Executive Functioning Deficits: A Remedial Intervention for Middle School Students with Organizing and Planning Difficulties

Lise Huppler

A Thesis

In

The Department

Of

Education

Presented in Partial Fulfillment of the Requirements

For the Degree of Master of Arts (Child Studies) at

Concordia University

Montreal, Quebec, Canada

January 2016

CONCORDIA UNIVERSITY
School of Graduate Studies

This is to certify that the thesis prepared

By: Lise Huppler

Entitled: Executive Functioning Deficits: A Remedial Intervention for Middle School Students with Organizing and Planning Difficulties

and submitted in partial fulfillment of the requirements for the degree of

Master of Arts (Child Studies)

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

_____Chair
Steven Shaw

_____Examiner
Elsa Lo

_____Examiner
Arpi Hamalian

_____Supervisor
Miranda D'Amico

Approved by _____
Chair of Department or Graduate Program Director

_____
Dean of Faculty

Date _____

ABSTRACT

Executive Functioning Deficits: A Remedial Intervention for Middle School Students with Organizing and Planning Difficulties

Lise Huppler

Deficits in executive functioning (EF) skills, a typical characteristic of students with attention deficit/hyperactivity disorder (ADHD), negatively impacts adolescents' academic functioning and performance (Barkley, 2012). The purpose of this qualitative study was to better understand the student outcomes of the Homework, Organization and Planning Skills (HOPS) program (Langberg, 2011), a 16-sessions intervention designed to improve these skills in middle-school students with ADHD, and identify the different elements that may impact the degree of success, feasibility and dissemination of the program as perceived by three middle-school students, their parents and one of their teachers. In addition, the replacement of the HOPS paper calendar by a digital equivalent for tablets was also explored. Both qualitative (interviews) and quantitative (behaviour rating scales) data were collected from each of the three participants, their parents and one teacher prior to and following the completion of the HOPS intervention. Findings suggest that the HOPS program yielded progress in the area of homework completion and planning of academic schoolwork and organization of material. Also, although both parents and teachers noted academic improvements, teachers observed more moderate progress. In addition, the length and timing of the sessions were perceived as the program's strengths, whereas the level of parent involvement and the student's level of independence at the end of the intervention were deemed a difficulty.

Acknowledgements

First and foremost, I would like to thank Dr. Miranda D'Amico for her endless support, commitment and enthusiasm, as well as Prof. Arpi Hamalian and Dr. Elsa Lo for their time and insight. This project would not have been possible without their expertise and dedication.

My sincere thanks goes to my students for constantly reminding me why I am so passionate about understanding their beautiful minds and to the participating families for taking part in this project. A special thanks goes to Eddy for being both the literal and figurative music to my ears. I am also grateful to my colleague Jeff for his help and support during the pilot project.

I would also like to thank Daniela and Sarah for being there through thick and thin. Thank you for listening and reminding me that nothing else matters more than friends and family.

Lastly, but certainly not least, I would like to express my heartfelt gratitude to my mother and my husband for the time and energy they have dedicated to this project, and to my sons, for being as loving as they are lovable.

Table of Contents

List of Tables

List of Figures

List of Appendices

Statement of the Problem

Executive Functioning (EF) can be broadly defined as the mental processes engaged in the management, regulation and control of goal-oriented thought and action (Zelazo & Muller, 2002). It involves cognitive activities such as goal setting, planning, organization of behaviours, cognitive flexibility, self-regulation, and the memory and attention structures. However, there remains debate over how to specifically define, assess and quantify EF in the literature. EF refers to the dynamic coordination of cognitive functions and is therefore not demonstrated by any single behaviour or observable characteristic. Due to its pervasive nature, EF presents significant assessment difficulties and remains ill-defined in scientific studies, making generalizations and cross-study comparisons a challenge (Barkley, 2012).

Despite issues relating to defining and assessing EF, it is clear that it is important to multiple areas of life. In fact, solid EF skills have been found to increase school readiness, quality of life, job quality and retention, marital happiness, physical health, social behaviour and academic achievement (Diamond, 2013). Conversely, deficits in EF skills are related to mental disorders, poor physical health, lack of job-related productivity, major social problems and marital disharmony (Diamond, 2013). Although poor EF skills have also been associated to numerous disorders such as depression and schizophrenia, and are prevalent in patients with brain injuries, EF deficits are central to the diagnosis of ADHD (Denckla, 2007).

One of the most frequently cited disorders in children and adolescents, ADHD is estimated to affect 11% of children aged four to 17 by the Centers for Disease Prevention and Control (Visser, Danielson, Bitsko et al., 2013), and is currently the most prevalent disorder in North American classrooms. Although defined by difficulties in controlling attention, motor activity and impulsivity, ADHD is also characterized by deficits in EF (Barkley, 1997; Barkley,

2012; Denckla, 2007). During childhood and adolescence, EF deficits in individuals with ADHD are particularly disruptive to academic functioning. In fact, students who have deficits in planning and organizing have been found to be at a significantly increased risk of low academic achievement, grade retention and school dropout (Biederman et al., 2004). Students with poor organizational and planning skills tend to lose their materials and homework more often, are more likely to mismanage their time, have difficulties keeping track of their assignments and studying responsibilities, and cannot consistently complete homework and projects (Abikoff & Gallagher, 2008).

The middle school years, attended between the ages of 10-14 in the United States and 11-14 in Canada, are particularly difficult for young adolescents with organizing and planning deficits as they encounter higher academic demands, and increased teacher and parental expectations of independence levels (Langberg, Epstein, Altaye et al., 2008). As part of the transition to middle school, students must manage multiple teachers, subjects and classrooms and an increase in lecture-based teaching style. Furthermore, teachers and parents have higher expectations in terms of what the students should be able to achieve independently and therefore, less structure and individualized help is offered than during the elementary school years (Raggi, Chronis-Tuscano, Fishbein, & Groomes, 2009). Consequently, middle school students with difficulties in organizing and planning are at a particularly increased academic risk.

Despite these findings, there are few interventions aimed at resolving organizing and planning difficulties in at-risk middle school students. Of the few that are available, which will be briefly explored, most either target younger students, require extensive training to implement, necessitate high levels of parental input, do not easily integrate the adolescent's schoolwork into the program or do not unite the school's prescribed organization system with the program's.

The Homework, Organization, and Planning Skills (HOPS) program meets these criteria and demonstrates promising preliminary study results in teaching organization, planning and homework completion strategies amongst middle-school students with ADHD (Langberg, Epstein, Becker, Girio-Herrera, & Vaughn, 2012). However, the program, and ensuing research, is still new and requires further exploration of efficacy, feasibility and adaptability to different environments. Thus, the purpose of this qualitative study was to better understand the student outcomes of the HOPS program and identify the different elements that may impact the degree of success, feasibility and dissemination of the HOPS program, as perceived by the student, the parents and the teacher. Both qualitative (interviews) and quantitative (behaviour rating scales) data were collected from each of the three student, their parents and one teacher prior and following the HOPS intervention. Data were then analyzed for each of the three case studies and common themes and findings were identified to draw conclusions and recommendations.

Theoretical Framework and Literature Review

Operational Definition

EF is a broad and largely ill-defined umbrella term used to describe the skills necessary to organize and self-regulate our behaviour in daily tasks (Zelazo & Muller, 2002). The concept of EF was explored over 120 years ago, much before the term “executive functioning” was coined (Barkley, 2012). EF was initially explored, from a neurological perspective, to understand the functions of the pre-frontal cortex (PFC), explaining the popular misconception that all EF skills derive from activity in the PFC solely (Barkley, 2012). A recent review showed EF was related to, but not exclusively, pre-frontal brain activity, demonstrating that both frontal and non-frontal brain regions are essential to EF skills (Alvarez & Emory, 2006). Thus, it can be said that the study of “executive functioning” has been carried out at two main levels: the

neuroanatomical level which attempts to relate the neuropsychological functions to its specific region of the brain and the neuropsychological level which involves cognition, emotion and behaviour (Denckla, 1996). Educational and psychological research has focused on studying EF at the latter level, and has resulted in the development of a body of literature at a third level, relating specifically to education (Denckla, 2007).

Educational researchers have transferred and adapted the terminology and conceptual frameworks related to EF used in the fields of neuropsychiatry and neuropsychology to address the need of educators and educational psychologists to express, analyze and assess academic behaviour (Denckla, 2007). Thus, the study of EF at an educational level involves examining the application and transfer of EF skills in an academic environment. Using more familiar and practical terms, such as planning, organizing, prioritizing, remembering, paying attention and self-monitoring, educators are better able to communicate student strength and weaknesses in regards to academic behaviour and intervene when necessary. In the realm of education, this terminology and concepts have been found in the literature pertaining to learning disabilities (LD) and ADHD for many decades, but has more recently gained popularity amongst educators under the umbrella term of EF. Recently, it has found its way into popular press and although increased awareness can be beneficial to students everywhere, many misconceptions based on over-simplification exist today.

Despite its relatively long history, educational and psychological researchers and theorists have yet to agree on a core definition of EF. In general, EF refers to the cognitive processes involved in the conscious control of thought and action (Zelazo & Muller, 2002). This complex set of cognitive processes serving ongoing, goal-directed behaviours include activities such as goal setting and planning, organizing of behaviours over time, cognitive flexibility, self-

regulatory processes such as inhibition and self-monitoring, and the attention and memory systems that conduct these processes (Meltzer, 2007). EF skills are called upon during situations that involve short- and long-term planning, decision-making, problem-solving, new and difficult tasks, and overcoming habitual responses and temptation. Although most definitions used by researchers reflect these broad parameters, many different definitions of EF and its subcomponents can be found in the literature, making comparisons and synthesis a difficult task.

Theoretical Frameworks

As previously demonstrated, there are numerous definitions of the processes and behaviours involved in EF. This highlights mainly the complex nature of EF, but also the various backgrounds and perspectives of the researchers studying the development and application of EF (McCloskey, Perkins, & Divner, 2009). Although many theoretical frameworks have been developed to understand EF, these following four have been prominent in the educational body of literature on EF.

Working Memory Theory. An influential model widely used in the study of EF is Baddeley (1986)'s multicomponent model of working memory. This model comprises three subsystems: the *phonological loop* devoted to speech-based information, the *visuospatial sketchpad,* which maintains visual and spatial information and the *central executive* which coordinates the two other subsystems and prioritizes stimulus. According to Baddeley (1986), information that is received by these subcomponents is converted to visual and verbal processes. The central executive system is at the core of the system. This executive system coordinates information from the subcomponents, and selects and controls the cognitive processes and strategies (executive functions).

This framework can be used to illustrate how the brain undertakes ordinary academic

tasks. For example, a student who is sitting in history class will need to call on his central executive to attend to what the teacher is saying and writing on the board, and ignore his classmates. Then, the phonological loop will temporarily hold on to the words "Second World War" that the teacher has announced and the dates of WWII written on the board. If the central executive continues to hold on and rehearse this information that is now in the working memory, it will eventually become part of long term memory and this student will be able to recall the dates of the Second World War during his exam in several months.

Das-Naglieri Cognitive Assessment System (CAS). The CAS is based on the PASS Theory of Intelligence, developed by Naglieri and Das (1990), who theorize that cognitive ability is measured by performances in planning, attention, and simultaneous and successive processing. For example, a student should begin reading a schoolbook chapter by planning which strategy best fits the type of text studied. Then, as the student reads, she will have to maintain her attention and ensure focus on relevant information. To acquire the information, she will have to simultaneously and successively process, encode, transform and retain the written words. Any deficit in these processes will greatly impede her understanding of any read material.

Stemming from the highly influential works of Luria (1966), this neurological-based test offers a nuanced assessment of an individual's cognitive abilities as it provides information of the strengths and weaknesses on each of the four processes. When used to assess EF, the CAS addresses some of the issues engendered by other more widely used measures, such as the Tower of London (Best, Miller, & Naglieri, 2011). First, it included multiple performances indices such as accuracy and speed measures. These measures can enrich developmental research by providing information on the developmental trends of completion time and accuracy, and how they relate to the executive task performance and each other. Furthermore, the CAS is a

standardized test allowing for comparisons of age groups and generalizations (Best et al., 2011).

Barkley's self-regulatory model. Barkley's self-regulatory model divides executive functions into four main abilities, which are each influenced by a broader function, inhibition (Barkley, 1997). One element is working memory, which allows one to hold elements in mind to manipulate and resist interference. Another is internalization of self-directed speech to control and sustain goal-oriented behaviour. A third element is self-regulation of affect, motivation and arousal, which allows students to manage and control their emotions and align them with goal-directed behaviour. The fourth, reconstitution, involves the analysis and synthesis of information to direct behavioural responses. According to Barkley, whose model demonstrates that self-regulation deficits are at the heart of attention deficit hyperactivity disorder (ADHD), executive functions are described as types of self-regulatory actions that people draw on to manage their actions toward goals (Barkley, 1997).

Barkley (2006) argues that the main deficit in students with ADHD is their failure to develop adequate self-control. For example, a student with ADHD might find it difficult to be successful in a subject they find challenging. When sitting down to study for a test in math, he might have trouble engaging his working memory to remember similar past situations (in which poor study caused poor results) and apply them to his current situation. Then, he might have great difficulty using internal self-directed speech to help himself stay on track and focus on the topic at hand, in this case, math problems. Furthermore, he will likely be unable to control his negative feelings of discouragement and boredom, and he will quit studying long before he is prepared. Deficits in EF skills, as defined by Barkley (2006) as self-control, working memory, self-directed speech, control of goal directed behaviour and management of emotions and motivation, will have serious consequences in many areas of life, specifically in all school-

related matters and will be expanded on in a following section.

Miyake and Friedman's unity/diversity framework. A main issue in the development of research on EF is based on the question of whether they manifest independently from one another or whether they are regulated by an overarching function. Miyake and colleagues (2000) employed confirmatory analysis to examine whether inhibition, shifting and updating (commonly used EF skills), were related or distinguishable, or both. Although the three skills were found be moderately correlated (demonstrating unity), no unique factor was found for dual-task performance (demonstrating specificity). In an article summarizing further research on EF within this framework, authors conclude that individual differences in EF skills show diversity *and* unity, have strong genetic influences, and demonstrate developmental stability (Miyake & Friedman, 2012). Their studies demonstrate the need to research EF in a way that will allow the development of a more nuanced understanding. In fact, very recent studies by researchers in various subfields of EF development have used this framework to structure their findings and conclusions (Borella, Carretti, & Pelegrina, 2010; Yeniad, Malda, Mesmann, van Ijzendoorn, & Pieper, 2013).

Assessment

Aside from lacking an operational and consistent definition, the assessment of EF skills shows significant obstacles for several reasons.

Novel versus routine task. It has been argued that only novel, complex tasks will activate EF skills since they are by nature the cognitive processes involved in problem solving. Simple, routine tasks do not measure plan devising, strategy usage and self-monitoring, as they rely predominantly on automatized responses (Anderson, 2002). Hence, once a test had been administered, it cannot be successfully re-administered. The participant has had an opportunity to

refine a strategic plan and a second test would not reflect their ability to solve a problem, but rather to remember what strategy worked best. This explains why test-retest reliability of EF tasks is typically poor (Denckla, 1996).

Unity and diversity or domain-specific versus domain-general. One of the main difficulties in developing a functional definition and assessing EF relates to the topic of unity and diversity of the EF tasks. Despite the fact that EF tasks can be defined as distinguishable and assessed separately, one could argue that they reflect a common underlying mechanism that might be better studied as such (Miyake, Friedman, Emerson, Witzki, & Howerter, 2000). In other words, different EF skills correlate with one another, therefore demonstrating unity, but have also shown to differentially relate to other measures on a consistent basis proving diversity (Miyake & Friedman, 2012). Proponents of a common-base conception ground their reasoning on early theoretical development as executive functions initially develop as a whole, without demonstrating distinct subfunctions (Miyake et al., 2000), and studies of patients with front-lobe deficits (Duncan, Johnson, Swales, & Freer, 1997). Evidence for a dissociative framework also include front-lobe patients, as well as neuro-typical individuals, who demonstrated differing scores on related, but separate EF tasks such as the Wisconsin Card Sort Test and the Tower of Hanoi test (Miyake et al., 2000; Miyake & Friedman, 2012). Based on studies designed to further investigate the unity/diversity divide, a group of researchers headed by Miyake (Miyake et al. 2000; Miyake & Friedman, 2012) have developed the aforementioned theory of the unity/diversity framework, which attempts to reconcile both sides and recognizes the communality and specificity of executive functions.

Task impurity. Task impurity has been identified by a number of researchers as the most challenging problem in the study of EF. Essentially, during any task, EF skills inevitably

manifest themselves in parallel to cognitive processes (Miyake et al., 2000). Thus, a score obtained on a task targeting a specific EF skill could be attributed to either the executive or the non-executive skills needed to complete the task (van der Sluis, de Jong, & van der Leij, 2007). For example, performance on the Stroop test, used to measure processing speed, cognitive flexibility and inhibition, can be attributed to the added non-executive task requirements, articulation speed or colour processing (Miyake & Friedman, 2012). Since the variance caused by the non-executive functioning processes is substantial, task impurity makes it difficult to purely measure EF (Miyake & Friedman, 2012) and complicate hypothesis testing from one study to another. From a developmental point of view, task impurity also raises the question of whether improved performance with age on EF measures is due to improved executive function or improved cognitive processes (van der Sluis et al., 2007).

Psychometric tests. Neuropsychological tests of executive function are used to determine an individual's performance on specific EF tasks. It is presumed that their performance on a task reflects the ability of cognitive process, and is thus generalizable to other situations (Burgess, Alderman, Evans, Emslie, & Wilson, 1998). For example, the Wisconsin Card Sorting Test provides information on problem solving and attention. The participant is shown cards whose pictures differ on different levels and are asked to match them to other cards, but not how to match them. The individual must figure out which rule to apply based on select information given by the examiner. This test is presumed to give insight on an individual's ability to use working memory (or updating) and cognitive flexibility to solve a problem (Zelazo & Muller, 2002). Similarly, the Tower of Hanoi and the Tower of London are tasks designed to measure problem-solving skills. In both tasks, participants are presented with an initial arrangement of balls or disks of different colours mounted on three pegs, and are shown a

specific goal state. They must move the balls or disks in as fewer moves as possible to attain the target arrangement. The tasks are also used to generalize an ability to problem solve, with working memory and attention as the target cognitive processes (Zelazo & Muller, 2002). The Rey-Osterrieth Complex Figure task, another commonly used test, measures planning, as well as working memory, and has the participants draw a complex shape from memory (Davies, Field, Andersen, & Pestell, 2011). Although select few psychometric tests are mentioned here, there are many tests available to clinicians to measure EF (for a review, see McCloskey, Perkins, & van Divner, 2009).

Issues with psychometric measures. Related to the issues of task impurity, the main criticism of EF testing is that psychometric tests seem to have relatively low internal reliability, test–retest reliability and low construct validity (Denckla, 1996). In a study examining the construct validity of EF tasks on adults, Salthouse, Atkinson and Berish (2003) observed that performances on EF tasks (inhibition, updating and time-sharing) were significantly diminished once non-executive processes were controlled for. This led authors to conclude that EF tasks have weak construct validity, meaning that there was little evidence suggesting that there are distinct constructs corresponding to EF tasks. Furthermore, critics of the clinical tasks of EF have pointed out that there is little empirical validity supporting the assumption that one's performance on a specific EF task in clinical setting will reflect that person's performance in real-life tasks that call upon the same (or similar) cognitive processes (Burgess et al., 1998). The main argument is that the clinician takes on the role of the EF of the participant by regulating attention and inhibition. Barkley (2012) also questions the practice of clinical tests for assessing EF: "Other than convenience or tradition, why are tests given in clinical or lab settings the widespread basis for measuring EF and not direct observations of human action in natural

settings or rating scales completed by patients and others?" In educational practice, scores on EF measures are used to determine a child's strength and weaknesses, evaluate academic placement, direct intervention, determine IEP goals and accommodations, establish behaviour expectations, and determine emotional needs (Gioia & Isquith, 2004). Thus, ecological validity is of importance; assessment of EF must properly relate to and predict behaviour in day-to-day real-life situations as well as reflect long-term planning and organizing. This disconnect is probably best described by Toplak, West and Stanovich (2013) who undertook a review of the relationship between neuropsychological tests of EF and ratings of EF (which are described in the next section) and found that they have little to negligible correlations. Authors explain that cognitive performance-based testing and EF ratings should not be interpreted as equivalent or interchangeable as they ultimately do not measure the same aspects of EF, but that each play a role in developing an accurate picture of someone's EF ability and should be used together to assess EF in optimal performance environment and how it translate in day-to-day functionality over time.

Parent and teacher ratings. As a response to issues of ecological validity in neuropsychological testing of EF, parent and teacher ratings have become increasingly prevalent in the assessment of EF skills. The most common, the Behavior Rating Inventory of Executive Functioning (BRIEF), was developed by Gioia and colleagues (2000) as a result of their "own clinical need to more efficiently and systematically capture information about manifestations of EF difficulties in children's everyday behaviors at home, in school, and in their communities" (Gioia & Isquith, 2004). It was developed for individuals aged 5 to 18 years and assesses eight subdomains of EF: Inhibition, Shift, Emotional Control, Initiate, Working Memory, Plan-Organize, Organization of Materials, and Monitor. The BRIEF has strong psychometric value; it

demonstrates solid content validity and internal consistency (a's = .80-.98) and has appropriate test-retest reliability properties (*r*s = .82 for parents, .88 for teachers), on the whole and the individual scales (Gioia & Isquith, 2004). However, as is relatively common in parent-teacher surveys, agreement between the two informants is modest. For example, Langberg, Dvorsky and Evans (2013) found that when comparing parent and teacher ratings of organizing and planning subscales on the BRIEF, parents rated Planning and Organizing significantly lower than teachers did. Authors hypothesized that parents witness and assist in the homework process, and are therefore present during planning and organizing activities, whereas teachers do not have as much exposure to this specific or related situations. This highlights the importance of using both parent and teacher insight when evaluating children and adolescents' EF skills. It would seem that teachers are an ideal resource for gathering information in terms of materials organization and planning issues, whereas parents are a good source of information for specific homework problems (Langberg, Vaughn et al., 2011). Parent and teacher ratings add an important dimension to the EF assessment of a child by shedding light on how neuropsychological EF translates into day-to-day behaviour.

Influence of EF

Because of their pervasive nature, EF are paramount to several areas of life (Diamond, 2013). EF skills are better predictors of school readiness, more so than intelligence quotient (IQ), entry-level reading and mathematics (Blair & Razza, 2007; Morrison, Ponitz, & McClelland, 2010), and improvement in EF has been found to strongly correlate to better health-related quality of life (Brown & Landgraf, 2010; Davies et al., 2010). Poor EF is associated to marital conflict (Eakin et al., 2004), social problems, such as crime and violent behaviour (Broidy, Nagin, & Tremblay, 2003), difficulties finding and keeping a job (Bailey, 2007) and poor

physical health (Miller, Barnes, & Beaver, 2011). It is important to note that deficits in EF also occur in non-clinical populations on a short-term basis and across the lifespan. For example, for all individuals, the act of engaging in the EF processes involved in making a choice can hamper performance on subsequent self-control tasks (Vohs et al., 2008), which suggests that when an individual increases their active use of EF, perhaps in a period of greater stress, their ability to manage and control themselves is diminished. Furthermore, executive control is weak in the early years, develops during childhood and adolescence, and declines in old age in both clinical and non-clinical populations (Zelazo, Craik, & Booth, 2004).

EF and academic achievement. Working memory and inhibition have long since been associated to mathematic performance (Blair & Razza, 2007; Bull, Espy, & Wiebe, 2008) and more recently, shifting (or cognitive flexibility) has been found to consistently contribute to mathematic ability (Yeniad et al., 2013). In regards to literacy, inhibition control and working memory has been related to decoding ability (Blair & Razza, 2007; Boulc'h, Gaux, & Boujon, 2007; Demont, & Botzung, 2003) and to reading comprehension (Borella et al., 2010; Carretti, Borella, Cornoldi, & De Beni, 2009; Sesma, Mahone, Levine, Eason, & Cutting, 2009).

Furthermore, EF has been linked to general academic achievement at various ages and in different clinical and non-clinical populations (Best et al., 2011; Blair & Razza, 2007; Borella et al., 2010; Bull et al., 2008; Carretti et al., 2009; Sesma et al., 2009; Yeniad et al., 2013). Moreover, longitudinal studies suggest that EF contributes significantly to academic achievement above and beyond other factors such as IQ (Bull et al., 2008; Clark, Sheffield, Wiebe, & Espy, 2013; Hooper et al., 2011; Neuenschwander, Röthlisberger, Cimeli, & Roebers, 2012).

For example, a large study (N=2036) undertaken by Best, Naglieri and Miller (2011)

involving a representative sample of older children and adolescents demonstrated the close relationship between EF skills and academic achievement. Researchers examined the relations between complex EF tasks, as measured by the CAS, and academic performance on mathematics and literacy measures. Results demonstrate that although the correlation between EF tasks and academic achievement varied throughout childhood and adolescence, the developmental pattern of the strength of the correlations were surprisingly similar on the overall mathematics and reading performance. These findings reflect the aforementioned domain-general nature of EF skills. Authors put forth that the findings demonstrate that underlying cognitive processes (plan generation, self-monitoring, updating and impulse control) are crucial to both math and literacy. In fact, deficits in EF do not only affect specific academic domains such as mathematics and literacy, but also, and perhaps more importantly, negatively impact the general academic functioning of a student.

Organizing and Planning Skills

Planning is the first EF skill to be called on for most cognitive tasks, and in some studies is considered the umbrella term for other executive functions (Best et al., 2011). The executive control of planning allows individuals to set goals which will direct their course of action to achieve those goals. It also includes one's ability to regulate time and effort, internal motivation and to monitor's one progress in order to achieve set objectives (Yeager & Yeager, 2013). Organizing and planning skills have been found to positively impact academic achievement, above and beyond the influence of non-executive functioning skills (Best et al., 2011).

Simple planning skills are apparent beginning at age four and five. Three-year-olds struggle to show any signs to plan and organize actions ahead of time (Welsh, Pennington, & Groisser, 1991). Children's first signs of planning are evident in cooperative imaginary play as

they begin to organize, plan, and assign roles and plot lines to act out before the pretend play session has taken place (Yeager & Yeager, 2013). For example, a group of children in a kindergarten classroom may want to play "grocery store". They might rearrange a few tables and furniture to emulate a grocery store and put objects in place of grocery items. In addition, they may assign the roles of store clerks, cashiers and shoppers, and invent an interesting storyline with conflict for them to act out. These actions display planning as they set a goal (to play "grocery store"), although implicit, and have developed strategies (change of setting and role assignment) in order to play more efficiently, or in this case, more complexly.

Planning and organizational goals develop consistently throughout the years and undergo rapid growth between the ages of 7 and 10 years old (Anderson, 2002). Until the age of 7 and 8 years old, planning is somewhat inefficient and random, but during the ages of 7 and 10 years old, children are better able to set realistic goals, and engage in the strategic behaviour and reasoning abilities to become more successful in rapid and efficient attainment of their goals (Anderson, 2002). Planning and organizational skills continue to develop in terms of efficacy and speed well into adolescence (Anderson, Anderson, Northam, Jacobs, & Catroppa, 2001), and their refinement is positively linked to academic performance (Best et al., 2011).

Deficits in Planning and Organizing in an Educational Setting. Much of the literature available on deficits in planning and organizing, and subsequent interventions, relate specifically to individuals with ADHD. The most prominent model of ADHD, Barkley's model (1997; 2006; 2012) theorizes that ADHD is at its core a disorder caused by underlying deficits in EF. In this influential model, symptoms of ADHD can be explained by disruptions in one's ability to self-regulate. ADHD is characterized, of course, by inattention and impulsivity, but also by other symptoms that demonstrate EF deficits such as poor organizational, time management and

planning skills. Other disorders, such as autism spectrum disorder, executive dysfunction and dysexecutive syndrome, also manifest deficits in EF, but are poorly represented in the available literature on EF deficits and its educational implications.

Learning and ADHD. Children and adolescents with ADHD grapple with many learning challenges in comparison to their unaffected peers. They have trouble directing and sustaining attention to tasks, and attending to and following rules and instructions established by others (Barkley, 2006). In a school setting this may translate into difficulty listening to the teacher during instruction, difficulty initiating and staying on task during working time, and an increased risk of getting into trouble for breaking rules. They might make frequent careless mistakes and tend to omit important parts of schoolwork because they have trouble following protocols. They also have problems with disinhibition, their ability to halt unwanted behaviour (Barkley, 2006). This manifests itself in the classroom as increased fidgetiness and gross motor activity in general, excessive talking ("chattiness") and interrupting others. They have difficulty waiting their turn and will often blurt out what they are thinking before it is appropriate to do so. Their symptoms also include a great difficulty in becoming and staying organized and keeping on top of their schoolwork.

In an academic setting, poor organizational skills translate into lost or misplaced school material and homework and difficulties in selecting and transporting necessary materials and homework to and from school to complete homework or return it to the teacher. It also impedes a student's ability to consistently have in their possession their agenda/planner, which reduces their capacity keep track of schoolwork (Abikoff & Gallagher, 2008). Planning skills deficits impact a student's ability to initiate and complete daily academic tasks such as selecting appropriate material for class and homework completion. Deficits in planning and time

management skills result in difficulties in prioritizing schoolwork and in managing long-term assignments and studying needs (Abikoff & Gallagher, 2008). Subsequently, a student who does not know when and what to work on will likely demonstrate procrastination and avoidance. These difficulties lead to increased anxiety over schoolwork and conflict between child and parent and between student and teacher. Consequently, students with difficulties in EF skills are at an increased risk for grade retention and demonstrate a decrease in academic performance (Biederman et al., 2004).

The transition to middle school can be a particularly trying time for students with difficulties in organizing and planning (Langberg, Epstein, Altaye et al., 2008). Young adolescents entering middle school face increasing academic demands that put a strain on their ability to organize and plan. Students must learn to juggle many subjects, in different classrooms and taught by multiple teachers. The style of instruction is increasingly lecture-based, rather than collaborative and cooperative, and being able to plan long-term assignments and study schedules becomes more essential to student success (Raggi et al., 2009). Furthermore, middle school teachers have higher expectations of students' independence and are less likely to offer intensive help in developing organizing and planning skills than in the younger grades. Considering these increased demands, it is no surprise that difficulties related to homework completion are particularly frequent for children with ADHD during the middle school years (Power, Werba, Watckins, Angelucci, & Eiraldi, 2006). In light of the exacerbated difficulties students experience during the middle school years, paired with the knowledge that early adolescence is a developmental time in which complex EF skills develop rapidly (Anderson, 2002; Best et al., 2011), it would seem that middle school is an ideal period to implement interventions that could circumvent the planning and organizing difficulties in youths with ADHD and reduce the

academic risk.

The study by Biederman et al. (2004), one of the first in a growing body of literature that demonstrates the negative impact poor EF skills have on overall academic functioning in young adolescents with ADHD, found that youths with ADHD and EF deficits (as defined by demonstrating impairments in two EF measures) fare worse on academic outcomes (grade retention and academic achievement) than students who have ADHD alone. Critics of this study are researchers who define ADHD as a disorder that is largely based on EF deficits (Barkley, 2012). According to Barkley's theory of ADHD, it would be impossible to categorize youths with ADHD alone separately from youths with ADHD and EFD. Barkley argues (2012) that the conclusions of such studies are restricted to the definition of EF and in light of the current research on the ecological validity issues of neuropsychological tests for EF, it might not reflect EF behaviour in real life situations. A new wave of research, using ratings and survey to define EF deficits is becoming increasingly available, yet is still scarce and remains an area in need of further research.

In a study aimed at examining the relationship between ratings of different aspects of EF and academic results, as well as homework difficulties, in middle-school students with ADHD, researchers Langberg, Dvorsky and Evans (2013) found that planning and organizing skills were associated to academic functioning. More specifically, the EF Planning and Organizing subscales of the BRIEF predicted academic results above and beyond the ADHD symptoms. This study added to previous research because it assessed the contribution of EF behaviour as rated by parents and teachers and different measures of academic functioning, while controlling for ADHD symptoms. Also, this study assessed the impact of several different aspects of EF on academic functioning, which can help direct intervention. These findings demonstrate the crucial

role organization and planning play in academic functioning and standing of middle-school students and thus stressing the need to develop and conduct interventions that target the training of planning and organizing skills.

Interventions

Despite the growing body of literature that associates deficits in planning, organizing and time management with severe academic impairment, there is a relative lack of systematic research effort dedicated to the development and testing of interventions designed to offset such difficulties for young adolescents. Indeed, many published guides to help teachers manage students with ADHD exist, but there is a paucity of empirically validated programs available. However, initial investigations on the impact of the few programs currently available to meet the needs of these students are demonstrating promising results.

Organizational Training Program (OTP). The OTP is a program conceived by Abikoff and Gallagher (2008) to address poor organizational skills amongst children with ADHD. First, to meet the need for a relevant assessment tool, the authors created the Children's Organizational Skills Scales (COSS) a rating tool assessing organizational skills in children up to age 14 years old (Abikoff & Gallagher, 2009). The program, implemented in 20 sessions, twice a week, is designed to build organizational strategies in four areas: tracking assignments, managing materials, time management and task planning. Each new skill is discussed, defined and demonstrated by the teacher and then practiced by the student. The findings of a recent study evaluating the program's efficacy provide significant support for its use with children in grades 3-5 with ADHD (Abikoff et al., 2013). Although it was originally designed for younger students, it appears the OTP has been modified for middle school students, although at this time, no clinical-research on its efficacy is available.

Challenging Horizons Program (CHP). The CHP is a school-based program for middle-school adolescents with ADHD. It joins a combination of family, academic, social and behaviour interventions into a program that runs for 2 hours and 15 minutes per day, 3 days a week for the entire school year, after-school. (Evans, Langberg, Raggi, Allen, & Buvinger, 2005). CHP interventions emphasize the development and reinforcement of strategies such as overall organization, goal setting and self-control of behaviour, homework management, study and note-taking skills, socialization and group cooperation, fitness, and sports skills. Parent involvement is fostered through training and weekly reports (Evans et al., 2006). A pilot study with 7 middle school students provided encouraging results, and the program was thus examined at a larger scale in subsequent studies. Rating discrepancies between parents and teachers and student fluctuation make it difficult to draw solid conclusions from earlier studies (Evans, Langberg, Raggi, Allen, Buvinger et al., 2005), but from the multiple studies (in Evans, Shultz, DeMars, & Davis, 2011) undertaken using the CHP, authors have been able determine ideal modifications for certain factors such timing (beginning of the school year) and duration (most for the school year) and that multicomponent interventions lead to significant improvements in interpersonal functioning and organizational skills (Evans et al. 2009). More research is needed to test modifications to timing, duration and the model used to increase parent involvement (Evans et al., 2011).

Homework Intervention Program (HIP). The Homework Intervention Program (HIP) is a 5-session program involving a family-school and behaviour-based approach, designed for middle school students with a diagnosis of ADHD or for students showing similar homework difficulties. Sessions involve educational training about ADHD and its impact on homework difficulties, homework problem analysis, parent training on the development of a homework plan

and a reward system and parent-teacher meetings (Raggi et al., 2009). This program builds on the success of similar programs designed for younger children, such as the Homework Success Program (Habboushe et al., 2001), but modifications such as an increased role in the treatment process (goal setting and adjustments of the contingency plan) are included to address needs of older students. The HIP differs from more comprehensive programs, such as the CHP, by targeting a more specific academic difficulty: homework completion and accuracy (Raggi et al., 2009). A pilot project, with a multiple-baseline across participants design, was used by authors to evaluate the effect of the intervention on 11 middle school students. Results showed improvement in parent-reported homework difficulties and ADHD symptoms, overall grade average and on teacher-reported academic productivity (Raggi et al., 2009). More research exploring the roles of moderators using larger, group-design studies need to be conducted to examine the efficacy of the HIP.

Homework, Organization and Planning Skills (HOPS). The HOPS is a 16-session intervention aimed at improving the material organization and homework management of middle school students with ADHD. The program, which employs modeling, shaping, rehearsal and contingency management, is taught on a one-on-one basis through 20-minute sessions at a rate of twice weekly for the first ten sessions and once weekly for the remaining six. Using an earlier version of the program, Langberg, Epstein, Urbanowicz, Simon and Graham (2008) evaluated the intervention with thirty-seven middle school students. Researchers used highly trained undergraduate college students to deliver the HOPS as an after-school program. According to parent ratings, participants made significant improvements in both material and homework organization, and the students also demonstrated small to moderate increases in their overall grade average. Overall, the results were promising, but the resources involved in training the

implementers were restricting to dissemination. To address these issues, the researchers used a mixed methods study design to test a modified HOPS program in order to refine it for use by school mental health (SMH) provider. The modified program was designed to be implemented by school practitioners instead of trained staff, thus increasing the feasibility to run the program in schools.

Quantitative results showed that the participants demonstrated significant improvement in organizing materials, and important gains in organization, homework problems and inattention as rated by parents. These post-intervention results were similar to that of the previous version of HOPS, which was implemented by trained staff, and thus demonstrates that the program can be just as successful when taught by untrained SMH providers. Indeed, the SMH providers demonstrated high levels of fidelity during implementation with the use of a manual rather than formal training.

Qualitative analysis of focus group data offered specific feedback that researchers used to modify and refine the HOPS program further. First, SMH noted that the pace of skills introduction was too fast and that problem-solving of materials organization and homework management skills was needed. As a result, two sessions dedicated to troubleshooting were added. SMH also noted that the students felt that attainment of the first reward of the reinforcement plan took too long, so point values were increased. It was also found that teachers needed increased guidance and that meetings with parents should occur earlier in the intervention, so these changes were made to the HOPS manual. Lastly, analysis of audio-recordings of the sessions revealed that SMH providers used a multitude of strategies to engage the students during the sessions and scripts based on these strategies were included in the manual as well.

Researchers then conducted a randomized trial study of forty-seven middle school students with organizing and planning difficulties using the refined version of the HOPS as implemented by SMH professionals (Langberg et al., 2012). Authors found that students in the intervention group made significant gains in organized action, planning and homework completion behaviours on parent ratings when compared to their waitlisted peers. Furthermore, effects were maintained after a three-month follow-up evaluation and SMH providers implemented the HOPS program with high levels of fidelity, meaning that the SMH providers were able to adhere closely to the procedure and scripts provided in the HOPS manual without intensive training (Langberg et al., 2012).

It appears the HOPS program is successful in helping middle schoolers with ADHD to circumvent their organizing and planning difficulties because it incorporates many strong features of other available programs while addressing their major drawbacks. Indeed, it involves strong parental involvement, a model that gradually releases the responsibility from the implementer to the parent, an individualized approach, low cost, low training time for instructors, high fidelity ratings, and feasible and flexible timing of instruction.

Most of the programs mentioned share a parental involvement component. Since homework is an activity that is mainly accomplished in the home setting, it makes sense to involve parents in an intervention to increase homework completion. Communication between the home and school is critically important in recognizing breakdowns in the process of homework completion and in the successful remediation of these problems (Raggi & Chronis, 2006). For example, a student may not be documenting their homework appropriately and without teacher consultation, a parent may be unaware of this problem. Conversely, a student may be completing their homework, but omitting to hand it in, leading a teacher to believe the

student does not complete homework. A parent could clarify this situation and a fitting solution can be found. In the HOPS program, the parent is not simply a homework assistant (helps with content), but is a participant in goal setting and organization monitoring. This reflects current research on parental involvement. A meta-synthesis on the impact of parental involvement on student academic achievement has found that no matter how the parental involvement or the academic achievement was defined, the relationship, predictably, was positive. However, findings also demonstrated that it was weakest when parents' involvement consisted of homework assistance and strongest when parental involvement was defined as parental expectations (Wilder, 2014). Since the parents become involved in the process of goal setting and monitoring, they are encouraged to set expectations and maintain involvement throughout the program and beyond (Langberg, Vaughn et al., 2011).

Barkley (2006) recommends that programs to help students with ADHD must include intervention at the point of performance. The point of performance is defined as the moment and place in a real setting in which a person is failing to employ the strategies they know to successfully perform. Indeed, students with ADHD might not only lack the skills to organize and complete their schoolwork, but also may have difficulty applying their knowledge of strategies to real life situations. For example, a student might know that they are supposed to breakdown large assignments into smaller chunks, and manage their time using these smaller chunks, but not use that knowledge in practice. Once the skills have been taught, the HOPS program uses a modified "gradual release of responsibility" model, in which the teacher initially leads instruction and then, over the course of the intervention, allows the student to become increasingly responsible and independent (Pearson & Gallagher, 1983). Thus, the instruction begins by introducing and teaching specific strategies, and then ensures the practice and eventual independent use of these

strategies until they are implemented with positive results (Langberg, 2011). This is an important feature of an intervention program designed to help students with ADHD because it ensures that the strategies are not merely learned, but practiced until automatization, thus increasing the long-term effect of the program. However, it is important to note that the HOPS program is designed to release the responsibility of monitoring the application of taught skills and implementing the contingency plan from the implementer to the parent and that the parent is expected to continue in this role while the student continues to practice their skills and gain independence.

Another crucial feature of this intervention is the tailoring of the program for the student on a one-on-one basis. The importance of individualizing programs has been highlighted in the research on children and adolescents with ADHD for over a decade now (Abikoff, 2001; Jensen & Abikoff, 2000). The symptomatic profile of students with ADHD is best addressed in an one-on-one intervention because it increases sustained attention and decreases risk of distraction, and because it allows for the instructor to move at the pace of the student which varies greatly from student to student, especially in students with ADHD, an approach that students of this population do not benefit from in group format, but greatly need (Abikoff, 2001). While the general content and the pace of the HOPS intervention are largely fixed, the program is meant to be delivered as a one-on-on program, thus ensuring that the students will receive the attention they require to gain skills and that the implementer can individualize problem-solving sessions. Although the one-on-one ratio of the program decreases how many students can participate at one time with an instructor in comparison to small- or large-group interventions, the positive results of the program make this a judicious and important trade-off (Langberg, 2011).

Programs that require intensive training to deliver present major limitations in how feasibly they can be integrated in schools at a large scale. It is for this reason that the HOPS

authors modified the program to allow for school professionals, such as SMH providers, to implement the program within a school day (Langberg, Vaughn et al., 2011). Since Langberg et al. (2012) demonstrated that instructors of the program delivered the HOPS program with high fidelity despite lack of training and consultation, and that the students greatly benefitted from the intervention, the HOPS program can be feasibly implemented into schools without training (Langberg et al., 2012). In consequence, this program is fairly inexpensive to run as the instructors only need the HOPS manual and no specific training, and the reward system can include solely non-material based prizes (such as time spent with the provider or playing video games). These findings are of particular importance in regards to school-based dissemination of the program.

In sum, the HOPS program has demonstrated promising features, including strong parental involvement, a " gradual release of responsibility" model, an individualized approach, low cost, low training time for instructors, high fidelity ratings, and feasible and flexible timing of instruction.

A factor that is perhaps missing from the HOPS program and thus necessitating exploration is the flexibility of the HOPS program to be used in conjunction with homework recording and planning digital applications that are not only used, but increasingly required of students in this day and age. Taking into account the growing numbers of iPads in the classrooms and the 300 000 applications designed for education (King & Bass, 2013), it would be of benefit for the HOPS program to be used in combination with organizational applications that are frequently used in classrooms. Indeed, in a short time span, the iPad has penetrated classroom at a increasing rate. Today, more than 6000 students in Quebec are using touchpad technology in their classrooms. In the United States, over 4.5 million students are using touchpads on a daily

basis in their schools (Etherington, 2013). Many homework management applications exist today and given the increase usage of iPads in school, their increased use as part of a larger academic organization system is inevitable in the years to come. Despite this new reality, the studies on the HOPS have not yet explored the possibility of replacing its paper and pen calendars with digital equivalents. Further examination on the incorporation of homework management applications for the iPads into the current HOPS program will be of great interest and a beneficial addition to the program.

Present Study

Despite difficulties in defining and assessing EF skills, it is evident that disruption to the EF negatively impacts individuals. The transition to middle school is particularly straining for individuals with ADHD who experience deficits in planning and organizing skills, due to an increase in expectations and academic obstacles. During this transition, students with planning and organizing skills are at higher academic risk than their peers. Recently, interventions have begun to emerge from the literature, and research efforts towards their development and systematic review are underway. However, it is clear that significantly more research is needed in this area to guide school professionals and teachers in their interventions with students with planning and organizing deficits. The HOPS intervention is a program that is showing promising results thus far, but requires further research and testing to increase its success in meeting the needs of a growing population of concern in our classrooms. Indeed, although the modified HOPS program has shown qualitative strength, it is of value to better understand the factors involved in its success and to identify areas in need of improvement due to its distinctive impact in fulfilling a critical need in education. In addition, exploring the use of digital applications to replace the paper calendar is an important step towards updating the HOPS program for usage in

the years to come. To this end, a case study method was employed to gain insight into the effects of the HOPS intervention, designed to increase the organization and homework completion of adolescents with ADHD, in a sample of three middle school students with formal diagnoses of ADHD. Specifically, the following research questions were explored:

1. What are the student outcomes of the HOPS program, as perceived by the student, the parents and the teacher?
2. What are the different elements that may impact the degree of success, feasibility and dissemination of the HOPS program, including the use of organizational applications for tablets and computers, as perceived by the student, the parents and the teacher?

Method

Research Design

Both qualitative and quantitative data were collected from each of the three participants prior and following the intervention. The BRIEF, a behaviour rating scale, was completed by each participant as well as both of their parents and one of their teacher and provided quantitative information on effectiveness and impact of the program. To complement this information, the researcher interviewed the participant, and both their parents and their teacher. This provided information on the perceived impact of the student's difficulties pre-intervention and the perceived quantity and quality of the impact of the program post-intervention as determined by the student, their parents and one of their teacher. The BRIEF, and the interviews are described in detail in a following section.

For this thesis, the case study method, defined as "an empirical inquiry that investigates a contemporary phenomenon (the case) in depth and within its real-world context" by key researcher and proponent Yin (2014), was selected with the goal of acquiring a deeper

understanding the student outcomes of the HOPS program as perceived by the student, the parents and the teacher. Preliminary research on the HOPS program demonstrates its success and a deeper understanding of the different factors at play, which can be provided by a case study methodology, is key to further develop such programs and adding strength to its body of research.

The study includes three phases, as outlined in Figure 1.

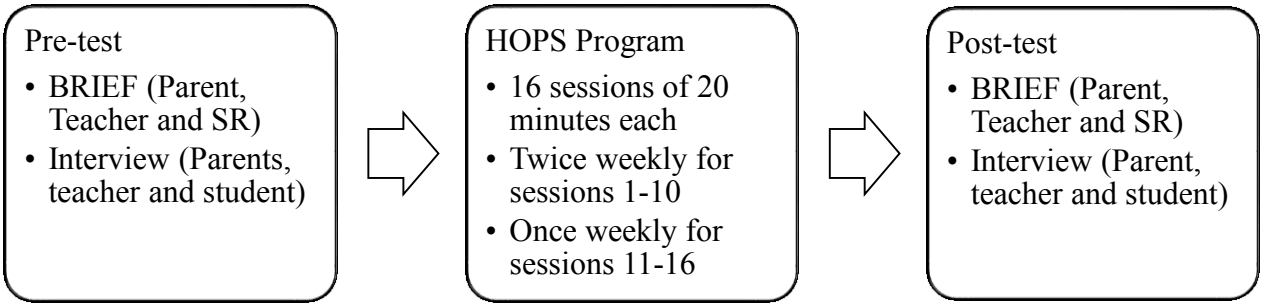

Figure 1. Study Design.

Participants

Convenience and criterion sampling were employed to select participants. Middle school teachers from the participating school were provided with a description of the current study and an explanation of the HOPS intervention, and were encouraged to refer students that might be eligible for the intervention. Participant selection was criterion based and hence, only participants meeting the following criteria were contacted: (a) attendance at the participating middle school; (b) meeting full diagnostic criteria of ADHD as determined by a certified professional in a psycho-educational report; (c) referral from teachers based on difficulties in academic organizing and planning tasks. Parents of referred students meeting these criteria were contacted by phone and provided with an explanation of the study. A follow-up email also containing an explanation of the study and the intervention was sent to parents following the phone discussion. Once the parents had agreed to participate in the study, and to have their child

participate in the study, the researcher met with each student to explain the study and to obtain assent. English Language Arts teachers were contacted via email to inform them of the study and obtain consent to participate. The researcher selected English Language Arts teachers to maintain consistency from participant to participant, as they have similar expectations, and because they see their classes more often than any other core teacher. All English Language Arts teachers agreed to participate. Parent, teacher and student either consented or assented to participate in the study by written forms.

Six students met the outlined criteria, and four agreed to participate in the study. However, following a sports-related injury, one of the participants withdrew two weeks into the study. Of the remaining three participants, two were in grade seven, aged thirteen years-old, and one was in grade eight, aged fourteen years-old. All students lived with their married parents, were of European-descent and came from double-income households.

Measures

Behavior Rating Inventory of Executive Function (BRIEF; Gioia et al. 2000)

The BRIEF was administered to each student, to both parents and one teacher for each student before the intervention (pre-test) and following intervention (post-test). The student version of the BRIEF, the BRIEF Self-Report (SR), is a self-rating measure designed to evaluate the everyday behaviours associated with deficits in EF for adolescents aged 11-18 years with a reading level at the fifth grade and above. It provides a unique perspective of the demonstration of EF skills from the viewpoint of the adolescent. It includes 80 items are incorporated two global indexes, the Behavioral Regulation Index (BRI) which include the Inhibit, Shift, Emotional Control and Monitor scales, and the Metacognitive Index (MI) which includes the Working Memory, Plan/Organize, Organization of Materials and Task Completion scales,

further explained below. The Global Executive Composite (GEC), which is derived from all eight scales, provides a score of global EF skills, as outlined in Figure 2. The BRIEF-SR also includes two subscales, the Behavioural Shift and the Cognitive Shift. Items on the self-rating form provide frequency-based ratings on a three-point scale. Raw scores are converted to T-scores and higher T-scores indicate a higher degree of dysfunction. T scores greater or equal to 65 are indicative of clinically significant dysfunction. The self-rating form was read to students to eliminate reading issues, as recommended in the professional manual (Gioai & Isquith, 2004). See Appendix F for BRIEF questionnaires.

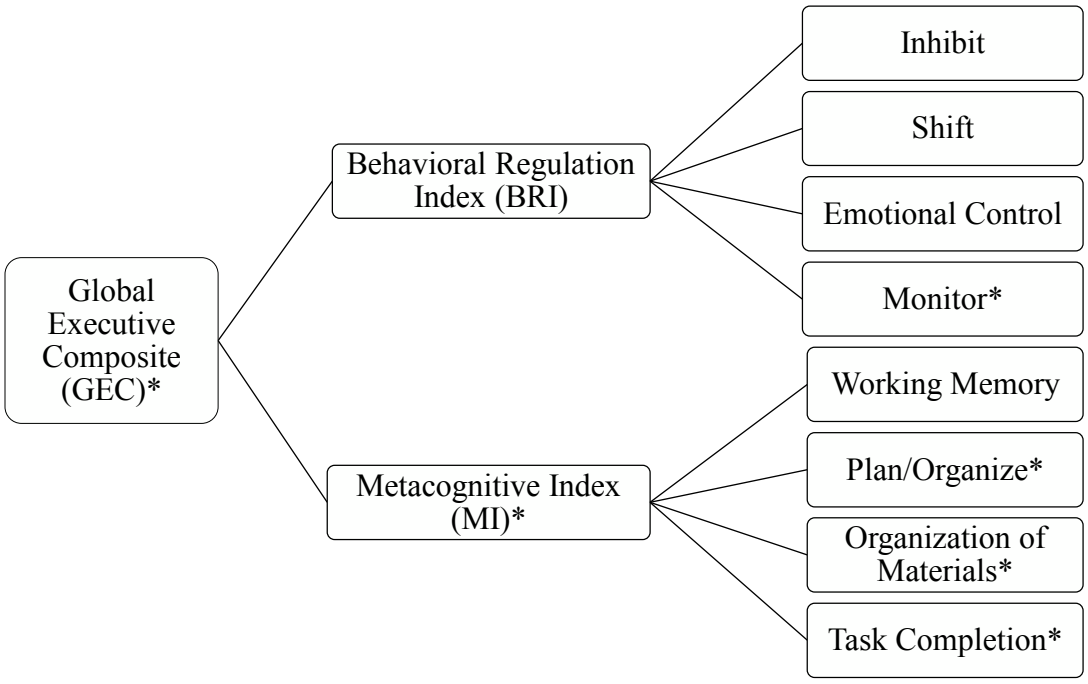

Figure 2. BRIEF-SR Form Scales.

* Only scores that are pertinent to the HOPS program were reported and analyzed for the purpose of this study.

The BRIEF Teacher and Parent Form is a rating scale designed to evaluate the everyday behaviours associated with deficits in EF in individuals aged 5-18 years as perceived by the parents and teachers of a student. The BRIEF includes 86 items and takes approximately 10-15-

minutes to complete. The 86 items are incorporated into eight empirically derived scales and two global scales, the Behavioral Regulation Index (BRI) and the Metacognitive Index (MI), which were established as the result of factor analysis of the eight scales. The BRI includes the Inhibit (impulse control and the ability to inhibit behaviours), Shift (flexibility and ability to transition appropriately) and Emotional Control (ability to control emotional response) scales and the MI includes Initiate (ability to initiate tasks or activities appropriately), Working Memory (task persistence and ability to retain information while completing a task), Plan-Organize (ability to set goals and develop a plan of action based on anticipation of future circumstances), Organization of Materials (ability to keep materials and workspace organized) and Monitoring (ability to assess performance and monitor behaviours) scales (Gioia et al. 2000). The Global Executive Composite (GEC), which is derived from all eight scales, provides a score for global EF skills as outlined in Figure 3. As on the self-report version, items on the parent and teacher rating provide frequency-based ratings on a three-point scale, which comprises “Never”, “Sometimes” and “Often”. Raw scores are converted to T-scores and higher T-scores indicate a higher degree of dysfunction and T scores greater or equal to 65 are indicative of clinically significant dysfunction. See Appendix F for BRIEF questionnaires.

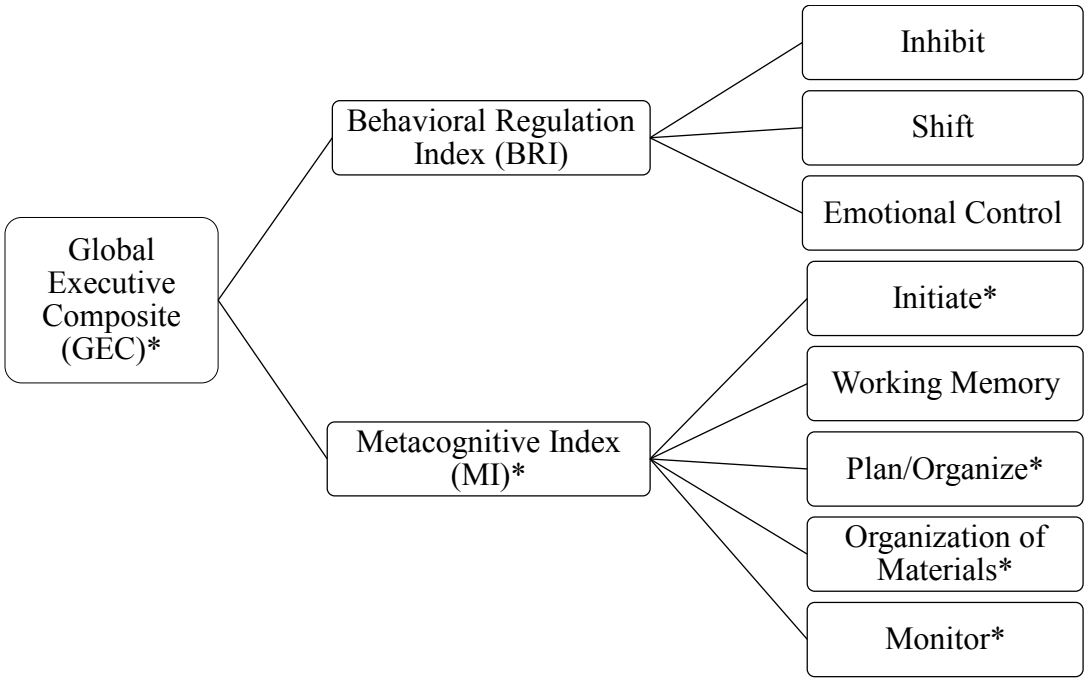

Figure 3. BRIEF Parent and Teacher Form Scales.

*Only scores that are pertinent to the HOPS program were reported and analyzed for the purpose of this study.

Semi-structured interviews

Semi-structured interviews were included in the study because they yield rich data and allow for gains of understanding and insight into the perceptions and experiences of the interviewees (Ritchie & Lewis, 2003). The interviews were composed of open, semi-structured, pre-determined questions and lasted between fifteen and twenty minutes. Each student was interviewed individually in order to yield information on their personal experience and perception of themselves, and the impact of the intervention on their day-to-day decisions and behaviour. The parents were interviewed individually or together (depending on their preference) to collect data on their collective experience, whether similar or contrasting, in engaging in the intervention themselves, and their collective perception of the impact of the program on their child (Creswell, 2011). Teachers were interviewed to collect information of the perceived

changes in the students as a result from the intervention from an academic standpoint. For a list of the interview questions, refer to Appendix E.

Procedure

The study took place over the course of the 2014-2015 academic year. Once consent or assent was collected, as explained in the Participants section, the BRIEF Forms were sent to parents and the teacher in sealed envelopes and were returned to the researcher in sealed envelopes. Once rapport was established with the student in a separate, casual meeting, the BRIEF-SR was administered by the researcher to the student prior to the interview and was read aloud to avoid inaccurate responses due to reading issues. The student, the parents and the teacher were interviewed separately in person in the researcher's office, at the participating school. Each interview lasted between fifteen and twenty minutes.

The following phase of the study was the commencement of the eleven-week HOPS program. The intervention was delivered in 16 sessions, with each sessions lasting up to 20 minutes, at a rate of two sessions a week for the first 10 sessions, and then once a week until completion of the program. Three main areas are covered during the HOPS intervention: school materials organization, homework management, and time management and planning. For the school materials organization, the student learns a specific organization system for bringing homework materials from school to home and vice-versa. For homework management, the student learns to use a consistent and effective homework assignment recorder for assignments, projects and tests. For time management and planning, the student learns to chunk homework and studying into smaller, more manageable pieces and to plan to complete them on a functional timeline.

Student sessions. Each HOPS session is twenty minutes long and is teacher-led in terms

of content. The teacher introduces and demonstrates the use of a skill and/or strategy and the student is directed to engage in the strategy using their own schoolwork and material. See Appendix C for an outline of session-by-session content on the progress-tracking sheet provided in the manual. The HOPS intervention includes a rewards plan to counteract the tendency a student with AHDH has to opt for short-term reinforcement (i.e. computer games) to the detriment of long-term goals (i.e. academic achievement) (Barkley, 1997). The teacher completes a checklist based on their evaluation of the student's use of the organization and planning skills. A positive review earns the student points, which can be redeemed for gift cards or other rewards predetermined by the teacher and student during the first session. Student sessions were implemented with fidelity, meaning that the teacher closely adhered to the procedures and scripts provided in the HOPS manual.

Parent meetings. The HOPS intervention includes two parent meetings. The first one takes place at the beginning of the intervention and is intended to familiarize the parent with the program. The second meeting takes place closer to the completion of the program and is designed to teach the parent how to take control of the teacher's responsibilities in regards to student expectations and the reward system. Parent meetings were implemented with fidelity.

At the end of the HOPS intervention, the BRIEF Forms were sent to both parents and the teacher in sealed envelopes and were returned to the researcher in sealed envelopes. The BRIEF-SR was administered by the researcher to the student during the last session. Each item was read aloud to avoid inaccurate responses due to reading issues. The student, the parents and the teacher were interviewed separately in person in the researcher's office, at the participating school. Each interview lasted between fifteen and twenty minutes.

Results

Results are presented by case study. Pre-intervention BRIEF results are presented first, followed by pre-intervention interviews, post-intervention BRIEF results and post-intervention interviews. For clarity, both pre- and post-intervention BRIEF results are presented in tables found at the end of each case study.

Case Study 1: Stephan

Stephan was a 13-year-old grade 7 student at a private coeducational high-school in Montreal. He lived with his parent and his younger brother, aged 8. In his late elementary school years, teachers and his mother became concerned about his difficulties sustaining attention in class and in developing organizing and planning skills. Stephan's mother, Mrs. H, had him assessed by a certified psychologist, who diagnosed Stephan with ADHD, Inattentive Type. Stephan began pharmacological treatment shortly thereafter and despite alleged improvement of his in-class focus according to his teachers, Stephan continued to have difficulty meeting organizational and homework management expectations as demands increased over time. Pre-intervention data was collected in September of his seventh grade year and the intervention was conducted from October to December, every Tuesday and Thursday morning from 7:45am-8:15am. Missed appointments were rescheduled to the next weekday. Post-intervention data was collected in December.

Stephan's parents, Mr. H and Mrs. H were married, lived together and both worked at the time of the intervention. They attended parent meetings together and attended the pre-intervention interview separately in the office of the researcher. Mr. H was not available for the post-intervention interview. The participating teacher, Mrs. P, was Stephan's English teacher and taught him seven periods on a ten-day schedule for 65 minutes per period. She was also interviewed in the researcher's office.

Pre-intervention BRIEF scores. All validity scales were within normal limits indicating the likelihood of an interpretable profile. Pre- and post-intervention BRIEF results are presented at the end of the result section for present case study.

Parent. As demonstrated in Table 1, results on the BRIEF Parent Form as reported by Mrs. H revealed clinically significant elevations on the MI (91%ile), and on two of its scales, Plan/Organize (92%ile) and Organization of Materials (94%ile). Results on the Initiate (85%ile) and Monitor (53%ile) scales and on the GEC (85%ile) did not reach significant levels. Stephan's scores as reported by Mr. H, as seen in Table 2, showed significant problems on the Organization of Materials (94%ile) scale only. Results on other scales of the MI did not reach clinical significance, nor did the GEC (59%ile).

Teacher. As seen in Table 3, results on the BRIEF Teacher Form indicated clinically significant scores on the MI (99%ile) and included scales: Initiate (97%ile), Plan/Organize (99%ile), Organization of Materials (98%ile) and Monitor (97%ile). Consequently, the results on the Teacher Form as reported by Mrs. P revealed a global score (GEC) at the 99%ile. BRIEF ratings on the Teacher Form suggest higher overall levels of concern when compared to the BRIEF Parent Forms.

Self. Stephan's results on the BRIEF-SR Form, as seen in Table 4, were consistent with results obtained from the Parent and Teacher Forms, demonstrating clinically significant deficits on the Plan/Organize (97%ile) and Organization of Materials (92%ile) scales and on the MI (97%ile), whereas the Task Completion scale score was not elevated. Like his teacher and his mother, Stephan reported a clinically elevated GEC at the 99%ile.

Overall, scores on the Parent, Teacher and SR BRIEF Forms showed some patterns and some inconsistency. Clinically elevated scores were revealed on the Organization of Materials

scale on all four forms suggesting important deficits in this area. Also, on the Student Form, Teacher Form and on the Parent Form as reported by Mrs. H, high results were reported on the Plan/Organize scale indicating particular difficulty in planning and organizing skills. However, only Mr. P identified significant problems on the Initiate scale, suggesting difficulties in initiating work that may be isolated to the classroom. Stephan, Mr. P and Mrs. H reported elevated scores on the MI. Taken together, it appears that Stephan has important difficulties in organizing his materials and planning and organizing in general, as well as difficulties initiating tasks in a classroom.

Pre-intervention interviews.

Mother.

Student behaviour: homework, organization and planning. Mrs. H identified serious organizational and planning difficulties. According to her, it seemed that Stephan showed particular difficulty in organizing his school materials. She explained, "I won't say disastrous, but you know, if disaster is a 5, he would be at a 4." She described a schoolbag full of loose papers, with empty binders and no apparent system. It would seem that without her help, Stephan would not be able to locate any materials while doing his homework. In terms of homework completion, Mrs. H also identifies severe difficulties explaining that he would not be able to work if it was not for her constant monitoring. She stated, "He needs absolutely100% full support or nothing would ever get done", adding that he does not show any independence.

Parental behaviour and emotion. Mrs. H described homework time as stressful on the home environment. It appears that Stephan and his mother argue about homework recording and completion, deadlines and quality of work. Furthermore, it seems that the conflict between

Stephan and Mrs. H create tension between her and her husband because he believes she is too hard on him, although, according to Mrs. H, Stephan is not privy to these conversations.

Parental expectations of program. Mrs. H was hoping to reduce the conflict associated with the homework process in her household, by increasing Stephan's knowledge and practice of skills. She expected for him to learn organization and planning skills that he could implement with autonomy, thus reducing the need for monitoring and the level of tension it created in the household.

Father.

Student behaviour: homework, organization and planning. Mr. H reported less dysfunction of organization and homework management skills than did his wife. He reported some difficulties initiating the work, but added that "under pressure of a deadline, he will usually kick into gear by himself and do it." Similarly, Mr. H reported that Stephan faced some challenge in his organization of schoolwork, but that it was "like any teenage boy". He added that although his bag was messy, Stephan seemed to be able to keep track of his academic materials within the untidiness. He stated that he did not have a clear idea of how Stephan tackled long-term planning of tasks and studying, as his wife was more likely to get involved during homework time.

Parental behaviour and emotion. Mr. H seemed somewhat concerned about the amount of stress the homework process was creating in the household. He stated that he sometimes argued with his wife about how best to help Stephan with his homework difficulties. His feeling was that it was best to have Stephan "make his own mistakes and learn from them" than to be constantly monitoring and offering support and structure to ensure homework was completed. He stated that these discussions were not hugely stressful and were a normal element of co-parenting.

Parental expectation of program. Stephan's father was hoping that Stephan would gain the maturity to understand how his actions impact his long term goals. He explained that Stephan often related wanting to do better academically and be more organized but that he could not always see how to direct his present actions towards his goals.

Consistency with BRIEF findings. The findings from the parental interviews were consistent with the BRIEF results as both Mr. and Mrs. H identified difficulties with organization of academic materials yet demonstrated disagreement on homework management, on both the BRIEF measure and during the interviews. Mrs. H described more serious issues of recording and independent completion of homework during the interview and on the BRIEF Parent From. On the other hand, but also consistent with his BRIEF scores, Mr. H noted difficulties in material organization, but did not seem to identify the homework process as an important problem for Stephan.

Teacher.

Student behaviour: homework, organization and planning. Mrs. P also identified several issues with Stephan's organization, planning and homework management. She explained that his material organization was "always a problem and here at school, his bag and locker are a complete disaster." She added that he had lost his agenda multiple times since the beginning of the year and if the homework information was not available on a digital platform, and if his mother was not constantly on top of it, his homework would never be completed and submitted. Mrs. P highlighted that his academic issues are not related to lack of motivation, but rather to an inherent disorganization. According to Mrs. P, although daily homework is managed by his mother, and thus submitted on times most of the time, long-term projects are so difficult for Stephan to organize and plan that even with help, he is unable to meet deadlines. Overall, she

identified issues in (a) material organization, (b) recording of homework and (c) independent planning and completion of long-term projects.

Teacher Expectations of Program. Mrs. P hoped that the HOPS program would help Stephan develop a system that works in getting him and keeping him organized. She explained that, in her opinion, Stephan's mother offered him a remarkable amount of help and that it was time for him to become more independent in his organization and planning of schoolwork and in his organization of academic materials.

Consistency with BRIEF findings. The gravity of Stephan's material organization and management of homework deficits explained by Mrs. P in the interview accurately reflected elevated scores on BRIEF Teacher Form. Indeed, Mrs. P indicated clinically significant scores on the Initiate, Plan/Organize, Organization of Materials and Monitor scales, all of which suggest poor organization and planning of academic tasks skills.

Self.

Student behaviour: homework, organization and planning. Stephan stated finding school challenging due to his disorganization. He mentioned that his academic materials are not in order, that his bag and locker are "terribly messy" and that he finds it difficult to locate the materials he needs when it comes time to study or complete homework. He claimed that his mother was helping him with his homework, but not with keeping his materials organized. He also admitted to needing a great deal of persuasion to initiate schoolwork when he is at home. He explained that he rarely used his agenda, instead relying on the digital platform for homework information, and that without his mother's support he would never know what to do or when to do it. He also added that even once he has done homework, he often forgot to submit it, sometimes receiving a poor grade on an assignment because it is late. Overall, he outlined

difficulties in (a) material organization, (b) recording and managing homework, (c) initiating schoolwork, and (d) submitting work.

Emotion. Stephan explained that homework is a stressful time in his household. He described needing his mother's support, but resenting it at the same time. He stated, "It's complicated because I hate that she helps me, but I have no choice because if not I wouldn't survive in school at all." He added that homework was tedious and boring and that he had a difficult time sitting down to do it, which is why he resisted doing his work so often. He explained that he would like to gain independence in this area in order to lessen the tension between himself and his mother and between his parents.

Expectations for program. Stephan hoped that the intervention would allow him to gain skills in material organization and homework organization, planning and completion. He was hoping to learn to use an agenda, complete his homework on time and keep his binders in order. He explained that he was looking forward to becoming more autonomous and therefore, arguing less with his parents.

Consistency with BRIEF findings. Information gathered from Stephan's interview is highly consistent with BRIEF SR results. During the interview, Stephan identified difficulties in (a) material organization, (b) recording and managing homework, (c) initiating schoolwork, and (d) submitting work. Accordingly, results from the BRIEF SR Form revealed clinical difficulties on the Plan/Organize and Organization of Materials scales, and on the MI in general, which are associated to the difficulties outlined in the interview.

Summary of pre-intervention findings. Overall, Stephan, his mother and his teacher identified severe dysfunction in academic areas that relate to organization, planning and homework. Specifically, taken together, the findings from the BRIEF forms and the pre-

intervention interviews revealed Stephan had persistent difficulties in material organization, and planning and organizing long-term projects. They also suggest that he lacked autonomy, but that he appeared to have some level of awareness of his own issues. Stephan's father identified some issues, but appeared to be less concerned about Stephan's academic problems than Stephan himself and his teacher and mother.

Post-intervention BRIEF scores.

Parent. Parent BRIEF results are presented in Tables 1 and 2. Mrs. H reported improved T scores on three of the MI scales, as well as an improved score on the MI. Stephan's mother reported T scores at the 78%ile for the Initiate scale (7%ile decrease from the pre-intervention result), at the 78%ile on the Plan/Organize scale (14%ile decrease), at the 65%ile on the Organization of Materials scale (29%ile decrease), at the 63%ile on the Monitor scale (10%ile increase), at the 77%ile on the MI (14%ile decrease) and at the 69%ile on the GEC (16%ile decrease). Post-intervention results on the Plan/Organize and Organization of Materials scales, as well as the MI declined to below clinical significant range.

Scores on the BRIEF Parent Form as reported by Mr. H also demonstrated improvement on some scales and regression in others. Stephan's father reported improved T scores at the 63%ile for the Initiate scale (10%ile decrease from the pre-intervention result) and at the 78%ile on the Organization of Materials scale (16%ile decrease). He also reported poorer T scores at the 81%ile on the Plan/Organize scale (14%ile increase), at the 69%ile for the Monitor scale (29%ile increase), at the 80%ile on the MI (5%ile increase) and at the 65%ile on the GEC (6%ile increase). Post-intervention results on the Organization of Materials scale declined to below clinical significant range, whereas the Plan/Organize scale remained below significant range.

Teacher. Results on the BRIEF Teacher Form as reported by Mrs. P showed similar improvement patterns to Mrs. H, but were more conservative, as seen in Table 3. On the BRIEF Teacher Form, Mrs. P reported improved T scores on four scales included in the MI, as well as improved scores on the MI and on the overall GEC. Stephan's teacher reported T scores at the 90%ile for the Initiate scale (7%ile decrease from the pre-intervention result), at the 90%ile on the Plan/Organize scale (9%ile decrease), at the 85%ile on the Organization of Materials scale (18%ile decrease), at the 90%ile on the Monitor scale (7%ile decrease), at the 95%ile on the MI (4%ile decrease) and at the 96%ile on the GEC (3%ile decrease). Post-intervention results on the Initiate, Plan/Organize, Organization of Materials and Monitor scales, as well as on the MI declined to below clinical significant range.

Self. As presented in Table 4, Stephan's results on the BRIEF-SR showed improvement patterns that were consistent with his results from the Parent and Teacher Forms, but demonstrated larger gains. Indeed, Stephan reported T scores at the 45%ile on the Plan/Organize scale (52%ile decrease from the pre-intervention result), at the 28%ile on the Organization of Materials scale (64%ile decrease), at the 3%ile on the Task Completion scale (73%ile decrease), at the 73%ile on the MI (24%ile decrease) and at the 68%ile on the GEC (33%ile decrease). Post-intervention results on the BRIEF-SR on the Plan/Organize and Organization of Materials scales, as well as on the MI and the GEC declined to below clinical significant range.

Overall, Stephan demonstrated improvements that show a consistent pattern on the Parent Form as reported by his mother, on the SR and Teacher Forms. According to him, he made remarkable improvements on the Plan/Organize, Organization of Materials and Task Completion scales. Similarly, but more conservatively, Mrs. H and Mrs. P reported improvement on the Plan/Organize, Organization of Materials and Initiate scales. According to his mother, his

teacher and himself, Stephan displayed improvements on the Organization of Materials and Plan/Organize scales that declined to below statistical significance. These post-intervention scores suggest that Stephan improved his behaviour on planning and organizing in general and on organizing his materials to a degree that is no longer concerning. Apart from also reporting a score on the Organization of Materials that fell below clinical significance and improvement on the Initiate scale, Stephan's father reported post-intervention scores on the BRIEF Parent Form that are inconsistent with the other forms. He suggested a regression on the Plan/Organize and Monitor scales when comparing post-intervention scores to pre-intervention scores. In sum, post-intervention scores suggest an improvement in the areas of organization of materials, initiation of work, and planning and organizing in general.

Post-intervention interviews.

Mother.

Student behaviour: homework, organization and planning. Mrs. H reported improvement in Stephan's (a) managing of daily homework, including recording, initiation, completion and submission and (b) organization of materials, but that he was still struggling with (a) long term planning of projects and studying and (b) autonomy. Mrs. H claimed that Stephan's agenda was much more updated than it has been in the past. She felt as though she no longer had to check it and update it herself. Mrs. H commented on improvements on Stephen's initiation of schoolwork. She claimed that even though he still needs some reminders at times, he was much more likely to initiate work on his own accord. She explained that 'He's better at listening to me the first time and doesn't argue back as much" when she has suggested he begin his homework. Furthermore, she claimed that work seemed to be completed because she had not received any teacher phone calls with complaints of missing assignments or poor grades. She believed that it

was indeed done because every time she spot-checked, it was completed. In terms of material organization, she stated that it was "much better and with barely any help from me". She explained that his school binder is so well organized that his geography teacher had him show and explain the system to the class. She did however explain that if there is a project that is due in more than a week, Stephan has a difficult time planning for it and still required her help. Overall, she felt that her son gained independence and skill in how he organized his work and in how he tackled daily homework. She acknowledged persisting difficulties in planning for long-term work, but felt this was due to the fact that he was not in the habit of doing yet, and would need more modeling and practice to complete it. Furthermore, she commented that he still needed some levels of structure for the improvement in skill to manifest. She explained, "He is much better all around, but still needs to know that I am checking in once a day to make him accountable. It doesn't come from him yet. I wish the program could last a few more months."

Parental behaviour and emotion. Mrs. H reported less tension in the household involved in the homework process, although she explained that implementing the intervention increased stress on some evenings. She said, "I've let go a bit and it feels good. My husband and I disagree less too", but further explains that because Stephan was held more accountable and she was better informed of the homework, there was more opportunity for them to argue about homework. She added, "several times, I just wanted to hire a tutor or leave him in the library and pay no attention to the checklists and his agenda".

Parent reflections and recommendations. Mrs. H claimed to be satisfied with the results of the intervention and felt that it gave Stephan "the boost he needed to become more organized and even remain more organized", adding that she felt the positive outcomes would last. He claimed that he learned to be responsible and strategic and that he took pride in his affairs. Mrs.

H appreciated that the program was held at school and did not cut into after-school or weekend activities. She did feel that the program was very taxing on her in regards to amount of time and effort she had to sacrifice and added, "it might have been nice to have Stephan become more independent in the program." She felt that it was "a shame that it ended as I would have liked to enroll him for another semester. There is still room for improvement!"

Consistency with BRIEF findings. Information gathered during the interview with Stephan's mother was consistent with BRIEF results. She reported improvements in Stephan's (a) managing of daily homework, including recording, initiation, completion and submission and (b) organization of materials, but that he was still struggling with (a) long term planning of projects and studying and (b) autonomy. All four BRIEF forms revealed significant improvements on the Organization of Materials and Stephan, his teacher and his mother reported significant improvement on the Plan/Organize scale, which reflect gains in organization of academic materials and homework process. Scores on the Plan/Organize scale demonstrated improvements that were inferior to those on the Organization of Materials scale, which is also consistent with interview findings that Stephan has some persisting difficulties on planning for long-term homework projects.

Teacher.

Student behaviour: homework, organization and planning. Just like his mother, Stephan's teacher reported improvement on (a) organization of materials and (b) homework recording and submission, while identifying enduring challenges in (a) autonomy and (b) planning of long-term projects. Mrs. P explained that since the beginning of the intervention, Stephan's material organization was "pretty average for a teenage boy." She described a cyclical trend in which his bag and binder become a bit messy, and then he reorganizes it, but highlighted that he did not

need prompting to reorganize his materials. Also, she had noticed improvements in his homework recording, explaining that he was often one of the first students to take out his agenda when she was informing the class about homework. She also mentioned that Stephan had been submitting his work on time and that it was done well. According to Mrs. P, during a meeting to discuss students of concern, Stephan was not included on the list of students who were flagged for poor work habits and homework submission, which suggests that he is consistently submitting his work on time to his teachers. However, Mrs. P still felt that he needed a great deal of support from his mother, something she hoped would improve more over the course of the intervention. She said, "his mother still does a lot for him and I'm unsure how well he would do independently, especially on the larger projects." She illustrated this point by relating a situation in which Mrs. P realized that Stephan was running late on an English project and later found out that his mother had interfered and organized his work.

Teacher reflections and recommendations. Overall, it appeared that Mrs. P was pleased with the results that the intervention yielded. She felt that the daily homework and organization of material improvements had an important impact on Stephan's academic performance. She felt it was a shame that he was not independent yet and that the intervention could not be extended as she felt he was "not at the same level as his peers yet" and that he still had "a ways to go" in terms of long-term planning. Several times throughout the interview, she mentioned that it could be beneficial for Stephan to follow a program that would target off-task behaviour such as calling out in class. She explained, "Often times, I get the impression that he is not as engaged as he should be and that it affects in homework completion." At the end of the interview, she inquired as to how she could get more students enrolled in the HOPS intervention as she felt many other students "desperately need" this type of help.

Consistency with BRIEF findings. Findings from the post-intervention teacher interview were in line with the BRIEF findings. Both set of findings for Mrs. P suggest excellent progress in regards to material organization and good progress in regards to planning and organizing, especially with daily homework. When comparing pre-intervention scores to post-intervention scores, the Teacher Form revealed lower scores on the Initiate, Plan/Organize and Monitor scales, which relates to Stephan's teacher's perceived improvement of homework completion, and lower scores on the Organization of Materials scale, which relates to the better organization of Stephan's binder and workspace noted by his teacher. This accurately reflects both set of findings for Mrs. H and for Stephan himself. Although, Mr. H reported improvement on Organization of Material and Initiate scales, he reported poorer scores on the Plan/Organize and the Monitor scales, which is somewhat inconsistent with the findings as revealed by Mrs. P's interview.

Self.

Student behaviour: homework, organization and planning. Stephan reported strong improvements in his own behaviour in the same areas as outlined by his mother and his teacher, and also reported improvements in long-term planning of schoolwork. In terms of recording homework, he explained that he is "more specific when writing homework" and that he rarely forgot his agenda. He also reported that he had come to the understanding that if he started his homework by himself, it would avoid having to be told to do homework by his mother. Since he preferred initiating his work than being directed, he began his homework independently much more often. Furthermore, for same reason, he described being more motivated to complete and submit his homework without prompting. In fact, he reported "never [missing] deadlines anymore." In terms of material organization, he claimed to have considerably improved. He said, "I'm way more organized and I remember to put things away immediately." He appeared to enjoy

the positive attention it generated amongst his teachers, parents and peers. He also said: "Sometimes, in class, I help others plan the things that are due in a long time because I know how and I always do it for myself now." According to Stephan, he improved in the following academic areas: (a) materials organization, (b) recording, initiating, completing and submitting homework, and (c) planning long-term school projects.

Student reflections and recommendation. Stephan stated that he felt proud at the improvement that he has made over the course of the HOPS program. He did mention that as a result of his improvements, his mother and he fought less, although he did claim there was more tension at the beginning of the intervention and that he did not enjoy having her see all of his homework in his agenda. He also found morning sessions difficult, but preferred them to after-school or weekend sessions since, according to him, he is extremely busy in the afternoons and on the weekends. He did not have any recommendations for the researcher.

Consistency with BRIEF findings. Findings from this interview were consistent with findings from the BRIEF forms as reported by his mother and his teacher, but showed some dissimilarity with their interviews. Indeed, Stephan proclaimed having improved in material organization and on daily and long-term tasks. The BRIEF forms supported these findings as all four participants described evident positive differences in Stephan's ability to organize his bag, binder and desks and some improvement in his ability to plan and organize his homework. However, both his mother and teacher described long-term planning as a persisting difficulty during their interviews whereas Stephan declared this planning and organizing long-term projects a skill he had improved upon.

Integration of the digital calendar application. Stephan, his parents and his teacher did not seem to think that the digital calendar application conflicted with the HOPS program. Mr. H

felt that although the iPad may have been a distraction at times, the calendar application seemed to have fulfilled its purpose and Stephan mentioned, "it worked just fine. It was good that I always had it on me."

Overall Summary. Overall, it appears that Stephan made significant improvements on both homework planning and organization of materials, though more significantly so in the latter, according to all participants. However, more conservative improvements were reported by Stephan's teacher in comparison to the self-rating and parent forms. Parents and teachers seemed satisfied with the program, although would have preferred to observe more autonomy in academic functioning on Stephan's part as Mrs. H seemed somewhat apprehensive at the level of parental involvement still required, and thus it was suggested that the program be lengthier. The timing and length of the individual HOPS sessions appeared to be a strength, according the Stephan and his parents, and the integration of the digital calendar application did not seem to pose a problem.

Table 1

Pre- and Post-Test Scores for the BRIEF Parent Form (Mother) for Stephan

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Initiate	62	85	56	78	-7%ile
Plan/Organize	67*	92	56	78	-14%ile
Organization of Materials	66*	94	52	65	-29%ile
Monitor	48	53	51	63	+10%ile
MI	66*	91	57	77	-14%ile
GEC	62	85	53	69	-16%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Table 2

Pre- and Post-Test Scores for the BRIEF Parent Form (Father) for Stephan

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Initiate	53	73	50	63	-10%ile
Plan/Organize	53	67	56	81	+14%ile
Organization of Materials	66*	94	57	78	-16%ile
Monitor	45	40	54	69	+29%ile
MI	56	75	59	80	+5%ile
GEC	50	59	51	65	+6%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Table 3

Pre- and Post-Test Scores for the BRIEF Teacher Form for Stephan

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Initiate	78*	97	64	90	-7%ile
Plan/Organize	83*	99	64	90	-9%ile
Organization of Materials	83*	98	57	85	-18%ile
Monitor	78*	97	64	90	-7%ile
MI	85*	99	71*	95	-4%ile
GEC	87*	99	73*	96	-3%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Table 4

Pre- and Post-Test Scores for the BRIEF-SR Form for Stephan

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Plan/Organize	69*	97	49	45	-52%ile
Organization of Materials	65*	92	43	28	-64%ile
Task Completion	58	76	35	3	-73%ile
MI	71*	97	56	73	-24%ile
GEC	74*	99	55	68	-33%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Case Study 2: Arthur

Arthur was a 13 year-old boy in grade 7 at the time of the intervention at a private coeducational high-school in Montreal. He lived with his married parents and two older brothers. Following concerns related to attention difficulties in an academic setting, grade 1 teachers encouraged Arthur's parents to have him assessed by a certified psychologist. The assessment yielded a diagnosis of ADHD, Hyperactive-Impulsive Type and he has been frequenting the resource center at his school since the beginning of grade 2. Arthur took the same dosage of medication for his ADHD symptoms prior to and throughout the intervention. Throughout elementary school, Arthur's teachers and parents noted specific difficulties in keeping his materials organized, and with recording and completing homework. Pre-intervention data was collected in September of his seventh grade year and the intervention was conducted from October to December, every Monday and Wednesday morning from 7:45am-8:15am. Missed appointments were rescheduled to the next weekday. Post-intervention data was collected in December.

Arthur's parents, Mr. and Mrs. B were married, lived together and both worked long hours at the time of the intervention. They attended parent meetings together and attended pre- and post-intervention interviews separately in the office of the researcher. The participating teacher, Mr. S, was Arthur's English teacher and taught him seven periods on a ten-day schedule for 65 minutes per period. He was also interviewed in the researcher's office.

Pre-intervention BRIEF scores. All validity scales were within normal limits indicating the likelihood of an interpretable profile. Pre- and post-intervention BRIEF results are presented at the end of the result section for present case study.

Parent. Results on the BRIEF Parent Form, presented in Table 5, as reported by Mrs. G revealed clinically significant elevations on the MI (99%ile), with scores above the 97%ile on each scale, including Initiate (99%ile), Plan/Organize (99%ile), Organization of Materials (99%ile) and Monitor (97%ile). Mr. G revealed similar results on his Parent Form, as seen in Table 6. Statistically significant deficits were reported on the Initiate (94%ile), the Plan/Organize (98%ile), on the Organization of Materials (99%ile) and on the Monitor (99%ile) scales and, accordingly, on the MI (99%ile). Both parents reported a GEC at the 99%ile.

Teacher. As seen in Table 7, results on the BRIEF Teacher Form indicated clinically significant scores on the MI (98%ile) and included scales: Initiate (97%ile), Plan/Organize (99%ile), Organization of Materials (99%ile) and Monitor (96%ile). Consequently, the results on the Teacher Form as reported by Mr. S revealed a global score (GEC) at the 99%ile, which reflected results from the BRIEF Parent Forms.

Self. Arthur's results, found in Table 8, on the BRIEF-SR Form were consistent with results obtained from the Parent and Teacher Forms, revealing statistically significant deficits on the Plan/Organize (99%ile), Organization of Materials (96%ile) and Task Completion (98%ile) scales and, thus, on the MI (99%ile). Like his parents and teacher, Arthur reported a clinically elevated GEC at the 99%ile.

Overall, results from the Parent, Teacher and Self-Report BRIEF Forms were consistent and revealed clear patterns. In fact, percentile conversions of T scores from all four forms were within three percentile on the Plan/Organize and Organization of Materials scales and on the MI and GEC. These scores suggest a high level of dysfunction on the scales that constitute the MI. These results indicate that Arthur has enormous difficulties organizing his materials and with orderliness in general. They also imply that he might have difficulty independently beginning

tasks, as well as with strategically planning for the completion of current and future homework tasks. Additionally, parent and teacher results indicate that Arthur may have difficulty checking his work and evaluating his performance on both ongoing and completed tasks.

Pre-intervention interviews.

Mother.

Student behaviour: homework, organization and planning. Mrs. G noted that Arthur grapples with several homework and organization challenges. She reported that he lacked material organization ("everything is crazy, it's a mess") and that his bag "is full of squished papers." In terms of homework, she reported a lack of independence, claiming that "he needs to be supervised the entire time or he does not do anything" and that he "is late on a third of his handed in assignments." She also identified off-task behaviour as problematic for homework completion. She claimed that "he blocks and can't move forward", and often turned to external distractions instead of pushing through or reaching out for help.

Parental behaviour and emotion. Schoolwork appeared to have been a source of conflict in the household. Mrs. G explained that school has "always been" a source of conflict and that "it's really depressing to watch his things in the state that they are." She also mentioned feeling frustrated because "all [they] hear is excuses and laziness." She added that the conflict has "changed who [Arthur] is" and had negatively affected his willingness to participate in any structured activities, even sports-orientated ones that he enjoyed when he was younger.

Parental expectations of program. Mrs. G appeared to have low expectations for the program stating that "it can't hurt him" and that she would have felt satisfied "if it helps him 40%". She reasoned that he was in such a bad state that it would have required more than eight

weeks to bring apparent changes in his student behaviours and that she was concerned about his motivation to positively engage in the process.

Father.

Student behaviour: homework, organization and planning. Mr. G also noted that Arthur had difficulty completing his homework without supervision. He reported that Arthur needed a significant amount of help to begin and complete his homework. He also explained that if and when the homework was completed, Arthur was only able to hand it in to the teachers about 80% of the time. Furthermore, when asked how organized his son was in regards to school materials, he claimed that Arthur was "not at all" organized. He also asserted that Arthur "always chooses the easier and shortest way out every time" and that this caused major difficulties in Arthur's ability to tackle the planning of long-term tasks.

Parental behaviour and emotion. Mr. G seemed concerned about the "big time stress" that homework caused in their household. He admitted that he was frustrated at the "avoidance at every turn" and "going around in circles". He felt that several strategies had been attempted, such as getting a homework tutor, but all had failed in reducing the conflict surrounding academics in their home.

Parental expectation of program. Arthur's father was hoping that as a result of the HOPS program, Arthur would learn strategies to be organized, how to prioritize, how to record homework and how to manage his tasks and time.

Consistency with BRIEF findings. The findings from the parental interviews were consistent with the BRIEF results as Mr. and Mrs. G identified issues with independently initiating homework, sustaining attention until task completion, punctual submission and academic material organization, and these problems corresponded to the BRIEF scales for which

they reported results that reflect statistically significant difficulties for Arthur (Initiate, Plan/Organize and the Organization of Materials).

Teacher.

Student behaviour: homework, organization and planning. Mr. S also identified specific and general issues with Arthur's organization and homework management. According to Mr. S, Arthur's work was "no submitted on time ever" and he required "frequent reminders" to hand it in. Furthermore, Mr. S claimed that even if submitted, Arthur's work is often incomplete, and that he has absolutely zero independence in regards to submitting quality work on time. In terms of organization of materials, Arthur's teacher described it as non-existent and in desperate need of improvement. Mr. S also referred to Arthur's difficulty staying on task during classroom activities, stating that he had trouble "sitting still" and "learning the topic at hand. In fact, he explained that in class, he sat Arthur at a separate table as he "can't even work in class with someone beside him". In sum, the teacher outlined three main academic difficulties for Arthur: (a) material organization, (b) homework management, including punctual and complete work submission, and (c) being able to stay on task independently.

Teacher expectations of program. Mr. S hoped that the HOPS program would provide Arthur with the opportunity to develop a system that would allow him to record homework expectations and due dates, to follow through at home, and to increase his completion and quality of homework.

Consistency with BRIEF findings. The severity of Arthur's homework management, attentional and organizational issues described by Mr. S in the interview was also established on the BRIEF Teacher Form. Indeed, clinically high scores were recorded on the associated scales: Initiate, Plan/Organize, Monitor and Organization of Materials. Significantly elevated scores on

the MI and the GEC further indicate consistency, as Mr. S described severe generalized executive dysfunction in an academic setting.

Self.

Student behaviour: homework, organization and planning. Arthur himself identified similar issues as his teacher and parents. He seemed to identify initiating homework and sustaining attention as his main difficulties. When asked about whether he was able to independently start his homework, he explained that he would sometimes zone out and would text his friends, play with his dog or his phone or listen to music instead of doing or continuing his homework. Furthermore, he described his iPad as being problematic to record homework because, in his own words, "there's games on this!" He also claimed that he needed daily reminders from teachers and parents to get his work handed in on time. In terms of his academic material, Arthur reported that his schoolbag was "not clean at all" and that it "weighs fifty pounds more than me" on account of the unnecessary items it contained. He also explained that his home desk is disorganized and "full of stuff."

Emotion. Arthur, like his parents, felt that homework was indeed a source of conflict in the household. However, he seemed to feel that the stress came from his parents overestimating how much work he usually had. He explained, "my parents freak out because they say you have to do your homework, but I know I only have like 7 seconds of homework and I'm like 'Don't stress over it'". He acknowledged that homework is cause for discord in his house, but appeared to blame his parents for exaggerating the situation. In terms of participating in the program, he seemed to adopt a positive attitude, as he declared: "I'm feeling positive about all this. I am ready for change."

Expectations for program. Arthur seemed hopeful that the program could help him become more organized and "make homework easier". He explained that grade 7 is more challenging than he initially thought and that he would need the help of the program to get on track.

Consistency with BRIEF findings. Findings from Arthur's pre-intervention interview and BRIEF scores are consistent. He revealed statistically significant deficits on the MI in general and on the Plan/Organize, Organization of Materials and Task Completion scales, which are closely related to the homework recording, initiation, completion and submission issues, as well as the material organization difficulties, that he outlined during the interview.

Overall, student, parent and teacher findings from the BRIEF forms and the interviews demonstrated that Arthur exhibited severe executive dysfunction relating to academic skills, such as the recording, initiation, completion and submission of schoolwork, as well as physical organization of academic material, and planning and organizing of long-term academic tasks. These deficits seemed to affect his academic performance and created conflict between himself and his parents. All parties appeared to be enthusiastic about how the HOPS program could help Arthur develop these skills and reduce related stress.

Post-intervention BRIEF scores.

Parent. Parent BRIEF results are presented in Tables 5 and 6. Mrs. G reported improved T scores on three of the MI scales, as well as a slightly improved score on the MI. Arthur's mother reported T scores at the 96%ile for the Initiate scale (3%ile decrease from the pre-intervention result), at the 93%ile on the Plan/Organize scale (6%ile decrease), at the 78%ile on the Organization of Materials scale (21%ile decrease), at the 77%ile on the Monitor scale (no change), at the 95%ile on the MI (4%ile decrease) and at the 99%ile on the GEC (no change).

Post-intervention results on the Organization of Materials scale declined to below clinical significant range.

Scores on the BRIEF Parent Form as reported by Mr. G also demonstrated improvement, but to a higher degree. Arthur's father reported improved T scores on four scales included in the MI, as well as improved scores on the MI and on the overall GEC. Arthur's father reported T scores at the 85%ile for the Initiate scale (9%ile decrease from the pre-intervention result), at the 83%ile on the Plan/Organize scale (15%ile decrease), at the 65%ile on the Organization of Materials scale (34%ile decrease), at the 97%ile on the Monitor scale (2%ile decrease), at the 90%ile on the MI (9%ile decrease) and at the 94%ile on the GEC (5%ile decrease). Post-intervention results on the Initiate, Plan/Organize and Organization of Materials scales declined to below clinical significant range.

Teacher. Results on the BRIEF Teacher Form as reported by Mr. S showed similar improvement patterns, but were more modest, as seen in Table 7. On the BRIEF Teacher Form, Mr. S reported improved T scores on four scales included in the MI, as well as improved scores on the MI and on the overall GEC. Arthur's teacher reported T scores at the 92%ile for the Initiate scale (5%ile decrease from the pre-intervention result), at the 96%ile on the Plan/Organize scale (3%ile decrease), at the 89%ile on the Organization of Materials scale (10%ile decrease), at the 98%ile on the Monitor scale (2%ile decrease), at the 97%ile on the MI (1%ile decrease) and at the 97%ile on the GEC (1%ile decrease). Post-intervention results on the Organization of Materials scale declined to below clinical significant range.

Self. Arthur's results on the BRIEF-SR, presented in Table 8, were consistent with his results from the Parent and Teacher Forms, revealing improvements on the scales targeted by the HOPS program. Indeed, Arthur reported T scores at the 97%ile on the Plan/Organize scale

(2%ile decrease from the pre-intervention result), at the 60%ile on the Organization of Materials scale (36%ile decrease), at the 95%ile on the Task Completion scale (3%ile decrease), at the 94%ile on the MI (5%ile decrease) and at the 84%ile on the GEC (15%ile decrease). Post-intervention results on the BRIEF-SR on the Organization of Materials scale declined to below clinical significant range.

Overall, Arthur demonstrated comparable patterns on the results on all BRIEF forms, although the SR and Parent Forms revealed larger gains. Arthur, his parents and his teacher reported improvement on the Organization of Materials scale, for which the T scores declined to below clinical significant levels. Improvements that reflect T scores that declined below clinical significant range were also revealed on the Plan/Organize and Initiate scales on the BRIEF Parent Form as reported by Mr. G. Furthermore, improvements, though not reflecting T scores declining below clinical significance, on the Initiate scale were reported by Mrs. G and Mr. S and on the Plan/Organize scale by Mr. G, Mr. S and Arthur. Small to moderate gains were reported on the MI on all forms. It is important to note that the BRIEF Teacher Forms revealed smaller margins of improvement on all scales and on the MI. Taken together, it would appear that Arthur demonstrated significant gains in organizing his materials and some gains in initiation, and planning and organizing in general.

Post-intervention interviews.

Mother.

Student behaviour: homework, organization and planning. Mrs. G reported improvements in Arthur's (a) knowledge of skills and self-awareness, (b) organization of materials and (c) recording and submission of work. She also noted continued difficulty in (a) initiation and on-task behaviour and (b) homework planning. Mrs. G felt that, first and foremost,

the program had offered Arthur the opportunity to learn to reflect on his student behaviour and identify difficulties, and how to tackle these difficulties. She said, "it helped him realize what is wrong about his attitude and the way he does things" and she explained that he has learnt different ways to fix his organizational shortcomings, even though he was not engaging in them. In terms of organizational of materials, she highlighted a marked improvement, stating that his organization of material is "great" and that he "cleans his bag and room more easily than he used to." She explained that he had been improving on organization of materials since the beginning of the program and that he was now in the habit of reorganizing without parental monitoring required. the She also noticed improvement in his recording and submission of schoolwork. In speaking about his agenda, she said that the important information was "usually there" when she checked it and that if he did his homework, he was likely to hand it in ("once it's done, he hands it in"). She did, however, mention that homework completion was still an issue. She explained that he still had trouble independently beginning work and that his phone and iPad were sources of constant distraction, and homework periods were often spent attempting to pull him away from distractions and working instead. She also revealed that long-term projects were still a great challenge for Arthur and that they are "never on time and it gets him in trouble at school and affects his grades".

Parental behaviour and emotion. Mrs. G seemed to continue to express negative emotion in regards to homework in their household. She described homework time as "still hell" and explained that her and Arthur "fight about it all the time". She appeared frustrated with the process and claimed to have tried multiple strategies, such as "shouting at him" and "trying to be nice and helpful", but did not feel that it was working to get him to complete his work. She described the homework process as "a problem because it's affecting our family and time

together." Furthermore, she explained that she "wished [she] had a son that would do his homework without having a war in our home". Despite noting several improvements, Mrs. G still appeared to experience high levels of frustration with the homework process in her home.

Parent reflections and recommendations. On the whole, Mrs. G believed that the program helped her son be more aware of his student behaviour and the product it yielded, and helped him learn how he can remedy it, but that "it didn't help him change". She felt that he learned what his difficulties are, and how to tackle them, but that apart from "a few small improvements like organization of his binder and his bag", he still was struggling to make consistent and major changes to his student behaviour that would result in significant overall improvement and lessened conflict. She expressed frustration and resentment at the level of involvement that was required from her over the course of the intervention. She explained, "It was so hard for us to see eye-to-eye on anything and then all of a sudden, we had to do even more homework things together, which made everything worse." Although she appeared to appreciate that the program was mainly completed at school, she would have preferred not to be involved and to have Arthur continue in such program indefinitely until he be able to regulate himself without parental monitoring.

Father.

Student behaviour: homework, organization and planning. Mr. G identified improvement in (a) recording of homework, (b) organization of material and (c) knowledge of skills and self-awareness. He also pinpointed continued difficulties in (a) homework completion and (b) on-task behaviour. According to his father, Arthur was "more in the habit of adding homework to the agenda", which he had not been doing previously. Mr. G also claimed that his school materials

were "much better" organized and that he appeared to "[take] pride in being much more organized and will reorganize his papers without being asked". Mr. G explained that:

> [Arthur] now seems to understand why he is not doing well in his academics, what he is supposed to do to be better at school, and even how to do it, but just can't seem to execute it when we really need him to".

Mr. G seemed to believe that Arthur developed increased awareness of his current academic behaviour, and why and how he could change it to become a more successful student. He felt that the challenge for Arthur was to act on his newly acquired knowledge and awareness in a productive and directed way to improve behaviour and consequently grades. To explain the discrepancy of his knowledge and his behaviour, Mr. G identified attention and on-task behaviour difficulties. He described that often, when checking in with Arthur while he is doing homework, he is "doing something unrelated" and that it is "hard for him to focus to complete anything". In addition, he claimed that the iPad is a distraction for him as he used it to play games and surf the Internet.

Parental behaviour and emotion. Arthur's father appears to have continued difficulty in deciding how to deal with Arthur's academic behaviour because, according to him, "it's so hard to tell what is him not wanting [to do his homework] and what is related to his ADHD." It seems that Mr. G did not want to fault Arthur for what is not within his control, but he wanted to provide structure and consequences to help him succeed. He also acknowledged the strain between Arthur and his mother during homework sessions, stating that "my wife and [Arthur] still butt-heads constantly over homework." He also divulged to having great difficulty ensuring that Arthur complete his homework and that despite having access to properly recorded homework, Arthur still argued about the content of homework and due dates. He felt as though

larger gains were made in organization of materials than in homework planning because those skills were taught earlier in the sessions and that Arthur needs significant practice time to master skills.

Parent reflections and recommendations. When reflecting on the program, Mr. G's main recommendation was to extend the length of the program to students with ADHD as "they need hand-holding for longer than other students." He stated that he liked the in-school sessions format and would like to see Arthur in such a program for several years to give him the opportunity to put into action what he has been exposed to during the eight weeks of the intervention.

Consistency with BRIEF findings. Information gathered during the interview with Arthur's parents was somewhat consistent with BRIEF results. They reported improvements in Arthur's (a) knowledge of skills and self-awareness, (b) organization of materials and (c) recording and submission of work. All four BRIEF forms revealed important improvements on the Organization of Materials and slight improvement on the Plan/Organize scale, which reflect gains in organization of academic materials and homework process. Although Arthur's mother did not report improvement on the Monitor scale, his teacher and father identified progress on their BRIEF forms, which concur with Mr. and Mrs. G's claims of Arthur's improved self-awareness. Overall, Arthur's parents claimed moderate improvements in student behaviour relating to homework, planning and organizing, which is in accordance with reported results on the MI from all four BRIEF forms.

Teacher.

Student behaviour: homework, organization and planning. Arthur's teacher also reported moderate improvement in (a) self-awareness, (b) organization of materials and (c) homework

submission, while pinpointing enduring challenges in (a) independent homework recording, quality and completion and (b) planning of long-term projects. Mr. S stated that Arthur "seems to have improved his awareness of his situation and in organizational skills." He also claimed that Arthur "has what he needs when he comes to class" and that material organization was "not really a problem anymore". Furthermore, the teacher noticed a "slight improvement in terms of punctuality" of his schoolwork. However, Mr. S echoed Arthur's parents concerns when he described persisting difficulties in Arthur's ability to independently complete homework. He explained that " his work is rushed and done carelessly", that Arthur refused to use his agenda without "consistent prompting", that, at the time of the interview, Arthur had still omitted to submit three assignments, more than any of the other students, and that Arthur continued to "drop the ball" when engaging in independent work.

Teacher reflections and recommendations. Mr. S concluded that although Arthur had improved his awareness of the situation and his organizational skills, he continued to lack the desire and follow through to consistently transform his academic behaviour in order to make significant change. He explained that materials organization is relatively "easy to get a handle on because it doesn't involved any thinking and we can help him by telling him to put order in his papers and stuff." Mr. S named motivation and maturity as reasons impeding further improvement, and he identified the length of the HOPS program as a barrier. He said, "I'm a believer of that this takes time, and he might need more time in a program like this to benefit." Mr. S stated that Arthur began to make necessary changes, but that he would require more time to continue to improve his organization, homework and planning skills. He further explains, "When I look at his peers, I realize Arthur is years apart." Lastly, he mentioned that the program

might have had a deeper impact on Arthur if his parents had shown more support for the efficacy of the program.

Consistency with BRIEF findings. Mr. S' commentary on Arthur's improvement in regards to material organization and self-awareness reflected BRIEF findings on Teacher and Forms. During the interviews, parents and Mr. S verbally noted solid improvements in Arthur's academic material organization, which is consistent with scores that dropped below clinical significance on the Organization of Materials scale as reported on all four BRIEF forms. However, it appeared that despite reporting lower scores on the Plan/Organize, Initiate and Monitor scales and on the MI on the BRIEF Teacher Form, scores that were consistent with the scores on BRIEF Parent and SR Forms, Mr. S failed to identify planning and managing homework as an area of improvement for Arthur during the interview. In fact, he highlighted these areas as enduring challenges. The scores on these scales were, however, minimal, and did not fall below clinical significance on the BRIEF Teacher Form and the BRIEF Parent Form as reported by Arthur's mother.

Self.

Student behaviour: homework, organization and planning. Arthur reported improvement in his (a) self-awareness pertaining to organization, planning and homework and the benefits of developing such skills, (b) homework completion, (c) planning and (d) material organization. Throughout the interview, Arthur seemed to have a better understanding of himself and his needs. Several times, he identified his own patterns of behaviour and what he needs help with. For example, he stated: "I need a kick in the butt" and "I need help to get my stuff together." He also mentioned specific examples of his shortcomings in different areas pertaining to his organization and managing of homework and what he should be doing to remedy the issues.

Furthermore, he claimed better understanding of the purpose and benefits of being organized. He explained:

> I used to not care, and I care more now. It's like I'm thinking about what I want to do and realize that no matter what I want to do, you know, with my life, I'll have to organize my stuff and get it together to do good and be successful so I better get good at it now so I can get better at it more than the others.

Arthur also mentioned that he felt that his organization of school material improved significantly. He claimed that "what [he is] really good at now is organizing my bag and material". He mentioned that female peers had noticed this improvement and provided him with positive feedback. He also highlighted some improvement in planning ("I've been organizing my school work a little bit every day") and although he acknowledged that he needs support to get started, he claimed that he is better able to complete his work ("once I start, I usually finish it"). When asked to expand, he said, "it's long and even when you do [referring to breaking down a task and scheduling the chunks of work in a calendar], you haven't actually done any homework."

Emotion. Arthur seemed to have little to say about how homework was affecting his household and his relationship with his parents. He mentioned that there is sometimes some conflict between his mother and him on difficult days, but that for the most part, "things are fine". He did convey pride when talking about his perceived improved organizational skills, especially when relating the situation in which his female peers noticed the orderliness of his binder and bag.

Student reflections and recommendation. Arthur seemed positive about his perceived impact of the intervention. He provided positive feedback about the short lengths of the periods ("I would have died if they were as long as classes."), the in-school format ("When I'm out of

school, I don't want to think about it anymore. So, it's a good thing it was here.") and the content ("I learned everything that I needed to."). He voiced displeasure at the required teacher initials he had to collect at each period ("that was the worst thing") and the timing of the sessions ("I don't think good in the morning."), but could not offer any valid replacement.

Integration of the digital calendar application.

Although the use of the iPad appeared to be a potential source of distraction for Arthur, the digital calendar application was not identified as problematic to the HOPS program according to all participants. Arthur enjoyed having the calendar readily available and did not feel that the calendar application itself was a distraction.

According to all participants, Arthur demonstrated important gains in Arthur's ability to organize his bag, binder and desks and more modest improvements of Arthur's homework completion and planning of long-term assignments and studying tasks. They appreciated the length and timing of the HOPS program and felt the digital calendar application was an appropriate addition to the program. Parents reported high levels of parent-adolescent conflict and would have preferred a program with less parental involvement and higher student independence at its completion.

Table 5

Pre- and Post-Test Scores for the BRIEF Parent Form (Mother) for Arthur

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Initiate	76*	99	70*	96	-3%ile
Plan/Organize	79*	99	69*	93	-6%ile
Organization of Materials	69*	99	57	78	-21%ile
Monitor	72*	97	69*	97	0
MI	80*	99	72	95	-4%ile
GEC	85*	99	75	99	0

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Table 6

Pre- and Post-Test Scores for the BRIEF Parent Form (Father) for Arthur

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Initiate	68*	94	62	85	-9%ile
Plan/Organize	76*	98	60	83	-15%ile
Organization of Materials	69*	99	52	65	-34%ile
Monitor	78*	99	69*	97	-2%ile
MI	76*	99	65*	90	-9%ile
GEC	50	59	51	65	+6%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Table 7

Pre- and Post-Test Scores for the BRIEF Teacher Form for Arthur

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Initiate	78*	97	66*	92	-5%ile
Plan/Organize	83*	99	77*	96	-3%ile
Organization of Materials	86*	99	64	89	-10%ile
Monitor	74*	96	81*	98	-2%ile
MI	83*	98	76*	97	-1%ile
GEC	84*	98	78*	97	-1%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Table 8

Pre- and Post-Test Scores for the BRIEF-SR Form for Arthur

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Plan/Organize	75*	99	69*	97	-2%ile
Organization of Materials	69*	96	52	60	-36%ile
Task Completion	74*	98	67*	95	-3%ile
MI	76*	99	65*	94	-5%ile
GEC	71*	99	61	84	-15%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Case Study 3: Lloyd

Lloyd was a 14 year-old boy in grade 8 at the time of the intervention at a coeducational private high-school in Montreal. He lived with his married parents and younger sisters, aged 7 and 11. As a result of parental and teacher concerns over Lloyd's attentional control, he was seen by a certified psychologist in his primary years and diagnosed with ADHD, inattentive-type. Lloyd took the same dosage of his medication for his ADHD symptoms prior to and throughout the intervention. Although problems first arose in his younger years, Lloyd had particular difficulty with adapting to the EF demands of grade 7. Indeed, teachers and parents noted great difficulty in recording, managing, completing and submitting homework, as well as keeping his materials organized that is likely hindering his academic performance. Pre-intervention data was collected in January of his eighth grade year, and the intervention was conducted from February to April, every Monday and Wednesday morning from 7:45am-8:15am, with a two-week spring break in March. Missed appointments were moved to the next weekday. Post-intervention data was compiled in April.

Lloyd's parents, Mr. and Mrs. B both worked at the time of the intervention. They attended parent meetings and pre- and post-interviews together, in the office of the researcher. Lloyd's teacher, Mr. M, is a grade 7 and 8 English teacher that taught Lloyd seven periods on a ten-day schedule for 65 minutes per period.

Pre-intervention BRIEF scores.

The validity scales on all forms were within normal range, indicating the likelihood of a valid profile. Pre- and post-intervention BRIEF results for Lloyd are presented in Tables 9 to 12, following the description of Lloyd's results.

Parent. Results on the BRIEF Parent Form as reported by Mrs. B, as seen in Table 9, revealed significant elevations on the MI (95%ile) with major difficulties noted on the Plan/Organize (97%ile) and Monitor (96%ile) scales. Further deficits were reported on the Inhibition scale (95%ile). Similarly, Mr. B, as seen in Table 10, also reported clinically elevated T scores on the Plan/Organize (97%ile) and Monitor (99%ile) scales, resulting in an elevated T score on the MI (96%ile). However, results on Mr. B's Parent Form revealed higher T scores than Mrs. B's results on the Shift (73%ile), Emotional Control (72%ile) and Monitor (99%ile) scales. Consequently, Mr. B reported higher levels of global dysfunction as demonstrated by the clinically significant score on the GEC (93%ile), in comparison to a lower, yet also clinically significant, GEC score in the 89%ile on Mrs. B's Parent Form. Both parents reported a high but non-significant score on the Organization of Materials scale (85%ile on both forms) and an average score on the Initiate scale (55%ile on both forms).

Teacher. Examination of BRIEF ratings on the Teacher Form, as presented in Table 11, indicated clinically significant elevations on the Inhibition scale (91%ile), as well as on all of the scales included in the MI. Indeed, Lloyd's teacher reported very elevated scores on the Initiate (96%ile), Plan/Organize (99%ile), Organization of Materials (99%ile) and Monitor (98%ile) scales. Accordingly, scores on the BRI and MI were statistically significant, and the results on the Teacher Form revealed a global score (GEC) of Lloyd's EF behaviour in the 99%ile.

Self. Lloyd's results on the BRIEF-SR Form, as presented in Table 12, were highly inconsistent with results obtained from the Parent and Teacher Forms, although Inconsistency and Negativity were within normal limits. Indeed, results from the BRIEF-SR suggested limited self-awareness or self-recognition of EF difficulties. No scales reached clinical significant levels, and consequently his T score result on the GEC was in the 7%ile. These results echoed self-

monitoring difficulties as noted by high scores on the Monitor scale by Lloyd's teacher (92%ile), mother (96%ile) and father (99%ile). However, in relative terms, although non-significant, the T scores on the Plan/Organize (18%ile), Organization of Materials (16%ile) and Task Completion (32%ile) scales were higher than the other scales, suggesting that although Lloyd has difficulty assessing the severity of his EF deficits, he is able to identify his main difficulties (as per Parent and Teacher Form results) from other EF skills.

Overall, Lloyd demonstrated similar patterns of scores on the Parent and Teacher Forms. Indeed, elevated T scores were reported on the Inhibition and Plan/Organize scales and on the MI across both the home and school settings, although his scores on the Teacher Form suggest higher overall levels of concern and additional difficulties on the Initiate and Organization of Materials scales. Additionally, Lloyd's BRIEF-SR Form mainly exposed difficulty with accurate self-assessment, as well as identification of some areas of relative difficulties on the Plan/Organize, Organization of Materials and Task Completion scales. In sum, the BRIEF findings from all four forms paint the picture of a student with severe EF difficulties in his ability to cognitively self-manage tasks and self-monitor his performance that are likely impairing his academic performance.

Pre-intervention interviews.

Parent.

Student behaviour: homework, organization and planning. Several times throughout the interview, Lloyd's parents commented on his lack of organization in regards to his academic materials. His mother stated, "His bag is a mess and I can't even see his desk here at home because of all the piles of paper." It seems that Lloyd lacked an organizational system that allowed him to locate important documents and homework, and he seemed to waste time looking

for these during homework sessions at home. Concerning homework, parents explained that Lloyd also struggles with several steps involved in the process of completing homework. Both Lloyd's father and mother stated difficulties recording homework in his agenda, independently initiating schoolwork at home, finishing homework once he has started and handing in homework to the teacher once it has been completed. His mother said, "We are constantly asking him to do it, but he doesn't." and his father added, "we have had a few phone calls from teachers complaining that homework is not handed in". Not surprisingly, parents also reported deficits in the planning of long-term projects and studying for tests and exams. Parents explained that Lloyd often waits until the day before a project is due or a test is to take place before addressing it. They illustrated a situation in which he had to stay up into the night to complete a geography project that should have been started weeks in advance, but was only partially begun as of the day before it was due. According to parents, as result, the work that Lloyd submits is poor, far below his potential, and does not always meet academic requirements. In sum, parents had concerns with Lloyd's ability to (a) organize his academic materials, (b) record, start, finish and submit homework, and (c) plan for the completion of long-term project and studying.

Parental Behaviour and Emotion. Lloyd's parents seemed concerned as to their role in helping Lloyd with his homework. Although they both reported that homework is not a source of conflict in their household, they seem to have adopted different approaches to the homework process, and both seemed somewhat frustrated with Lloyd's underperformance. Lloyd's mother claimed to want to provide him with support and hands-on help during his last-minute work or study sessions because "he's naturally disorganized". She felt as though his disorganization is inherent, stating it is "just a part of his ADHD" and that until he is able to manage and plan his homework independently, he should receive support from school and home. On the other hand,

his father explained that when it is "too late to help him, it is better to let him suffer the consequences of his choices", so that he may learn from the experiences and organize himself better next time. He added, speaking on behalf of both parents, "we are struggling to know when to help and when to let him make his own mistakes. Especially as he gets older", as Lloyd's mother nodded in approval. Despite their different methods to deal with homework issues, Lloyd's parents seemed to respect and understand the other's approach, as they were recorded nodding in approval when the other was talking.

Moreover, both parents reported feeling frustrated and sad at their son's underperformance. Parents perceived Lloyd as a bright and capable boy that lacks the skills necessary to demonstrate his academic abilities. His mother said, "It's so hard to see him underperform because we know how able he really is". She also stated that they are careful not to convey this frustration in his presence, though "sometimes it's hard to not show disappointment when he comes back with a grade that is much worse than you know he could get if he was more on top of things".

Parental expectations of programs. Parents also shared similar expectations of the HOPS program for their son. First and foremost, they hoped that the program would help increase Lloyd's self-awareness and that he would "begin to internalize the benefits of being organized". They believed that if he learned homework and organizational skills, he would appreciate how it makes him feel and would be motivated to maintain his gains and increase his efficiency independently as he proceeds into high school. Indeed, his mother stated, "I would love for him to get a taste of what it's like to be and stay organized". Overall, they expected Lloyd to (a) increase his self-awareness in regards to organization and managing homework, (b) learn how to be more organized in his academic materials, (c) increase his ability to complete his homework,

from recording to submission, (d) derive pleasure and motivation from being organized and (e) maintain his gains in the long-term.

Consistency with BRIEF findings. Parental statements during the interview appeared to be in line with BRIEF results from all four forms, with the exception of the scores on the Organization of Material and Initiate scales on the Parent Forms. Parents verbalized concern in regards to Lloyd's ability to (a) organize his academic materials, (b) record, start, finish and submit homework, and (c) plan for the completion of long-term project and studying. Indeed, this information is consistent with statistically significant scores on the Plan/Organize scale and on the MI from the Parent and Teacher Forms and with the statistically significant scores on the Organization of Materials and the Initiate scales from the Teacher Form. However, although parents did state problems with the organization of academic materials during the interview, they reported high but not clinically significant deficits on the Organization of Materials on the Parent Forms. Furthermore, they claimed to have difficulties with Lloyd's ability to self-initiate during homework, but only reported average scores on the Initiate scale. Lastly, findings from the parental interview are consistent with the BRIEF-SR results on the Task Completion, Plan/Organize and Organization of Materials scales, which Lloyd identified as relative weaknesses, though not at a statistically significant level.

Teacher.

Student behaviour: homework, organization and planning. Lloyd's teacher appeared to have several issues with Lloyd's behaviour in regards to homework and organization. According to his teacher, Lloyd "rarely completes his work on time and very rarely is it complete when he does hand it in". Furthermore, he described that Lloyd often has excuses, technological or other, to explain his difficulties in submitting work on time. He also identified a lack of independence

on Lloyd's part, stating that "without help from a tutor, parent or teacher, you will never see the homework". He described Lloyd's organization of schoolwork as "very, very weak" and claimed that Lloyd has "no apparent system whatsoever" to keep track of his homework and maintain his academic materials in order. In sum, the teacher outlined three main areas of difficulties for Lloyd: (a) material organization, (b) homework management, including recording, completing and submitting, and (c) being able to organize his materials and manage his homework independently.

Teacher expectations of program. Like his parents, Lloyd's teacher perceived him as a bright boy with strong potential. He explained that "with the proper tools he can be very successful" and that he hoped the HOPS program could provide Lloyd with these tools. Lloyd's teacher expected that the program would help him develop skills to (a) become more organized in terms of materials and homework recording and (b) complete and submit quality schoolwork.

Consistency with BRIEF findings. Information gathered during the teacher interview was consistent with results from BRIEF forms. The teacher indicated difficulties with material organization, homework management and independence. The BRIEF Teacher Form provided quantitative support for this indication, as results on related scales, Initiate, Plan/Organize and Organization of Materials scales and on the related index, the MI, were statistically significant. The BRIEF Parent Form also revealed clinically significant scores on the Plan/Organize scale and high scores on the Organization of Materials scales. Furthermore, though he did not report any statistically significant difficulties on any scales, Lloyd identified relative weaknesses on the Plan/Organize, Organization of Materials and Task Completion scales on the BRIEF-SR.

Self.

Student behaviour: homework, organization and planning. Lloyd was able to share and discuss academic issues and identified many problems with his academic behaviour. In terms of homework, although he identified strengths in regards to recording homework and on-task behaviour during homework sessions, he also acknowledged difficulties in his ability to initiate homework sessions, to submit work on time and with long-term planning. Twice he mentioned that his recording system for homework is functional ("It's in the agenda" and "I have an agenda, and I put everything in it"), but admitted that he does not check his agenda and, thus, does not complete the work. Furthermore, he classified himself as "a procrastinator" and tied it into a difficulty with initiating his schoolwork. He explained that "it's not the doing that is difficult, it's the taking it out of the bag and starting". He did feel that once begun, it is not a challenge to stay on task and that he "can do it just fine". Lloyd did recognize work submission to teachers as an academic issue and claimed that although he does complete the majority of his "important projects", he is "usually late" submitting work punctually. He also stated long-term planning as a major difficulty. He explained that he tends to do multistep projects "last minute" and sometimes resorts to finishing his projects during "the whole night, literally" and "in the car or even in the hallway before class". As a result, he often feels the need to "think about excuses all the time - not a lie, but not totally the truth" to explain the tardiness or poor quality of work to his teachers. In sum, Lloyd self-assessed difficulties with (a) initiating homework sessions, (b) submitting his work on time and (c) long-term planning of larger projects.

Emotions. Lloyd admitted that when he creates excuses to explain to the teacher why his work is late or poorly done, it "stresses [him] out a lot". He also seemed to feel that his poor working habits create conflict in his household because his parents "get mad at [him] for doing things in the morning, or anything last minute". Though he admitted they do not shout at him, he

feels that they can be "upset and disappointed". In fact, stress elimination is an outcome he named when asked what he hoped the program can do for him.

Student Expectations of HOPS Program. Other than stress elimination, Lloyd also mentioned better general organization, better work habits and higher academic performance as results he intended on achieving through the HOPS program.

Consistency with BRIEF Findings. During the interview, Lloyd identified difficulties with (a) initiating homework sessions, (b) submitting his work on time, and (c) long-term planning of larger projects. Interestingly, at first glance, Lloyd's BRIEF-SR profile was not consistent with these findings as he did not report elevated T scores on any of the scales or indexes. However, as ascertained by high results on the Monitor scale on Teacher and Parent scales, Lloyd seemed to have difficulties with self-assessment, and, as previously mentioned, although he did not report any statistically significant results on the BRIEF-SR, he did report higher T scores on the Plan/Organize, Organization of Materials, Task Completion scales than what he reported on other scales. This demonstrates that although he perhaps cannot accurately establish the level of dysfunction in these areas, he was able to identify them as relative weaknesses. Lloyd's self-identified difficulties to submit work and plan for long-term projects is consistent with results on the BRIEF Parent and Teacher Forms, and his difficulty with initiating work at home is consistent with findings from the BRIEF Teacher Form, as all related scales and indexes were rated at clinically significant levels.

Taken together, the findings from the four BRIEF forms and the pre-intervention interviews revealed that Lloyd has consistent and significant difficulties in several skills related to EF behaviour that are impairing his academic behaviour and performance. Specific difficulties were identified in organization of materials (desk, bag and binders), the homework process

(accurate recording, initiating work, completing work and submitting work) and the planning of homework and studying tasks over a longer period of time. Also, the information collected suggested that he seems to lack self-awareness of his deficits in these areas.

Post-intervention BRIEF scores.

Parent. BRIEF results are presented in Tables 9 and 10. Lloyd's mother reported improved T scores on several scales included in the MI, as well as improved scores on the MI and on the overall GEC. Lloyd's mother reported T scores at the 47%ile for the Initiate scale (8%ile decrease from the pre-intervention result), at the 85%ile on the Plan/Organize scale (12%ile decrease), at the 81%ile on the Organization of Materials scale (4%ile decrease), at the 77%ile on the Monitor scale (19%ile decrease), at the 81%ile on the MI (14%ile decrease) and at the 81%ile on the GEC (8%ile decrease). Post-intervention results on the Plan/Organize, Organization of Materials and the Monitor scales, as well as on the MI and the GEC, declined to below clinical significant range.

Results on the BRIEF Parent Form as reported by Lloyd's father showed similar improvements. Lloyd's father reported T scores at the 55%ile for the Initiate scale (no change from the pre-intervention result), at the 83%ile on the Plan/Organize scale (14%ile decrease), at the 78%ile on the Organization of Materials scale (7%ile decrease), at the 93%ile on the Monitor scale (6%ile decrease), at the 82%ile on the MI (14%ile decrease) and at the 85%ile on the GEC (18%ile decrease). Consistent with Lloyd's mother's results, post-intervention results from Lloyd's father on the Plan/Organize, Organization of Materials and the Monitor scales, as well as on the MI and the GEC, declined to below clinical significant range.

Teacher. Scores on the BRIEF Teacher Form, as presented in Table 11, showed similar improvement patterns, but were more conservative. Lloyd's teacher reported T scores at the

84%ile for the Initiate scale (12%ile decrease from the pre-intervention result), at the 95%ile on the Plan/Organize scale (4%ile decrease), at the 93%ile on the Organization of Materials scale (6%ile decrease), at the 92%ile on the Monitor scale (6%ile decrease), at the 97%ile on the MI (2%ile decrease) and at the 93%ile on the GEC (6%ile decrease). Post-intervention results on the BRIEF Teacher Form on the Initiate and Plan/Organize scales declined to below clinical significant range.

Self. Lloyd's results on the BRIEF Self-Report Form, as seen in Table 12, were highly inconsistent with his results from the Parent and Teacher Forms as they revealed poorer scores on scales targeted by the HOPS program. Indeed, Lloyd reported T scores at the 45%ile on the Plan/Organize scale (27%ile increase from the pre-intervention result), at the 28%ile on the Organization of Materials scale (12%ile increase), at the 56%ile on the Task Completion scale (24%ile increase), at the 34%ile on the MI (18%ile increase) and at the 19%ile on the GEC (12%ile increase).

Overall, Lloyd demonstrated similar patterns of improvement on the results on the Parent and Teacher Forms, although the Parent Forms demonstrated larger margins of improvement. Both parents reported improvements on the Plan/Organize, Organization of Materials and Monitor scales and on the MI and GEC, for which the T scores declined to below clinical significance, with the most pronounced positive changes on the Plan/Organize scale and on the overall MI. Moreover, Lloyd's mother reported a marked positive difference on the Monitor. Lloyd's teacher also reported improvement on the Plan/Organize, Organization of Materials and Monitor scales, as well as some improvement on the MI and GEC, although only the Plan/Organize scale showed a clinically significant improvement. Although Lloyd's father did not report any improvement on the Initiate scale, results on the Teacher Form and Lloyd's

mother's Parent Form suggested strong progress in this area for Lloyd. Taken together, parents and teacher revealed gains in Lloyd's ability to (a) organize his materials, (b) initiate work, (c) monitor his own behaviour, and (d) plan and organize his work, especially over the long-term. Overall, they reported improvement of his EF skills relating to academic functioning. Conversely, Lloyd did not report improvement on any the measure's scales. In fact, Lloyd reported decreases across all scales, with more prominent losses on the Plan/Organize, Organization of Materials and Task Completion scales. Lloyd also reported poorer scores on the MI and the GEC.

Post-intervention interviews.

Parent.

Student behaviour: homework, organization and planning. Parents reported improvement in Lloyd's (a) knowledge of skills and self-awareness (b) his managing of daily homework, including recording, initiation, completion and submission, (c) organization of materials and work spaces, (d) ability to plan for the completion of long-term project and studying and (e) his understanding of the benefit of being organized. Lloyd's mother maintained that "he better understands what he has to do to be more successful as a student", and as Lloyd's father nodded in approval, he added "yes, he gets the bigger picture and now actually talks about things like organization and reflects on it". In terms of homework, it appeared that Lloyd is better able to record due dates for homework assignments. Lloyd's father stated that "it's rare that he has homework that is not in his agenda". Furthermore, Lloyd's mother explained that he is much better at starting his schoolwork without prompting. In regards to his ability to initiate, she added, "Sometimes it's done already when I go tell him to get started. We never used to see that!" Parents also claimed that he is better able to complete his work as per positive feedback and a

decrease in complaints from Lloyd's teachers, and that it is handed in "most of the time" complete and on time. It would seem that his organization of materials was "significantly better" and that once he adopted the HOPS system, he was able to maintain it with little home support. In regards to long-term planning, although his mother claimed that he still needs help sometimes, she asserted that "he is far better than he used to be", and his father added that "at least now he realizes what to do and can get started earlier than he used to". However, it appeared Lloyd had left a few assignments until the last minute and that, according to his mother, "sometimes he is down to the wire and he'll stay up very, very late". Overall, when asked how they feel the HOPS program benefitted their son, Lloyd's parent acknowledged the learned organization skills related to academics, but also emphasized his deeper appreciation of the benefit of being organized. To illustrate her point, Lloyd's mother related a conversation she had with her son a few days before the interview in which, as he was readying himself to study for his final June exams, he claimed that "'I used to have to find all my notes before exams, but now everything is right there - this is awesome!'".

Parental behaviour and emotion. Several times throughout the interview, parents related positive emotions towards Lloyd in light of their perception of his improvements. They did note that Lloyd occasionally fought them on getting his homework finished. Mr. B explained, "With the homework sheet that the teachers sign every period, we could finally see all the homework he had to do and he wasn't happy about this at all. We had several arguments to get his work done." He seemed to have reacted more positively to being held accountable for his organization of materials. His mother stated, "Once you showed him the system, he kept to it and is proud of it. It's really good to see." They appeared happy to see him take pride in his organization and to be animated when talking about his improvements. They smiled throughout the program, and

Lloyd's mother laughed four times when she was explaining how she felt the program had impacted Lloyd, and when she related conversations she shared with her son about the different components of the program. Their enthusiasm was apparent in their closing statements when, at the end of the interview, Lloyd's mother addressed her husband and said, "It's been so exciting to see him move forward, hasn't it?" to which he answered, "Yes, it's been great!"

Parent reflections and recommendations. Lloyd's parents believed that the program was successful in helping Lloyd acquire academic skills in homework planning and general organization. They believed the plan was successful, because it allowed Lloyd to appreciate how it feels to be organized, and it directly impacted his academic performance. They appreciated the short in-school sessions, citing extracurricular activities and weekends at the family cottage as reasons that make sessions outside of school hours difficult. They did, however, acknowledge that it was very difficult for them to dedicate the time they needed to after-school homework monitoring with two younger children, but Mr. B added that it "was well worth the time." They added that it was important for Lloyd to be forced and consistently held accountable at first, and then permitted him to slowly take responsibility for his own actions. However, they did mention that they would have preferred for Lloyd to be more independent by the end of the program, especially for the planning of long-term projects and studying. Mrs. B explained that "Lloyd is doing well, much, much better, but he still needs to know that we are tracking his homework or it would be easy for him to fall off the wagon." Mr. and Mrs. B claimed that Lloyd's materials organization was in a much better state because he was able to get many more weeks of practice, whereas long-term planning was introduced more than half-way through the intervention and therefore did not benefit from a full eight weeks of supervised practice. In fact, Lloyd's parents' main recommendation for the HOPS program and its implementation was to extend the duration

of the program. Lloyd's mother stated that she would like him to "continue doing it next year and the following year too", stating that he needs to be followed and monitored closely to maintain the gains she felt he developed through the HOPS program.

Consistency with BRIEF findings. Findings from the interview with Lloyd's parents supported BRIEF results from Parent and Teacher Forms. During the interview, parents reported improvements in Lloyd's (a) knowledge of skills and self-awareness (b) his managing of daily homework, including recording, initiation, completion and submission, (c) organization of materials and work spaces, (d) ability to plan for the completion of long-term project and studying and (e) his understanding of the benefit of being organized. BRIEF findings revealed that Lloyd's parents and teacher reported improvements on scales related to the improvements outlines in the interview: Initiate (mother and teacher only), Plan/Organize, Organization of Materials and Monitor. However, Lloyd did not report any improvements on these scales, and thus, the findings of the parental interview were inconsistent with the BRIEF-SR.

Teacher.

Student behaviour: homework, organization and planning. Lloyd's teacher also report improvement of several skills targeted by the HOPS program. In terms of homework, the teacher asserted that Lloyd is better at recording the homework and that he "uses his agenda regularly at the end of each class". Although he did not comment on Lloyd's initiation of schoolwork, the teacher has noticed an improvement in Lloyd's level of homework completion in terms of quality and punctuality. He said of Lloyd, "he is making a point of completing his tasks" and deemed homework completion in general as "much better" than prior to the intervention. Lloyd's teacher also noted improvement in the area of organization of materials and contended that his "binder is more organized and [he] works on a clean surface". However, Mr. M mentioned that Lloyd was

still not "quite at the same level of an average student yet" and that long-term planning was still problematic, citing that it is more difficult to build and stick to a plan than to keep academic materials in order. Overall, according to the interview Lloyd's teacher seemed to have perceived improvement of (a) homework completion, including recording and submission of quality and punctual work and (b) organization of materials, such as his binder and his work space, but that improvement was still required on long-term planning of schoolwork.

Teacher reflections and recommendations. Lloyd's teacher felt that the program had been successful for Lloyd and stressed the importance of accountability. The teacher felt that Lloyd needed to feel the pressure of an outside source to initially engage in his own planning and organizing. He felt the frequency of the meetings (twice weekly) were the key to the success of the program as, according to him, students with ADHD need to touch base frequently when learning new skills or habits. Lloyd's teacher had two main recommendations for the program. The first recommendation was that the program should last longer to increase student independence. He felt that although the program was helpful, Lloyd still required too much input from his teachers and parents to manage long-term projects. The other recommendation was for the program to reach other students, as he feels many other students could benefit from the HOPS program. He did not offer recommendations for the implementation of the program itself.

Consistency with BRIEF findings. Mr. M's comments on Lloyd's improvement in regards to homework completion and organization of materials accurately reflected BRIEF findings on Teacher and Parent Forms. When comparing pre-intervention scores to post-intervention scores, the Teacher Form revealed lower scores on the Initiate, Plan/Organize and Monitor scales, which relates to Lloyd's teacher's perceived improvement of homework completion, and lower scores on the Organization of Materials scale, which relates to the better organization of Lloyd's binder

and workspace noted by his teacher. The BRIEF Parent Form also revealed lower scores on the Initiate, Plan/Organize, Organization of Materials and Monitor scales, also demonstrating consistency with Lloyd's teacher's perceived improvement. As previously mentioned, Lloyd did not report improvement on any scales and thus the information provided by the teacher interview is inconsistent with findings from Lloyd's BRIEF-SR.

Self.

Student behaviour: homework, organization and planning. Lloyd reported improvement in the three main skills targeted by the HOPS program intervention. In terms of homework, he reports having acquired better habits in how he records homework, completes his homework once he has started, and submits the work on time once it has been completed. When asked how difficult it is for him to complete his homework, he answered, "Not hard at all, I can keep going for a long time, it's harder for me to stop than to finish". As for homework submission, he asserted that he gets it in on time, only forgetting to hand it in "on rare occasions". He qualified his current organization of materials as "a hell of a lot better" than prior to the intervention and explained that he has been maintaining his binders and that, despite not being taught explicitly through the HOPS program, he has been able to keep his digital work organized on his laptop as well. Furthermore, he reported that his workspace at home is clear of clutter and that he "can find stuff on it, which [he] could never do previously." In terms of long-term planning, Lloyd also reported progress but admitted that it remained a struggle. In describing how many hours of schoolwork he averages over the weekend, he said, "I don't work a number of hours. I make sure to finish the topics outlined on my study schedule". Later in the interview, he explained that he prefers to "split homework loads in smaller chunks" as part of his homework plan. Chunking his work in smaller, manageable tasks is a key strategy to long-term projects and studying.

Emotion. Lloyd appeared to have adopted a more positive emotional response to homework responsibilities and how it affected his relationship with his parents and his self-image. He claimed that homework had only become an occasional source of conflict in his household and that he feels as though his mother may encourage him or help him, but that she no longer nags him or gets disappointed in him. He asserted that he felt more "self-motivated for homework these days" and demonstrated pride in his progress. When asked how he feels about the progress he has made as a result of his active participation in the HOPS program, he explained:

> Great, to be honest. It sucks when you feel like everyone is judging you for being bad at something everyone does well. But now, it's like I'm surprising everyone by how good I am at organizing my binder and getting ready for tests. It's like 'Hahaha, in your face!'

He felt as though his peers see him differently now and he appeared to enjoy his new academic image. When asked how he changed in regards to planning long-term assignments or study schedules, he said that it was still difficult for him, but that he had improved.

Student reflections and recommendation. Lloyd felt that the program worked for him because "someone's on top of you and someone cares about your schoolwork, especially at the beginning, but now it's a habit and I care about doing everything by myself." It appears that being held accountable for his actions by someone else helped him develop the habit and motivation to take on the responsibility by himself. His sole recommendation for the program was to remove the task of collecting teacher signatures at the end of each class proving that the student had in fact properly recorded the homework in the agenda. He explained that it was time-consuming and that it generated questions from his peers that he would have preferred to avoid.

When pressed for detail, he admitted that the signatures had a purpose but that he could have managed without it.

Consistency with BRIEF findings. Although the findings from Lloyd's interview were consistent with the Teacher and Parent Forms, which revealed improvements on the scales relating to progress in homework completion, initiative, organization of materials and long-term planning of larger tasks, they were highly inconsistent with the BRIEF-SR results. Indeed, despite reporting improvements and change in multiple academic areas relating to homework completion and organization throughout his interview, Lloyd reported a significant decline in related scales on his BRIEF-SR. He reported significantly lower scores on the Plan/Organize, Organization of Materials and Task Completion scales. A possible reason for his discrepancy may be explained by the gains in self-monitoring and accuracy of self-evaluating. During the interview with Lloyd's parents, they explained that Lloyd seems better able to recognize successful student strategies in regards to organization and planning. Furthermore, the post-intervention BRIEF Teacher and Parent Forms reported important gains on the Monitor scale, demonstrating proof for an increase in his personal monitoring function. Perhaps, prior to the intervention, Lloyd reported non-problematic scores on the scales relating to organizing and planning for homework because he did not recognize these areas as issues, and that participating in the HOPS program helped him paint a more accurate picture of positive student behaviour. It is possible that a clearer understanding of what it means to be organized and plan for homework gave Lloyd the ability to more accurately evaluate his own skills and performance in this academic area. This hypothesis is further supported by the fact that Lloyd's post-intervention BRIEF scores were more consistent with the BRIEF scores on the Parent and Teacher Forms than his pre-intervention BRIEF scores.

Integration of the digital calendar application. Lloyd and his parents felt that the calendar application was a suitable supplement to the HOPS program because it allowed Lloyd to have quick and easy access to homework recording. Mr. M seemed neutral on the digital application, stating "I can't comment on whether it conflicted or complemented the program, but from my end it seemed fine".

According to all participants, Lloyd demonstrated important improvements in material organization and homework completion and planning of long-term assignments and studying tasks. Although his parents and his teacher wished the program was longer so that Lloyd may continue to improve and gain independence, the length and timing of the sessions were valued by himself and his parents and all participants recognized its success.

Table 9

Pre- and Post-Test Scores for the BRIEF Parent Form (Mother) for Lloyd

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Initiate	49	55	46	47	-8%ile
Plan/Organize	72*	97	61	85	-12%ile
Organization of Materials	63	85	58	81	-4%ile
Monitor	65*	96	57	77	-19%ile
MI	67*	95	60	81	-14%ile
GEC	65*	89	59	81	-8%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Table 10

Pre- and Post-Test Scores for the BRIEF Parent Form (Father) for Lloyd

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Initiate	49	55	49	55	0%ile
Plan/Organize	72*	97	59	83	-14%ile
Organization of Materials	63	85	55	78	-7%ile
Monitor	76*	99	62	93	-6%ile
MI	70*	96	60	82	-14%ile
GEC	70*	93	61	85	-18%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Table 11

Pre- and Post-Test Scores for the BRIEF Teacher Form for Lloyd

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Initiate	76*	96	59	84	-12%ile
Plan/Organize	92*	99	63	95	-4%ile
Organization of Materials	110*	99	70*	93	-6%ile
Monitor	87*	98	73*	92	-6%ile
MI	94*	99	72*	97	-2%ile
GEC	90*	99	70*	93	-6%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Table 12

Pre- and Post-Test Scores for the BRIEF-SR Form for Lloyd

	Pre-test scores		Post-test scores		Percentile difference
Scale/Index/Composite	T score	Percentile	T score	Percentile	
Plan/Organize	39	18	49	45	+27%ile
Organization of Materials	40	16	43	28	+12%ile
Task Completion	44	32	51	56	+24%ile
MI	39	16	45	34	+18%ile
GEC	35	7	40	19	+12%ile

Note. Elevated BRIEF T scores indicate elevated dysfunction. MI= Metacognitive Index; GEC= Global Executive Composite

* T scores ≥65 are indicative of clinically significant dysfunction.

Discussion

The main purpose of this qualitative study was to provide insight on the student outcomes of a remedial intervention for middle school students with EF difficulties from the perspective of the student, their parents and their teacher. Behaviour rating questionnaires and interviews were employed to collect information on student change engendered by the HOPS program on academic organizing and planning difficulties. Specifically, the researcher sought to gain perspective on the general student outcomes of the HOPS program and on the identification of different elements of the HOPS program that may impact its success, feasibility and dissemination, including the use of organizational digital applications for tablets and computers. The results of this thesis will be organized to address the research questions and put into context of relevant literature. Implications for school practitioners and further research, as well as study limitations, will be also be discussed.

Overall, through the examination of three case studies, according to students, parents and teachers, the HOPS program yielded progress in the area of organization of material, homework completion and planning of academic schoolwork, although it appears to have had a more important impact on organization of materials. Also, although both parents and teachers noted academic improvements on questionnaires and during interviews, teachers observed more conservative progress than did the students' parents. Additionally, it seems that the length and timing of the sessions were perceived as the program's strengths, whereas the level of parent involvement and the student's level of independence at the conclusion of the program were deemed challenging by the participants. As well, it was found that the implementation of the program may entail parent-adolescent conflict. Lastly, it was found that the replacement of the paper calendar with computer and tablet applications did not prove to be problematic.

Question 1: What are the student outcomes of the HOPS program as perceived by the student, the parents and the teacher?

Discrepancy between improvement of materials organization and improvement of planning and management of homework. The primary goal of this study was to explore the effects of the HOPS program as interpreted by the students who took part in the intervention, their parents and one of their teachers. The main finding was that the students showed improvement in how they organized their materials. Indeed, the BRIEF questionnaires indicated that two of the three participating students showed improvements that lowered the score related to organizing their school materials from clinically dysfunctional to within normal range on all four forms. The third student did not demonstrate deficits that were clinically significant on his pre-intervention BRIEF form, but did show improvement on three of his four BRIEF forms on the scores associated to organization of materials. Furthermore, these findings were consistent with what the participants, their parents and their teachers stated during all four sets of post-intervention interviews. In other words, for each of the three students, significant improvement was noted by all participants involved (student, parents and teacher) on both the questionnaires and during the interviews.

This finding is highly consistent with results of other studies that examined the efficacy of the HOPS program in improving materials organization (Langberg, Vaughn et al., 2011; Langberg et al., 2012). This finding is significant because previous research has demonstrated that, specifically, materials organization is associated to academic results. Indeed, in a study examining what aspects of homework functioning are the strongest predictors of school grades in middle-school students with ADHD, Langberg et al. (Langberg, Epstein et al., 2011), found that parent-rated homework materials management and teacher-rated materials management were the

best predictors of academic performance. Furthermore, in a similar study evaluating predictors of response and mechanisms of change for the HOPS program, Langberg et al. (2013) found that, according to student ratings, the adoption of the HOPS binder materials organization system and the therapeutic alliance significantly predicted outcomes (organization, planning and homework problems) after controlling for pre-intervention severity of ADHD symptoms and that, according to parent ratings, the implementation of the binder materials organization system predicted outcomes above and beyond the effect of therapeutic alliance. These results, including the ones from the present study, highlight the critical importance of teaching students with ADHD a structured binder organization system.

The three participants also demonstrated important gains in homework management and planning according to post-intervention BRIEF scores and information obtained from the interviews. This is consistent with previous research of the effects of the HOPS program (Langberg et al., 2012). However, the present study found that the improvements shown on homework management and planning were more conservative than the improvements demonstrated on material organization, for which BRIEF scores lowered from clinically significant levels of concern (pre-intervention) to within normal limits (post-intervention). Since both improvement in organization of materials, and an improvement in planning of homework are primary goals of the HOPS program and that they are both related to improvement in academic functioning (Langberg et al., 2013 EF; Langberg, Molina et al., 2011), it is of interest to examine the qualitative data for factors that may explain this discrepancy. Interestingly, students, parents and teachers identified different reasons to explain better improvement of organization of materials than of homework management and planning.

According to the three participating students, their organization of academic materials improved more than their long-term planning of schoolwork because it is less time consuming and it elicits immediate positive feedback from adults and peers. All three students qualified the act of organizing their bag and binder on a frequent basis as easy and quick to complete. Lloyd described it well when he said, "It's easy. It takes about 10 minutes and it looks so good." Both Arthur and Stephan noted that their organized affairs received frequent positive feedback from their parents, which cause positive emotions such as pride and self-satisfaction, and Arthur mentioned that he enjoyed the positive feedback he received from female peers. Conversely, planning their homework requires multiple steps and follow-through to fully complete the task. As Arthur put it, "it's long and even when you do [referring to breaking down a task and scheduling the chunks of work in a calendar], you haven't actually done any homework." Taking into account the nature of their ADHD, it is not surprising that these students showed preference for activities that elicits immediate positive feedback (Barkley, 1997) over an activity that requires delayed gratification. It is for this reason that the HOPS program is designed to assign points towards a reward for each step towards homework planning (Langberg, Vaughn et al., 2011). However, it is possible that parents and teachers were focused on progress that was directly observable and tended to provide more positive feedback for materials organization as opposed to the less observable process of homework planning.

The students' parents, on the other hand, had a different take on the matter. It appears that they believed that organization of school materials was more successful on the whole because it was introduced earlier in the program and thus the students had more time to practice this skill under the supervision of the researcher. Two of the parents stated that this extra practice time for materials organization in comparison to long-term planning skills allowed for habit formation,

which they deemed specifically important for children with ADHD. Indeed, literature on students with ADHD demonstrates an increased need in practice in order to achieve skill acquisition and automaticity (Barkley, 1997; Huang-Pollock & Karalunas, 2010).

The teachers' interpretation for larger gains in material organization reflect the students' reasoning. They mentioned that organization of materials does not require long bouts of focus and that it might seem more achievable than planning and completing a large assignment. Also, two of the teachers explain that it is difficult to properly observe the homework process, as they usually only monitor whether the homework is handed in or not, which is the last step of a multi-step process. Directions for future research and implications for practice are discussed in a subsequent section.

Discrepancy between parent and teacher ratings. It was found that, on post-intervention questionnaires, parent ratings of organization of materials and planning demonstrated notably higher levels of improvement than teacher ratings. This is consistent with previous studies using the HOPS intervention (Langberg, Epstein, Urbanowicz et al., 2008; Langberg et al., 2012; Langberg et al., 2013) and studies on the validity of teacher ratings in middle school students with ADHD (Evans, Allen, Moore, & Strauss, 2005). Langberg (2012) found that teacher-ratings on organization did not show significant improvement, despite improved Grade Point Average (GPA) scores. In a study examining inter-rater agreement of teacher ratings and the relationship between teacher ratings and observational data in middle school, Evans et al. (2005) yielded results indicating low inter-rater agreement amongst teachers and low rates of agreement between teachers and observational data. In other words, teachers did not report improvements, despite apparent and quantifiable behaviour changes by the students, as observed by the research staff. These researchers have hypothesized that teachers have less

opportunity to observe change, likely because they do not spend significant time with the students, do not benefit from one-on-one time with them, and because they are not present during the homework process.

Since teachers are the ones evaluating academic progress and performance on report cards, their perspective on development of organization and planning skills are of value. The present study provides additional hypotheses that may benefit from future research on the matter. Indeed, all three teachers appeared to compare each participant to their peers as opposed to their pre-intervention selves, focusing on gaps instead of personal improvement. This might be due to increased knowledge of age-appropriate benchmarks in comparison to the parent body, and to the fact that they almost solely observe and evaluate the students in relation to their peers. It was also found that teachers appeared to be frustrated with typical symptoms of ADHD, such as off-task behaviour or calling out of turn, that are unrelated to organization and planning skills. Thus, it is a possibility that they are unintentionally interpreting these manifestations of ADHD as a general negative intent towards school or negative behaviour, and are biased by their frustrations. These findings suggest that the HOPS program may benefit from increased teacher involvement to increase teacher exposure to student improvement, and teacher instruction sessions on the nature of ADHD and how to develop realistic objectives for students with ADHD. Further research on teacher rating of organization and planning measures is needed to increase assessment abilities and, as a result, develop better interventions.

Research Question2: What are the different elements that may impact the degree of success, feasibility and dissemination of the HOPS program, including the use of organizational applications for tablets and computers, as perceived by the student, the parents and the teacher?

Originally, the HOPS program was designed to be an after-school program implemented by highly trained research staff (Langberg, Epstein, Urbanowicz et al., 2008). However, authors of the program redesigned the program to increase its feasibility of implementation within a school and thus, to increase its dissemination (Langberg, Vaughn et al., 2011). In a further attempt to increase the impact of research on practice, the present study collected information from the participants, their parents and a teacher on the different factors influencing its success.

HOPS sessions: Length and Timing. Short, in-school sessions were perceived as a strength by parents and students. Parents asserted that their families are very busy and that help occurring outside of school is difficult to commit to due to extracurricular activities and weekends spent outside of the city at family cottages. Students also appreciated the short sessions, citing difficulty focusing for longer than 20 minutes. These remarks are consistent with what was found during the development process for the HOPS program (Langberg, Vaughn et al., 2011). Students also mentioned that morning meetings were challenging in terms of focus, but could not provide the interviewer with alternate timing because, according to them, recess is important for socializing and after-school is dedicated to band or sports practices.

Digital Organization Applications. A secondary goal of the present study was to explore the HOPS intervention's flexibility in regards to the replacement of the paper calendar by a digital equivalent. Despite growing numbers of schools using touchpad technology (Etherington, 2013), the HOPS program has yet to be studied using a digital application in lieu of the available hard copy version in the manual (Langberg, 2011). In the private school in which the research took place, students are mandated to use digital calendars and planners which provide similar uses to paper calendars, but usually involve more functions and more complex layouts.

Parents, students and teachers alike seemed to have little to say about how the digital application interacted with the HOPS program, based on information gathered during post-intervention interviews. When encouraged to expand on the topic, they often responded with neutral comments, such as Mrs. G's answer: "It seemed to be fine, but I'm not really sure." Furthermore, when asked if the HOPS and the digital calendar application complemented or conflicted, although most respondents did not directly state that they complemented, most respondents indicated that they did not conflict. Their neutral and minimal responses may be due to the fact that they did not experience the use of the paper calendar to which to compare the digital application. However, it is likely that students, parents and teachers would have highlighted a problematic interaction if it had been present, suggesting that the use of a digital application with the HOPS intervention may be a non-issue. This indicates that the use of a digital calendar and planner application is likely compatible with the HOPS program, although more research is needed to validate its integration.

On a related note, several parents, teachers and students stated that the iPads could be a source of distraction. Since distractibility is often a symptom experienced by children with ADHD, it is likely that the use of tablets and computers, which offer instant and unmonitored access to the Internet and an array of games and programs, may be problematic. Thus, tablets and computers may not be an ideal location to hold homework information if their user gets sidetracked during usage, although this was not stated specifically during the interviews. Accordingly, moving forward, research on the potential level of distraction presented by tablets, and how to circumvent it, will be key to the effective use of touchpad and computer technology to help students with ADHD with homework management.

Parental involvement, student independence and family conflict. Parental involvement has shown to be a successful component of programs targeting homework completion and thus is an important aspect of the HOPS intervention and similar programs (Wilder, 2014). A meta-synthesis on the effect of parental involvement on homework showed that any parental involvement was positively correlated with student academic achievement, but that it was strongest when parental contribution involved goal setting and monitoring, rather than helping with content (Wilder, 2014). Accordingly, it is an expectation that parents implicated in the HOPS program will set student expectations and monitor behaviour throughout the program and beyond (Langberg, 2011). Previous studies on the HOPS program indicate that parents were able to meet intervention expectations and were willing to continue participating past the end of the program. Indeed, Langberg et al. (2012) found that at a three-month maintenance data collection of the long-term effects of the HOPS program, 80% of parents were still monitoring their child and 55% were still using HOPS checklist, and the students were maintain gains of GPA and on parent ratings of materials management, organized actions and homework completion.

However, the current study found that parents claimed to have had difficulty meeting the expected level of involvement, although it is important to note that at least one parent came to each parent meeting for all three participants and completed checklists suggested that parents were appropriately involved throughout the intervention. Indeed, during the parent post-intervention interviews, it was commonly noted that the HOPS program required too many hours of implementation and organization on their part, and most parents claimed they felt they would be unable to continue implementing the program past its completion. Parents stated long work

hours, business trips, social and athletic commitments, and time and energy required by siblings as reasons meeting HOPS program expectations was challenging.

In a similar vein, analysis of the information collected during pre-intervention indicates that the parents value independence in their child's ability to manage their academic materials and homework. Indeed, almost all parents stated improved independence as an expected outcome of the HOPS program. Upon completion of the program, several parents were concerned that students had not yet achieved a level of independence that would permit them to maintain gains in academic function without continued supervision. Accordingly, these parents' main recommendation for the improved implementation of the HOPS intervention was to extend the length of the program while decreasing parental involvement, thus increasing supervised practice by the implementer until independent mastery of the taught skills. It stands to reason that if parents are having difficulty meeting the expectations of their active involvement in the program, they would be eager to have their child function as independently as possible.

Furthermore, one family claimed high levels of conflict and stress as a result of implementing the program. It is important to note that the family (student and both parents) reported high levels of conflict concerning schoolwork prior to the intervention and also reported an overall decrease in stress and conflict after the completion of the program. Langberg, Molina et al. (2011) found that receipt of teacher initials (indicating accurate homework recording) increased parent-rated life interference and family conflict. Authors hypothesized that teacher initials increased parent-adolescent arguments over the completion of homework because parents have the accurately recorded homework to which to hold their child accountable. These findings, consistent with the present study, might indicate that households experiencing high levels of conflict in regards to homework may not be ideal candidates for the HOPS program as it

currently stands. Conflict surrounding homework is more prevalent in families with children with ADHD (Power et al., 2001), and thus further research on how to address their specific needs would be of value.

Implications For School Practitioners and Future Research

Overall, this study confirms the positive impact of the HOPS program on organization and homework planning and management on middle-school students with ADHD. Its implementation in schools could help adolescents learn the student skills required to increase academic functioning and performance, thus decreasing the academic risks to which they are vulnerable, and could reduce the strain this growing population of students exerts on the educational system as a whole. Furthermore, increased autonomy in academic functioning is likely to lessen household stress in regards to homework and academics. The HOPS program has the potential to play an integral role in increasing student academic functioning in a growing at-risk population and middle schools would greatly benefit by its integration by faculty or support staff.

The findings of this qualitative study contribute to the literature on the HOPS program by providing suggestions of potential changes that may improve this specific intervention and similar programs. First, it may of value to develop a version of the HOPS program that includes a plan to gradually release responsibility to the student and a flexible date of completion that would depend on the student's success and level independence on homework, planning and organization. This might allow for further consolidation of skills learned later in the program (long-term planning), increased independence and might alleviate parental monitoring. Secondly, it might be useful to develop and test a screening probe to identify families that may not be best served by the HOPS program. Indeed, it appears that households with heightened levels of

conflict in regards to homework may experience an increase of conflict during the implementation of the HOPS program. These families might benefit from the complete removal of homework from the household, to be outsourced instead to a tutor or homework program. Alternatively, perhaps the HOPS program could include conflict resolution sessions for the families, as has been suggested by its authors (Langberg, Molina, & et al., 2011). Third, although parents who feel overwhelmed by the level of parental involvement of the HOPS may also opt for outsourcing homework to a tutor or homework program, it may be important to add research-based information about the benefit of parental involvement to parent sessions to ensure parents more clearly understand and appreciate the value of their involvement. Forth, as was noted by Langberg, Vaughn, & et al. (2011) during the development of the HOPS, teachers are interested in the HOPS intervention and the students may benefit from their more direct involvement. Potentially, teachers could share more responsibility with the researcher, perhaps learning about students with ADHD and how best to help them. Additionally, teachers might increase their exposure to homework process and student progress, perhaps positively affecting their accuracy of assessment of homework planning and management skills. Fifth, there is little research available on the use of digital calendars and planners amongst students in general, on the level of distraction presented by such technology amongst students with ADHD and on its integration into program like the HOPS. As we move towards increasingly technological classrooms, research in this field will have important implications on practice. Lastly, all three participating teachers commented that many of their students without a diagnosis of ADHD could benefit from the HOPS program due to organizational and planning difficulties. Therefore, it might be valuable to first develop studies testing the HOPS on different populations and then to examine the efficacy of implementing the program in a small group setting, as it has yet to be studied. It

may be possible to alter the intervention to reach maximum efficacy with minimum time and human resources, thus allowing a larger number of students to benefit from the HOPS program. All of above mentioned suggestions require further testing and refining before changes be brought to the HOPS manual.

Limitations

The current study presents several limitations that should be considered and addressed in future research on the HOPS program. First of all, although the case study method was selected to provide rich, qualitative data, the small sample size limits the development of firm and generalizable conclusions. Indeed, the purpose of this study was to explore the student outcomes of the HOPS and to identify potential changes that may improve its success, feasibility and dissemination, as perceived by the participants involved. Studies using randomized controlled methodology will be required to test for efficacy and a larger, more diverse sample would increase generalizability to the population at large. Secondly, the role of the researcher as HOPS implementer may have served as a limitation. Although every effort was made to assure impartiality throughout the study, the researcher recognizes that her major role in the intervention could potentially have influenced the interpretation of the data due to personal biases and experience with the participating students. However, the researcher's role as implementer ensured the program was followed with fidelity and her previous experience with student with ADHD and their parents may have proven an advantage as it likely augmented her knowledge and understanding of the various factors and concerns involved in this study. Lastly, it is possible that participants, especially students and parents, may have been susceptible to social desirability bias. In other words, since the implementer also carried out the data collection,

it is possible that the students and parents responded to questions and questionnaires more positively to show the implementer that the intervention was successful.

Conclusion

The purpose of this study was to explore the student outcomes of the HOPS and to identify features that impact its success, feasibility and dissemination, as perceived by the students involved, and their parents and teacher. This study demonstrated important potential areas of improvement in a program designed to help middle-school students with ADHD develop homework, organizing and planning skills. While the questionnaires shed light on student outcomes at the completion of the HOPS program, the semi-structured interviews allowed students, parents and teachers to share their perspectives on the different elements of the program and their impact on its success. Findings revealed improvements of targeted skills and confirmed previous research on the program by its authors (Langberg, Vaughn et al., 2011) in regards to the perceived strengths of the program (length and timing of sessions). In addition, it was found that the replacement of the paper calendar by a digital equivalent did not present difficulty, thus revealing the flexibility of the HOPS program and adding to the available literature on this intervention. However, it was found the student level of independence at the end of the program and the level of parental involvement were perceived as challenges to the success of the HOPS program by parents and teachers. Furthermore, it was found that the implementation of the program may entail parent-adolescent conflict, thus potentially affecting its success. These findings are of particular concern and merit further investigation as they could allow for the refinement of one of the only available programs designed to help students with ADHD improve their EF skills, especially given the increasing prevalence of students with ADHD in classrooms and the significant impact such skills have on academic and life functioning. Indeed, ADHD is

typically characterized by deficits in EF skills, specifically those relating to planning and organizing, which negatively impact their academic success. An intervention targeting such skills administered during the formative middle school years can minimize the negative impact of EF deficit in students with ADHD, thus increasing school success and their sense of self-efficacy, and lowering conflict in the family unit and pressure on the school system.

References

Abikoff, H. (2001). Tailored psychosocial treatments for ADHD: The search for a good fit. *Journal Of Clinical Child Psychology*, *30*(1), 122-125. doi:10.1207/S15374424JCCP3001_14

Abikoff, H. & Gallagher, R. (2008). Assessment and remediation of organizational skills deficits in children with ADHD. In K. McBurnett & L. Pfiffner (Eds.). *Attention deficit hyperactivity disorders: Concepts, controversies, new directions.* (pp. 137-152). New York: NY. Information Healthcare USA.

Abikoff, H. H., & Gallagher, R. R. (2009). *Children's Organizational Skills Scale*. North Tonawanda, NY: Multi-Health Systems.

Abikoff, H., Gallagher, R., Wells, K. C., Murray, D. W., Huang, L., Lu, F., & Petkova, E. (2013). Remediating organizational functioning in children with ADHD: Immediate and long-term effects from a randomized controlled trial. *Journal Of Consulting And Clinical Psychology*, *81*(1), 113-128. doi:10.1037/a0029648

Alvarez, J. A. & Emory, E (2006). Executive function and the frontal lobes: A meta-analytic review. *Neuropsychology Review, 16* (1), 17–42. doi:10.1007/s11065-006-9002-x. PMID 16794878.

Anderson, P. (2002). Assessment and development of executive function (EF) during childhood. *Child Neuropsychology*, *8*(2), 71-82. doi:10.1076/chin.8.2.71.8724

Anderson, V. Anderson, P., Northam, E., Jacobs, R., & Catroppa, C. (2001). Development of Executive Functions Through Late Childhood and Adolescence in an Australian Sample. *Developmental Neuropsychology*, *20*(1), 385-406.

Baddeley, A. D. (1986). *Working Memory*. Oxford: Clarendon Press.

Bailey, C. (2007). Cognitive accuracy and intelligent executive function in the brain and in business. *Annals Of The New York Academy Of Sciences*, *1118,* 122-141.

Barkley, R.A. (1997). *ADHD and the nature of self-control.* New York: Guilford Press.

Barkley, R. A. (2006). Attention-deficit/hyperactivity disorder. In D. A. Wolfe, E. J. Mash (Eds.), *Behavioral and emotional disorders in adolescents: Nature, assessment, and treatment* (pp. 91-152). New York, NY US: Guilford Publications.

Barkley, R. A. (2012). *Executive functions: What they are, how they work, and why they evolved*. New York, NY US: Guilford Press.

Best, J. R., Miller, P. H., & Naglieri, J. A. (2011). Relations between executive function and academic achievement from ages 5 to 17 in a large, representative national sample. *Learning And Individual Differences*, *21*(4), 327-336. doi:10.1016/j.lindif.2011.01.007

Biederman, J., Monuteaux, M., Doyle, A., Seidman, L., Wilens, T., Ferrero, F., & Faraone, S. (2004). Impact of executive function deficits and attention-deficit/hyperactivity disorder (ADHD) on academic outcomes in children. *Journal Of Consulting And Clinical Psychology*, *72*(5), 757-766.

Blair, C., & Razza, R. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development*, *78*(2), 647-663. doi:10.1111/j.1467-8624.2007.01019.x

Borella, E., Carretti, B., & Pelegrina, S. (2010). The specific role of inhibition in reading comprehension in good and poor comprehenders. *Journal Of Learning Disabilities*, *43*(6), 541-552. doi:10.1177/0022219410371676

Boulc'h, L. L., Gaux, C. C., & Boujon, C. C. (2007). Implication des fonctions exécutives dans le décodage en lecture: Étude comparative entre normolecteurs et faibles lecteurs de CE2. *Psychologie Française*, *52*(1), 71-87. doi:10.1016/j.psfr.2006.11.001

Broidy, L. M., Nagin, D. S., & Tremblay, R. E. (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Developmental Psychology*, *39*(2), 222-245.

Brown, T., & Landgraf, J. (2010). Improvements in executive function correlate with enhanced performance and functioning and health-related quality of life: Evidence from 2 large, double-blind, randomized, placebo-controlled trials in ADHD. *Postgraduate Medicine*, *122*(5), 42-51. doi:10.3810/pgm.2010.09.2200

Bull, R., Espy, K., & Wiebe, S. A. (2008). Short-term memory, working memory, and executive functioning in preschoolers: Longitudinal predictors of mathematical achievement at age 7 years. *Developmental Neuropsychology*, *33*(3), 205-228. doi:10.1080/87565640801982312

Burgess, P. W., Alderman, N., Evans, J., Emslie, H., & Wilson, B. A. (1998). The ecological validity of tests of executive function. *Journal Of The International Neuropsychological Society*, *4*(6), 547-558. doi:10.1017/S1355617798466037

Carretti, B., Borella, E., Cornoldi, C., & De Beni, R. (2009). Role of working memory in explaining the performance of individuals with specific reading comprehension difficulties: A meta-analysis. *Learning And Individual Differences*, *19*(2), 245-251. doi:10.1016/j.lindif.2008.10.002

Clark, C. C., Sheffield, T. D., Wiebe, S. A., & Espy, K. A. (2013). Longitudinal associations between executive control and developing mathematical competence in preschool boys and girls. *Child Development*, *84*(2), 662-677. doi:10.1111/j.1467-8624.2012.01854.x

Creswell, J. W. (2011). Educational research: Planning conducting and evaluating quantitative and qualitative research 4th edition. Upsaddle River, NJ: Pearson Education Inc.

Davies, S. R., Field, A. J., Andersen, T., & Pestell, C. (2011). The ecological validity of the Rey–Osterrieth complex figure: Predicting everyday problems in children with neuropsychological disorders. *Journal Of Clinical And Experimental Neuropsychology*, *33*(7), 820-831. doi:10.1080/13803395.2011.574608

Demont, E., & Botzung, A. (2003). Contribution de la conscience phonologique et de la memoire de travail aux difficulties en lecture : Étude auprès d'enfants dyslexiques et apprentis lecteurs. *L'année psychologique*, *103*(3), 377-410. doi:10.3406/psy.2003.29642

Denckla, M. B. (1996). A theory and model of executive function: A neuropsychological perspective. In G. Lyon, N. A. Krasnegor (Eds.), *Attention, memory, and executive function* (pp. 263-278). Baltimore, MD US: Paul H Brookes Publishing.

Denckla, M. B. (2007). Executive function: Binding together the definitions of attention-deficit/hyperactivity disorder and learning disabilities. In L. Meltzer. (Ed.), *Executive function in education from theory to practice*. (pp. 5-18). New York, NY: The Guilford Press.

Diamond, A. (2013). Executive functions. *Annual Review Of Psychology*, *64*(1), 135-168. doi:10.1146/annurev-psych-113011-143750

Duncan, J., Johnson, R., Swales, M., & Freer, C. (1997). Frontal lobe deficits after head injury: Unity and diversity of function. *Cognitive Neuropsychology*, *14*(5), 713-741. doi:10.1080/026432997381420

Eakin, L. L., Minde, K. K., Hechtman, L. L., Ochs, E. E., Krane, E. E., Bouffard, R. R., & ... Looper, K. K. (2004). The marital and family functioning of adults with ADHD and their

spouses. *Journal Of Attention Disorders*, *8*(1), 1-10.

Etherington, D. (2013). *Apple has sold over 8M iPads direct to education worldwide, with more than 1B iTunes U downloads*. Retrieved from http://techcrunch.com/2013/02/28/apple-has-sold-over-8m-ipads-direct-to-education-worldwide-with-more-than-1b-itunes-u-downloads/

Evans, S., Allen, J., Moore, S., & Strauss, V. (2005). Measuring symptoms and functioning of youth with ADHD in middle schools. *Journal Of Abnormal Child Psychology*, *33*(6), 695-706.

Evans, S. W., Langberg, J., Raggi, V., Allen, J., & Buvinger, E. C. (2005). Development of a school-based treatment program for middle school youth with ADHD. *Journal Of Attention Disorders*, *9*(1), 343-353. doi:10.1177/1087054705279305

Evans, S. W., Serpell, Z., & White, C. (2005). The transition to middle school: Preparing for challenge and success. Attention! (CHADD), June, 29–31.

Evans, S. W., Schultz, B. K., DeMars, C. E., & Davis, H. (2011). Effectiveness of the Challenging Horizons after-school program for young adolescents with ADHD. *Behavior Therapy*, *42*(3), 462-474. doi:10.1016/j.beth.2010.11.008

Evans, S. W., Schultz, B. K., White, L. C., Brady, C., Sibley, M. H., & Van Eck, K. (2009). A school-based organization intervention for young adolescents with attention-deficit/hyperactivity disorder. *School Mental Health, 1,* 78–88.

Evans, S. W., Timmins, B., Sibley, M., White, L., Serpell, Z. N., & Schultz, B. (2006). Developing coordinated, multimodal, school-based treatment for young adolescents with ADHD. *Education & Treatment Of Children*, *29*(2), 359-378.

Gioia, G. A., Isquith, P. K., Guy, S. C., & Kenworthy, L. (2000). Behavior Rating Inventory of

Executive Function. *Child Neuropsychology*, *6*(3), 235-238. doi:10.1076/chin.6.3.235.3152

Gioia, G. A., & Isquith, P. K. (2004). Ecological assessment of executive function in traumatic brain injury. *Developmental Neuropsychology*, *25*(1-2), 135-158. doi:10.1207/s15326942dn2501&2_8

Habboushe, D. F., Daniel-Crotty, S., Karustis, J. L., Leff, S. S., Costigan, T. E., Goldstein, S. G., & ... Power, T. J. (2001). A family-school homework intervention program for children with attention-deficit/hyperactivity disorder. *Cognitive And Behavioral Practice*, *8*(2), 123-136. doi:10.1016/S1077-7229(01)80018-3

Hooper, S. R., Costa, L., McBee, M., Anderson, K. L., Yerby, D. C., Knuth, S. B., & Childress, A. (2011). Concurrent and longitudinal neuropsychological contributors to written language expression in first and second grade students. *Reading And Writing*, *24*(2), 221-252. doi:10.1007/s11145-010-9263-x

Huang-Pollock, C. L. & Karalunas, S. L. (2010). Working memory demands impair skill acquisition in children with ADHD. *Journal of Abnormal Psychology, 119*(1), 174-185. DOI: 10.1037/a0017862

Jensen, P. S., & Abikoff, H. (2000). Tailoring treatments for individuals with attention-deficit/hyperactivity disorder: Clinical and research perspectives. In T. E. Brown (Ed.), *Attention-deficit disorders and comorbidities in children, adolescents, and adults* (pp. 637-652). Arlington, VA, US: American Psychiatric Publishing, Inc.

King, I., & Bass, D. (2013). *Microsoft's Surface tablet is said to fall short of predictions*. Retrieved from http://www.bloomberg.com/news/2013-03-14/microsoft-s-surface-tablet-is-said-to-fall-short-of-predictions.html

Langberg, J. (2011). *Homework, Organization, and Planning Skills (HOPS) Interventions.* National Association of School Psychologists. Bethesda: MD.

Langberg, J., Dvorsky, M., & Evans, S. (2013). What specific facets of executive function are associated with academic functioning in youth with attention-deficit/hyperactivity disorder? *Journal Of Abnormal Child Psychology*, *41*(7), 1145-1159. doi:10.1007/s10802-013-9750-z

Langberg, J., Epstein, J., Altaye, M., Molina, B., Arnold, L., & Vitiello, B. (2008). The transition to middle school is associated with changes in the developmental trajectory of ADHD symptomatology in young adolescents with ADHD. *Journal Of Clinical Child And Adolescent Psychology*, *37*(3), 651-663. doi:10.1080/15374410802148095

Langberg, J. M., Epstein, J. N., Becker, S. P., Girio-Herrera, E., & Vaughn, A. J. (2012). Evaluation of the Homework, Organization, and Planning Skills (HOPS) intervention for middle school students with attention deficit hyperactivity disorder as implemented by school mental health providers. *School Psychology Review*, *41*(3), 342-364.

Langberg, J. M., Epstein, J. N., Girio-Herrera, E., Becker, S. P., Vaughn, A. J., & Altaye, M. (2011). Materials organization, planning, and homework completion in middle-school students with ADHD: Impact on academic performance. *School Mental Health*, *3*(2), 93-101. doi:10.1007/s12310-011-9052-y

Langberg, J. M., Epstein, J. N., Urbanowicz, C. M., Simon, J. O., & Graham, A. J. (2008). Efficacy of an organization skills intervention to improve the academic functioning of students with attention-deficit/hyperactivity disorder. *School Psychology Quarterly, 23*(3), 407-417.

Langberg, J. M., Molina, B. G., Arnold, L. E., Epstein, J. N., Altaye, M., Hinshaw, S. P., & ... Hechtman, L. (2011). Patterns and Predictors of Adolescent Academic Achievement and Performance in a Sample of Children with Attention-Deficit/Hyperactivity Disorder. *Journal Of Clinical Child & Adolescent Psychology*, *40*(4), 519-531. doi:10.1080/15374416.2011.581620

Langberg, J. M., Vaughn, A. J., Williamson, P., Epstein, J. N., Girio-Herrera, E., & Becker, S. P. (2011). Refinement of an organizational skills intervention for adolescents with ADHD for implementation by school mental health providers. *School Mental Health*, *3*(3), 143-155. doi:10.1007/s12310-011-9055-8

Luria, A. R. (1966). *Higher cortical functions in man.* New York, NY: Basic Books.

McCloskey, G., Perkins, L. A., & van Divner, B. (2009). *Assessment and intervention for executive function difficulties*. New York, NY US: Routledge/Taylor & Francis Group.

Meltzer, L. (Ed.) (2007). *Executive Function in Education From Theory to Practice*. New York, NY: The Guilford Press.

Miller, H., Barnes, J., & Beaver, K. (2011). Self-control and health outcomes in a nationally representative sample. *American Journal Of Health Behavior*, *35*(1), 15-27.

Miyake, A., & Friedman, N. P. (2012). The nature and organization of individual differences in executive functions: Four general conclusions. *Current Directions in Psychological Science*, 21(1), 8-14. http://dx.doi.org/10.1177/0963721411429458.

Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., & Howerter, A. (2000). The unity and diversity of executive functions and their contributions to complex 'frontal lobe' tasks: A latent variable analysis. *Cognitive Psychology*, *41*(1), 49-100. doi:10.1006/cogp.1999.0734

Morrison, F. J., Ponitz, C., & McClelland, M. M. (2010). Self-regulation and academic achievement in the transition to school. In S. D. Calkins, M. Bell (Eds.) , *Child development at the intersection of emotion and cognition* (pp. 203-224). Washington, DC US: American Psychological Association. doi:10.1037/12059-011

Naglieri, J. A., & Das, J. P. (1990). Planning, Attention, Simultaneous, and Successive (PASS) cognitive processes as a model for intelligence. *Journal Of Psychoeducational Assessment*, *8*(3), 303-337. doi:10.1177/073428299000800308

Neuenschwander, R., Röthlisberger, M., Cimeli, P., & Roebers, C. M. (2012). How do different aspects of self-regulation predict successful adaptation to school? *Journal Of Experimental Child Psychology*, *113*(3), 353-371. doi:10.1016/j.jecp.2012.07.004

Pearson, P.D. & Gallagher, M. (1983). The instruction of reading comprehension. *Contemporary Educational Psychology, 8,* 317-344.

Power, T. J., Karustis, J. L., & Habboushe, D. F. (2001). *Homework success for children with ADHD: A family–school intervention program*. New York, NY, US: Guilford Press.

Power, T. J., Werba, B. E., Watkins, M. W., Angelucci, J. G., & Eiraldi, R. B. (2006). Patterns of parent-reported homework problems among ADHD-referred and non-referred children. *School Psychology Quarterly*, *21*(1), 13-33. doi:10.1521/scpq.2006.21.1.13

Raggi, V., & Chronis, A. (2006). Interventions to address the academic impairment of children and adolescents with ADHD. *Clinical Child & Family Psychology Review*, *9*(2), 85-111. doi:10.1007/s10567-006-0006-0

Raggi, V. L., Chronis-Tuscano, A., Fishbein, H., & Groomes, A. (2009). Development of a brief, behavioral homework intervention for middle school students with attention-

deficit/hyperactivity disorder. *School Mental Health*, *1*(2), 61-77. doi:10.1007/s12310-009-9008-7

Ritchie, J. and J. Lewis (2003). *Qualitative research practice: A guide for social science students and researchers.* London: SAGE

Salthouse, T. A., Atkinson, T. M., & Berish, D. E. (2003). Executive functioning as a potential mediator of age-related cognitive decline in normal adults. *Journal Of Experimental Psychology: General*, *132*(4), 566-594. doi:10.1037/0096-3445.132.4.566

Sesma, H., Mahone, E., Levine, T., Eason, S. H., & Cutting, L. E. (2009). The contribution of executive skills to reading comprehension. *Child Neuropsychology*, *15*(3), 232-246. doi:10.1080/09297040802220029

Toplak, M. E., West, R. F., & Stanovich, K. E. (2013). Do performance- based measures and ratings of executive function assess the same construct?. *Journal Of Child Psychology And Psychiatry*, *54*(2), 131-143. doi:10.1111/jcpp.12001

van der Sluis, S., de Jong, P. F., & van der Leij, A. (2007). Executive functioning in children, and its relations with reasoning, reading, and arithmetic. *Intelligence*, *35*(5), 427-449. doi:10.1016/j.intell.2006.09.001

Visser S., Danielson M., Bitsko R. et al. (2013). Trends in the parent-report of health care provider-diagnosis and medication treatment for ADHD disorder: United States, 2003–2011. *Journal of the American Academy of Child and Adolescent Psychiatry*. doi: 10.1016/j.jaac.2013.09.001.

Vohs, K. D., Baumeister, R. F., Schmeichel, B. J., Twenge, J. M., Nelson, N. M., & Tice, D. M. (2008). Making choices impairs subsequent self-control: A limited-resource account of

decision making, self-regulation, and active initiative. *Journal Of Personality And Social Psychology*, *94*(5), 883-898. doi:10.1037/0022-3514.94.5.883

Welsh, M. C., Pennington, B. F., & Groisser, D. B. (1991). A normative-developmental study of executive function: A window on prefrontal function in children. *Developmental Neuropsychology*, *7*(2), 131-149. doi:10.1080/87565649109540483

Wilder, S. (2014). Effects of parental involvement on academic achievement: A meta-synthesis. *Educational Review, 66*(3), 377-397.

Yeager, M., & Yeager, D. (2013). *Executive function and child development*. New York, NY, US: WW Norton & Co.

Yeniad, N., Malda, M., Mesman, J., van IJzendoorn, M. H., & Pieper, S. (2013). Shifting ability predicts math and reading performance in children: A meta-analytical study. *Learning And Individual Differences*, *23*1-9. doi:10.1016/j.lindif.2012.10.004

Yin, R. K. (2014). Case Study Research and Design and Methods (5th ed.). Thousand Oaks, CA: Sage.

Zelazo, P., Craik, F. M., & Booth, L. (2004). Executive function across the life span. *Acta Psychologica*, *115*(2-3), 167-183. doi:10.1016/j.actpsy.2003.12.005

Zelazo, P., & Müller, U. (2002). Executive function in typical and atypical development. In U. Goswami (Ed.), *The Wiley-Blackwell handbook of childhood cognitive development (2nd ed.)* (pp. 574-603). Wiley-Blackwell.

Appendix A

Consent/Assent Forms

PARENTAL CONSENT FORM TO PARTICIPATE IN RESEARCH

CONSENT TO PARTICIPATE IN: HOMEWORK, ORGANIZATION AND PLANNING SKILLS (HOPS) INTERVENTION

I understand that I have been asked to participate in and have my child participate in a program of research being conducted by Lise Huppler of the Department of Education of Concordia University (1455 de Maisonneuve Blvd. W. Montreal, Québec, Canada, H3G 1M8) and supervised by Dr. Miranda D'Amico.
Contact information: Lise Huppler, 514-831-0549, lhuppler@lcc.ca.

A. PURPOSE

I have been informed that the purpose of the research is to examine the effectiveness of the Homework, Organization and Planning Skills (HOPS) intervention, by Joshua M. Langberg, which is designed to improve the planning, organizing and homework completion of middle-school students. The intervention is designed to teach the students strategies and skills, as well as develop a functional organizational and homework management system to circumvent their organizing and planning difficulties. The intervention is a one-on-one eight-week program at the rate of two 30-minute sessions per week for a total 16 sessions. The sessions may take place at mutually convenient times for the family and the researcher at the school. The intervention also involves two parent meetings, after sessions 5 and after session 13. These meetings are to both inform you of the systems and content introduced to your child and to involve you in the process of releasing organization and planning responsibility to your child.

B. PROCEDURES

- I understand that I will be asked to participate in three 15-minute interviews with the instructor, one prior to the intervention, another following the intervention and a third 6 weeks after the end of the intervention. The interview questions pertain to the homework completion, planning of academic long-term projects and time management skills of your child.

- I understand that I will be given three 10-15-minute questionnaires to complete, one prior to the intervention, another following the intervention and a third 6 weeks after the end of the intervention.

- I understand that my child will be asked to participate in three 15-minute interviews with the instructor, one prior to the intervention, another following the intervention and a third 6 weeks after the end of the intervention. The interview questions pertain to the homework completion, planning of academic long-term projects and time management skills of my child.

- I understand that my child will be given three 10-15-minute questionnaires to complete, one prior to the intervention, another following the intervention and a third 6 weeks after the end of the intervention.

- I understand that my child will be involved in an 8-week instructional program that will take place at mutually convenient times at the rate of two 30-minute sessions per week for a total 16 sessions at the school during the 2014-2015 academic year.

- I understand that the intervention also involves two parent meetings, after sessions 5 and after session 13. These meetings are to both inform me of the systems and content introduced to my child and to involve me in the process of releasing organization and planning responsibility to my child.

- I understand that the content of the sessions of the HOPS program will be introduced as follows:

Session	Content	
1	Establishing a Materials Organization Baseline	The teacher will assess the student's locker, schoolbag and organizing system.
2	Introducing the HOPS Material System	The teacher will show the student how to use the one-binder system, with a folder for each subject.
3	Introducing the HOPS Homework Management System	The student will learn to use the homework management planner, agenda and collect teacher initials for properly recorded homework
4	Using the HOPS Systems Effectively	Catch up session.
5	Developing a Home-Based Reward System	The student will choose non-monetary rewards that they can claim for points accumulated using the homework management system.
HOPS Intervention Parent Meeting 1		
6	Maintaining the Organization System	The student and teacher will problem-solve issues with the system.
7	Planning an Studying for Tests	The student will learn to accurately record and plan for studying of tests in advance.
8	Preparing to Complete Long-Term Projects	The student will learn to accurately record and plan the completion of long-term projects in advance.
9	Use After-School Time Efficiently	The student will learn to manage time after school efficiently to increase homework completion.
10	Refining the After-School Activities Plan	The student and teacher will problem-solve any issues with the after-school planning schedule.
11	Refining the Organization and Homework Plans	Catch up session.
12	Introducing Self-Management	The student will learn to use a checklist to self-assess the success of their use of the different elements of the program (e.g. organization, homework planning, etc.)
13	Expanding the Home-Based System	The teacher will explain how the system can be expanded into the home and how parents can help the student with their self-monitoring.
HOPS Intervention Parent Meeting 2		

14	Troubleshooting Self-Management Plans	The student and teacher will problem-solve the self-management system.
15	Reviewing Student Progress and Planning Ahead	The teacher and student will look at the charted results of the different checklists and discuss plans of independent use of the program.
16	Celebrating Student Progress	The student and teacher enjoy a session together to talk or engage in an activity of the student's choice.

C. RISKS AND BENEFITS

- I understand that the study presents low to no risk to my child and myself and that my child might benefit from increased organization, planning and homework completions skills.

D. CONDITIONS OF PARTICIPATION

- I understand that I am free to withdraw my consent and discontinue the use of my child and my data for the study at anytime without negative consequences.

- I understand that my participation and my child's participation in this study is confidential, which means that only the researcher will know my real identity and that of my child's, but that our identities will not be disclosed. Pseudonyms will be used to protect identities.

- I understand that the data from this study may be published. Published data may include individual results and direct quotes from the interviews.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN AND HAVE MY CHILD PARTICIPATE IN THIS STUDY.

CHILD NAME _____

MY NAME (please print) _____

SIGNATURE _____

If at any time you have questions about the proposed research, please contact the study's Principal Investigator: Lise Huppler, 514-831-0549, lhuppler@lcc.ca.

If at any time you have questions about your rights as a research participant, please contact the Research Ethics and Compliance Advisor, Concordia University, 514.848.2424 ex. 7481 ethics@alcor.concordia.ca

TEACHER CONSENT FORM TO PARTICIPATE IN RESEARCH

CONSENT TO PARTICIPATE IN: HOMEWORK, ORGANIZATION AND PLANNING SKILLS (HOPS) INTERVENTION

I understand that I have been asked to participate in a program of research being conducted by Lise Huppler of the Department of Education of Concordia University (1455 de Maisonneuve Blvd. W. Montreal, Québec, Canada, H3G 1M8) and supervised by Dr. Miranda D'Amico.
Contact information: Lise Huppler, 514-831-0549, lhuppler@lcc.ca.

A. PURPOSE

I have been informed that the purpose of the research is to examine the effectiveness of the Homework, Organization and Planning Skills (HOPS) intervention designed to improve the planning, organizing and homework completion of middle-school students with Attention-Deficit/Hyperactivity Disorder. The intervention is designed to teach the students strategies and skills, as well as develop a functional organizational and homework management system to circumvent their organizing and planning difficulties. The intervention is a one-on-one eight-week program at the rate of two 30-minute sessions per week for a total 16 sessions. The sessions may take place at mutually convenient times for the family and the researcher at the school.

B. PROCEDURES

- I understand that I will be given one 10-15-minute questionnaire to complete, prior to the intervention.

- I understand that I will be asked to participate in one 15-minute interview with the instructor, prior to the intervention. The interview questions pertain to the homework completion, planning of academic long-term projects and time management skills of the child.

- I understand that I will be given one 10-15-minute questionnaire to complete, at the completion of the intervention.

- I understand that I will be asked to participate in one 15-minute interview with the instructor, at the completion of the intervention. The interview questions pertain to the homework completion, planning of academic long-term projects and time management skills of the child.

- I understand that I will be given one 10-15-minute questionnaire to complete, six weeks following the completion of the intervention.

- I understand that I will be asked to participate in one 15-minute interview with the instructor, six weeks following the completion of the intervention. The interview questions pertain to the homework completion, planning of academic long-term projects and time management skills of the child.

C. RISKS AND BENEFITS

- I understand that the study presents low to no risk and that the student might benefit from increased organization, planning and homework completions skills.

D. CONDITIONS OF PARTICIPATION

- I understand that I am free to withdraw my consent and discontinue the use of my data for the study at anytime without negative consequences.

- I understand that my participation in this study is confidential, which means that only the researcher will know my real identity, but my identity will not be disclosed. Pseudonyms will be used to protect my identity.

- I understand that the data from this study may be published. Published data may include individual results and direct quotes from the interviews.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print) _____

SIGNATURE _____

If at any time you have questions about the proposed research, please contact the study's Principal Investigator: Lise Huppler, 514-831-0549, lhuppler@lcc.ca.

If at any time you have questions about your rights as a research participant, please contact the Research Ethics and Compliance Advisor, Concordia University, 514.848.2424 ex. 7481 ethics@alcor.concordia.ca

STUDENT CONSENT FORM TO PARTICIPATE IN RESEARCH

CONSENT TO PARTICIPATE IN: HOMEWORK, ORGANIZATION AND PLANNING SKILLS (HOPS) INTERVENTION

I understand that I have been asked to participate in a program of research being conducted by Lise Huppler of the Department of Education of Concordia University (1455 de Maisonneuve Blvd. W. Montreal, Québec, Canada, H3G 1M8) and supervised by Dr. Miranda D'Amico.
Contact information: Lise Huppler, 514-831-0549, lhuppler@lcc.ca.

A. PURPOSE

I have been explained that the purpose of the research is to look at how well a program called Homework, Organization and Planning Skills (HOPS) will help to improve planning, organizing and homework completion of middle-school students with Attention-Deficit/Hyperactivity Disorder. The program is meant to teach the students strategies and skills, as well as develop a strong organizational and homework management system to help them with their organizing and planning difficulties. The intervention is a one-on-one eight-week program. There will be two 30-minute sessions per week for a total 16 sessions. The sessions may take place at a time that works well for the family and the teacher at the school.

B. PROCEDURES

- I understand that I will be asked to participate in three 15-minute interviews with the teacher, one prior to the program, another following the program and a third 6 weeks after the end of the program. During the interview, we will talk about school related activities, such as my organizing skills, how I do my homework and how I manage my time.

- I understand that I will be given three 10-15-minute questionnaires to complete, one prior to the program, another following the program and a third 6 weeks after the end of the program.

- I understand that I will be involved in an 8-week program that will take place at times that are convenient for the teacher and for me. I understand that I will have two 30-minute sessions per week for a total 16 sessions during the 2014-2015 academic year and that they will take place at school in the researcher's private office.

- I understand that the program also involves two parent meetings, after sessions 5 and after session 13. These meetings are to inform my parents of the systems we use in HOPS, to let them know about my progress and to involve my parents in the program.

- I understand that the content of the sessions of the HOPS program will be introduced like this:

Session	Content	
1	Establishing a Materials Organization Baseline	The teacher will assess the student's locker, schoolbag and organizing system.
2	Introducing the HOPS Material System	The teacher will show the student how to use the one-binder system, with a folder for each subject.
3	Introducing the HOPS Homework Management System	The student will learn to use the homework management planner, agenda and collect teacher

		initials for properly recorded homework
4	Using the HOPS Systems Effectively	Catch up session.
5	Developing a Home-Based Reward System	The student will choose non-monetary rewards that they can claim for points accumulated using the homework management system.
HOPS Intervention Parent Meeting 1		
6	Maintaining the Organization System	The student and teacher will problem-solve issues with the system.
7	Planning an Studying for Tests	The student will learn to accurately record and plan for studying of tests in advance.
8	Preparing to Complete Long-Term Projects	The student will learn to accurately record and plan the completion of long-term projects in advance.
9	Use After-School Time Efficiently	The student will learn to manage time after school efficiently to increase homework completion.
10	Refining the After-School Activities Plan	The student and teacher will problem-solve any issues with the after-school planning schedule.
11	Refining the Organization and Homework Plans	Catch up session.
12	Introducing Self-Management	The student will learn to use a checklist to self-assess the success of their use of the different elements of the program (e.g. organization, homework planning, etc.)
13	Expanding the Home-Based System	The teacher will explain how the system can be expanded into the home and how parents can help the student with their self-monitoring.
HOPS Intervention Parent Meeting 2		
14	Troubleshooting Self-Management Plans	The student and teacher will problem-solve the self-management system.
15	Reviewing Student Progress and Planning Ahead	The teacher and student will look at the charted results of the different checklists and discuss plans of independent use of the program.
16	Celebrating Student Progress	The student and teacher enjoy a session together to talk or engage in an activity of the student's choice.

C. RISKS AND BENEFITS

- I understand that the study presents low to no risk and that I might benefit from increased organization, planning and homework completions skills.

D. CONDITIONS OF PARTICIPATION

- I understand that I am free to stop participating in the program whenever I want and that no one will be upset or mad at me. I can either tell or email the teacher that I would like to stop the program. If I choose to stop, my information will not be part of the study.

- I understand that my participation in this study is confidential. This means that if my information is used in the study, only the teacher will know who I am. A fake name will be used in the study so that no know one reading it will know who I am.

- I understand that the information from this study may be published, such as my results on the questionnaires or things that I have said during the interviews.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print) _____

SIGNATURE _____

If at any time you have questions about the proposed research, please contact the study's Principal Investigator: Lise Huppler, 514-831-0549, lhuppler@lcc.ca.

If at any time you have questions about your rights as a research participant, please contact the Research Ethics and Compliance Advisor, Concordia University, 514.848.2424 ex. 7481 ethics@alcor.concordia.ca

Appendix B

Ethics Form

Summary Protocol Form (SPF)

Office of Research – Research Ethics Unit – GM 900 – 514-848-2424 ext. 7481 – oor.ethics@concordia.ca – www.concordia.ca/offices/oor.html

Important Information for All Researchers

Please take note of the following before completing this form:

- You must not conduct research involving human participants until you have received your Certification of Ethical Acceptability for Research Involving Human Subjects (Certificate).
- In order to obtain your Certificate, your study must receive approval from the appropriate committee:
  - Faculty research, and student research involving greater than minimal risk is reviewed by the University Human Research Ethics Committee (UHREC).
  - Minimal risk student research is reviewed by the College of Ethics Reviewers (CER; formerly the "Disciplinary College"), except as stated below.
  - Minimal risk student research conducted exclusively for pedagogical purposes is reviewed at the departmental level. **Do not use this form for such research.** Please use the Abbreviated Summary Protocol Form, available on the Office of Research website referenced above, and consult with your academic department for review procedures.
- Research funding will not be released until your Certificate has been issued, and any other required certification (e.g. biohazard, radiation safety) has been obtained. For information about your research funding, please consult:
  - Faculty and staff: Office of Research
  - Graduate students: School for Graduate Studies
  - Undergraduate students: Financial Aid and Awards Office or the Faculty or Department
- Faculty members are encouraged to submit studies for ethics review online on ConRAD, which can be found in the MyConcordia portal.
- If necessary, faculty members may complete this form and submit it by e-mail to oor.ethics@concordia.ca along with all supporting documentation. Student researchers must use this form, except for departmental review. Please note:
  - Handwritten forms will not be accepted.
  - Incomplete or omitted responses may result in delays.

- This form expands to accommodate your responses.

- Please allow the appropriate amount of time for your study to be reviewed:
  - UHREC meets on the second Thursday of each month. You must submit your study 10 days before the meeting where it is to be reviewed. You will normally receive a response within one week of the meeting. Please confirm the deadline and date of the meeting with the staff of the Research Ethics Unit.
  - CER reviews require approximately 14 days.
- Research must comply with all applicable laws, regulations, and guidelines, including:
  - The *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*
  - The policies and guidelines of the funding/award agency
  - The *Official Policies of Concordia University*, including the *Policy for the Ethical Review of Research Involving Human Participants, VPRGS-3*.
- The Certificate is valid for one year. In order to maintain your approval and renew your Certificate, please submit an Annual Report Form one month before the expiry date that appears on the Certificate. You must not conduct research under an expired Certificate.
- Please contact the Manager, Research Ethics at 514-848-2424 ext. 7481 if you need more information on the ethics review process or the ethical requirements that apply to your study.
- A new SPF is required only if the amendment represents a major change to the study.

Additional Information for Student Researchers

- If your research is part of your faculty supervisor's research, as approved, please have him or her inform the Research Ethics Unit via e-mail that you will be working on the study.
- If your research is an addition to your faculty supervisor's study, please have him or her submit an amendment request, and any revised documents via e-mail. You must not begin your research until the amendment has been approved.

1. Basic Information

Study Title: Executive Functioning Deficits: A Remedial Intervention for Middle School Students with Organizing and Planning Difficulties

Principal Investigator: Lise Huppler

Principal Investigator's Status:

- Concordia faculty or staff
- Visiting scholar
- Affiliate researcher
- Postdoctoral fellow
- PhD Student
- X Master's student
- Undergraduate student
- Other (please specify):

Type of submission:

- X New study
- Modification or an update of an approved study.
- Approved study number (e.g. 30001234):

Where will the research be conducted?

- X Canada
- Another jurisdiction:

2. Study Team and Contact Information*

Role	**Name**	**Institution† / Department / Address‡**	**Phone #**	**e-mail address**
Principal Investigator	Lise Huppler	Child Studies	514-831-0549	lhuppler@lcc.ca
Faculty supervisor§	Miranda D'Amico	Education	514-848-2424 ext. 2040	miranda@education.concordia.ca
Committee member|	Elsa Lo	Education	NA	elsa.lo@education.concordia.ca
Committee member|	Arpi Hamalian	Education	514-848-2424 Ext. 2014	arpi@education.concordia.ca
Additional Team Members°				

Notes:

* If additional space is required, please submit a list of team members as a separate document.

†For team members who are external to Concordia only.
‡For individuals based at Concordia, please provide only the building and room number, e.g. GM-910.03.
§For student research only.
|For research conducted by PhD and Master's students only.
°Please include all co-investigators and research assistants.

3. Project and Funding Sources

Please list all sources of funds that will be used for the research. Please note that fellowships or scholarships are not considered research funding for the purposes of this section.

Funding Source	Project Title*	Grant Number†	Award Period	
			Start	End

Notes:
* Please provide the project title as it appears on the Notice of Award or equivalent documentation.
† If you have applied for funding, and the decision is still pending, please enter "applied".

4. Other Certification Requirements

Does the research involve any of the following (check all that apply):

Controlled goods or technology

Hazardous materials or explosives

Biohazardous materials

Human biological specimens

Radioisotopes, lasers, x-ray equipment or magnetic fields

Protected acts (requiring professional certification)

A medical intervention, healthcare intervention or invasive procedures

Please submit any certification or authorization documents that may be relevant to ethics review for research involving human participants.

5. Lay Summary

Please provide a brief description of the research in everyday language. The summary should make sense to a person with no discipline-specific training, and it should not use overly technical terms. Please do not submit your thesis proposal or grant application.

Current statistics show that students with attention-deficit/hyperactivity disorder (ADHD) have a difficult time with the transition to high school due to executive functioning deficits, particularly in regards to organization and planning (Langberg, Epstein, Altaye et al., 2008; Raggi, Chronis-Tuscano, Fishbein, & Groomes, 2009). The purpose of the study is to determine the effects of an intervention, the Homework, Organization and Planning Skills (HOPS) program, by Joshua M. Langberg, designed to help

students with AHDH in grade 7 and 8 circumvent difficulties in organization and planning (Langberg, 2011). It will also explore the integration of a homework management and agenda application used by students on the iPad into the HOPS program. This will provide insight on the benefits of the HOPS program and whether it is feasible to use it in conjunction with a homework management and agenda application on the iPad. This application is submitted in partial fulfillment of the requirements of the Masters of Arts in Child Studies. My specific research questions are as follows:

1. What are the effects of the HOPS intervention on planning and organizing skills on middle-school children with ADHD
    a. What aspects are most effective?
    b. What aspects are least effective?
2. What is the effect of integrating a homework management and agenda application on an iPad into the HOPS program on its efficacy?

The study is a qualitative inquiry, which will involve four to six students from a private school setting in Montreal over the 2014-2015 academic school year. For each student participant, I will implement a one-on-one eight-week program with each student, at the rate of two 30-minute sessions per week for a total 16 sessions. The intervention also includes two sessions to inform parents of the progress and content of the program. These 30-minute meetings are scheduled after session 5 and after session 13. Please refer to Appendix A for an overview of the timeline of the study and the content covered in each session. The expectations are that the students will improve their materials organization, homework management and completion and planning of schoolwork skills.

Although the intervention needs further testing, initial studies have shown positive results. Langberg, Epstein, Urbanowicz, Simon and Graham (2008) evaluated the intervention with thirty-seven middle school students. Researchers used highly trained undergraduate college students to deliver the HOPS as an after-school program. According to parent ratings, participants made significant improvements in both material and homework organization, and the students also demonstrated small to moderate increases in their overall grade average. Several other studies have yielded similar positive results (Langberg, Epstein, Becker, Girio-Herrera, & Vaughn, 2012; Langberg, Vaughn, Williamson, Epstein, Girio-Herrera, & Becker, 2011).

Data collection will include semi-structured interviews with the student, one or both parents and a teacher will be conducted before the intervention, at the end of the intervention and six weeks after the end of the intervention, and the Behavior Rating Inventory of Executive Functioning (BRIEF) will be administered to the student, one or both parents and a teacher before the intervention, at the end of the intervention and six weeks after the end of the intervention. More details are available in a subsequent section.

The principal investigator and MA student is a resource teacher at the school. I have been working in the resource department for five years, and have experience working with Middle-School students with both learning and behavioral difficulties and especially with the targeted population that is, children with Attention-Deficit/Hyperactive Disorder (ADHD). As such, I have experience implementing both in-class and after school learning and remedial interventions similar to the HOPS program proposed here and communicating with parents.

Note: The study has been accepted by the school's Board of Directors (see Appendix I) and I have been granted permission of the use of the intervention in this study by the author, Joshua M. Langberg, for the purpose of my Masters of Arts in Child Studies.

6. Scholarly Review

Has this research received favorable review for scholarly merit?

For faculty research, funding from a granting agency such as CIHR, FQRSC, or CINQ is considered evidence of such review. Please provide the name of the agency. For students, a successful defense of a thesis or dissertation is considered evidence of such review. Please provide the date of your defense.

X Yes — The application is submitted in partial fulfillment of my Masters of Arts in Child Studies. The proposal has been successfully defended and the thesis defense date is TBA.

No

If you answered no, please submit a Scholarly Review Form, available on the Office of Research website. For studies to be conducted at the PERFORM Centre, please submit the Scientific Review Evaluator Worksheet.

7. Research Participants

Will any of the participants be part of the following categories?

X Minors (individuals under 18 years old)
Individuals with diminished mental capacity
Individuals with diminished physical capacity
Members of Canada's First Nations, Inuit, or Métis peoples
Vulnerable individuals or groups (vulnerability may be caused by limited capacity, or limited access to social goods, such as rights, opportunities and power, and includes individuals or groups whose situation or circumstances make them vulnerable in the context of the research project, or those who live with relatively high levels of risk on a daily basis)

a) Please describe potential participants, including any inclusion or exclusion criteria.

All student participants will be in grade seven and eight with an age range of 12-14. Students must meet following criteria: (a) attendance at the participating middle school; (b) a diagnostic of ADHD as determined by a certified professional in a psycho-educational report. The researcher is a teacher at the school, in the resource department, but does not teach in those grade levels and thus will not be a teacher of the participants.

All eight students with a diagnosis of ADHD in the participating school's grade 7 and 8 will be given an opportunity to benefit from the intervention during the 2014-2015 academic year.

Parents of the students are also involved in the data collection (described in a later section) and are required to attend two 30-minute meetings to learn about the program. They are notified about this involvement in the initial letters, during the initial phone call, and on the consent form.

Teachers are involved at the data collection (described in a later section) and are notified about this involvement during the initial oral explanation and on the consent form.

b) Please describe in detail how potential participants will be identified, and invited to participate. Please submit any recruitment materials to be used, for example, advertisements or letters to participants.

The intervention is designed to be implemented on a one-on-one basis and between four and six children are expected to be recruited. Students and parents may or may not know the researcher. Parents of eligible students meeting all criteria will be contacted by phone, provided with an explanation of the purpose and procedure of the study and have a chance to ask any questions pertaining to the study. I have taught different subjects and grades, so there is a possibility that I have worked with these students in the past, or that the students recognize me and there is a possibility that the student and parent do not know or recognize me at all. For this reason, parents will be verbally reassured that they have absolutely no obligations to participate in the study and that the program is entirely independent from their child's education and experience at the school. A follow-up email also containing an explanation of the study and the intervention will be sent to parents following the phone discussion. Please see Appendix C for the explanation of the study and the intervention that the parent will receive by email.

c) Please describe in detail what participants will be asked to do as part of the research, and any procedures they will be asked to undergo. Please submit any instruments to be used to gather data, for example questionnaires or interview guides.

As mentioned above, the study will be a qualitative inquiry, which will involve four to six students from a private school setting in Montreal. For each student participant, the investigator will implement a one-on-one eight-week program with each student, at the rate of two 30-minute sessions per week for a total 16 sessions. This means the student participants will be spending eight hours in all in intervention sessions. Interviews and sessions are one-on-one and will take place in the practitioner's private office. Parents and students must sign consent forms to participate in the study. Please refer to Appendix A for an overview of the timeline of the study and the content covered in each session.

Parent Meetings

The intervention also includes two 30-minute sessions to inform parents of the progress and content of the program. These meetings are scheduled after session 5 and after session 13. Parents will not receive information about BRIEF scores or about the information that teachers have provided in their interviews. During the sessions, students receive and are rated on several checklists and a weekly planner. The checklists reflect different areas that are being addressed. For example, students will receive the Organization Checklist (APPENDIX B) that will be administered every time the student sees the practitioner. For every checkmark (if the child attains the criteria of an item), the student receives one point. During the parent meetings, youth will share with their parents what has been covered in the HOPS sessions. They then present the checklists and explain the rationale behind their use. They will show their parents their progress within the checklists. The role of the practitioner is to facilitate the student's presentation and to tackle parental questions/concerns that might arise, as outlined by the scripts in the manual.

Data Collection

Semi-structured interviews with the student, one or both parents and the teacher will be conducted before the intervention, at the end of the intervention and six weeks after the end of the intervention. Questions of the semi-structured interviews will pertain to the current organization, planning and homework completion of the child. The interviews are conducted without the student and will take place in the practitioner's private office. Teachers will be interviewed on a one-on-one basis and both parents will be interviewed together, or on a one-on-one basis if only one parent wishes to participate. The interviews will be audio-recorded, and transcribed and eventually coded for analysis. Please see Appendix D for the interview questions for the students, parents and teachers at all three data collection points.

Also, the Behavior Rating Inventory of Executive Functioning (BRIEF) will be administered to the student, one or both parents and a teacher before the intervention, at the end of the intervention and six weeks after the end of the intervention. The BRIEF is rating scale designed to evaluate the everyday behaviours associated with deficits in executive functioning skills in individuals aged 5-18 years. A subsection of the rating, the Metacognitive Index, includes five scales that are directly related to the behaviours targeted by the HOPS program and will be indicative of the efficacy of the intervention. The scales are: (a) Initiate (ability to initiate tasks or activities appropriately), (b) Working Memory, task persistence and ability to retain information while completing a task, (c) Plan-Organize, ability to set goals and develop a plan of action based on anticipation of future circumstances, (d) Organization of Materials, ability to keep materials and workspace organized and (e) Monitoring, ability to assess performance and monitor behaviours (Gioia et al. 2000). Items on the parent and teacher rating provide frequency-based ratings on a three-point scale, which comprises "Never", "Sometimes" and "Often". Raw scores are converted to T-scores and higher T-scores indicate a higher degree of dysfunction. The BRIEF includes 86 items and takes approximately 10-15-minutes to complete. There is a Parent Form, a Teacher Form and a Self-Rating Form. Please see Appendix E for the questions from all three BRIEF forms.

The confidentiality, access and storage of data are described in a later section.

d) Do any of the research procedures require special training, such as medical procedures or conducting interviews on sensitive topics or with vulnerable populations? If so, please indicate who will conduct the procedures and what their qualifications are.

NA

8. Informed Consent

a) Please explain how you will solicit informed consent from potential participants. Please submit your written consent form. In certain circumstances, oral consent may be appropriate. If you intend to use an oral consent procedure, please submit a consent script and describe how consent will be documented.

Once the parents have verbally agreed or agreed via email to participate in the study, and to have their child participate in the study, the researcher will meet with the student to explain the study and obtain assent. A detailed overview of each HOPS session and parent meeting will be presented to students. They will also receive examples of some of the activities they will be asked to do. They will be informed that their parents will be attending two parent meetings during which students will present their progress. The overview will reflect the chart that can be found in Appendix A.

Parents and teachers will consent and students will assent to participate in the study by written forms. Please see Appendices F, G and H for consent and assent forms. Note: While it will be necessary to have both parents consent for their child's participation in the study, only one parent's participation is necessary for implementation of the program. If both parents wish to participate, they may do so.

Please note: written consent forms and oral consent scripts should follow the "I understand" format, as shown in the sample consent on the OOR website. Please include all of the information shown in the sample, adapting it as necessary for your research.

b) Does your research involve individuals belonging to cultural traditions in which individualized consent may not be appropriate, or in which additional consent, such as group consent or consent from community leaders, may be required? If so, please describe the appropriate format of consent, and how you will solicit it.

NA

9. Deception

Does your research involve any form of deception of participants? If so, please describe the deception, explain why the deception is necessary, and explain how participants will be de-briefed at the end of their participation.

Please note that deception includes giving participants false information, withholding relevant information, and providing information designed to mislead.

Deception will not be involved in this study.

10. Participant Withdrawal

a) Please explain how participants will be informed that they are free to discontinue at any time, and describe any limitations on this freedom that may result from the nature of the research.

Parents and teachers will be told orally during the recruitment phase and in writing in the initial informational email that they are free to discontinue their participation and that of their child's at any time. Students will be told orally during the initial meeting. Furthermore, it will be stipulated in both the parents' and teachers' consent form and in the students' assent forms.

b) Please explain what will happen to the information obtained from a participant if he or she withdraws. For example, will their information be destroyed or excluded from analysis if the participant requests it? Please describe any limits on withdrawing a participant's data, such as a deadline related to publishing data.

If the parent, teacher or student wishes to withdraw their own participation, or if a parent wishes to withdraw their child's participation, at any time before the thesis is submitted, their data will be removed from the analysis and destroyed immediately; hard copies will be shredded and electronic copies will be permanently deleted from the computer. Once the thesis is submitted the researcher will be unable to remove the data. However, all names and identities will remain anonymous and data will

be destroyed; hard copies will be shredded and electronic copies will be permanently deleted from the computer.

11. Risks and Benefits

a) Please identify any foreseeable benefits to participants.

Students will likely benefit from their involvement in this study by having organization and planning skills improve. Parents will likely benefit from their involvement in this study by increasing their knowledge in organization and planning strategies for their child and by having their child's organization and planning skills improve. Teachers will benefit from their involvement in this study by increasing their knowledge of organization and planning strategies for their student.

b) Please identify any foreseeable risks to participants, including any physical or psychological discomfort, and risks to their relationships with others, or to their financial well-being.

Some parents and students may feel some discomfort sharing their experiences in regards to homework completion and organization and planning skills. Some students may feel discomfort showing the researcher the current state of their bags and lockers, as well their knowledge and use of planning and organizing strategies. Some teachers may feel some discomfort discussing the student's organization and planning deficits. Also, though unlikely, it is possible that the program may exacerbate a difficult relationship between a parent and child since the program involves the parents by informing them on their child's progress

c) Please describe how the risks identified above will be minimized. For example, if individuals who are particularly susceptible to these risks will be excluded from participating, please describe how they will be identified. Furthermore, if there is a chance that researchers will discontinue participants' involvement for their own well-being, please state the criteria that will be used.

The researcher will create a respectful and supportive environment, free of judgment and criticism. Students, teachers and parents showing discomfort will be reminded that they can choose to withdraw participation at any time. Should a student, parent or teacher show extreme difficulty and/or discomfort during the interviews, or at any other point in the study, the researcher will discuss the option of withdrawing with the participant. Also, the researcher will ensure that parents approach the program as an opportunity for the child to learn and that they should not have unrealistic expectations. In other words, the researcher should intervene during the initial conversation and during the parent meetings. For example, during the first parent teacher meeting, if a parent interjects with a negative statement, the researcher should redirect the parent with a positive comment and an explanation of the process. Examples of this type of interjection, and how to redirect the parent are available in the manual (Langberg, 2011).

d) Please describe how you will manage the situation if the risks described above are realized. For example, if referrals to appropriate resources are available, please provide a list. If there is a chance that participants will need first aid or medical attention, please describe what arrangements have been made.

In the unlikely event that a participant appears to feel overly emotional or anxious, or if parent-child relationships appear to be overly tense, the full-time school counselor or an off-site psychologist would be contacted for additional support.

12. Reportable Situations and Incidental Findings

a) Is there a chance that the research might reveal a situation that would have to be reported to appropriate authorities, such as child abuse or an imminent threat of serious harm to specific individuals? If so, please describe the situation.

Please note that legal requirements apply in such situations. It is the researcher's responsibility to be familiar with the laws in force in the jurisdiction where the research is being conducted.

It is unlikely that the research will reveal such a situation, but in the event that a situation arises that requires reporting to appropriate authorities, said appropriate authorities will be contacted immediately.

b) Is there a chance that the research might reveal a material incidental finding? If so, please describe how it would be handled.

Please note that a material incidental finding is an unanticipated discovery made in the course of research but that is outside the scope of the research, such as a previously undiagnosed medical or psychiatric condition that has *significant welfare implications for the participant or others.*

It is unlikely that a material incidental finding will be discovered; however, if such a finding should arise, the appropriate health care resources will be offered to the participant.

13. Confidentiality, Access and Storage

a) Please describe the path of your data from collection to storage to its eventual archiving or disposal, including details on short and long-term storage (format, duration, and location), measures taken to prevent unauthorized access, who will have access, and final destination (including archiving, or destruction).

Interviews will be audio-recorded and transcribed to hard copy. All hard copy data, consent and assent forms, and student handouts will be kept locked in the researcher's filing cabinet of her office. All electronic copy data and email correspondence will be on the researcher's password-locked computer. Only the researcher will have access to these files at all time.
Once the data is analyzed, it will be kept locked in the researcher's filing cabinet and password-locked in the researcher's computer until the researcher has defended her work. Then, all data will be destroyed; hard copies will be shredded and electronic copies will be permanently deleted from the computer.

b) Please identify the access that the research team will have to participants' identity:

	Anonymous	The information provided never had identifiers associated with it, and the risk of identification of individuals is low, or very low.
	Anonymous results, but identify who participated	The information provided never had identifiers associated with it. The research team knows participants' identity, but it would be impossible to link the information provided to link the participant's identity.
	Pseudonym	Information provided will be linked to an individual, but that individual will only provide a fictitious name. The research team will not know the real identity of the participant.
	Coded	Direct identifiers will be removed and replaced with a code on the information provided. Only specific individuals have access to the code, meaning that they can re-identify the participant if necessary.
	Indirectly identified	The information provided is not associated with direct indentifiers (such as the participant's name), but it is associated with information that can reasonably be expected to identify an individual through a combination of indirect identifiers (such as place of residence, or unique personal characteristics).
X	Confidential	The research team will know the participants' real identity, but it will not be disclosed.
	Disclosed	The research team will know the participants' real identity, and it will be revealed in accordance with their consent.
	Participant Choice	Participants will be able to choose which level of disclosure they wish for their real identity.
X	Other (please describe)	Due to the setting of the study (small private school), the students will likely be aware of each other's participation.

c) Please describe what access research participants will have to study results, and any debriefing information that will be provided to participants post-participation.

Once the data is collected and interpreted and the thesis is written and defended, the study will be made available through the Concordia libraries and be accessible to all participants.

d) Would the revelation of participants' identity be particularly sensitive, for example, because they belong to a stigmatized group? If so, please describe any special measures that you will take to respect the wishes of your participants regarding the disclosure of their identity.

The identities of the participants are confidential at all times. The teachers and parents of each child are already aware of the student's diagnosis and since the researcher works with many students in the school, with or without diagnosis, working with the researcher will not expose the student's diagnosis.

e) In some research traditions, such as action research, and research of a socio-political nature, there can be concerns about giving participant groups a "voice". This is especially the case with groups that have been oppressed or whose views have been suppressed in their cultural location. If these concerns are relevant for your participant group, please describe how you will address them in your project.

NA

14. Multi-Jurisdictional Research

Does your research involve researchers affiliated with an institution other than Concordia? If so, please complete the following table, including the Concordia researcher's role and activities to be conducted at Concordia. If researchers have multiple institutional affiliations, please include a line for each institution.

Researcher's Name	**Institutional Affiliation**	**Role in the research (e.g. principal investigator, co-investigator, collaborator)**	**What research activities will be conducted at each institution?**

15. Additional Issues

Bearing in mind the ethical guidelines of your academic or professional association, please comment on any other ethical concerns, which may arise in the conduct of this research. For example, are there responsibilities to participants beyond the purposes of this study?
NA

16. Signature and Declaration

I hereby declare that this Summary Protocol Form accurately describes the research project or scholarly activity that I plan to conduct. Should I wish to make minor modifications to this research, I will submit a detailed modification request or in the case of major modifications, I will submit an updated copy of this document via e-mail to the Research Ethics Unit for review and approval.

I agree to conduct all activities conducted in relation to the research described in this form in compliance with all applicable laws, regulations, and guidelines, including:

- The *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*
- The policies and guidelines of the funding/award agency
- The *Official Policies of Concordia University*, including the *Policy for the Ethical Review of Research Involving Human Participants, VPRGS-3*.

Please note that Concordia faculty members may submit this form in MS Word or PDF format from their official Concordia e-mail address. Such a submission will be deemed equivalent to an ink-on-paper signature.

Principal Investigator Signature: Lise Huppler

Date: October, 14th, 2014

Faculty Supervisor Statement (required for student Principal Investigators):

I have read and approved this project. I affirm that it has received the appropriate academic approval, and that the student investigator is aware of the applicable policies and procedures governing the ethical conduct of human participant research at Concordia University. I agree to provide all necessary supervision to the student. I allow release of my nominative information as required by these policies and procedures in relation to this project.

Faculty Supervisor Signature: Miranda D'Amico

Date: October, 8th, 2014

Appendix C

Session-by-session Outline of HOPS Intervention

Session-by-session Outline of HOPS Intervention

Timeline		
Pre-Intervention	Recruitment	
Pre-Intervention	Parent and Teacher Consent and Student Assent	
Pre-Intervention	Data Collection: - Administration of the BRIEF to parents, teacher and student - Interviews for parents, teacher and student	
Intervention Begins		
Session 1	Establishing a Materials Organization Baseline	The teacher will assess the student's locker, schoolbag and organizing system.
Session 2	Introducing the HOPS Material System	The teacher will show the student how to use the one-binder system, with a folder for each subject.
Session 3	Introducing the HOPS Homework Management System	The student will learn to use the homework management planner, agenda and collect teacher initials for properly recorded homework
Session 4	Using the HOPS Systems Effectively (Catch up period if necessary)	Catch up session.
Session 5	Developing a Reward System	The student will choose non-monetary rewards that they can claim for points accumulated using the homework management system.
HOPS Intervention Parent Meeting 1		The parents will learn from the student about their progress within the homework management system and how they can become involved to assist them.
Session 6	Maintaining the Organization System	The student and teacher will problem-solve issues with the system.
Session 7	Planning an Studying for Tests	The student will learn to accurately record and plan for studying of tests in advance.
Session 8	Preparing to Complete Long-Term Projects	The student will learn to accurately record and plan the completion of long-term projects in advance.

Session 9	Use After-School Time Efficiently	The student will learn to manage time after school efficiently to increase homework completion.
Session 10	Refining the After-School Activities Plan	The student and teacher will problem-solve any issues with the after-school planning schedule.
Session 11	Refining the Organization and Homework Plans (Catch up period if necessary)	Catch up session.
Session 12	Introducing Self-Management	The student will learn to use a checklist to self-assess the success of their use of the different elements of the program (e.g. organization, homework planning, etc.)
Session 13	Expanding the Home-Based System	The teacher will explain how the system can be expanded into the home and how parents can help the student with their self-monitoring.
HOPS Intervention Parent Meeting 2		Parents will learn from the student of their progress and how they can help the student with their self-monitoring.
Session 14	Troubleshooting Self-Management Plans	The student and teacher will problem-solve the self-management system.
Session 15	Reviewing Student Progress and Planning Ahead	The teacher and student will look at the charted results of the different checklists and discuss plans of independent use of the program.
Session 16	Celebrating Student Progress	The student and teacher enjoy a session together to talk or engage in an activity of the student's choice.
Intervention Concludes		
Post-Intervention	Data Collection: - Administration of the BRIEF to parents, teacher and student - Interviews for parents, teacher and student	
Maintenance (Six weeks post-intervention)	Data Collection: - Administration of the BRIEF to parents, teacher and student - Interviews for parents, teacher and student	

Appendix D

Parent Information Letter

Dear Mr X and Mrs Y,

As discussed on the phone, I am currently enrolled in a Masters in Child Studies, under the supervision of Dr. Miranda D'Amico, at Concordia University and I am examining an intervention designed to help Middle-School students with ADHD with organizing and planning deficits. I will be running an eight-week one-on-one intervention that is designed to help students with planning and organizing issues using the Homework, Organization and Planning Skills (HOPS) program by Joshua M. Langberg. Difficulties in planning and organizing can mean difficulty keeping their desk, schoolbag and locker organized, keeping track of their homework, handing in their homework on time and planning long-term projects.

The intervention is designed to teach the students strategies and skills, as well as develop a functional organizational and homework management system to circumvent their organizing and planning difficulties. The intervention is a one-on-one eight-week program at the rate of two 30-minute sessions per week for a total 16 sessions. The sessions may take place at mutually convenient times for the family and the researcher at the school. The intervention also involves two parent meetings, after sessions 5 and after session 13. These meetings are to both inform you of the systems and content introduced to your child and to involve you in the process of releasing organization and planning responsibility to your child and last about 30 minutes.

You will find attached a brief outline of the content of each session and the parental consent forms to be filled out by both parents should you decide to participate. Please keep in mind that your child and you are free to discontinue participation in the intervention at any point. Also, please keep in mind that whether you choose to have your child participate in the study or not will in no way impact on your child's experience and education at this school and that you

will not be treated any differently by the researcher. You are under no obligations whatsoever to have your child participate in this study.

Thank you for your support, Lise Huppler

Appendix E

Interview Questions

Interview Questions

Pre-Intervention Parent Interview

1. How much time does your child spend on homework on a weekday?
2. How much time does your child spend on homework during the weekend?
3. Is homework a source of conflict in your household?
4. Can you comment on the level of support your child requires to:
    a. initiate doing homework?
    b. complete homework?
    c. hand homework in on time?
5. How organized is your child in regards to:
    a. school materials (including bag, locker and home office)?
    b. agenda and homework management system?
    c. time management for homework and studying?
    d. homework completion?
6. How are you hoping this program will help your child?

Pre-Intervention Student Interview

1. How much time does you spend on homework on a weekday?
2. How much time does you spend on homework during the weekend?
3. Is homework a source of conflict in your household?
4. How much help do you need to:
    a. begin doing homework?
    b. complete homework?
    c. hand homework in on time?

5. How organized are you in regards to:
    a. school materials (including bag, locker and home office)?
    b. agenda and homework management system?
    c. time management for homework and studying?
    d. homework completion?
6. Have you ever used an iPad? Have you ever used an iPad app to keep track of your homework?
7. How are you hoping this program will help you?

Pre-Intervention Teacher Interview

1. Can you comment on the student's level of homework completion, both in terms of quality and punctuality?
2. Can you comment on the student's level of independence in regards to handing homework in on time and of adequate quality?
3. Can you comment on the student's organization in regards to:
    a. school materials (including bag, locker and home office)?
    b. agenda and homework management system?
    c. time management for homework and studying?
    d. homework completion?
4. How are you hoping this program will help the student?

Post-Intervention Parent Interview

1. How much time does your child spend on homework on a weekday?
2. How much time does your child spend on homework during the weekend?
3. Is homework a source of conflict in your household?

4. Can you comment on the level of support your child requires to:
    a. initiate doing homework?
    b. complete homework?
    c. hand homework in on time?
5. How organized is your child in regards to:
    a. school materials (including bag, locker and home office)?
    b. agenda and homework management system?
    c. time management for homework and studying?
    d. homework completion?
6. How well did the HOPS program interact with the iPad app, Cogito, used by the school? Did they conflict or complement?
7. Did you feel the HOPS benefitted your child? If so, in what respect? If not, what would it have needed to be more beneficial?
8. Do you have any recommendations for its implementation?

Post-Intervention Student Interview

1. How much time does you spend on homework on a weekday?
2. How much time does you spend on homework during the weekend?
3. Is homework a source of conflict in your household?
4. How much help do you need to:
    a. begin doing homework?
    b. complete homework?
    c. hand homework in on time?
5. How organized are you in regards to:

   a. school materials (including bag, locker and home office)?
   b. agenda and homework management system?
   c. time management for homework and studying?
   d. homework completion?

6. How well did the HOPS program interact with the iPad app, Cogito, used by the school? Did they conflict (did not work well together) or complement (worked well together)?
7. Do you feel the HOPS helped you? If so, how? If not, why not?
8. Do you have any recommendations for me (the implementer) so that the program can work better?

Post-Intervention Teacher Interview

1. Can you comment on the student's level of homework completion, both in terms of quality and punctuality?
2. Can you comment on the student's level of independence in regards to handing homework in on time and of adequate quality?
3. Can you comment on the student's organization in regards to:
   a. school materials (including bag, locker and home office)?
   b. agenda and homework management system?
   c. time management for homework and studying?
   d. homework completion?
4. How well did the HOPS program interact with the iPad app, Cogito, used by the school? Did they conflict or complement?
5. Did you feel the HOPS benefitted this student? If so, in what respect? If not, what would it have needed to be more beneficial?

6. Do you have any recommendations for its implementation?

Maintenance Parent Interview

1. How much time does your child spend on homework on a weekday?
2. How much time does your child spend on homework during the weekend?
3. Is homework a source of conflict in your household?
4. Can you comment on the level of support your child requires to:
    a. initiate doing homework?
    b. complete homework?
    c. hand homework in on time?
5. How organized is your child in regards to:
    a. school materials (including bag, locker and home office)?
    b. agenda and homework management system?
    c. time management for homework and studying?
    d. homework completion?
6. Do you feel that the HOPS had a short-term or long-term effect on your child?

Maintenance Student Interview

1. How much time does you spend on homework on a weekday?
2. How much time does you spend on homework during the weekend?
3. Is homework a source of conflict in your household?
4. How much help do you need to:
    a. begin doing homework?
    b. complete homework?
    c. hand homework in on time?

5. How organized are you in regards to:
    a. school materials (including bag, locker and home office)?
    b. agenda and homework management system?
    c. time management for homework and studying?
    d. homework completion?
6. Do you feel that the HOPS had a short-term or long-term effect on you?

7. Post-Intervention Teacher Interview

1. Can you comment on the student's level of homework completion, both in terms of quality and punctuality?
2. Can you comment on the student's level of independence in regards to handing homework in on time and of adequate quality?
3. Can you comment on the student's organization in regards to:
    a. school materials (including bag, locker and home office)?
    b. agenda and homework management system?
    c. time management for homework and studying?
    d. homework completion?
4. Do you feel that the HOPS had a short-term or long-term effect on this student?

Appendix F

BRIEF Forms

BRIEF Self-Rating Form

Over the past 6 months, how often has each of the following behaviors been a problem?

N- Never S-Sometimes O- Often

1. I have trouble sitting still
2. I have trouble accepting a different way to solve a problem with schoolwork, friends, tasks, etc.
3. When I am given three things to do, I remember only the first or last
4. I start projects (such as homework, recipe) without the right materials
5. I overreact to small problems
6. My desk/workspace is a mess
7. I am not aware of how my behavior affects or bothers others
8. I have problems finishing long-term projects (such as papers, book reports)
9. I get upset by a change in plans
10. I get in other peoples' faces
11. I try the same approach to a problem over and over even when it does not work (I get stuck)
12. I have a short attention span
13. I don't plan ahead for future activities
14. I have angry outbursts
15. I lose things (such as keys, money, wallet, homework, etc.)
16. I don't notice when my behavior causes negative reactions until it is too late
17. I have difficulty finishing a task on my own
18. I get disturbed by an unexpected change (such as teacher, daily activity)
19. I have problems waiting my turn
20. I am slower than others when completing my work
21. I forget to hand in my homework, even when it's completed
22. I have trouble getting ready for the day (such as school, work, etc.)
23. I become tearful easily
24. I forget to bring home from school what I need (such as homework, assignments, books, materials, etc.)
25. I am unaware of my behavior when I am in a group
26. I have problems completing my work
27. It bothers me when I have to deal with changes (routines, foods, places)
28. I interrupt others
29. I am not creative in solving a problem
30. I have trouble with jobs or tasks that have more than one step
31. I don't plan ahead for school assignments
32. I have outbursts for little reason
33. My backpack/schoolbag is disorganized
34. I have a poor understanding of my own strengths and weaknesses (I try things that are too difficult or too easy for me)
35. I have many unfinished projects
36. I have trouble getting used to new situations (such as classes, groups, friends)
37. I am impulsive

38. I test poorly even when I know the correct answers
39. I forget what I am doing in the middle of things
40. I have problems organizing my written work
41. My eyes fill with tears quickly over little things
42. I am late for many activities (such as school, appointments, meals)
43. I don't know when my actions bother others
44. I have good ideas but do not get the job done (I lack follow-through)
45. I have trouble changing from one activity to another
46. I get out of my seat at the wrong times
47. I get caught up in details and miss the main idea
48. When I am sent to get something, I forget what I am supposed to get
49. I don't think ahead about possible problems
50. I react more strongly to situations than my friends
51. I have difficulty finding my clothes, glasses, shoes, books, pencils, etc.
52. I make careless errors
53. I have trouble finishing tasks (such ·as chores, homework)
54. I get out of control more than my friends
55. I have difficulty coming up with different ways of solving a problem
56. I have trouble staying on the same topic when talking
57. I have trouble carrying out the things that are needed to reach a goal (such as saving money for special items, studying to get good grades, etc.)
58. I get upset easily
59. My work is sloppy
60. I don't check my work for mistakes
61. I blurt things out
62. I get stuck on one topic or activity
63. I have trouble remembering things, even for a few minutes (such as directions, phone numbers, etc.)
64. I have problems getting started on my own
65. I get upset over small events
66. I talk too loudly
67. I have trouble thinking of a different way to solve a problem when I get stuck
68. I change topics in the middle of a conversation
69. I have trouble prioritizing my activities
70. I overreact
71. I act too wild or "out of control"
72. I have problems showing what I know during tests
73. I forget instructions easily
74. I have problems balancing school, work, and other activities
75. I am easily overwhelmed
76. I think or talk out loud when working
77. It takes me longer to complete my work
78. I am absentminded
79. I talk at the wrong time
80. I don't think of consequences before acting

BRIEF Teacher Form

Over the past 6 months, how often has each of the following behaviors been a problem?

N- Never S-Sometimes O- Often

1. Overreacts to small problems
2. When given three things to do, remembers only the first or last
3. Is not a self-starter
4. Cannot get a disappointment, scolding, or insult off his/her mind
5. Resists or has trouble accepting a different way to solve a problem with schoolwork, friends, chores, etc.
6. Becomes upset with new situations
7. Has explosive, angry outbursts
8. Has a short attention span
9. Needs to be told "no" or "stop that'
10. Needs to be told to begin a task even when willing
11. Loses lunch box, lunch money, permission slips, homework, etc.
12. Does not bring home homework, assignment sheets, materials, etc.
13. Acts upset by a change in plans
14. Is disturbed by change of teacher or class
15. Does not check work for mistakes
16. Cannot find clothes, glasses, shoes, toys, books, pencils, etc.
17. Has good ideas but cannot get them on paper
18. Has trouble concentrating on chores, schoolwork, etc.
19. Does not show creativity in solving a problem
20. Backpack is disorganized
21. Is easily distracted by noises, activity, sights, etc.
22. Makes careless errors
23. Forgets to hand in homework, even when completed
24. Resists change of routine, foods, places, etc.
25. Has trouble with chores or tasks that have more than one step
26. Has outbursts for little reason
27. Mood changes frequently
28. Needs help from adult to stay on task
29. Gets caught up in details and misses the big picture
30. Has trouble getting used to new situations (classes, groups, friends)
31. Forgets what he/she was doing
32. When sent to get something, forgets what he/she is supposed to get
33. Is unaware of how his/her behavior affects or bothers others
34. Has problems corning up with different ways of solving a problem
35. Has good ideas but does not get job done (lacks follow-through)
36. Leaves work incomplete
37. Becomes overwhelmed by large assignments
38. Does not think before doing

39. Has trouble finishing tasks (chores, homework)
40. Thinks too much about the same topic
41. Underestimates time needed to finish tasks
42. Interrupts others
43. Is impulsive
44. Gets out of seat at the wrong times
45. Does not notice when his-her behaviour causes negative reactions
46. Is unaware of own behavior when in a group
47. Gets out of control more than friends
48. Reacts more strongly to situations than other children
49. Starts assignments or chores at the last minute
50. Has trouble getting started on homework or chores
51. Mood is easily influenced by the situation
52. Does not plan ahead for school assignments
53. Gets stuck on one topic or activity
54. Has poor understanding of own strengths and weaknesses
55. Talks or plays too loudly
56. Written work is poorly organized
57. Acts too wild or "out of control"
58. Has trouble putting the brakes on his/her actions
59. Gets in trouble if not supervised by an adult
60. Has trouble remembering things, even for a few minutes
61. Work is sloppy
62. After having a problem, will stay disappointed for a long time
63. Does not take initiative
64. Angry or tearful outbursts are intense but end suddenly
65. Does not realize that certain actions bother others
66. Small events trigger big reactions
67. Cannot find things in room or school desk
68. Leaves a trail of belongings wherever he/she goes
69. Does not think of consequences before acting
70. Has trouble thinking of a different way to solve a problem when stuck
71. Leaves messes that others have to clean up
72. Becomes upset too easily
73. Has a messy desk
74. Has trouble waiting for turn
75. Does not connect doing tonight's homework with grades
76. Tests poorly even when knows correct answers
77. Does not finish long-term projects
78. Has poor handwriting
79. Has to be closely supervised
80. Has trouble moving from one activity to another
81. Is fidgety
82. Cannot stay on the same topic when talking
83. Blurts things out
84. Says the same things over and over

85. Talks at the wrong time
86. Does not come prepared for class

BRIEF Parent Form

Over the past 6 months, how often has each of the following behaviours been a problem?

N- Never S-Sometimes O- Often

1. Overreacts to small problems
2. When given three things to do, remembers only the first or last
3. Is not a self-starter
4. Leaves playroom a mess
5. Resists or has trouble accepting a different way to solve a problem with schoolwork, friends, chores, etc.
6. Becomes upset with new situations
7. Has explosive, angry outbursts
8. Tries the same approach to a problem over and over even when it does not work
9. Has a short attention span
10. Needs to be told to begin a task even when willing
11. Does not bring home homework, assignment sheets, materials, etc.
12. Acts upset by a change in plans
13. Is disturbed by change of teacher or class
14. Does not check work for mistakes
15. Has good ideas but cannot get them on paper
16. Has trouble coming up with ideas for what to do in play or free time
17. Has trouble concentrating on chores, schoolwork, etc.
18. Does not connect doing tonight's homework with grades
19. Is easily distracted by noises, activity, sights, etc.
20. Becomes tearful easily
21. Makes careless errors
22. Forgets to hand in homework, even when completed
23. Resists change of routine, foods, places, etc.
24. Has trouble with chores or tasks that have more than one step
25. Has outbursts for little reason
26. Mood changes frequently
27. Needs help from an adult to stay on task
28. Gets caught up in details and misses the big picture
29. Keeps room messy
30. Has trouble getting used to new situations (classes, groups, friends)
31. Has poor handwriting
32. Forgets what he/she was doing
33. When sent to get something, forgets what he/she is supposed to get
34. Is unaware of how his/her behavior affects or bothers others
35. Has good ideas but does not get job done (lacks follow-through)
36. Becomes overwhelmed by large assignments

37. Has trouble finishing tasks (chores, homework)
38. Acts wilder or sillier than others in groups (birthday parties, recess)
39. Thinks too much about the same topic
40. Underestimates time needed to finish tasks
41. Interrupts others
42. Does not notice when his/her behaviour causes negative reactions
43. Gets out of seat at the wrong times
44. Gets out of control more than friends
45. Reacts more strongly to situations than other children
46. Starts assignments or chores at the last minute
47. Has trouble getting started on homework or chores
48. Has trouble organizing activities with friends
49. Blurts things out
50. Mood is easily influenced by the situation
51. Does not plan ahead for school assignments
52. Has poor understanding of own strengths and weaknesses
53. Written work is poorly organized
54. Acts too wild or "out of control"
55. Has trouble putting the brakes on his/her actions
56. Gets in trouble if not supervised by an adult
57. Has trouble remembering things, even for a few minutes
58. Has trouble carrying out the actions needed to reach goals (saving money for special item, studying to get a good grade)
59. Becomes too silly
60. Work is sloppy
61. Does not take initiative
62. Angry or tearful outbursts are intense but end suddenly
63. Does not realize that certain actions bother others
64. Small events trigger big reactions
65. Talks at the wrong time
66. Complains there is nothing to do
67. Cannot find things in room or school desk
68. Leaves a trail of belongings wherever he/she goes
69. Leaves messes that others have to clean up
70. Becomes upset too easily
71. Lies around the house a lot ("couch potato")
72. Has a messy closet
73. Has trouble waiting for turn
74. Loses lunch box, lunch money, permission slips, homework, etc.
75. Cannot find clothes, glasses, shoes, toys, books, pencils, etc.
76. Tests poorly even when knows correct answers
77. Does not finish long-term projects
78. Has to be closely supervised
79. Does not think before doing
80. Has trouble moving from one activity to another
81. Is fidgety

82. Is impulsive
83. Cannot stay on the same topic when talking
84. Gets stuck on one topic or activity
85. Says the same things over and over
86. Has trouble getting through morning routine in getting ready for school