then read them to the participants again to verify accuracy. In these cases the researcher indicated on the log book page that the responses had been transcribed by the researcher.

The log book provided the children with an opportunity to further explore and evaluate intervention activities. The content provided questions to initiate reflection, evaluation and

discussion. The primary purpose of the log book was to facilitate better mastery of the mental skills through use of illustrations and written comments by the children (Appendix I).

The log book provided participants with evaluation scales where they could rate the effectiveness of using the skills. They could also comment on additional areas explored, including possible situations for applying the skills, and a list to catalogue which exercises had been learned. The log book served to generate opportunities for the researcher and the participants to discuss the intervention exercises and skills following listening to the intervention activities on CD. The participants coloured the pages assigned for each activity and were encouraged to make notes of ideas or thoughts they had on the intervention activities they were doing. The researcher facilitated the process by reading the directions and encouraging the participant to discuss their picture or ideas. The log book also provided an opportunity for the children to recall specific situations where they had used the program skills, or situations where they could have, but did not use the skills.

Researcher Notes

The researcher kept brief notes on each session with each participant. Following each session, the researcher recorded information relating to what was done in that session, what went well, any problems or concerns expressed by the parents or the participant, the participant's reactions to the intervention activities presented and any relevant or unique session details. Notes were used to allow the researcher to recall details about what transpired with each particular participant while running sessions with three different children over the course of the intervention period.

Data Analysis

The post-intervention interviews, log books and researcher notes were analyzed deductively to assess the overall effectiveness of the program (see Table 3). Prior to the study, the researcher identified 3 primary categories of information that would be assessed, including enjoyment of intervention activities, application of skills learned, and effectiveness of the application. These three primary areas of assessment were based on previous research on the *PLS* program, the needs of children with ADHD and discussions between the researcher and her advisor. The following table indicates which data sources were used to evaluate each of the research categories.

Research Category	Data Sources
Enjoyment	Participant interviews Parent interviews Researcher notes
Application	Participant interviews Parent interviews Researcher notes Log book
Effectiveness	Participant interviews Parent interviews Researcher notes Log book

Table 3. The data sources that contribute to each of the three research categories.

The interviews from both the participants and the parents were transcribed and then analyzed inductively in a multiple case study format. The information collected from the pre-interviews for each case was summarized to provide a history of each participant. Information gathered and inserted in the case summary included diagnosis information, treatment history,

ADHD behaviours and effects of the behaviours. The case summary was generated from the information from both the parents and the participant in the pre-intervention interview.

The post-interview quotes from each of the participants and the parents were coded as being information relating to one of three categories (Rubin & Rubin, 1995). The categories were; a) enjoyment, whether the participant enjoyed, or did not enjoy, the *PLS* program; b) application, whether the participant applied the skills in relevant situations or not; c) effectiveness, whether the *PLS* program was effective or not.

The log book entries for each participant were collected at the conclusion of the intervention. Each page was then classified according to the categories for effectiveness and application. Entries that pertained directly to the interview comments of either the participant or their parents, on effectiveness or application, were inserted into the case study. Cumulative results of data were also presented, as not all log book pages could be included. A summary was written, using the researcher notes to present the child's reactions to particular intervention activities. Log book pages that did not refer to the targeted topics and did not directly pertain to the research were not included in the results.

Log books were not used to assess enjoyment as they were not designed for this purpose. To assess the overall enjoyment of the program, it was best that the children do this at the end of the intervention program and that through an interview and researcher notes to get detailed feedback.

The researcher notes were thoroughly reviewed, and any notes that provided relevant information relating to particular situations associated with either the participant's application of the skills, their enjoyment of the program, or the effectiveness of the skills were identified. The researcher's notes were used to supplement information gathered from the interviews and the log

books. In the case study presentations, only situations, reactions, or comments by the participants or their parents were used to provide pertinent examples of important session events. When the comments came from the researcher's notes, they were identified as such, and the session when they occurred was also identified.

Trustworthiness

The interview portion of the data collection was recorded and transferred to a written transcript format. It was then given to the participants and parent(s) to ensure the accuracy of the content. The participants and their parent(s) reviewed their interview transcripts together to ensure accuracy. In all cases, the participants and their parents confirmed that the transcript was accurate and true.

The researcher also had a peer verify the coded interview transcripts to ensure that the quotes were coded correctly according to the established categories. This process ensured the accuracy of the content and avoided misinterpretation by the researcher. Any codes that were not agreed upon by the peer verifier and the researcher were discussed to ensure the coding best reflected the quote's meaning.

The researcher was aware of the importance of the researcher-participant relationship when introducing an intervention and conducting qualitative research. This relationship allows for meaningful communication and open and honest interview results. The importance of listening and really hearing the participant, as presented by Rubin and Rubin (1995), assist in constructing this relationship throughout the research experience. The researcher provided a comfortable and safe environment by interacting in a calm, caring and professional manner at all times. The parents were informed of the researchers' graduate experience in qualitative research, through both class work and previous interview experience. The researcher shared her

background in behaviour analysis and her experience working with children in recreational and academic settings. The parent and participant interviews also began with general questions to begin from an unobtrusive vantage point and to gain a basic knowledge of each participant's interests.

During the entire study, the researcher kept a reflexive journal to record personal comments, reflections or thoughts, and to log a chronicle of decisions. No changes to the program were made based on the reflections noted on the journal, however some flexibility with respect to the participants being tired or ill was recorded. Keeping the reflexive journal provided an opportunity for the researcher to recognize and record her feelings and personal reflections about the participants and the sessions over the course of the research (Rubin & Rubin, 1995). These personal reflections were kept apart from the researcher notes, as the researcher notes were based on specific session examples and events.

CHAPTER IV

Results

The results present the data collected for each participant in a individual case study format. The data is presented by providing a brief description of each participant, followed by the presentation of data related to each of the three research categories; enjoyment, application, and effectiveness.

Case 1

Cal was an 8-year-old boy who was diagnosed with ADHD when he was 6-years-old. At the time of the research, he was taking methylphenidate to treat the behaviours of ADHD and had been part of an ADHD group therapy session with children his age for eight months. During the pre-intervention interview, Cal's mother explained that he had many typical symptoms of ADHD.

He is excited all the time, even when I know he is tired, he cannot stop himself. He gets frustrated because I want him to sit for a meal or to do his homework. He yells a lot, sometimes to be heard, other times just to yell...I often have to repeat instructions, like making his bed, six or seven times. I know it is not his fault, he cannot focus, he gets lost in other things, but not like a typical child. He really seems to want to pay attention, but he just can't sometimes.

Cal's mother explained that since he began the medication a year ago, he is more able to maintain a level of focus when talking to another person or completing a task, but far less than his 6-year-old, non-ADHD brother.

When asked about favorite activities, Cal explained that he used to play hockey and he loved it, but the coach said he had to leave. Cal's mother explained, "He was just too anxious, he didn't know how to calm down. If they were winning, he was up the walls, if they were losing, he yelled, screamed, and got penalties for being unsportsmanlike". Cal also explained that he was unable to stay focused at school, and was often sent to the principal for recess. "She [teacher] sends me there all the time. I say one little thing and I hafta spend recess with the secretary, inside. Nobody listens when I say I didn't do it". Cal's mother later said that Cal is quick to complete his work and has a high academic standing, but once he is finished, he doesn't sit and read like other children, or talk quietly.

When asked what it felt like to be focused, Cal responded "Like water, I mean like being there. Then I know what to do, and everybody likes me. My friends like me more, and mom too". When he tried to explain how he felt when he couldn't focus, Cal said, "Like, like nobody cares. I try, I do. I try to pay attention. But it is like nobody can make me, even me... I feel like I am shaky, like I can't do anything right". Cal responded quickly when asked about situations where he can stay focused. "I can play PS2 (videogame) forever. And I pay attention to TV really good. Sometimes when I play with my brother, but sometimes not". Cal's mother explained that he can watch TV or play video games for an intense amount of hours.

He has this amazing ability to pay attention to those things. And he is good, he knows what to do to go to the next level. Even TV is easy for him to watch, he knows all of the Simpsons® episodes by heart, I think. I sometimes want to video myself asking him to do stuff, like clean his room, and see if it works. But it probably wouldn't, I don't think.

Enjoyment

When Cal was asked about the intervention activities, he was quick to announce his approval of the *PLS* program. He mentioned enjoying all the parts of the program, but had particularly enjoyed One-Breath Relaxation, a relaxation skill.

I do it all the time, like at school, or when I play soccer. And in the car mom tells me to do it when I get loud. And my teacher says I did it and she taught the class. Now we get to do it after recess and stuff when we are hyper.

Cal's mother reinforced his dedication to using the One-Breath relaxation, saying that she had immediately noticed him using it after the second session, when it was introduced. She had also heard him using Special Place Relaxation before bed, quietly talking to himself.

He would frequently ask me to put the CD in when we were driving to school or somewhere. He likes listening to the Focusing through Distraction one. He is always asking me to make sure he did it right. And I even heard him teaching his little brother to do Jelly Belly once.

She also mentioned that Umbalakiki had been a favorite of his, and that she had many times told him to use Changing Channels when he was in a difficult mood or easily frustrated.

Cal was asked about when he used the skills and he said,

I use them all the time. I do them at school, and in the basement when we are playing, or with my friends. And when I have to be quiet, like when we visit Nana. Some I do with the CD, but I can do a lot on my own too.

Application

Cal brought his *PLS* CD to school and soccer practice. He introduced his teacher and coach to the program so that they could facilitate its use outside the home. The parents

encouraged the teacher and coach to prompt him to use the program skills if they observed situations where he might need to relax, shift focus or manage his behaviours.

Cal was asked to provide more detail on how he uses the program skills in soccer or at school. He stated that he used One-Breath Relaxation when he got excited or could not focus. "I take a slow breath when I get crazy like that. Some days I takes lots of breaths. But mom says I am good at it".

In the log book, participants had the opportunity to complete two pages for each new program skill introduced. The first page completed provided the participants an opportunity to brainstorm situations where they might use the new skill they had just finished listening to on the CD. Cal had a multitude of situations to suggest for implementation, and most of these situations were repeated for each new program skill introduced. A sample log book page that Cal completed for the Focusing Through Distraction CD exercise is shown in Figure 2. The following list includes the situations suggested by Cal where he might use one or more of the program skills in daily life, including at school, at hockey, during soccer, at the doctor, at church, while doing homework, and while playing outside. Participants were encouraged to update the list of possible situations for application and their actual situations of application in their log book pages as they used their skills or had new ideas for situations to apply them. The researcher suggested adding to the lists during each session.

Cal, and the other participants, also completed a separate page for each program skill that illustrated where the children had actually used the skills. Cal repeatedly reported specific areas where he actually applied the program skills. For example at school, doing homework, at the hospital and playing soccer.

Cal's mother said she would often encourage him to use Basic Spaghetti Toes while she was making dinner, and he would just relax and become calm enough to sit through dinner. The family also listened to the CD on the way to church, and Cal was able to sit through two 45-minute church services without being disruptive. Once he was calm after listening to the CD, he would colour or read during the service to keep from running and yelling. Cal did require the occasional reminder to use the skills during church and when visiting people, but he was quick to identify which program skills to use, and his mother said he was almost always successful in choosing one that was effective.

Effectiveness

When asked if the program had helped him, Cal responded with an enthusiastic yes.

Cause I can do stuff now. Like sit and listen to the teacher. Not always, but sometimes. And I can play soccer. Mom said if I learned to calm down, I could. And I scored two goals last week. I only got two warnings from the coach to calm down, and the other kids did too.

The researcher notes cited a specific incident in session 7. Cal, a child who had previously been removed from hockey, due to his inappropriate behaviours, literally ran to share the news of his permission to join the soccer team with me. At the end of that session, his mother became emotional as she shared that she had feared her son would never be able to participate in recreational activities without direct parental supervision prior to the *PLS* program.

Cal and his parents had previously been informed that he could no longer play on the hockey team because he was unable to control himself and his outbursts during the games. Therefore he and his parents considered his ability to appropriately participate in soccer and

Cal.

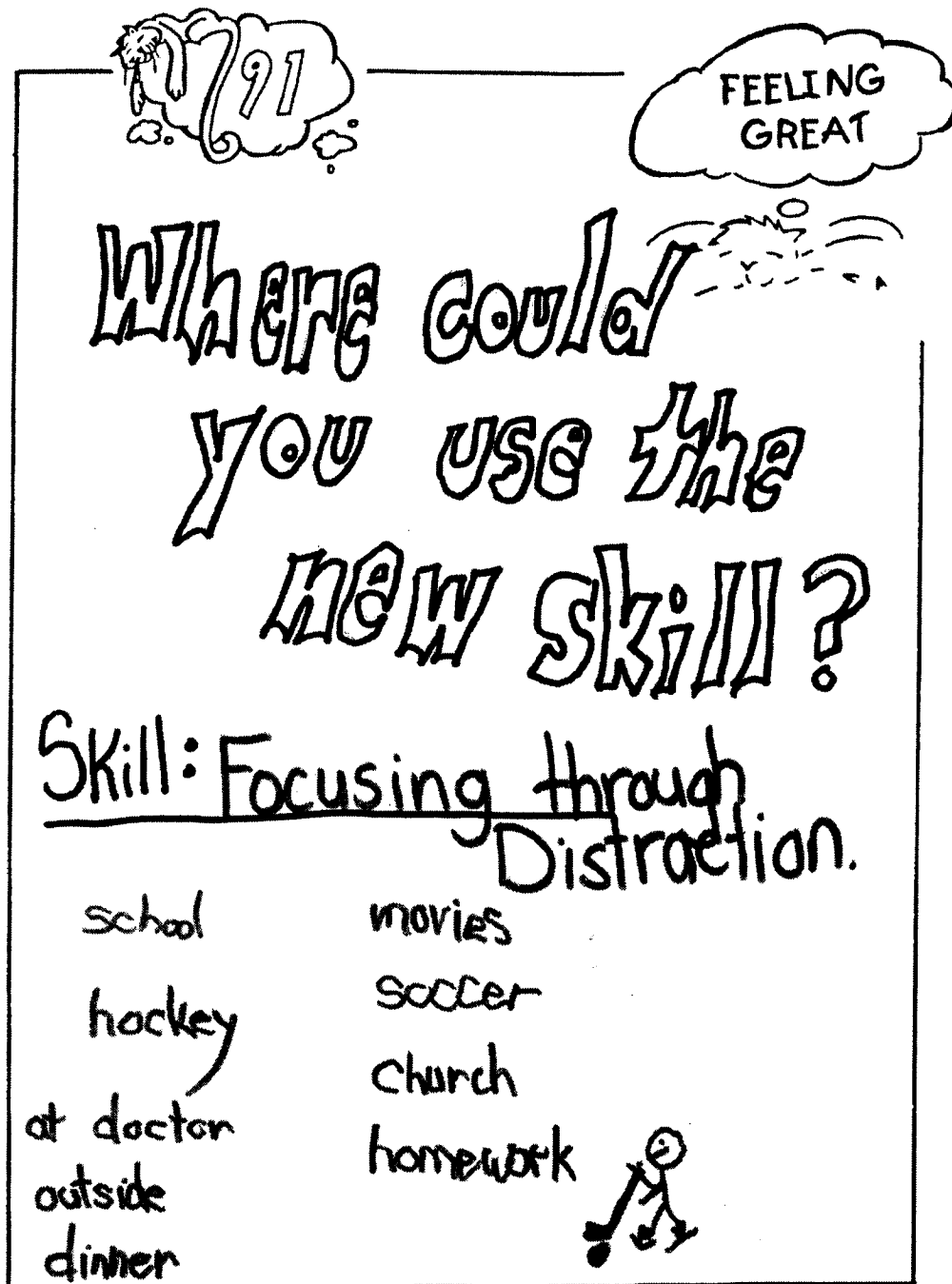


Figure 2. Cal's list of locations where he could use the skills learned from the Focusing Through Distractions activity.

control his inappropriate behaviours as a milestone accomplishment and attributed it primarily to the *PLS* program. They clearly stated this in their post-intervention interview.

Cal's mother pointed out that his teacher and coach had been aware of his use of the *PLS* program and would sometimes remind him to use his skills if they thought he might lose control or blow up. She reported that the instances of going to the principal's office had also decreased drastically since starting the *PLS* program.

He still goes, but when he does, he tells the principal what he should have done before she even asks. He tells her he should have used this program skill or that program skill. The school is very impressed with this change.

In his log book scales on self-evaluation of relaxation prior to and following the use of One-Breath Relaxation, Cal frequently evaluated himself as stressed prior to doing it, and calm after doing it. Cal completed six relaxation evaluation scales during the course of the *PLS* program. He rated himself as having gone from a little stressed to very relaxed five out of six times, and going from very stressed to a little relaxed the one remaining time.

Cal was also a frequent user of the focusing skill called Changing Channels. In his log book, he rated his independent use of the Changing Channels on four separate occasions. On each assessment responded that yes, using Changing Channels to refocus had been effective for him. Cal's third self-assessment of Changing Channels, taken in session 6 of the intervention, is presented in Figure 3.

Cal's mother noted that when he was tired or sick, it became more difficult to engage him in using the program skills, but that he still tried.

Cal emphasized that he will continue to use the program skills. As he phrased it, "Well they work, why would I stop?" His mother echoed this remark, commenting that they had been

so effective, she wished this had been available sooner to her. While Cal still had behaviours that he could not completely control, he was more frequently able to use his program skills to help himself maintain or regain control. His mother commented on how his behaviours had improved.

Since the second week, (of the PLS program) I could see a change. He would really try to control himself. Even asking what a program was called so he could use it. He is less antagonistic of his brother and is able to listen better. He can follow instructions now to do something without three repeats. He still needs to be overseen, and sometimes he will say, 'Mom, let me breathe first, then tell me what to do.'

The family now uses the programs actively with both children. Each parent has a copy of the CD in their car and they often play it going to school, church, and work, or even to the grocery store.

Before, when he was bouncing off the walls, we couldn't stop him, besides sending him to his room. Now, we have a tool, and a tool that he enjoys, It isn't a punishment. It's like we say, 'here, you need this now, it will help' and he accepts that.

Case 2

Tom is an 8-year-old boy diagnosed with ADHD 18 months ago. He is currently taking medication to manage his ADHD behaviours and also participates in regular psychotherapy. He speaks very little, used many short, non-descript answers in both interviews and used his log book primarily to express his opinions about the program skills.

When asked to discuss the particulars of Tom's behaviours, his mother explained that,

He likes to be the centre of attention. But there has to be consequences, he will sit out, because he will act out. I have to repeat myself 55 times... And hyperactivity, acting hyper. The struggle to get him to do his homework.

When Tom was asked about situations where he found it hard to maintain attention, Tom explained that he found it hard to focus at school, or at his desk. And at home, he found doing his homework to be terribly hard because he simply could not focus to get it finished. He explained that he had no techniques to allow him to focus in necessary situations. "I just fail because I can't focus".

Tom's mother pointed out that he can focus during desirable activities, such as video games, building with Lego, and playing with cars. "He can do it if he wants to. It's gotta be what he wants though". Tom also plays hockey, skis and mountain bikes.

Some of the strategies Tom's family had used in the past to manage his behaviours included taking away items and removing preferred activities.

Enjoyment

In the post-interview Tom was quick to comment on his enjoyment of the program. "I liked it, I still do". He listened to the intervention activities frequently in the car or before bed, to both relax and focus. He explained that he enjoyed using it at these times, and he would often borrow his mother's CD player to listen to the tapes alone. Tom clarified that he enjoyed the intervention activities most when he could practice them a couple of times in a row. His mother discussed his use of the program as follows. "It's different from therapy...and he actually pulled out the CD without me pushing him". His mother was pleased with this observation, as she had had difficulty in the past motivating Tom to engage in some activities.

CAL.

Changing Channels

34

Date: January 28/04

Did you try to change channels or refocus today?

Yes No

Cal:
Transcribed
Verbatim
by
researcher

What happened?
I was trying to focus but I was looking outside of school. So I changed channels.

What did you do to refocus?
Channels

Did it work?

Yes A little No

Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

Yes A little No

Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

Yes A little No

Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

Yes A little No

Figure 3 . Cal's assessment of his use of Changing Channels while playing outside.

Application

The use of the program was integrated as a routine into Tom's life, which his mother believes contributed to its overall success. Tom said, "I listened to it before bed, or sometimes in the car. It is just kinda part of the day". His ability to integrate it as a part of his schedule allowed him to readily accept it. In his log book, Tom identified school as a primary location to utilize the program skills. He also indicated that during intense hockey games, when the fans were particularly loud, the relaxation skills were useful. Finally, he discussed that when he was angry, upset, or frustrated were ideal times to apply the program skills.

In his log book, Tom indicated that he would use the program skills in many situations, including during tests, at home, before bed, during meals, and when he was angry or upset. In his log book, he listed a variety of situations where he successfully implemented the program skills, including hockey, school, homework, when people were yelling, when doing work in class, and on tests.

The following example from Tom's log book (see Figure 4) presents a situation when he had actually applied the Spaghetti Toes program, the one he determined worked best for him.

Effectiveness

Tom recognized that his ability to relax and focus improved after engaging in certain intervention activities, such as Highlights, The Great Little Listener, and Umbalakiki. Tom's self-assessment of his level of stress prior to, and following their use, consistently showed favorable results. He experienced a reduction in stress and a transformation into a more relaxed and focused state. Through his log book, Tom illustrated various ways in which he effectively used the *PLS* program skills. Tom had already started to experience more academic successes, and gain a better grasp of his own ability to relax and focus early on in the *PLS* program. At the

beginning of the fifth session, as recorded in the researcher notes, Tom was sitting at the table with a book when the researcher arrived. He shared that he had received his highest grade ever in math that day, and had already begun studying for next week's test. The first program skill for that session was Basic Spaghetti Toes. When he was told the session would start with Spaghetti Toes, Tom announced that he had in fact used Spaghetti Toes that very day, to relax and focus before his math test.

Tom completed six self-assessments using the cat relaxation scales throughout the intervention. He assessed himself on this scale as having gone from a little stressed to a little relaxed 3 out of 6 times, from very stressed to a little relaxed 1 time, and from very stressed to very relaxed on the final two occasions. Tom's final cat scale, completed after practicing the Spaghetti Toes activity, is shown in Figure 5.

Tom and his mother both commented in the post-intervention interview that learning to relax had contributed significantly to his overall ability to focus. His mother felt that simply learning the skills to relax allowed him to focus and gain an overall confidence in himself.

Tom also completed the Changing Channels assessment page in his log book on three occasions. In two instances he reported that "yes" Changing Channels had worked to refocus, and in the other instance he reported it had worked "a little".

Tom's mother said she witnessed a significant improvement in his behaviours after using the *PLS* program.

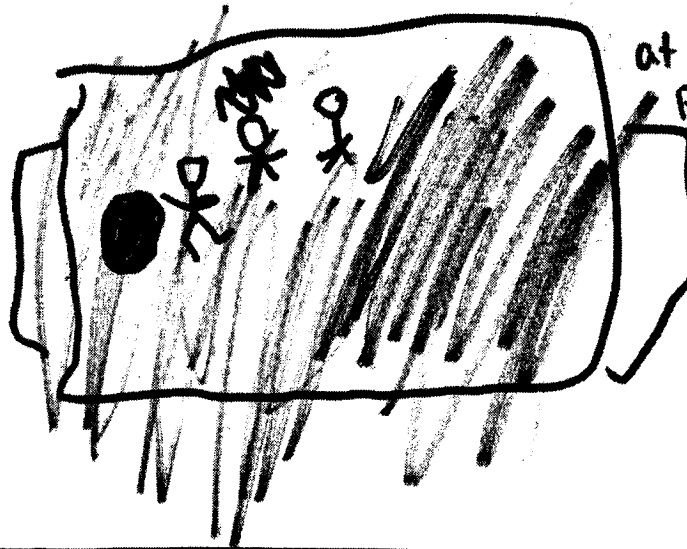
I've seen a big change in his school work...I'd say the one area I've noticed the most is where he would lose it and throw tantrums. They're becoming more of a minimum. And the outbursts, he'll catch himself...he is starting to think a bit more before he does things. It's a work in progress.

Tom.



Where did
you use your
NEW SKILLS?

Skill: Spaghetti Toes.



Tom:
"I was mad
at school. I was
playing soccer, and
the guy kicked
it (ball) at me
and it hit me
hard."

transcribed
verbatim
by
researcher.

Figure 4. Tom's log book indicating a situation where he had used the skills learned from the Spaghetti Toes activity.

Both Tom and his mother agreed that it was the entire *PLS* program that contributed to Tom's improved behaviour management, and that no specific program skill could be identified as contributing more than others. He had used many of the skills and felt that each helped him to control himself.

It was clear from Tom's log book, that his ability to relax and focus had improved after completing certain intervention exercises and working on certain skills, such as Highlights,

Cat Relaxation

Colour the cat you felt like before relaxing and after relaxing

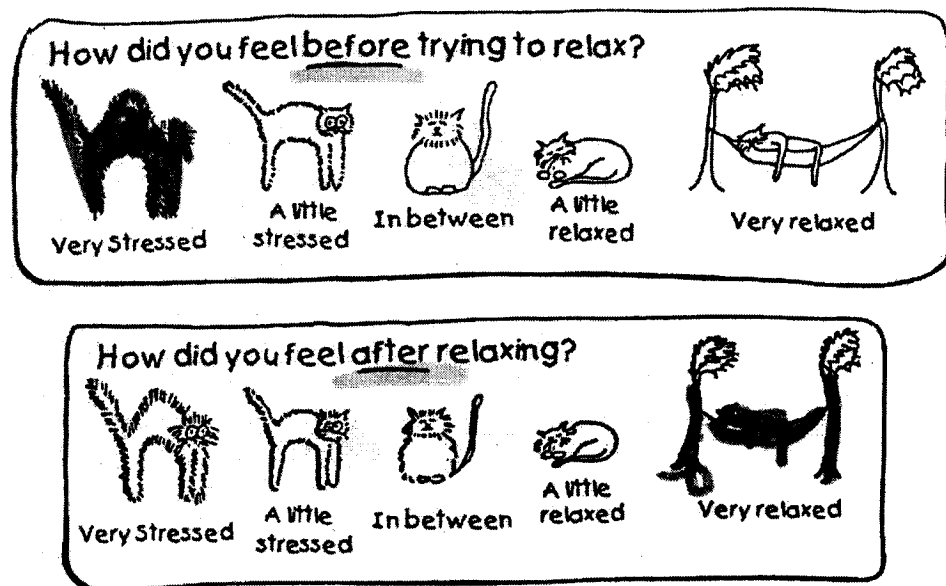


Figure 5. Tom's rating scale to measure self-assessed level of relaxation prior to and following use of the Spaghetti Toes activity.

Spaghetti Toes, The Great Little Listener, and Umbalakiki. His self-assessment of his own level of stress prior to and following the use of these skills consistently indicated positive results, including reduction of stress and shifting to a more relaxed and focused state.

Case 3

Bobby, a 9-year-old male, was diagnosed with ADHD 18 months ago, and is currently undergoing physician-supervised acupuncture and has been using methylphenidate for six months to treat his behaviours. When asked if it was sometimes hard for him to stay focused, the question was repeated twice before he could pay attention long enough to absorb the question, and answer. Bobby found it hardest to focus when he was in school or doing homework. His father mentioned that Bobby is an artist. "It's the only time I can get him to sit still. Give him some paint and paper and you could leave him for hours. But anything else and you can't keep him down". Bobby echoed his father's comments when asked to describe situations when he is able to focus. "When I am painting, or drawing, or using clay stuff, then I can focus. I know what I am doing. And I am good at that".

Bobby described his inability to focus as, everything being more interesting than what he is supposed to be doing at that time. "I can find a hundred million stuffs to look at and talk about when I hafta do something. My teacher is always saying, 'find one thought'. But I can't do that. I have a lot to think about". Bobby's father explained that many "issues" exist around daily routine. Because Bobby is in constant need of direction, when left to his own devices, he will rarely complete tasks such as brushing teeth before school, eating lunch or dressing adequately to go outside.

Strategies the family had adopted for dealing with the ADHD behaviours included having Bobby repeat back instructions given to him, and being sure that clear expectations are being set and maintained for him daily.

We have a picture schedule that tells [Bobby] what is expected of him before school, after school and after dinner. If he forgets, or if he becomes distracted, we simply point him to the schedule. It has stopped the constant yelling between us and him, or at least we yell less.

Bobby referred to the picture schedule when asked what he does to stay focused in situations where it is necessary, “I go to the schedule and figure out what’s next. Then I go do that. It helps me...I also try really hard when mom and dad are talking, to pay attention. I don’t always listen, neither does my friends”.

Bobby’s father explained in the pre-intervention interview that meal times, church, or even going to a movie are very stressful for the family.

He just can’t sit there and listen; he needs to be up, doing something. We have stopped taking him to church because he was so disruptive. And movies, well we rent them now, and that way he can run around when the mood strikes him. I am actually surprised he sat for the whole interview.

Bobby did in fact sit for the entire interview with the researcher, but it is important to note he was constantly moving, needed the questions to be repeated multiple times, and was unable to maintain eye contact.

Enjoyment

In the post-interview, when Bobby was asked how he felt about the program, he responded by saying “I really liked the CD stuff, and I loved the art, but the programs were hard

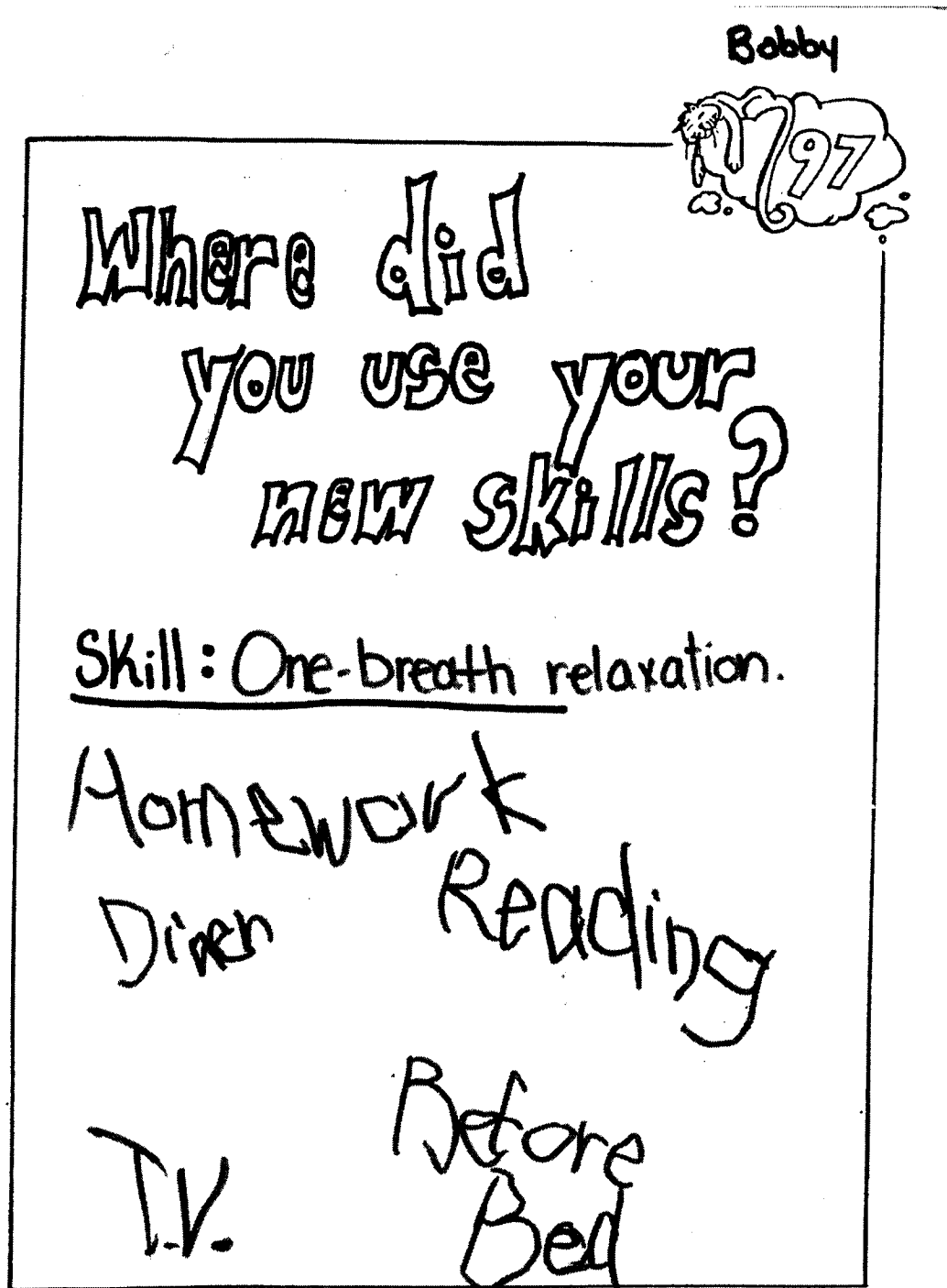


Figure 6 Bobby's list of situations where he used the skills learned from the One-Breath Relaxation activity.

to do on my own. I learned how to do Highlights really well.” His father supported this statement by saying that Bobby enjoyed listening to the CD, and did so almost daily.

Of all of the participants, Bobby’s reaction to the program was the most enthusiastic, which is clear from the researcher notes. On all occasions, except the very first session, Bobby ran to meet the researcher in the driveway to his house, already had the CD ready to go in the stereo and had a pencil case ready to work in his log book. At the end of sessions, he often shrugged his shoulders in a pleading way, and asked for five more minutes. This indicated that Bobby had a positive experience with the *PLS* program.

Application

Bobby and his parents were encouraged to use the *PLS* programs everyday. His parents said that his ability to illustrate his highlights appeared to relax him and allowed him to better focus on the rest of the day.

Bobby discussed his use of the program skills outside session.

One-Breath Relaxation was good if I was calm, but if I was bouncing off the walls, I couldn't do it. Mom would put the CD in and then I could calm down. I would relax and kinda pay attention to just the guy's voice.

His father agreed that it was easiest for Bobby to use the skills if the CD was present; however the family had been practicing with him to help him learn to relax on his own.

He definitely concentrates on the CD. It is amazing to see him focus on anything other than art, or maybe TV. But he would listen to the CD over and over. It has become part of his routine, built in, that he listens to one program after school, one before homework and one before bed.

In his log book, Bobby had many suggestions where he might use the program skills. His suggestions included at school, with friends, doing homework, in the car, in gym class, during piano lessons, and when his parents were talking to him. When he completed his list of situations where he actually applied the *PLS* skills, his list included while doing homework, when reading, at dinner, before bed, and while watching television (see Figure 6). Bobby's uses were focused primarily on his home environment, most frequently with his parents, before bed or when he was trying to relax before a meal. He did occasionally use the skills during homework, but they were limited to Changing Channels and One-Breath Relaxation.

When asked to discuss the program skills best suited to Bobby, his father said that for after school, Special Place Relaxation was best, and Bobby's favorite. Before homework, Bobby generally listened to Muscle Relaxation or Focusing Through Distractions. And before bed, Bobby always chose Basic Spaghetti Toes. The other intervention activities were used interchangeably through the day, including Highlights and the Great Little Listener. Changing Channels was favored by the parents, and became a commonly heard phrase for Bobby. He said that "Mom and dad are always saying 'change your channel' if I am being negative or having a bad day... I guess it reminds me."

Effectiveness

Bobby found that the program skills worked for him, however, he and his parents agreed he sometimes had a difficult time applying the skills on his own.

In times when he needed to use them, he often had a hard time thinking to use them. If his mother or I even said the name of program, he would really try to use that skill. Highlights were good for him. He would get really frustrated

or upset, and just by saying 'highlights' he would rush to get paper and draw some good things about the day.

When asked if the program had helped him, Bobby said that he was able to relax better now and was starting to be able to focus better, particularly when being given directions or instructions. He acknowledged that he had difficulty using the skills on his own, without the CD, but said he would certainly continue working on them.

Bobby completed the Changing Channels self-assessment log book page four times. Bobby indicated that he was able to refocus all four times when using this program skill, although he specified he had used the CD on each occasion. This was supported by the researcher notes. Bobby's third self-assessment for Changing Channels, taken from his log book, is shown in Figure 7. It indicated that he enthusiastically felt this intervention activity had worked.

Bobby also used the cat relaxation scale to evaluate his own ability to relax following the use of a *PLS* program skills. Of the 6 scales he completed, he indicated having gone from a little stressed to very relaxed three out of six times, and having gone from very stressed to a little relaxed the other three times. Bobby's final cat scale, completed after using the Quiet Lake program, is shown in Figure 8. He clearly felt relaxed after using this intervention activity.

Bobby's parents said that they had begun to see improvements in his behaviours after completing the first half of intervention sessions. According to the researcher notes from session nine, Bobby and his father were excited to share the news that Bobby had used his new-found skills to telephone his Grandmother and engage in a lengthy discussion. His parents were quick to point out his previous inability to maintain a thirty-second conversation on the phone, and the great milestone they felt this phone call was for both Bobby and his parents.

Bobby

Changing Channels



34

Date: Dec. 15/04

Did you try to change channels or refocus today?

Yes No

transcribed verbatim by researcher

What happened?
"I was really excited, like hyper at church. Mom said change channel. So I did"

What did you do to refocus?
"changed it... changed the channel, my channel"

Did it work?

Yes A little No

Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

Yes A little No

Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

Yes A little No

Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

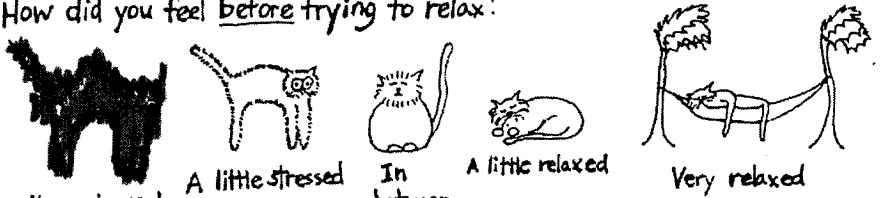
Yes A little No

Figure 7 Bobby's assessment of using the skills learned from the Changing Channels activity.

Cat Relaxation Bobby.

Colour the cat you felt like before relaxing and after relaxing.

How did you feel before trying to relax?



Very stressed A little stressed In between A little relaxed Very relaxed

How did you feel after relaxing?



Very stressed A little stressed In between A little relaxed Very relaxed

"I feel really, really, really relaxed."
transcribed verbatim by researcher.

Figure 8 Bobby's assessment of using the relaxation skills learned from the Quiet Lakes activity.

Bobby's parents said that they were impressed with the success Bobby had experienced with the program. They commented that his ability to even have a simple conversation on the phone was improved. When he started to become distracted, he would take a deep breath and then pretend he was doing the Great Little Listener program. His parents also emphasized that they felt it was very important to continue to use and refine these skills.

As a final note, Bobby sat through his entire post-intervention interview, approximately 11-minutes, without needing a single question to be repeated or asking to leave. He wiggled in his chair, but made eye contact and provided well thought out answers. In his pre-intervention interview (7 weeks earlier), Bobby was very inattentive and distracted. He struggled to remain seated and required many questions be repeated due to his inattention. A review of the researcher notes indicated that Bobby's ability to remain engaged in the interventions had increased dramatically over the 10 sessions, with less verbal prompts required to remain on-task as the sessions progressed, and none required in the final 2 sessions. The dramatic difference between the pre and post-intervention interviews was very evident to Bobby's father. He commented that he had observed Bobby using One-Breath Relaxation during the post-intervention interview to relax and remain focused. Bobby's father's final comment was, "He is a different kid. He tries harder and can really be a part of things now. He is much easier to be around, not just for me, but the whole family".

CHAPTER V

Discussion

The findings of this study clearly indicated that these three children, diagnosed with ADHD, who participated in the cognitive behavioural self-control intervention using the *PLS* program (Orlick, 1998) benefited from learning the relaxation, focus and distraction control skills. These encouraging results support the findings of previous studies (Cox & Orlick, 1996; Gilbert & Orlick, 2002; Taylor & Orlick, 2004). Koudys and Orlick (2002), and Klingenberg and Orlick (2002) also found the *PLS* programs to be effective in improving the relaxation and focusing skills of children from select population, including those with special needs and chronic illnesses. The outcome of the research is perhaps best served by discussing the enjoyment, application, and effectiveness of the program for these children.

The participants enjoyed the *PLS* program activities and found them to be engaging and fun experiences. The enjoyment of the intervention activities was due to two factors; the design of the activities, and the fact that they worked. The participants enjoyed the child-specific design of the program that allowed them, the primary stakeholders, to actively participate in their own treatment. Participating in the activities, including the audio CD's and the log book was fun, and children are motivate to do what they enjoy. This supports the findings of Cox and Orlick (1996), and Taylor and Orlick (2004) that children really enjoy the *PLS* program activities. The *PLS* program activities were also identified by all of the parents as positive and relevant, primarily because their children enjoyed the ease of use associated with the child-based design of the program.

The participants enjoyed having the ability and the skills to contribute to their own treatment and well being. The ability to actively participate in the treatment of one's own

diagnosis is empowering and can contribute to an overall improved prognosis (Tyson, 2000; Miranda & Presentacion, 2000). By providing the participants with relevant skills to self-administer therapy to treat their behaviours of ADHD, it appears to have provided better focus and more self control, which in turn, has potentially enhanced their quality of life.

The application of the PLS skills, particularly to daily life, was essential in ensuring an effective use of these program skills. The participants were able to integrate the relaxation, focus and distraction control skills into many aspects of their daily lives. In their log books, the children identified many situations where these skills were used effectively, including when doing school work, in peer relations, for family cohesiveness, during recreational participation and preparing for sleep. These findings support the findings of previous studies (, Cox & Orlick, 1996; Gilbert & Orlick, 2002; Koudys & Orlick, 2002; Klingenberg & Orlick, 2002; Taylor & Orlick, 2004) that found children to effectively use the *PLS* program skills outside the teaching environment to relax and focus.

Two of the participants (8-year-old Cal and 8-year-old Tom) and their parents found that the children easily generalized the *PLS* skills to all of their environments, and were capable of identifying appropriate situations and self-administering the skills. This supports earlier research by Cox and Orlick (1996), and Taylor and Orlick (2004) that elementary school children implemented the skills into many real world situations. Gilbert and Orlick (2002) also found that children who were taught the *PLS* skills used them both inside the classroom setting, as well as outside the teaching environment.

The other participant with ADHD in this study (9-year-old Bobby) also gained significantly from the intervention activities and applied them in multiple contexts. However, when compared to the other participants, Bobby appeared to rely more on the CD, verbal

prompts or reminders to use the skills in different situations where they may be beneficial. This family identified the generalization of the skills to different domains as important and challenging, and therefore persisted in encouraging their child to integrate the skills into his daily life. Given that this was a 5 week intervention program, and the previous school-based interventions were 10 and 12 weeks, it is likely that with continued use and encouragement, generalization of application and less reliance on the CD or verbal prompts will improve with time.

On a daily basis, the diagnosis of a child with ADHD impacts the entire family, sometimes causing discipline concerns and low family cohesiveness, with the potential to lead to greater distress, including maternal depression and marital conflict (Bor, Sanders, & Markie-Dadds, 2002; Lavigne & al., 1998; [NIH], 2000). All of the families in the current study integrated the *PLS* skills into their daily lives, with frequent use at home, at school and in recreational settings. The participants and their parents all indicated that they would persist with the *PLS* program as an integral part of their family cohesiveness and behaviour management strategy. The overall findings of the current study supports findings of previous studies by Klingenberg and Orlick (2002) and Koudys and Orlick (2002) both of which were conducted on families with special needs. In each case, better family functioning and improved coping skills resulted from using the *PLS* program.

All three families in the current research study reported experiencing improved family dynamics following the implementation of the *PLS* program into their lives. The families all found that using the *PLS* programs resulted in less anxiety and less stress related to their child's behaviours and in their own lives. More specifically they reported that there was less stress for them and their child, particularly in social settings. Families reported experiencing greater ability

for family outings, increased participation in community events, and better cohesiveness between parents, siblings and their children diagnosed with ADHD.

The enjoyment and application of the *PLS* skills are the first steps to successful implementation. The final and perhaps most important step is the effectiveness of the *PLS* program skills in promoting positive behaviours while diminishing inappropriate behaviours. The participants, from this select ADHD population, found that the skills they learned were useful in managing their behaviours, particularly when they had previously identified, during the sessions, possible situations where they could use the skills. These findings support similar findings in studies using the *PLS* programs with select populations (Koudys & Orlick, 2002; Klingenberg & Orlick, 2002).

The participants confirmed that they were able to learn the relaxation, focus and distraction control skills, and use them either independently or with the use of the CD program to relax, to focus and, to practice their ability to control distractions. These results corroborate previous research that found the use of self-control cognitive behaviour therapy to decrease the amount of disruptive behaviours of children diagnosed with ADHD, including hyperactivity and impulsivity. These results indicate that the *PLS* program also increases the amount of appropriate behaviours displayed by these children, including attention and social skills with peers, supporting previous research of self-control cognitive behaviour therapy and ADHD (Miranda & Prsentacion, 2000; Tyson, 2000; Mahone & al., 2002).

The findings of this study demonstrate that the parents reported an improvement in how their children handled their ADHD behaviours by replacing disruptive behaviours with positive alternatives. They identified improved behaviours, including less tantrums, improved listening skills, greater attention span, less frustration and more self-control as results associated with the

use of *PLS* program skills. These children demonstrated improved self behavioural control using a cognitive behaviour therapy (*PLS*) paired with methylphenidate. This supports previously established findings from other research that methylphenidate is more effective when paired with psycho, social, or cognitive therapy (Janetti, 2002; Wood, 1999). The parents stated that medication treatment alone served to decrease the amount of the negative behaviours, but did not increase appropriate positive behaviours. This supports previous research that methylphenidate, the most frequently prescribed medication treatment, is used to decrease inappropriate behaviours in children with ADHD, but does not increase positive social behaviours (Hupp & al., 2002).

It is worthy of note that some of the participants in this study were able to remain focused in situations where multimedia equipment was used (TV, video games). This supports previous research (Romaniuk et al., 2002; Landau, Lorch, & Milich, 1992) that children with ADHD can use multimedia tools to escape the over-stimulus of the environment. Research also found that children with ADHD were only less focused than typically developing children when they are in the presence of a second highly desired object, while using the multimedia equipment.

Challenges to the research

This research presented three main challenges. The first challenge was the overall behaviour management required to facilitate the intervention process. All three participants demonstrated issues in focusing and were all easily distracted. The researcher managed these behaviours by showing respect for each child and by using positive verbal praise for on-task behaviours throughout the session. This positive verbal praise occurred at a variable-interval of approximately three minutes (VI-3). This time-based reinforcement allows for verbal praise for on-task behaviours that varies around a predetermined time. In this case, approximately every

three minutes during the session. The variable-interval was determined base on the researchers' experience working with children and behavioural training.

The second challenge faced by the researcher was the off-task behaviour exhibited by all of the participants at some point during the intervention sessions. This was managed by using verbal prompts to pay attention or return to the task. This was effective in most situations. When a participant was not easily returned to task using a verbal prompt, a two minute break would be encouraged. The child could get a drink, go for a quick walk, or talk about their distraction. The researcher would then quickly return to the task with the child, often increasing the variable-interval of praise for on-task behaviours to 30 seconds intervals for the initial few minutes in order to further reinforce the on-task behaviours. The variable-interval would then return to 3 minutes once the child was on-task for 2 minutes.

The final significant challenge facing the researcher in this study was the interference of parents and siblings during the intervention sessions. During the initial interview, the researcher had clarified the necessity to exclude the direct participation of the siblings from the intervention sessions. However, parents were encouraged to involve siblings in the practice and listening to the CD activities at home. Parents were requested to re-direct their other children from the intervention session areas, and it was suggested that they provide highly enjoyable alternative activities to dissuade siblings from attempting to participate. Verbal reminders at the start of sessions were provided for the parents who had previously failed to keep their other children away from the sessions.

Parents, who themselves, attended the sessions, were provided with a pad and pencil to note any comments or suggestions relating to the activities and intervention activities the researcher introduced to the child. This gave the parents a task to focus on and helped them

refrain from suggesting situations or events, or answering questions for their child during the session. At the end of the session, parents were encouraged to share their notes with the researcher, who would then sometimes introduce some of their ideas at the next session. Any suggestions made and implemented did not affect the design or delivery of the intervention.

These three ongoing challenges directly faced by the researcher through the process of delivering the intervention activities, were sufficiently managed through the aforementioned means and did not disrupt the sessions to any significant degree. The use of these skills, particularly those for the verbal reinforcement and prompting of the children to stay on-task, are skills the researcher has been extensively trained to complete. Individuals wishing to provide effective verbal reinforcement and verbal prompting, particularly to children diagnosed with behavioural disorders, should consult with trained individuals and/or do reading on the most effective means of implementing these skills. A list of references for this topic can be found in Appendix J.

The findings of this research are remarkable, considering the limited time of the intervention (5 weeks, 10 sessions). The success can be attributed to the use of a program that is exceptionally well-designed for children that can be self-directed, and self-controlled. It is effective in its simplicity, by being easy, enjoyable, and relevant for these children.

This study supports previous research on the capacity of the *PLS* program to teach relaxation, focus and distraction control skills to children in an efficient and effective format (Cox & Orlick, 1996; Gilbert & Orlick, 2002; Koudys & Orlick, 2002; Klingenberg & Orlick, 2002; Taylor & Orlick, 2004) Furthermore, it demonstrates that a cognitive behavioural self-control programs, designed for children, can positively contribute to an ADHD treatment plan for children (Miranda & Presentacion, 2000; Tyson, 2000; Mahone et al., 2002).

The treatment of ADHD in children must be viewed using a holistic approach to incorporate different therapies in order to decrease inappropriate behaviours, while increasing the use of appropriate behaviours. The use of *Positive Living Skills* (Orlick, 1998), paired with medication treatment, provides valuable tools for both children with ADHD and their parents.

Strengths and Limitations

A strength of the current study is that it explores the relatively new field of including children in the treatment of their own ADHD behaviours. The major stakeholders, the children and their parents, all expressed their pleasure in being able to learn and use these skills themselves to enhance their own lives – in addition to, or apart from their medication treatment. The use of log books and related activities, during the sessions, helped the children to comprehend the program skills and practice them. Gaining both the child's and the parent's perspective of the program skills and their relevancy, through interviews, provided a fundamental understanding of the role these program skills played in their lives. The participants and their parents were seeking something most people take for granted, the opportunity to live with less stress, to blend into the crowd, and not be seen as too different.

This intervention was brief by comparison to others. A longer intervention study may provide insight into whether the skills are enhanced, maintained, or improved over time. The small sample size may also present limitations on generalizing the results to a wider population of children with ADHD. Although the sample did not reflect the potential of all children diagnosed with ADHD, it is the belief of the researcher that the inclusion of the *PLS* program into a holistic ADHD treatment plan would, in general, have significant positive impact.

Future research could explore the potential of the *PLS* program for children diagnosed with ADHD taught in a team or group setting, or as part of a larger sample, or with an expansion

to include a wider age group. This would examine the possibility that the program skills could be used by a larger number of children with ADHD. Another relevant area of research would be follow-up evaluations, possibly 6 months or a year later, to assess the effects over a longer period of time. An attempt to determine longevity and refinement of the skills would provide a significant contribution to future research. Finally, further research into the use of alternative therapies for ADHD is important, particularly programs that empower the major stakeholders involved, including parents, teachers, therapists, physicians and most importantly, the children diagnosed with ADHD. Studies of self-control cognitive behavioural programs are fundamental requirements in attempting to help children control their own behaviours, perhaps allowing the use of medication to be minimized or eliminated over time.

Personal Reflections

The following personal reflections represent the feelings of the researcher as she shares her inner perspective on the experience of the intervention with these three families. It is by no means a scientific statement, but does contribute to the study by providing a dimension of inner perspective, as was presented in previous research publications by researchers using the *PLS* program and a qualitative case study approach (Klingenberg & Orlick, 2002, Zitszelberger, 1999).

Having extensive experience and training with select populations, and particularly children with behavioural challenges, I was hopeful, but cautious that the use of self-implemented skills could help children with ADHD manage their own behaviours. I was astonished that any program could have such a powerful impact in such a limited time-frame. My experience with this study has served to broaden my mind to all the possibilities for treatment of ADHD.

Children, who often feel powerless, can be provided with skills to help them create better lives for themselves. The *PLS* program empowered these three children to assume responsibility for their actions, and provided positive alternatives to negative behaviour. I am pleased to know that Tom was doing better at school, Cal got to play soccer with a team, and that Bobby had many successful phone conversations, due to the skills they learned. They were taught to manage their behaviours by learning to relax, focus and control distraction. While all children can benefit from learning these skills, it is, perhaps, the children with behavioural challenges that can benefit the most, as they have the most to gain.

The children and the families in this study earnestly integrated the *PLS* program into their lives. Their willingness to attempt something new and to persist with it provided them with a tool to facilitate managing ADHD behaviours. The program proved to be an effective form of therapy to complement medication treatment for children with ADHD. The program was successful because it is a well-designed program that children enjoy, and the therapy was delivered by a caring adult to families who were willing to apply the treatment to their daily lives. Given the positive results that were incurred in this study in such a short time frame, it is stimulating to anticipate the results that could be incurred from a longer-term intervention.

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Université d'Ottawa - University of Ottawa

Cabinet du vice-recteur à la recherche / Office of the Vice-Rector,
Certificate of Ethical Approval

HEALTH SCIENCES AND SCIENCE RESEARCH ETHICS BOARD

CERTIFICATE OF ETHICAL APPROVAL

This is to certify that the University of Ottawa Health Sciences and Sciences Research Ethics Board has examined the application for ethical approval for the research project **The impact of a cognitive behavioural self-control program on behaviours of children diagnosed with Attention-Deficit Hyperactivity Disorder (File H 05-03-01)** submitted by Kealey Amanda Hester and supervised by Terry Orlick. The Board found that this research project met appropriate ethical standards as outlined in the Tri-Council Policy Statement and in the Procedures of the University of Ottawa Research Ethics Boards, and accordingly gave it a Category 1a (approval). This certification is valid for one year from the date indicated below.

Andrée Bertrand

Protocol Officer for Ethics in Research,
 For the Chairperson of the Health
 Sciences and Science REB
 Daniel Lagarec

August 8th, 2003

Date



Université d'Ottawa Appendix B University of Ottawa

Service de subventions de recherche et de déontologie Research Grants and Ethics Services

November 18, 2003

Modification to Certificate of Ethical Approval

Dr. Terry Orlick
School of Human Kinetics
University of Ottawa
125 Université
Room 355
Ottawa, ON K1N 6N5

Ms. Kealey Amanda Hester
1819 - 190 Lees Ave
Ottawa, ON K1S 5L5

RE: Modification to file H 05-03-01

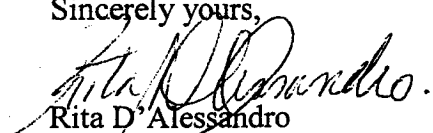
Dear Researchers,

The Health Sciences and Sciences Research Ethics Board of the University of Ottawa has examined your request dated November 17, 2003 for ethics approval of the following modification to your research project entitled **The impact of a cognitive behavioural self-control program on behaviours of children diagnosed with Attention-Deficit Hyperactivity Disorder (our file H 05-03-01):**

- The research will be conducted using a multiple case study format and three to four children will be recruited

Your request has been accepted. The certificate for ethics approval that you received on August 8, 2003 for your project thus covers this modification to your research project.

Sincerely yours,


Rita D' Alessandro
Protocol Officer for Ethics in Research
Tabaret Hall, Room 159
562-5800 ext. 1783

550, rue Cumberland 550 Cumberland Street
Ottawa (Ontario) K1N 6N5 Canada Ottawa, Ontario K1N 6N5 Canada

(613) 562-5841 • Téléc./Fax (613) 562-5338
http://www.uottawa.ca/services/research_rgc/index.html

Appendix C

Parent and/or Guardian Consent form

Kealey A. Hester

University of Ottawa, Faculty of Health Sciences, School of Human Kinetics

(613) 233-8458

kbrow003@uottawa.ca

I, (*Name of research subject*) _____, agree to participate in the research conducted by Kealey A. Hester, a Master's student, of the School of Human Kinetics, Faculty of Health Sciences at the University of Ottawa. The project is under the supervision of Terry Orlick, PhD. The purpose of the research is to study the impact of the *PLS* (Orlick, 1998) on children diagnosed with Attention-Deficit Hyperactivity Disorder (ADHD). The participants will be provided with cognitive behavioral control programs that they self-administer to self-manage the behaviors, including inattentiveness and impulsivity-hyperactivity, associated with ADHD.

My participation will consist essentially of attending ten, 35-45 minute sessions over a five-week period. The participants will participate in cognitive therapy activities, involving focus and distraction control, taken from the *PLS* (Orlick, 1998). The sessions have been scheduled for _____. I will also be asked to participate, with my parent or guardian, in an interview prior to and following the five weeks of the research, and both interviews will be audio taped and the interview will be transcribed. I understand that the contents will be used only for the purposes of assessing the impact of this program on children diagnosed with ADHD. My confidentiality will be respected by assigning a reference number to all materials that concern me. The researcher will only contact me within the confines of the research and will not share, sell or provide my personal information to others.

I understand that since this activity deals with very personal information, it may cause me emotional realizations regarding ADHD-related behaviors, which may, at times, be difficult. I have received assurance from the researchers that every effort will be made to minimize these occurrences. The activities for the program have all been designed by Terry Orlick, PhD, specifically for children. The participants will not be required to disclose any information that they feel uncomfortable sharing or to perform any program or activity that they do not wish to complete.

I am free to withdraw from the project at any time, before or during an interview, refuse to participate and refuse to answer questions.

I have received assurance from the researchers that the information I will share will remain strictly confidential. Anonymity will be assured in the following manner As previously detailed, all personal information will remain in possession of the research and her supervisor, in a locked drawer located in the supervisor's office. The reference number assigned to each participant will not be associated with the identity of the participant in any place within the published or unpublished research, and participants will not be discussed using their personal information, but will be referred to with their reference number. Any and all documents that link my personal information to my reference number will be kept under lock for five years following the

publication of the research, and will then be destroyed. Only the researcher, Kealey A. Hester, and her supervisor, Terry Orlick, PhD, will have access to the personal information.

Tape recordings of interviews and other data collected will be kept in a secure manner. The interview audio tapes and the transcripts will be kept under lock for five years following the publication of the research, and will then be destroyed. No one other than the researcher will have access to the audio tapes and/or transcripts.

Any information about my rights as a research participant may be addressed to **Protocol Officer for Ethics in Research, 550 Cumberland Street, Room 160, (613) 562-5387 or ethics@uottawa.ca**.

There are two copies of the consent form, one of which I may keep.

If I have any questions about the conduct of the research project, I may contact the researcher or her supervisor.

Researcher: Kealey A. Hester. University of Ottawa, School of Human Kinetics (613) 233-8458, kbrown003@uottawa.ca

Supervisor: Terry Orlick, PhD. University of Ottawa, School of Human Kinetics (613) 562-5800 ext. 4272. torlick@uottawa.ca.

Researcher's signature:

Date:

Research Subject's signature:

Date:

Participant Consent form

Kealey A. Hester

University of Ottawa, Faculty of Health Sciences, School of Human Kinetics

(613) 233-8458

kbrow003@uottawa.ca

I, (*Name of participant*) _____, agree to participate in the study that Kealey A. Hester, a Master's student, of the School of Human Kinetics, Faculty of Health Sciences is doing at the University of Ottawa. The project is being supervised by Terry Orlick, PhD. The study will test to see if the *PLS* programs (Orlick, 1998) will help kids with Attention-Deficit Hyperactivity Disorder (ADHD) control how they behave. The kids will learn programs to help them stay focused and not get distracted. We hope the programs will help kids with ADHD pay attention better and remain calmer.

I will participate in ten, 35-45-minute sessions for five weeks. I will learn programs for relaxation, focus and distraction control, from the *PLS* CD (Orlick, 1998). The sessions will be _____. I will also be asked to participate in an interview a week before the sessions begin, and my parent(s) will be there. I will be asked to do another interview two weeks after the program, again with my parent(s). Both interviews will be audio taped and the Kealey A. Hester, the researcher, will write out all my answers. My answers will be used to decide if the *PLS* programs are helpful to kids with ADHD. No one will know my name and everything I do will be given a reference number. The researcher will only contact me about this research and will not share, sell or provide my personal information to other people.

I understand that since this activity deals with very personal information, it may cause me to feel a lot of different emotions about having ADHD, and that could be difficult. The researcher will do everything she can to make this program a positive experience for me. Terry Orlick, PhD, made all the activities just for kids and they will not ask me to say or do anything I do not want to do.

I can decide to stop the program anytime, before or during an interview, refuse to participate and refuse to answer questions.

All my information will only be seen by the researcher and her supervisor. No one else will know I am doing the program or will be able to see my audio taped interviews or find out my name, address, or any other information about me. The researcher will keep all my information in a locked cabinet for five years after she publishes the study. Only the researcher and her supervisor will be able to see my personally information, read my answers or see my audio taped. My name will not be used in any published or unpublished article, and the researcher will not talk about me with her supervisor or anyone else using my real name.

The audio tape and the written answers will be kept under lock with for five years after the study is published, and then they will be destroyed.

Any questions about my rights as a research participant should go to **Protocol Officer for Ethics in Research, 550 Cumberland Street, Room 160, (613) 562-5387 or ethics@uottawa.ca** .

There are two copies of the consent form, and I keep one.

If I have any questions about the study, I can contact the researcher or her supervisor.

Researcher: Kealey A. Hester. University of Ottawa, School of Human Kinetics (613) 233-8458, kbrown003@uottawa.ca

Supervisor: Terry Orlick, PhD. University of Ottawa, School of Human Kinetics (613) 562-5800 ext. 4272. torlick@uottawa.ca.

Researcher's signature:

Date:

Participant's signature:

Date:

Participant Consent form (Parent/Guardian)

Kealey A. Hester

University of Ottawa, Faculty of Health Sciences, School of Human Kinetics

(613) 233-8458

kbrow003@uottawa.ca

I, (*Name of research subject*) _____, agree to participate in the research conducted by Kealey A. Hester, a Master's student, of the School of Human Kinetics, Faculty of Health Sciences at the University of Ottawa. The project is under the supervision of Terry Orlick, PhD. The purpose of the research is to study the impact of the *Positive-Living Skills (PLS)* program (Orlick, 2002) on children diagnosed with Attention-Deficit Hyperactivity Disorder (ADHD). The participants will be provided with cognitive behavioural control programs that they self-administer to self-manage the behaviours, including inattentiveness and impulsivity-hyperactivity, associated with ADHD.

My participation will consist essentially of attending an interview prior to and following the five weeks of the sessions with my child, and both interviews will be audio taped and the interview will be transcribed. I understand that the contents will be used only for the purposes of assessing the impact of this program on children diagnosed with ADHD. My confidentiality will be respected by assigning a reference number to all materials that concern me. The researcher will only contact me within the confines of the research and will not share, sell or provide my personal information to others.

I understand that since this activity deals with very personal information, it may cause me emotional realizations regarding ADHD-related behaviours, which may, at times, be difficult. I have received assurance from the researchers that every effort will be made to minimize these occurrences. I will not be required to disclose any information that I feel uncomfortable sharing or to answer any questions I do not wish to answer.

I am free to withdraw from the project at any time, before or during an interview, refuse to participate and refuse to answer questions.

I have received assurance from the researchers that the information I will share will remain strictly confidential. Anonymity will be assured in the following manner, as previously detailed, all personal information will remain in possession of the researcher and her supervisor, in a locked cabinet. The reference number assigned to each participant will not be associated with the identity of the participant in any place within the published or unpublished research, and participants will not be discussed using their personal information, but will be referred to with their reference number. Any and all documents that link my personal information to my reference number will be kept under lock for five years following the publication of the research, and will then be destroyed. Only the researcher, Kealey A. Hester, and her supervisor, Terry Orlick, PhD, will have access to the personal information.

Tape recordings of interviews and other data collected will be kept in a secure manner. The interview audiotapes and the transcripts will be kept in a locked cabinet in Dr.Orlick's office at the University of Ottawa for five years following the publication of the research, and will then be destroyed. No one other than the researcher will have access to the audiotapes and/or transcripts.

Any information about my rights as a research participant may be addressed to the **Protocol Officer for Ethics in Research, 550 Cumberland Street, Room 160, (613) 562-5387 or ethics@uottawa.ca** .

If I have any questions about the conduct of the research project, I may contact the researcher or her supervisor.

Researcher: Kealey A. Hester. University of Ottawa, School of Human Kinetics
(613) 233-8458, kbrown003@uottawa.ca

Supervisor: Terry Orlick, PhD. University of Ottawa, School of Human Kinetics
(613) 562-5800 ext. 4272. torlick@uottawa.ca.

If I choose to participate in the research, I will sign the consent form and return it to the researcher. There are two copies of the consent form, one of which I may keep.

Researcher's signature:

Date:

Research Subject's signature:

Date:

Appendix D

Program Outline for parents and participants

The Positive-Living Skills program (Orlick, 1998) is a series of activities designed specifically for children. The program has many different activities. For the purpose of this study, eleven were selected to use with your children. This summary of each activity will provide you with a resource when using the CD. Feel free to contact the researcher, Kealey Hester, with any questions or concerns you may have. Enjoy the program.

<u>Activity</u>	<u>Length (mins.)</u>	<u>Description</u>
Basic Spaghetti Toes	6:07	Tense and relax their muscles, making them feel like warm spaghetti
Treasure Hunting for Highlights	6:16	Finding happy things everyday
Umbalakiki	5:51	Learn to put worries and negative feelings away
Changing Channels	5:10	Switching from negative thoughts to positive thoughts by changing channels on an internal remote
The Great Little Listener	4:43	Listen to a story and learn to focus on what is being said
One-Breath Relaxation	5:35	A slow breath in and out, exhaling stress and tension
Tree It and Changing Channels	4:14	Focus on one of two stories being told at the same time
Focusing Through Distraction	5:43	Perform a simple math task, with distractions
Special Place Relaxation	4:11	Image calm and beautiful places to teach the mind and body to relax
Jelly Belly	6:39	Relax by controlling abdominal breathing
Quiet Lake	3:54	Use imagery to relax the mind and body

Appendix E

Pre-Intervention Participant Interview

What activities do you like to do in your free time?

How do you feel when you are participating in your favorite activities?

Is it hard for you to stay focused sometimes? Give me some examples of times when you find it hard to focus.

What does it feel like when you can't focus?

How would you like to feel in those situations?

Tell me about some circumstances when you can stay focused. What activities? With who?

What does it feel like to be focused?

Do you want to be able to focus more often? When, for example?

If you know you really need to pay attention, what do you do to help yourself stay focused?

Has it been easy or hard for you to sit for this interview and pay attention?

Appendix F

Pre-Intervention Parent Interview

What activities do you enjoy as a family?

Describe the behaviors of your child during participation in enjoyed activities.

What symptoms of ADHD have you observed in your child?

Please provide examples of situations when your child is able to concentrate. Now tell me about times when your child is unable to maintain focus.

How do you and your family react to the behaviors of ADHD?

Do you have strategies for dealing with the behaviors? What are they?

How would you evaluate your child's ability to maintain focus within this interview?

Any other comments you would like to add?

Appendix G

Post-Intervention Participant Interview

Did you enjoy the *PLS* program? What did you like the most?

What do you remember about the program? What did you learn?

Did you use the programs outside the sessions with me? When? Where? With who?

What programs were easiest for you to do on your own? What ones were hard for you alone?

Why?

Do you think this program helped you? How? With what?

Will you use these programs in the future to stay focused? When will you use them?

Appendix H

Post-Intervention Parent Interview

Do you think the program a positive experience for your child?

What reactions did your child have to participating in the program? Did he talk about the sessions?

Did you observe any changes in your child following participation in the program? What kind of changes? Which behaviors?

Did you observe your child using any of the activities to manage behavior outside the sessions? When? Which ones?

Do you believe your child has improved some of his behaviors since our last interview? Which ones?

Did you integrate any of our activities in your “dealing strategy” at home? Which ones and why?

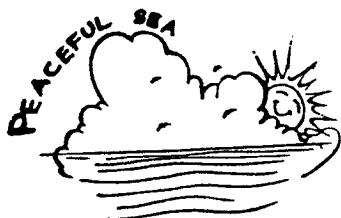
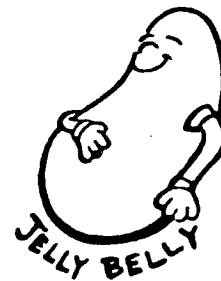
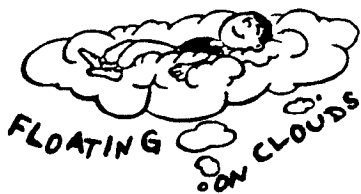
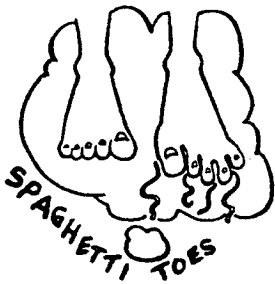
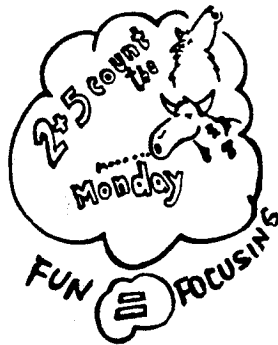
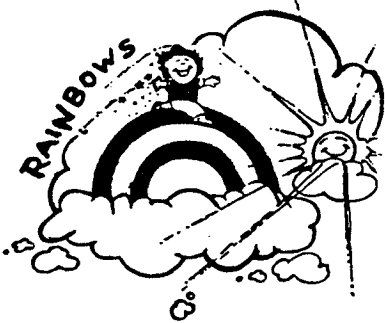
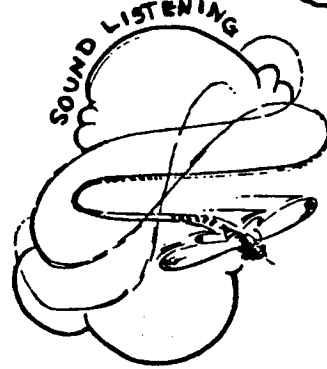
Will you encourage your child to continue to use the program? How?

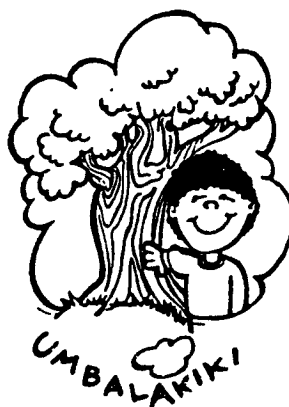
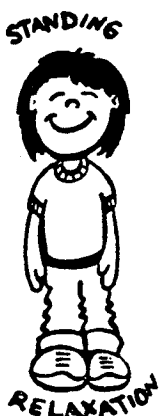
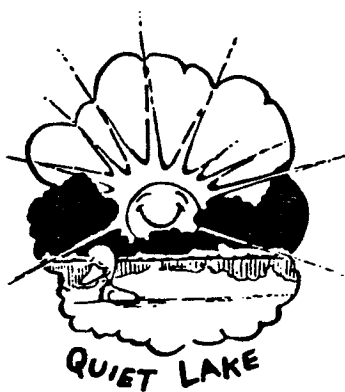
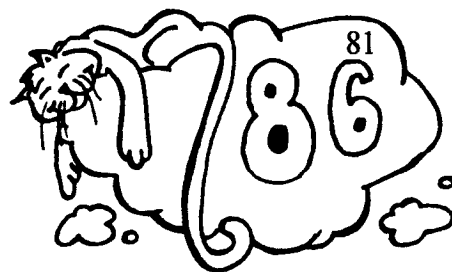
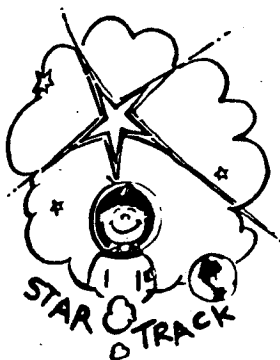
FEELING GREAT ACTIVITIES I HAVE DONE

Appendix I
85
Log Book

Colour in each activity you have done.

FEELING GREAT

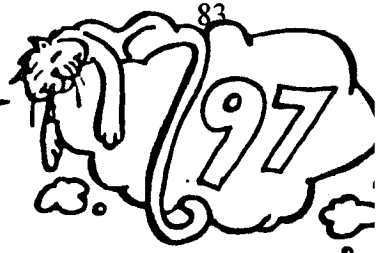






Where could
you use the
new skill?

Skill:



Where did
you use your
NEW skills?

Skill:

Changing Channels



Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

Yes A little No

Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

Yes A little No

Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

Yes A little No

Date: _____

Did you try to change channels or refocus today?

Yes No

What happened?

What did you do to refocus?

Did it work?

Yes A little No

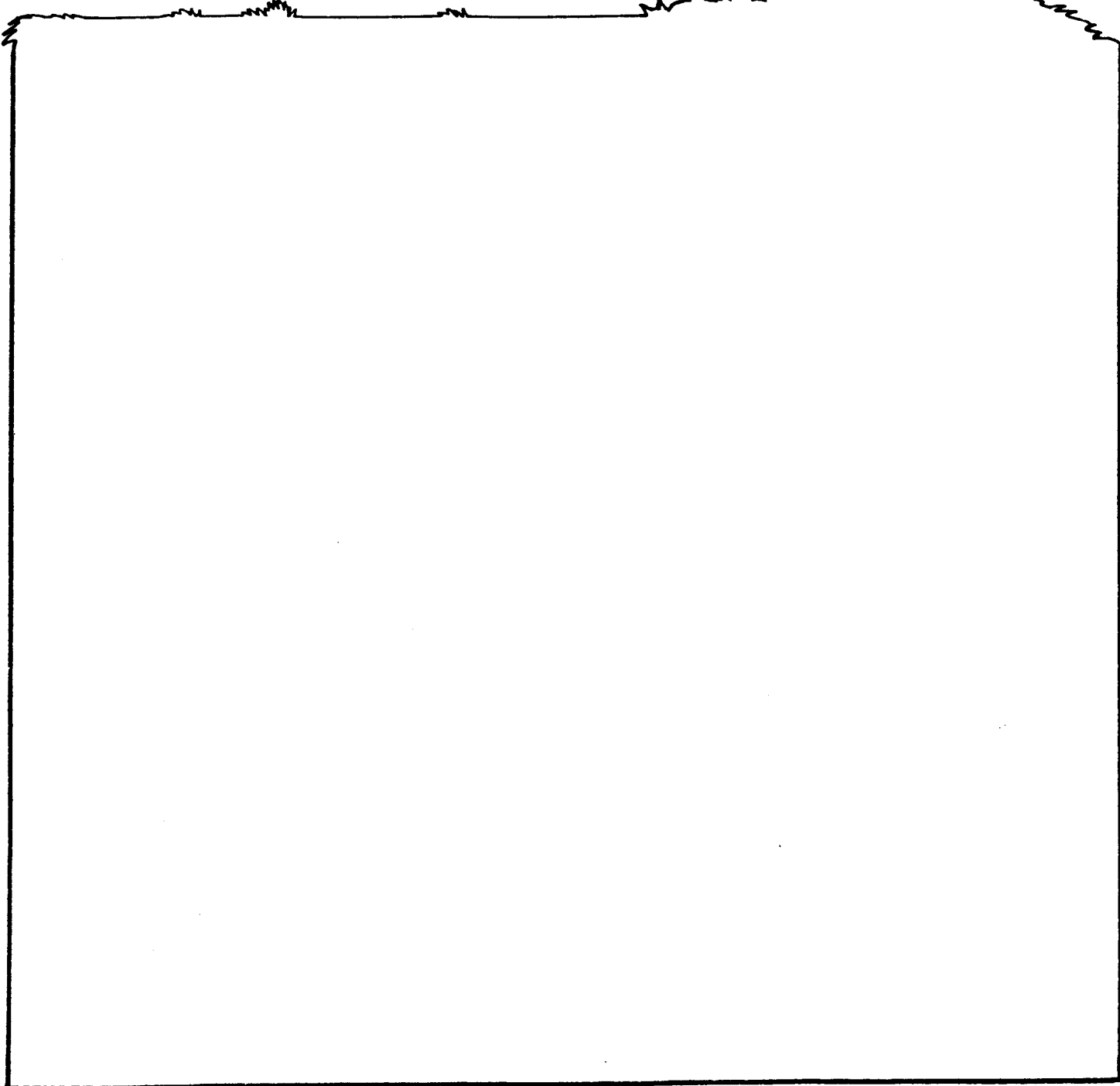
My Goals

Draw or write some good things you will do this week.



Being Relaxed

Draw something relaxing



Relaxing on Your Own

33

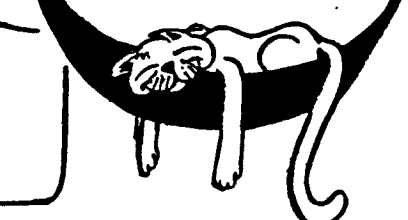
Did you try to relax on your own this week?



YES



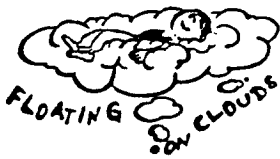
NO



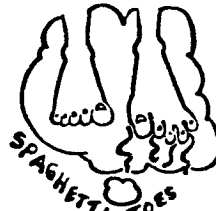
What did you do?



JELLY BELLY



FLOATING ON CLOUDS



SPAGHETTI TOES



QUIET LAKE



CHANGING CHANNELS



SPECIAL PLACE



UMBALARIKI



MUSCLE RELAXATION



ONE BREATH RELAXATION

How did you feel before trying to relax?



Very stressed



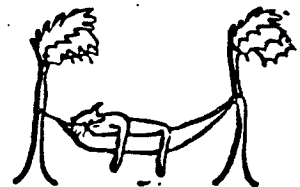
A little stressed



In between



A little relaxed



Very relaxed

How did you feel after relaxing?



Very stressed



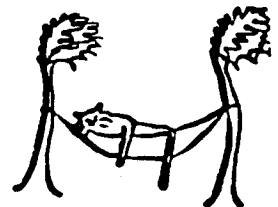
A little stressed



In between

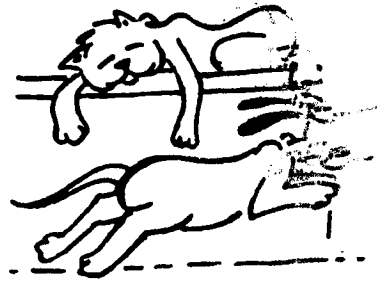


A little relaxed



Very relaxed

Relaxing on Your Own



Date: _____





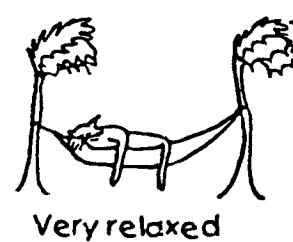
Did you try to relax on your own this week?

Yes No





Why did you try to relax?

What did you do ?

How did you feel before trying to relax?

				
Very Stressed	A little stressed	In between	A little relaxed	Very relaxed

How did you feel after relaxing?

				
Very Stressed	A little stressed	In between	A little relaxed	Very relaxed



Special Place Relaxation

Draw or write about your own
special place.



Appendix J

References for reinforcement and prompting

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