Socio-Emotional Resilience in Children with ADHD: Final Report

Prepared for:
Alberta Center for Child, Family, and Community Research (ACCFCR)

Respectfully Submitted by:
Emma A. Climie, Ph.D.
Assistant Professor
School & Applied Child Psychology
Faculty of Education
University of Calgary
Some children have difficulty paying attention at school and remaining focused on assigned tasks. These children seem unable to concentrate on what they are supposed to be doing, and teachers and parents are often frustrated by their short attention spans and subsequent behavioural challenges. These children are often identified as “bad” or misbehaved, and seen as problematic in the classroom. Subsequently, these children are frequently referred to a pediatrician or psychologist to further explore the possibility of a diagnosis of Attention-Deficit/Hyperactivity Disorder.

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder of behavioural inhibition hindering self-regulation, organization of behaviour, and goal-directed thought and action\(^1,2\). It is characterized by pervasive inattention and/or hyperactivity-impulsivity and may result in significant functional impairment, including difficulties at home, at school, in the community, and with peers. The Centers for Disease Control (2010) estimates that 5.4 million American youth ages 4-17 have been diagnosed with ADHD by a healthcare professional and 2.7 million youth aged 4-17 are currently receiving medication treatment for the disorder. These numbers represent a 22% increase in identification between 2003 and 2007. In school-aged children, estimates of the prevalence of this disorder are between 3-10% of children\(^3-5\) with a 3:1 over-representation of boys to girls\(^6\). More recent statistics have estimated that the lifetime prevalence of ADHD may be closer to 9%\(^7\). In Canada, Scahill and Schwab-Stone (2000)\(^8\) reported that ADHD prevalence rates in school-aged children may range from 5-10% and in recent years, ADHD has become one of the most commonly diagnosed disorders in children.
Children with ADHD can have a range of short- and long-term outcomes. Although some of these children lead successful lives across multiple domains of well-being, others struggle considerably across academic, behavioural, or social-emotional domains. Work in the area of resilience suggests that children are influenced by multiple factors on a number of levels, from their own profile of strengths and weaknesses to factors at the family, neighbourhood, school, and societal levels. Resilience is broadly defined as an individual's ability to cope with stressful or adverse situations (e.g., homelessness, low socio-economic status, parental mental health issues, or diagnosed childhood disorder). Masten notes that an individual’s resilient nature may result in an individual "bouncing back" to a previous state of normal functioning after an adverse event, or simply not show negative effects as a result of the event (e.g., lack of development of anxiety or depression).

Understanding outcomes for any given population requires consideration of the variables that may act as protective or risk factors both singularly and in interaction with one another. The current study proposed to adapt concepts of resilience and thriving to the special population of children with ADHD. Our primary goal is to identify the most salient factors at the individual, family, and community levels that can support competence and well-being in this highly heterogeneous population. Following Masten’s argument for the importance of measuring developmentally appropriate outcomes, outcomes for this study will encompass functioning within two broad domains: social functioning and emotional well-being. Moreover, both positive and negative aspects of these domains will be considered (e.g., lack of depression as well as presence of positive affect).

Additionally, there is a trend towards increasing the understanding of positive aspects of psychology, rather than continually emphasizing psychopathology. Indeed, this strengths-based
approach to understanding children focuses primarily on “ability” versus “disability” and acknowledges that even though a child may have areas of weakness, he or she will also have areas of individual or personal strength. From an intervention perspective, it may be beneficial to utilize these islands of competence to support areas of difficulty to allow a child to overcome difficulties and become more successful.

From a research perspective, the development and support of a model of resilience for ADHD allows and encourages other researchers to continue work within this area to achieve a multifaceted, comprehensive understanding of the implications of the presence or absence of any given factor. Moreover, achieving this goal has two major implications for front-line practice in the field. First, a comprehensive understanding of protective factors that promote positive outcomes can allow practitioners to identify, early on, those children most vulnerable and at-risk for negative outcomes. Given the high prevalence of children with ADHD\(^8\), combined with the perpetual limited resources available (e.g., budget cuts, funding shortages, demands on teacher or practitioner time), identifying those children who would most benefit from intensive support can help to ensure the most efficient use of these resources. Second, identifying those factors at the individual, family, or community levels that promote positive or negative outcomes can lead to the recognition of new areas that could be targeted in interventions or support programs for these families. Currently, behavioural-based parent and child interventions for ADHD represent the most currently implemented intervention practices; however, a broader understanding of the interactions and implications of factors at the multiple levels of influence can allow for new and creative means of increasing the thriving potential of these children.
Research Goals

To better understand the abilities as well as challenges of children with ADHD, a number of research goals were identified. These goals were primarily exploratory in nature and aimed to provide a more general understanding of the protective factors that may support children with ADHD in achieving success. Three overarching goals of this work were delineated:

1. To create a comprehensive model of thriving and resilience in school-aged children with Attention/Deficit/Hyperactivity Disorder (ADHD). Through the exploration of multidimensional pathways, this model will incorporate typical child development milestones as well as fundamental deficits in ADHD in order to create a parsimonious resilience model.

2. To identify general and ADHD-specific protective and compensatory factors at individual, family, and community levels that may aid children with ADHD in achieving greater positive outcomes, specifically identifying factors that may support their social and emotional functioning.

3. To gain a greater understanding of the ADHD population while identifying those who may be at higher risk for having more negative outcomes. Subsequently, it will also be important to provide a focus for treatment and management of ADHD symptoms.

Implications

This section delineates the implications of the Strengths project, as the results of these studies will be of particular interest to both parents and teachers. As well, general commentary on the overall generalizability of the current research sample and research findings is also provided.

The current study emphasizes that children with ADHD and typically developing children are, in fact, more similar than they are different. There are clear areas in which children
with ADHD demonstrate comparable performance to typically developing children. Although finding insignificant results is less meaningful from a research perspective, insignificant difference between children with ADHD and typically-developing peers is actually substantial in and of itself in the context of the current study. Such results indicate that children with ADHD are no different than their peers across a number of areas and actually demonstrate comparable performance in areas thought to be weaker. For example, children with ADHD and typically-developing children demonstrate no significant differences in social-emotional knowledge (i.e., emotional intelligence), indicating that children with ADHD have the same knowledge as children without ADHD but may have more difficulty applying their knowledge appropriately.

Additionally, this study has provided an opportunity for parents and teachers to reflect on the strengths and positives in a population of children that is typically portrayed in a negative light. However, it should also be noted that, given the scope of the Strengths project, many of the individual research studies are still ongoing and more specific and detailed results are yet to be determined at the current time. Ongoing results are pending and will be shared with the research community upon conclusion of the studies.

**Parents**

Parents of children with ADHD may be particularly interested in the results of this study. Indeed, given the deficit-focused view of much of the research into ADHD, many participating parents expressed gratitude and appreciation for the focus of our research and the emphasis on the abilities, rather than disabilities, of their children with ADHD.

In particular, parents may be interested to learn that the abilities of children with ADHD are not that different than those without ADHD. Specifically, given the large number of individual projects that were completed as a result of this project, very few revealed any
significant areas of deficit for children with ADHD. Indeed, across multiple studies, children with ADHD were found to be comparable to their same-aged peers. For parents, understanding that children with ADHD can and are successful at school is an important take-home message. Given the heterogeneity of children in general and particularly those with ADHD, it is important to understand each child’s individual strengths to capitalize on areas of weakness.

Of noteworthy interest to parents, across a number of studies within this project, the role of the family network and parent-child relationships was consistently highlighted. In particular, the importance of a strong parent-child relationship was noted as a protective factor against the potential onset of serious behaviour problems. As well, social support from the family was also found to play an important role in children’s lives. Finally, on a child-reported strengths inventory, connection with family and family values was rated as being particularly important by children with ADHD. Together, these results speak to the important role that parents play in supporting their children and the influential factors that may help them succeed.

**Teachers**

These results may be of particular interest to teachers and specifically those who have children with ADHD in their classrooms. Although we had a limited number of teacher participants (approximately 1/3 of the total number of child/family participants), the information that they provided was invaluable.

For teachers, it is important to highlight the abilities of children with ADHD. Many teachers struggle with the behavioural challenges presented in the classroom and are easily frustrated with these children. As such, presenting a more positive view of these children and emphasizing not only their strengths but noting areas of weakness may allow teachers to better understand the learning and abilities of children with ADHD in their classrooms. In particular,
teacher results spoke to the need to continue and expand education efforts surrounding children with ADHD. Of the respondents, almost 75% indicated that they would like to receive more information on working with children with ADHD in the classroom. In addition, many parents felt as though their child’s classroom teacher may benefit or be interested in learning about a strengths-based manner in which to work with children with ADHD.

**Generalizability**

It should be noted that although every effort has been made to include children with ADHD and their families from a variety of backgrounds, there may be inherent differences in children and families who sought out participation in this research as compared to those who did not. As well, given the positive focus of this project, it is possible that parents’ reports may be biased by the positive nature of the project (i.e., parents may have over-reported positive aspects or minimized negative behaviours in their children given the nature and focus of the research project). As such, although efforts were made to ensure generalizability of these findings to a broader ADHD population, results should be taken with caution as every child with ADHD demonstrates unique strengths and limitations and may or may not fit within the profiles of children who participated in this project.

**Approach**

This study was a large-scale project that aimed to better understand children with ADHD and their families. This broad scope necessitated involvement of a number of individuals to ensure that the project was well-managed, maintained integrity, and was successful. Although the initial thought was to include a wide variety of variables to test structural equation models (i.e., research goal #1), this was soon found to be not feasible given the size of the population we had anticipated collecting. As well, given the necessity of creating manageable thesis and
dissertation projects, the scale of the research became more focused on individual factors and research questions (as per research goal #2).

**Team-based Research**

A significant number of individuals have been involved in the creation and implementation of this research project. Although this project was initially granted to Dr. Vicki Schwean, she left the University of Calgary in June, 2011 to take a new position at the University of Western Ontario. As such, Dr. Emma Climie, previously a co-applicant on this project, became the project holder and primary investigator for this grant and continued to develop and expand the team-based approach to research.

Through the generous funding from the Alberta Center for Child Family and Community Research (ACCFCR), the Strengths project has allowed for the completion of two Master’s theses (Colleen Stinson and Meghan Taylor) and two doctoral dissertations (Emma Climie and Sarah Mastoras) thus far. Three additional Master’s theses are in progress (Whitney Reed, David Ki, and Kristi Mitchell; completion summer, 2013), along with one additional doctoral dissertations (Tara Crumpler; completion fall, 2013) and one honours paper (Ashley Schiller; completion April, 2013). In addition, this project has allowed a number of additional students to be involved in the research project through various positions, including research coordinator (Gia Pugilese, Ecaterina Ciugureanu, Gemma Leonard, Christina Gray), independent research project student (France Goulard), and research volunteer (Meagan Keashly, Stacy Thiry). In total, an impressive 18 individuals (including fifteen students and three faculty members) have contributed to this work.
Study Design

This study was designed to be exploratory in nature, with all projects taking a hypothesis-testing approach to research design. Each individual student designed his or her own project and created and tested hypotheses. All projects kept a “strengths-based” approach so as to ensure that we were expanding the literature on the abilities of children with ADHD rather than continually adding to the deficit-focused literature.

Recruitment

Information regarding the study was dispersed throughout the Calgary community through connections with local media, including Global Television, CTV Morning Live, and CBC radio, and community newsletters and family-oriented publications (e.g., Calgary’s Child) that enabled us to distribute information regarding our project and initial results. As well, significant support came from the Children and Adults with Attention Deficit Disorders – Calgary chapter (CHADD-Calgary), the CanLearn Society (formerly Calgary Learning Center), and the Learning Disability Association of Alberta – Calgary chapter (LDAA-Calgary), all of whom actively supported our project and promoted involvement with their families. Finally, a small percentage of our participants came through recruitment with the Calgary Board of Education (CBE), our on-campus psycho-educational assessment clinic, and our online social media presence (i.e., Facebook and Twitter). All interested parents contacted the researchers directly (via phone or email) and were provided with additional information on the study.

Participants

Children were required to meet a number of specific criteria to be eligible to participate in the study that were consistent with those used by many ADHD and child researchers. Specifically, inclusionary criteria for all children included the following four requirements: 1.
Must have resided with their parents or current guardians for at least the previous five years to ensure that guardians could provide adequate information regarding the family history; 2. Must have attended school full-time within an Alberta Education school district at the time of participation; 3. Must not have any indication or previous diagnosis of Autism Spectrum Disorder, psychosis, epilepsy, or significant gross neurological, sensory, or motor impairments; 4. Must have cognitive abilities that fell minimally within the Average range of functioning or higher (Full Scale Intelligence Quotient $\geq 85$) as based on an individually-administered cognitive assessment measure so as to ensure that participants were able to understand the questions asked of them and that performance was not limited by low cognitive abilities.

Additionally, following methods put forth by prominent researchers in the field\textsuperscript{11, 12}, specific additional criteria were identified for the ADHD participants to be eligible to participate: 1. Participants had previously received a diagnosis of ADHD from a psychologist, psychiatrist, or medical doctor (as reported by parent); 2. to address specific ADHD symptomology and severity, DSM-IV-TR\textsuperscript{3} inattentive and hyperactive/impulsive scales on the Conners-3 Rating Scale\textsuperscript{13} Parent Report yielded T-scores greater than or equal to 70 (Very Elevated) on at least one scale and a T-score of 65 (Elevated) on the second scale.

As of March 1, 2013, participants in the final sample included 121 children with ADHD between the ages of 9 years, 1 month and 11 years, 11 months of age ($M = 9.86$ years, $SD = 1.13$) who had previously received a diagnosis of ADHD and 35 typically developing children ($M = 10.12$ years, $SD = 1.06$), as well as parents of all child participants and approximately one-third of the children’s classroom teachers ($N = 42$). It should be noted that data collection is still ongoing to reach the desired targets of 150 children with ADHD and 50 typically developing children and their families. The current sample consisted of slightly more males than the typical
ADHD population with regards to gender, as 100 of the 121 participants were male (82.6%) and only 21 were female. Appendix A (table 1) provides information regarding participant age and IQ scores. The sample also incorporated a number of children with co-morbidities; see Appendix A (table 2) for summary of reported comorbid conditions. It should be noted that 12 children were excluded from the overall project for not meeting required full scale intelligence quotient or ADHD inclusionary criteria or child refusal to complete measures. As well, for each individual project, participant numbers varied based on measures used (e.g., some measures were not used with 8 year olds), specific inclusionary criteria (e.g., only using children diagnosed with ADHD-combined type) or incomplete datasets (e.g., not all measures were completed in the allotted time).

**Measures**

A number of measures were included in the study, allowing for a variety of research questions and analyses. In addition to the inclusionary measures, parents (both mothers and fathers), teacher, and children were asked to complete measures examining the child’s social-emotional, behavioural, and academic abilities. All measures were administered by trained Master’s- and Doctoral-level students in the School and Applied Child Psychology program in the Faculty of Education at the University of Calgary. These measures provided insight into potentially influential factors at individual, family, school, and community levels that may support children with ADHD and their families (see Appendix B for full list of measures).

**Methodology**

Interested parents completed a phone-based pre-screening questionnaire to determine initial eligibility. Children and families who met the inclusion criteria were invited to participate in the study. Most families participated over the course of two sessions (approximately 2-3
hours in length) to allow time for breaks and snacks (as needed). Families were provided with free parking at the university as well as a $25 family-friendly gift card (e.g., Chapters, Cineplex, restaurants) as an acknowledgement of their participation. Children were also able to choose an age-appropriate special toy from the prize box. Approval from the University of Calgary Conjoint Faculties Research Ethics Board (CFREB) was obtained for all aspects of this study.

Assessment measures were administered in a pseudo-random order, with the Wechsler Abbreviated Scale of Intelligence (WASI)\textsuperscript{14} always administered during the first day of assessment to evaluate the cognitive ability inclusionary criterion. For all self-report rating scales, items were read by the researcher to the child, unless the child indicated he or she would like to read independently and was deemed to have adequate reading ability to do so. For children with identified learning disabilities, particularly in reading, effort was made to ensure that participants were comfortable with the examiner and that that child was aware that all questions would be read to them. After completing informed consent paperwork, parents had the option to complete their measures in a quiet room while their child was participating or to take the forms home to complete and return on the second day of testing. Most parents chose to complete the forms during their child’s testing time.

**General Data Analysis**

The design of this project allowed for a number of smaller hypotheses to be tested at an individual level, meaning that the type of data analysis depended on the specific research question(s) being examined (see “Individual Project Summaries” section). Although the initial plan was to have enough participants to conduct modeling analyses (e.g., Structural Equation Modeling), as previously stated, large scale modeling was deemed inappropriate given the sample size and unique characteristics of this population. As such, analyses included planned t-
tests between children with ADHD and their typically-developing peers, as well as t-tests within the ADHD sample. Regression, Analysis of Variance, and Analysis of Covariance analyses were also examined in some research projects.

**Partnerships with Decision Makers and Community Organizations**

A number of connections with community organizations have been developed as a result of this project. Specifically, CHADD-Calgary and LDAA-Calgary became significant partners in this research endeavor. We have had the opportunity to meet with and present our research findings to the families involved in these organizations and engage in significant knowledge translation through invited talks and presentations. As well, collaborations with schools within the CBE as well as charter and private schools has also emerged, allowing for opportunities to connection with a wide variety of interested individuals within the Calgary area and beyond.

**Dissemination Plans**

Primary dissemination of the research findings will come from community presentations, conference presentations, and peer-reviewed and non-peer reviewed publications (i.e., journal articles and book chapters, respectively). Preliminary results from this project have already been presented to community organizations, including LDAA-Calgary and through a public lecture at the University of Calgary. Upcoming community presentations are planned with Community Education Services (Telehealth) through Alberta Health Services, with two individual elementary schools who have asked for a presentation of results, and through a second LDAA-Calgary workshop. See Appendix C for the list of community presentations/ invited lectures.

Research findings have been presented (or are accepted for presentation) at a number of conferences, including the 2012 and 2013 National Association of School Psychologists (NASP) annual conventions, 2010, 2011, 2012, and 2013 Canadian Psychological Association (CPA)
annual conventions, the 2012 CHADD organization annual convention (U.S.A.), and the 2013 Society for Research in Child Development (SRCD) bi-annual convention. See Appendix C for a complete list of conference presentations. Funding support from ACCFCR was acknowledged in all presentations. In addition, manuscripts detailing the results of some of the individual projects completed as part of the Strengths Project are in preparation and it is anticipated that three manuscripts will be submitted in summer, 2013.

Finally, it is important to share the findings of this project with the families who have graciously given their time to participate. We have composed two “results newsletters” that have been sent out to families who indicated that they would like to receive a copy of the results from this study. We plan to continue to send these newsletters to interested families so that they continue to see the benefits of their participation in this project.

Results

There have been four individually-completed projects as part of the Strengths Project and six on-going projects that are scheduled to be completed in the summer or fall of 2013. The following section outlines general themes that emerged from the overall research as well as individual descriptions of all thesis or dissertation projects that are part of the on-going research.

Together, these projects focus on identifying areas of strength in children with ADHD. Rather than focusing on deficits or areas in which they perform poorly as compared to typically-developing children, these projects aim to identify areas in which children with ADHD are no different than typically-developing children or actually show collective areas of strength.

Individual Project Summaries

Emotional intelligence and social skills. The purpose of this doctoral dissertation project was to gain an understanding of the emotional intelligence (EI) skills of children with
ADHD and examine how these abilities relate to their social capabilities. As there is limited research on the EI strengths and limitations of school-aged children with ADHD, there is a need to better understand this concept in these children. Additionally, this study examines the influence of EI on behaviours secondarily associated with ADHD, specifically poor social skills.

EI has been conceptualized as “an ability, capacity, skill, or a self-perceived ability to identify, assess, and manage the emotions of one's self, of others, and of groups”15. Two predominant EI theoretical frameworks have emerged in the recent literature, focusing on the ability-based EI model and the trait EI model16. These models look at the “knowing” (ability EI) versus “doing” (trait EI) when it comes to emotional behaviour. Ability theorists focus on what the individual knows to do in a specific situation, regardless of what action is taken (i.e., cognitive-emotional capacity) while trait theorists focus on what individuals would actually do in the situation and whether they would use their knowledge in everyday social situations (i.e., emotional self-efficacy)16. Results from the current study indicated that children with ADHD demonstrated no difference from typically-developing peers in their EI knowledge (ability EI); they generally knew what they should do or how to respond in a given situation. However, children with ADHD did demonstrate some difficulty with actual performance or behavior in some circumstances (trait EI). In other words, while children with ADHD knew how to respond in a given situation, they often did not act accordingly. Instead, behaviors associated with ADHD, such as hyperactivity, impulsivity, and inattention, may have limited their ability to act in the most appropriate manner. These results speak to the need for greater in vivo training for children with ADHD regarding social skills; rather than simply teaching them basic social knowledge, support in real-life social situations may be more beneficial.
Social support. Children’s perceptions of social support from key individuals in their lives (parents, teachers, friends, classmates, and other adults) were evaluated as a potential positive resource in promoting their emotional well-being. Social support describes feelings that one is cared for and can access information, resources, or emotional support from those around them. Social support has been shown to be a valuable resilience factor within other at-risk populations, but has received little attention within the population of children with ADHD. Results from this doctoral dissertation project demonstrated that for children with ADHD, higher perceptions of social support were associated with more positive self-esteem. Specifically, children who reported higher levels of support available to them also reported more positive self-worth, more positive evaluations of their academic and social competence, and a stronger believe in their ability to solve problems. Support specifically from classmates and parents were most strongly associated with these outcomes. Furthermore, perceived social support from parents, classmates, and friends continued to predict higher self-esteem even when the children’s peer status (e.g., peer rejection) was considered. Taken together with the broader literature base on social support, findings suggest that perceived social support, especially from parents and peers, may be helpful in promoting positive self-esteem. From a resilience perspective, this may be especially important for children who face chronic threats to their self-esteem from peer rejection, parent conflict, or academic difficulties that are common among children with ADHD. Although results are preliminary, they provide initial support for the value of considering and nurturing positive and supportive relationships within interventions for children with ADHD.

Theories of intelligence and goal orientations of parents of children with ADHD. Children with ADHD are more prone to giving up or avoiding activities where they may experience frustration, so it is important to identify factors that may help these children to deal
more effectively with frustration. As homework is a known point of frustration for children with ADHD, this doctoral dissertation project will investigate the relationship between beliefs that parents have about intelligence (whether or not it can be improved or changed) and the type of performance goals they choose (goals based on mastery of a task versus performing well); and children’s beliefs, goals, and task choices in the context of homework. Preliminary results indicate that parents of children with ADHD indicate beliefs that intelligence/ability can be improved, but they choose performance/outcome based goals rather than task-mastery. As expected, children with ADHD tended to choose tasks which allowed them to avoid an activity that they may not perform well at. Another important piece to understanding the context of children’s beliefs and behaviours when faced with frustration is the interaction that goes on between the parent and child in a frustrating situation (e.g., homework). Parents’ descriptions of their reactions to hypothetical frustration situations will be analyzed to identify responses used by parents whose children demonstrate positive responses to frustration, which may provide a more in depth understanding of the relationship between beliefs and behaviours. The results of this study will provide important information for researchers and practitioners for the purpose of creating appropriate recommendations and training programs for parents of children with ADHD, specifically those surrounding homework behaviours.

**Creativity and social skills.** This M.Sc. thesis project investigated the constructs of social skills and creativity in children with ADHD-C. Children with ADHD often struggle with social skills starting at a young age. Research has suggested that typically developing children can identify and isolate a child with ADHD within only 30 minutes of interaction. To date, most intervention strategies targeted at improving social skills involve direct social skills training. Although social skills training has produced results such as minimizing behavioural outbursts
and conduct problems, an improvement of social skills beyond these domains of behavioural problems has not been observed. To seek out alternative methods for improving social skills, the area of creativity was examined. If children with higher creative abilities also presented with stronger social skills than those with low creative abilities, the possibility exists that creativity interventions may be beneficial for children with ADHD. Information on social ability was attained via self-report measures completed by both the participating child and his/her parent(s). Creativity was assessed with a measure of figural creativity. It was found that children rated their social skills as significantly higher than did their parents; parents rated their children within the low average range, while children rated themselves within the average range. It was also determined that the children’s figural creativity fell within the average range in comparison to normative data. The primary finding was that there was no significant relationship between the domains of social skills and creativity. However, children with ADHD did exhibit average to high average figural creativity, lending support to the notion that these children are often as bright and creative as their same age peers. These findings suggest that additional research may focus on creativity as a possible strength in children with ADHD, and its relationship with social skills should be investigated further with a more diverse size (e.g., larger sample size).

Fostering resiliency in attachment. This M.Sc. thesis project investigated the constructs of caregiver attachment and resilience in children diagnosed with ADHD. Caregiver attachment, or the deep, enduring bond between caregiver and child, was investigated by comparing the attachment relationship of children with ADHD to a normed typical population. The concept of resilience in children with ADHD was also compared to a typical population. It was discovered that both mothers and fathers of the children involved in this study viewed their attachment with their child as within the secure range; however, there was some variability in
Socio-Emotional Resilience in ADHD

this, with approximately one third of parent participants reporting the attachment relationship to be insecure. Both parents appeared to have similar perspectives on the attachment relationships, while children rated their attachment with each parent similarly. A second goal of this study was to determine if any relationship between attachment and resilience existed in this sample, as it does in the typical population. It was found that there was a partial relationship between these two constructs and that they were linked by the ‘relatedness’ aspect of resilience. This relationship indicates that children with strong attachment security feel that their caregiver understands them, cares about them, is available to them in times of need, and is someone they can share things with. It is apparent that many children with ADHD feel that they have this relationship with their caregivers, which is a substantial protective factor against negative outcomes. Despite some limitations within this study, including small sample size and a reliance on self-report measures, several implications can be noted. Using a strengths-based approach, it is evident that the majority of children with ADHD in our study experienced secure attachment and positive resilience factors, and these two concepts were found to be partially related. As a result, these findings emphasize the importance of fostering positive relationships with challenging children, as this relationship can act as a ‘buffer’ against other risks in their lives.

**Parent-child relationships and conduct problems.** Recent literature suggests that as many as 60% of children with ADHD may develop more serious behavioural issues, such as comorbid Oppositional Defiant Disorder (ODD)\textsuperscript{17}. However, this also means that at least 40% of children with ADHD do not demonstrate these significant behavioural concerns. In keeping with the strengths based perspective of this project, this M.Sc. thesis project will examine potential protective factors against the development of behaviour problems for these children.
Specifically, parent-child relationships, from both the parents’ and the children’s perspectives, will be examined in relation to ratings of child behaviour problems given by the parents.

Preliminary results indicate that mothers who rate their children lower on symptoms of ODD also rate their communication with their child as higher whereas fathers who rate their children lower on externalizing problems and aggression also rate their communication and involvement with their child as higher. These results suggest a relationship between parent-child relationships and behaviour problems. Future results are expected to show a similar type of relationship regarding children’s ratings. The results of this study may have an impact on the way in which parents are encouraged to relate to their children. Furthermore, the interventions that are suggested for children with ADHD may need to be much more family-focused in order to prevent later behaviour problems. This project will be completed in summer, 2013.

**Academic achievement and teacher knowledge of ADHD.** This M.Sc. thesis project investigates whether teachers’ knowledge of ADHD may affect the academic achievement of children with ADHD. In addition, this study is intended to explore whether children’s attitude toward school/teacher plays a role in a relationship between ADHD knowledge and academic achievement. Parents’ and teachers’ knowledge of ADHD is measured by a 20 item true/false survey that was designed to test teachers’ basic knowledge of ADHD.

This study hypothesizes that children with ADHD who have more knowledgeable (in regards to ADHD) teachers will demonstrate higher academic achievement in comparison to children with ADHD who have less knowledgeable teachers. This study also expects children’s attitude toward school/teacher to be a significant mediator between ADHD knowledge and academic achievement. Thus, children with ADHD who have more knowledgeable teachers will
have more positive attitudes toward school/teacher, and this, in turn, may have a positive impact on academic achievement of these children. This project will be completed in summer, 2013.

**Anxiety and social skills in gifted children with ADHD.** Children with ADHD often experience challenges across multiple domains such as social difficulties. These children often struggle to make and keep friends and are frequently rejected by their peers, with negative peer perceptions often developing within minutes of meeting. Although there is an abundance of research on children with ADHD and social skills, there is limited and conflicting research on children with high intellectual quotients (i.e., gifted) and ADHD regarding social functioning. Gifted children tend to have an unequal balance between their high intellectual ability and their emotional level that has not developed to the same degree. Due to their heightened sense of self, gifted children may experience a heightened sense of anxiety and peer rejection.18

Two projects (an honours and M.Sc. thesis, respectively) were designed to examine how anxiety may affect social outcomes in gifted children with ADHD. As there is limited research on the relation between anxiety and gifted children, there is a need to examine the possible influence of anxiety on gifted children’s social skills. Gifted children with ADHD are expected to score higher on anxiety, gifted children with ADHD will have lower social competencies than gifted children, and gifted children with ADHD will have lower social competencies with higher levels of anxiety. Both of these projects will be completed in summer, 2013.

**Executive functions in bilingual ADHD children.** This graduate-level independent research project examined the executive functions (EF) of bilingual children diagnosed with ADHD. EF impairment, including challenges with inhibition, working memory, and cognitive flexibility, is one of the primary underlying factors in ADHD. Some researchers have demonstrated that bilingual children have stronger EF abilities compared to monolingual
children; however, the EF profile of bilingual children diagnosed with ADHD as compared to their monolingual ADHD peers is unknown. This study investigated potential differences between these two groups and the nature of these differences. Preliminary findings indicated no differences between the monolingual and bilingual children, indicating that there appeared to be no “bilingual advantage” in EF for children with ADHD. However, this study was limited by a small sample size and a mixed language bilingual group (i.e., children with a variety of second languages, including French, Mandarin, Ukrainian, etc.) which may have influenced results. Data collection is ongoing for this project in the hopes of being able to re-examine these research questions with a larger and more robust sample.

**Additional Resources**

A list of presented works from this project is appended to this document (see Appendix C). In addition, some recent conference poster presentations are available online on our lab website at www.ucalgary.ca/adhdkids/resultsandpresentations.

Further community resources and supports for parents and families with children with ADHD are available through the CHADD Calgary (http://members.shaw.ca/chaddcalgary/) and national (http://www.chadd.org/) chapters as well as through the CanLearn Society (http://canlearnsociety.ca/), the LDAA-Calgary (http://www.ldaa.net/) and provincial (http://www.ldalberta.ca) chapters, as well as other Calgary area agencies.

**Further Research**

The Strengths Project is the first step in the process of identifying factors that influence success in an at-risk population, specifically children with ADHD. Given the magnitude of this undertaking, the goals of the current project were to identify general factors that may support this population in being successful at home, at school, with their peers, and in their community.
However, it is acknowledged that this project is merely a beginning step in this process. Given the paucity of strengths-based literature in this field and the overabundance of deficit-focused work, the necessary shift from deficit to strength will understandably take time. As such, this project represents one of the first steps in this direction and, while ambitious in nature, has set the stage for pursuing future strengths-based work with children with ADHD.

Future research directions should focus on continuing to identify strengths in children with ADHD. Specifically, although the current study incorporated children ages 8 to 11 years of age, longitudinal work could be extremely beneficial in identifying factors that affect resilience over the long term. For example, does having a supportive family environment or strong parent-child relationships at age nine impact long-term behavioral outcomes (e.g., involvement with youth justice) or predict reduced levels of anxiety or greater academic achievement during adolescence? At this point, answers to these long-term outcomes are not known.

Finally, there is a continued need for community education surrounding the abilities of children with ADHD. Although the researchers have taken significant steps to share results of this project (e.g., community and conference presentations) and will continue to do so (e.g., through the publication of journal articles and book chapters), it is clear that further conversation is required. In particular, a better understanding of teacher knowledge of ADHD may be particularly useful so as to create programming that targets specific misconceptions or areas of need. As well, a better understanding of parents’ knowledge of ADHD may also help in the formulation of parent training and/or parent-child workshops for families.
References and Bibliography


Suggested additional readings

Appendix A – Demographic Information of Participating Children

Table 1. ADHD Participant Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean*</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>9.87 years</td>
<td>1.13</td>
<td>8.00-11.92 years</td>
</tr>
<tr>
<td>Verbal IQ</td>
<td>105.47</td>
<td>15.02</td>
<td>78-144</td>
</tr>
<tr>
<td>Performance IQ</td>
<td>109.20</td>
<td>13.60</td>
<td>80-144</td>
</tr>
<tr>
<td>Full Scale IQ</td>
<td>108.17</td>
<td>12.67</td>
<td>85-143</td>
</tr>
</tbody>
</table>

*standard score, unless otherwise indicated

Table 2. Co-morbid Psychological Diagnoses Reported by ADHD Participant’s Parent*

<table>
<thead>
<tr>
<th>Psychological condition</th>
<th>Number of participants</th>
<th>Percent of total participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>47</td>
<td>43.1</td>
</tr>
<tr>
<td>Learning Disorder</td>
<td>25</td>
<td>22.9</td>
</tr>
<tr>
<td>Did not report</td>
<td>18</td>
<td>16.5</td>
</tr>
<tr>
<td>Oppositional Defiant Disorder</td>
<td>7</td>
<td>6.4</td>
</tr>
<tr>
<td>Developmental Coordination Disorder</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Anxiety</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Obsessive Compulsive Disorder</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>Language Disorder</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>Anxiety and Obsessive Compulsive Disorder</td>
<td>1</td>
<td>0.9</td>
</tr>
</tbody>
</table>

* n = 109 children
Appendix B – Research Measures Completed by Parents, Teachers, and Child Participants

**Parents**
Family Demographic & Participant Information Questionnaire
Diagnostic Interview for Children and Adolescents – 4th edition (DICA-IV) (selected inquiries)
Conners Rating Scale – 3rd edition (Conners-3) – Parent Form
Behaviour Assessment System for Children – 2nd edition (BASC-2) – Parent Form
Social Skills Improvement System (SSIS) – Parent Form
Self-Perception Profile for Children (SPPC) – Parent Form
Resiliency Scale for Children and Adolescents – Parent Form
Parenting Relationships Questionnaire (PRQ)
Behaviour Rating Inventory of Executive Function (BRIEF) – Parent Form
Strengths Assessment Inventory – Parent Form

**Teachers**
Behaviour Assessment System for Children – 2nd edition (BASC-2) – Teacher Form
Conners Rating Scale – 3rd edition (Conners-3) – Teacher Form
Self-Perception Profile for Children (SPPC) – Teacher Form
Resilience in ADHD Teacher Questionnaire

**Children**
Wechsler Abbreviated Scale of Intelligence (WASI)
Woodcock Johnson III Test of Achievement – Battery Brief (WJ-III Brief ACH)
Delis-Kaplan Executive Function System (selected subtests) – D-KEFS
Behaviour Assessment System for Children – 2nd edition (BASC-2) – Self-Report Form
Social Skills Improvement System (SSIS) – Self-Report Form
Self-Perception Profile for Children (SPPC) – Self-Report Form
Resiliency Scale for Children and Adolescents – Self-Report Form
Torrent’s Test of Creative Thinking - visual
Emotional Quotient Inventory: Youth Version (Short Version) (EQi:YV (S))
Strengths Assessment Inventory – Self-report form
MSCEIT Youth Version
Participant information – child version
Appendix C – Conference Presentations

Invited Presentations/Lectures
May, 2013 – Glendale School teachers
March, 2013 – Alberta Health Services – Community Education Services
November, 2012 – Learning Disability Association of Alberta – Calgary Chapter
May, 2012 – Engaging New Ideas in Education, Faculty of Education, University of Calgary

Book Chapters

Journal Articles
*Please note that a number of papers are in preparation with the aim of submission in summer 2013

Conference Presentations

Conference Posters


