Bridging the Gap: Building More Collaborative Psychoeducational Assessment Practices

Sarah E. Babcock, *The University of Western Ontario*

Supervisor: Saklofske, Donald H, *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Psychology

© Sarah E. Babcock 2021

Follow this and additional works at: [https://ir.lib.uwo.ca/etd](https://ir.lib.uwo.ca/etd)

**Recommended Citation**


[https://ir.lib.uwo.ca/etd/8224](https://ir.lib.uwo.ca/etd/8224)

This Dissertation/Thesis is brought to you for free and open access by Scholarship@Western. It has been accepted for inclusion in Electronic Thesis and Dissertation Repository by an authorized administrator of Scholarship@Western. For more information, please contact wlsadmin@uwo.ca.
ABSTRACT

The identification process of learning challenges in children is diverse and multifaceted, but typically involves standardized assessment with a psychologist. And while cognitive ability assessment is an integral and informative part of the process, one major concern is that the integration of teacher and parent observations into Canadian psychoeducational evaluation process has, thus far, not been a key source of information guiding diagnosis and intervention. Another concern is that formalized assessments often have long wait times, which delays support to the child. Therefore, evidence-based measures are needed to integrate teacher and parent observations and streamline the assessment process. The purpose of this research program was to identify specific, observable behaviours that conceptually aligned with primary five-factors of the Wechsler Intelligence Test for Children (WISC-V), the standardized measure used for assessment, to develop home and classroom behavioural screening measures that can be used collectively. Development of the measures involved both qualitative and quantitative approaches. Focus groups, panel reviews, and item rating surveys with expert groups (e.g., school psychologists, teachers, parents) allowed items to be generated, appraised, and modified to develop the pilot measures. The final study collected WISC-V and screener data to assess conceptual alignment between measures, as well as included a qualitative examination of parent experiences supporting complex learners during the COVID-19 pandemic. Based on feedback data, the pilot Home and Classroom Cognitive Ability Screeners were developed; both include five composites reflecting the WISC-V factor structure. Preliminary evaluation demonstrates a relation between observed scores on the screeners and corresponding WISC-V scales, and qualitative data showed a significant number of unique challenges experienced by parents supporting children with learning differences. Given the daily demands of psychologists and teachers to support diverse and complex learning needs, it is imperative that research focuses on improving current practices and enabling increased collaboration. These new measures serve to inform psychologists about the child’s cognitive functions as they are expressed day-to-day in the home and classroom. This helps to facilitate a more effective assessment process and creates the opportunity for a common language for diagnosis, support, and progress monitoring to promote the child’s academic success and well-being.
Keywords

Cognitive Ability, Intelligence, WISC-V, Psychoeducation, Assessment, Behavioural Assessment, Learning Disability, Learning Differences, Scale Development
SUMMARY FOR LAY AUDIENCE

A vital part of helping children who are experiencing academic difficulties is to ensure that there is accurate identification of learning and behavioural challenges. This is usually done using a standardized assessment administered by a psychologist. However, another significant component to ensuring the child is supported according to their needs is to gather information from other sources. Teachers and parents, who spend time with the child every day, are among the most valuable sources of relevant information about how the child functions across various situations. For this reason, we sought to create home and classroom measures that would align the Wechsler Intelligence Scale for Children (WISC-V), one of the most used standardized assessments in psychoeducational evaluation. The purpose of this research project was to identify every day, observable behaviours that would link to the abilities measured on the WISC-V, to develop home and classroom screening measures. To create these new complementary measures, we consulted school psychologists, teachers, and parents though focus groups, review panels, and online surveys to develop and review items. The final part of the study collected WISC-V and screener data to compare results, as well as conducted interviews with parents of children with learning differences to understand their experiences with remote learning during the COVID-19 pandemic. Based on this, the Classroom and Home Cognitive Ability Screeners were developed, which asks teachers and parents, respectively, to reflect on the child’s behaviour and skills in the home and classroom. Early data suggests that the screening measures effectively capture behaviours aligned with the five factors of the WISC-V. Interview data revealed common themes of unique challenges experienced by parents with children with learning differences. Given the demand of school psychologists and teachers to support diverse learning needs, it is important that research focuses on improving assessment processes and promoting collaboration. These screening tools provide important information about the child’s daily functioning. This helps to build a more effective process and creates the opportunity for more meaningful dialogue between psychologists, teachers, and parents to support and monitor the child’s academic success and overall well-being.
ACKNOWLEDGEMENTS

First, my sincerest thanks to my supervisor Dr. Don Saklofske for your guidance and encouragement, from the earliest beginnings of this project idea to final submission. Your expertise, feedback, and support have been invaluable. A special thank you for your steadfast confidence in me along the way, especially in moments where mine wavered.

To my supervisory committee members Drs. Colin King, Erin Heerey, and Paul Tremblay. Thank you for your time and mentorship, it has been my absolute privilege to learn from you and I am so grateful to have had your support. To Drs. Alex Benson, Deanna Friesen, Colin King, and Steven Shaw, thank you for lending your expertise to serve on my examination committee. I sincerely appreciate the time and energy that you have dedicated to reviewing my work.

In addition, I am grateful to the psychology department staff who have supported my academic development and research along the way, most especially Lisa Drysdale, who always had my back and responded patiently and with grace to all (and I mean all) my emails and office visits. I also thank the Child and Youth Development Clinic team, as well as the clients who participated in this research. Without their collaboration, this project would not have been possible. I also want to acknowledge the Thames Valley School District and the graduate students, school psychologists, and teachers for their participation in this collection of studies, as well as the C. Kingsley Allison Research Grant for funding support on components of this project.

To my friend and mentor Jessie Miller, I am thankful for your ongoing support; your voice of reason and reassurance throughout my many moments of impostor syndrome were so very appreciated. To my original cohort allies, Alexa Clerke and Jessica Padgett, I consider our bond an incredible gift. I think it is rare to develop the kind of friendship that feels lifelong in your adult years, but I am one of the lucky ones. I am beyond grateful graduate school brought us together; I could not have done it without you. To Claire Wilson, my first grad school friend, my lab mate, and my go-to for all questions – thank you for being there as a sounding board and to talk me through my most anxious of days. I am so happy that our friendship has grown beyond academia.
To my little brother Matthew, your commitment to hard work and dedication to your craft has always been an inspiration to me. You might be the youngest, but I certainly look up to you. Thank you for always being such an optimistic supporter of my academic path, you never cease to make me laugh.

To my husband, Bradley – it is crazy to think you have only known me as a graduate student, but I am so lucky to have found someone to be my side on this journey. Thank you for always believing in me and being my biggest fan, your encouragement truly got me to the finish line. And to our sweet pup Oakley, I am so lucky to have had your emotional support and writing “assistance” from under my desk. You’ve been an absolute light in some of the hardest days; we truly don’t deserve dogs.

Last, but certainly not least, I thank my Mom and Dad. My first teachers, mentors, and cheerleaders. Thankful is not strong enough a word. Without your encouragement, and early support of my curious mind (i.e., toleration of my endless questions about the world around me) and my lifelong dedication to learning, I would not be writing this today. I am so very lucky to call you both my parents.
# TABLE OF CONTENTS

**ABSTRACT** ..................................................................................................................... II

**SUMMARY FOR LAY AUDIENCE** .................................................................................. IV

**ACKNOWLEDGEMENTS** .................................................................................................. V

**TABLE OF CONTENTS** ................................................................................................... VII

**LIST OF FIGURES** ............................................................................................................ X

**LIST OF APPENDICES** .................................................................................................. XI

**CHAPTER 1** ...................................................................................................................... 1

1. **INTRODUCTION AND LITERATURE REVIEW** .......................................................... 1

1.1 *Introduction* .................................................................................................................. 1

1.1.1 *Intelligence and Cognitive Ability Distinction* .......................................................... 2

1.2 *Honouring the Historical Influences of Intelligence Theory* ....................................... 3

1.2.1 *Pioneering Influences* ............................................................................................. 3

1.2.2 *The General Intelligence Factor* .............................................................................. 4

1.2.3 *The Division and Expansion of g Theory* .................................................................. 5

1.2.4 *Alternative Conceptualizations* .............................................................................. 6

1.2.5 *Reigning Model* ...................................................................................................... 7

1.3 *Measurement and Assessments of Cognitive Ability* .................................................... 8

1.3.1 *Psychometric Considerations* .................................................................................. 9

1.3.2 *Societal Issues* ...................................................................................................... 10

1.4 *Canadian Psychoeducational Assessment Practices* ...................................................... 15

1.4.1 *Response to Intervention* ...................................................................................... 16

1.4.2 *Individualized Education Programs* ....................................................................... 16

1.4.3 *Special Education Status: Identification and Diagnosis* ....................................... 18

1.4.4 *Summary* .............................................................................................................. 20

1.5 *Psychoeducational Assessment Roles and Allies* .......................................................... 20

1.5.1 *Identifying the Issues in Current Psychoeducation Practices* .................................. 22

1.6 *Literature Review Summary* ....................................................................................... 26

1.7 *The Present Study* ..................................................................................................... 27

1.7.1 *Research Problem* ............................................................................................... 27

1.7.2 *Study Rationale* .................................................................................................... 28

1.7.3 *Purpose and Objectives* ....................................................................................... 29

1.7.4 *Research Questions* ............................................................................................. 30

**CHAPTER 2** .................................................................................................................... 31

2. **METHOD** ................................................................................................................... 31

2.1 *Test Construction Approach* ..................................................................................... 31

2.1.1 *Establishing Study Measures* .................................................................................. 31

2.1.2 *Sample Item Pool and Format* ............................................................................ 33

2.2 *Classroom Cognitive Ability Screener Item Review (Study 1)* ................................... 35

2.2.1 *Participants* .......................................................................................................... 35

2.2.2 *Materials* .............................................................................................................. 36
LIST OF TABLES

**TABLE 1** SUMMARY OF FOCUS GROUP FEEDBACK .................................................. 55
**TABLE 2** FREQUENCY DESCRIPTIONS ........................................................................ 56
**TABLE 3** DEMOGRAPHIC PRE-SCREEN QUESTIONS .................................................. 56
**TABLE 4** SUMMARY OF SCHOOL PSYCHOLOGIST FOCUS GROUP FEEDBACK .......... 58
**TABLE 5** SUMMARY OF FACULTY MEMBER PANEL REVIEW FEEDBACK .................. 60
**TABLE 6** NEW ITEMS SUGGESTED FOR THE CLASSROOM COGNITIVE ABILITY SCREENER 60
**TABLE 7** SUMMARY OF TEACHER FEEDBACK ......................................................... 62
**TABLE 8** PRELIMINARY ITEM REVIEW FEEDBACK SUMMARY .............................. 64
**TABLE 9** MAJOR REVISION SUMMARY OF HOME COGNITIVE ABILITY SCREENER ITEMS .... 66
**TABLE 10** CORRELATIONS BETWEEN CORRESPONDING CONSTRUCTS ON THE HOME AND CLASSROOM COGNITIVE ABILITY SCREENERS ........................................ 68
**TABLE 11** CORRELATIONS BETWEEN WISC-V FIVE FACTORS AND CORRESPONDING CONSTRUCTS ON THE HOME AND CLASSROOM COGNITIVE ABILITY MEASURES .... 69
**TABLE 12** ASSOCIATED CODES & THEMES FOR EACH CASE ................................ 69
**TABLE 13** EMERGING THEMES ACROSS CASES ...................................................... 71
LIST OF FIGURES

FIGURE 1 WISC-V PRIMARY INDEX SCORES ................................................................. 32
FIGURE 2 CLASSROOM COGNITIVE ABILITY SCREENER DEVELOPMENT PROCESS ........ 35
FIGURE 3 HOME COGNITIVE ABILITY SCREENER DEVELOPMENT PROCESS .............. 45
# LIST OF APPENDICES

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Graduate Student Focus Group Study Package</td>
<td>113</td>
</tr>
<tr>
<td>B</td>
<td>Research Ethics Approval Documentation</td>
<td>124</td>
</tr>
<tr>
<td>C</td>
<td>School Psychologist Focus Group Package</td>
<td>133</td>
</tr>
<tr>
<td>D</td>
<td>Faculty Panel Review Study Package</td>
<td>138</td>
</tr>
<tr>
<td>E</td>
<td>Teacher Review Study Package</td>
<td>143</td>
</tr>
<tr>
<td>F</td>
<td>Classroom Cognitive Ability Screener (Pilot Version)</td>
<td>154</td>
</tr>
<tr>
<td>G</td>
<td>Home Cognitive Ability Screener (Draft Items)</td>
<td>160</td>
</tr>
<tr>
<td>I</td>
<td>Home Cognitive Ability Screener (Pilot Version)</td>
<td>174</td>
</tr>
<tr>
<td>J</td>
<td>CYDC Background Questionnaire</td>
<td>180</td>
</tr>
<tr>
<td>K</td>
<td>CYDC Recruitment Study Documents</td>
<td>186</td>
</tr>
<tr>
<td>L</td>
<td>Qualitative Study Participant Documents</td>
<td>194</td>
</tr>
<tr>
<td>M</td>
<td>CYDC Parents Interview Script</td>
<td>200</td>
</tr>
<tr>
<td>N</td>
<td>Interview Transcripts</td>
<td>202</td>
</tr>
</tbody>
</table>
CHAPTER 1

1. Introduction and Literature Review

1.1 Introduction

The importance of understanding intelligence and cognitive ability cannot be understated, as it is one of the best-known predictors of other individual differences observed within the modern human experience. Variation in cognitive abilities assessed at an early age are linked to a variety of environmental and societal phenomenon, as well have significant implications for the individual’s life outcomes, including mental and physical health, quality of life, longevity, career success, achieved socioeconomic status, and crime–delinquency (Deary et al., 2003; Lubinski, 2004; Wraw et al., 2016).

One of the strongest and most significant associations between intellectual ability and life outcomes is the empirical link observed between cognitive ability and academic success. Longitudinal evidence consistently demonstrates that higher intelligence is linked to increased educational accomplishments (e.g., higher grades, academic achievement awards, and post-secondary enrollment), as well as later career success (e.g., promotion, job advancement) (Deary et al., 2004; Gottfredson & Saklofske, 2009; Kuncel et al., 2010). The magnitude of the relationship between cognitive ability and educational achievement is generally agreed to be moderate to strong; literature posits the correlation ranges between .40 and .70 (Jencks, 1979; Jensen, 1969; Neisser et al., 1996; Sternberg et al., 2001). This empirical evidence is reported across a variety of samples, ranging in cultural and developmental diversity, and consistently supports that intelligence and cognitive performance is a reliable predictor of academic success (Deary et al., 2007; Laidra et al., 2007).

Therefore, when considering the wide range of personal and societal outcomes, and more specifically, the profound effect of cognitive ability on educational accomplishment and personal success, it becomes clear why continued efforts should be made to understand and advance cognitive ability assessment processes. The underlying foundation of this
dissertation research is the evaluation of current ability assessment practices and methodologies. This is primarily based in individual and group standardized testing procedures and draws from both empirical evidence and professional experiences.

The overarching theme across this collection of studies was to go beyond typical clinical assessment practices to bring in alternative perspectives, illustrating what “cognitive abilities” look like in real-world situations, outside of the testing environment. This was accomplished by extracting latent traits embedded within a robust measure of intelligence, using these traits as a guide to design screening measures which capture both parent and teacher perspectives. The purpose of this program of study was not only to evaluate current processes. Moreover, it was to advance the field by designing contemporary screening measures that allow for a 360-degree approach to data collection and sharing for psychoeducational evaluation. This not only strengthens the range of data that can be collected, but also promotes a more comprehensive assessment of cognitive abilities.

1.1.1 Intelligence and Cognitive Ability Distinction. Before exploring the literature in depth, it is necessary to explore the lexicon past and present to provide clarification of the constructs of intelligence and cognitive ability. These terms are often used interchangeably in research and literature, and while intrinsically related, they are not conceptually identical. Intelligence is the ability to acquire and use knowledge and skills, and is the cognitive foundation built upon every day to live, grow, learn, and function. Cognitive abilities (also referred to as skills or functions), are brain-based skills needed in the acquisition of manipulation of information, decision-making, and reasoning. Thus, intelligence refers to the idea of capacity for knowledge and learning, whereas cognition refers the process or mechanisms by which learning, problem solving, and knowledge integration takes place (rather than any actual specific knowledge). Intelligence therefore encompasses cognition on a broader scale (Neisser, 1979).

However, as Lubinski (2004) importantly states, the influence of general intelligence must be understood before specific cognitive abilities can reveal themselves, because the assessments designed to measure abilities typically capture a large component of general intelligence.
Given the conceptualization of these terms, it seems reasonable that in many cases, the terms “cognitive ability” and “intelligence” are used synonymously by investigators when referring to brain-based or mental abilities. As such, the literature presented throughout this dissertation will be described using both terms, representative of the terms consistent with what was used in the primary source. Moreover, of significant note is that while both terms are used in the descriptions of literature related to the current study, the focus of this research program was on of cognitive ability assessment, rather than overall human intelligence.

Moving forward into the review of the literature, the first collection of works reviews an historical account of the influences on intelligence theory, as well as explores the psychometric, societal, and practical considerations for cognitive ability assessment today.

1.2 Honouring the Historical Influences of Intelligence Theory

Human intelligence is a complex concept, with a rich history of theoretical conceptualization and development, spanning over a century. Moreover, this field of study was, and to a lesser extent continues to be, riddled with controversy and adversarial academic rivalry; therefore, a comprehensive overview of human intelligence is beyond the scope of this dissertation. However, I believe it is imperative to recognize from a historical perspective how intelligence theorists and their theories played a role in the development of cognitive ability theory, and that to appreciate the intricacies of cognitive ability assessment one must first have a broad level understanding of intelligence as a construct. Further, the assessment measures used to evaluate cognitive ability do so with the aspects of intelligence theory inherently underlying their test structure. Therefore, to facilitate a well-rounded understanding of the current study, an overview of intelligence theory inception and progression, as well as key theorist contributions, is summarized here.

1.2.1 Pioneering Influences. Arguably one of the earliest pioneers in the scientific examination of individual differences in human intelligence was Sir Charles Galton. Galton’s primary research utilized mental chronometry and his position was that
individual differences in intelligence were reflected by variations of sensory
discrimination and response time to stimuli (Galton, 1869). However, while scientifically
interesting, due to technical limitations of the machinery for data collection, as well as
methodological and psychometric shortcomings, his findings were met with disapproving
reception (Jensen, 2011). At that time, psychometric science as a field had a primitive
understanding of many key concepts (e.g., reliability, tests of significance, analysis of
variance) which dramatically hindered the scientific development. Instead, a more
pragmatic approach of simple tests of the child’s “mental age” reigned over Galton’s
response time theory.

In the early 1900s, psychologist Alfred Binet and psychiatrist Theodore Simon were
commissioned by the Parisian government to develop a “Measuring Scale of
Intelligence”, which was comprised of 30 cognitive tests to assess school children (Binet
& Simon, 1916). They grouped tests into age levels, and administration of the test began
at the child’s physical age and proceeded to higher or lower difficulties depending on
performance. Adjusting assessment level based on ability rather than purely
chronological age has served as the functional model for intelligence tests since (Boake,
2012). Within a few years of its inception, this scale became popularized across Europe
and gained support within the psychological community. The test acquired its current
name (i.e., the Stanford-Binet; Roid, G.) when a collaboration with Stanford University
took place to create a U.S. version of the measure and apply advanced methodology for
administration. This popularized this assessment in the U.S. (and later, Canada). Binet’s
more practical interpretation overshadowed Galton’s (and later Jensen’s expansion; see
Jensen, 2011) of response time theory in terms of methodology and face validity.
Intelligence and ability assessment has primarily remained anchored in this paradigm.

1.2.2 The General Intelligence Factor. The path to our current
conceptualization of intelligence and cognitive ability theory has a dynamic history.
Notably one of the most well-known names in the early work of the 20th century (and
integral to most future theoretical development) was Charles Spearman. He introduced
the seminal concept of the “general factor” of intelligence, often referred to as ‘g’
(Spearman, 1927). He first proposed the idea after discovering significant positive
correlations between children’s scores of seemingly unrelated academic subjects (Spearman, 1904). From this discovery he developed a two-factor theory of intelligence: one general intelligence factor \((g)\), plus the addition of *specific* factors. He proposed these would account for correlations between the measures of academic achievement, reasoning, and sensory discrimination. Interestingly, Spearman is also credited for the introduction of factor analysis to the study of human abilities (Schneider & McGrew, 2012).

While Spearman was developing this theoretical framework in Britain, L.L. Thurstone was investigating similar factor analytic techniques for understanding ability in the U.S. Thurstone (1938) posited that rather than one overarching \(g\), there were seven to nine primary mental abilities (PMAs) that were independent of a higher-order \(g\) factor. His PMA theory proposed *induction, deduction, verbal comprehension, associative memory, spatial relations, perceptual speed, numerical facility*, and *word fluency* as first-order abilities. Later, in 1947, Thurstone agreed to accept the possible existence of a general factor \((g)\) above the PMAs, however, Spearman and Thurstone continued to disagree theoretically on the relative importance of the first-order PMAs and second-order \(g\) factor (Carroll, 1993). While divided theoretically, their combined efforts were extremely influential to later model development.

1.2.3 The Division and Expansion of \(g\) Theory. Building off the concept of \(g\), Cattell (1941), a student of Spearman’s, concluded that \(g\) was more appropriately described as two distinct components, which he labelled fluid intelligence \((Gf)\) and crystalized intelligence \((Gc)\). Fluid intelligence referring to the ability to think and reason abstractly to solve problems, independent of learning and education, while crystalized intelligence involves knowledge derived from prior learning and previous experience. The distinction was important because of the implication that fluid ability was influenced more heavily by biological factors, and that crystalized intelligence was more so related to education and cultural influences. Cattell was the first to propose a theory which differentiated two distinct components of general intelligence; this suggestion of a hierarchical model of two equally important yet distinct broad abilities, above numerous lower-order abilities, signifies the formal start of the Horn & Cattell \(Gf-Gc\) theory
(Schneider & McGrew, 2012). While unarguably instrumental, Cattell’s model still provided only a post-hoc explanation of existing data. This changed with Horn’s (1965) first empirical test of the theory. Horn’s work (supervised by Cattell) provided empirical support for Cattell’s theory, with the caveat that a significant expansion was needed. He decreased focus on the concept of \( g \) and expanded the \( G_f-G_c \) theory to several broad ability factors, including 10 broad \( G_f-G_c \) abilities. Many others developed slightly varied iterations based on this model.

In 1993, psychologist John Carroll endeavored to unify the field as there were many distinct yet conceptually similar iterations of the \( G_f-G_c \) model. Carroll re-analyzed 460 factor analytic human cognition data sets. The prolific significance of this study was that it was the first account, since Spearman’s initial conceptualization of \( g \), of a single, clear, and organized framework of empirically based taxonomy of human abilities based upon factor-analytic literature (McGrew, 2005; Schnieder & McGrew, 2012). Carroll described intellectual ability as a hierarchical three-tier structure of cognition, where \( g \) exists as the broadest, overarching concept (Stratum III). Below it, at Stratum II level, there are eight second-order abilities, and finally, under those, Stratum I level consists of the abundant (approximately 69) specific abilities. Unlike Horn, Carroll argued that evidence for a single 'general' ability was overwhelming and insisted that \( g \) was still essential to a theory of human intelligence (Carroll, 1997). Carroll’s work provided the field with a framework for deciphering and organizing the mass of literature spanning over almost a century, and a common nomenclature for enhanced communication among researchers.

1.2.4 Alternative Conceptualizations. The development and expansion of a general intelligence factor and the variations of the \( G_f-G_c \) models dominated the field. However, there were other theorists with disparate perspectives and models worth noting. Many were quite closely linked to the \( G_f-G_c \) models (see Hebb, 1940; Guilford, 1965; Vernon, 1969), while others offer alternative conceptualizations. Moving away from the \( G_f-G_c \) approach, Gardner’s (1983) Theory of Multiple Intelligences defined intelligence as “a bio-psychological potential to process information, which can be activated in a cultural setting to solve problems or create products that are of value in a culture”. The premise was that intelligence is emergent and highly responsive to nature, contrary to
more traditional views which saw human intelligence as innate or fixed ability. Moreover, he argued that standardized intelligence tests probe too few “intelligences” and that instead there are eight (Visual-spatial, Musical, Bodily-Kinesthetic, Interpersonal, Verbal-Linguistic, Logical-Mathematical, Intrapersonal, and Naturalistic) which everyone has, but differs in their strengths and weaknesses. Similar to this, Sternberg’s (2012) Triarchic Theory of Successful Intelligence offered an integrative explanation of intelligence, defining the association between intelligence and three relationships: the internal world of the individual, the experience (or the mediating role of the individual’s passage through life), and the external world of the individual. Rather than a set of abilities, this theory posits that people are successfully intelligent by recognizing their strengths and weaknesses, finding ways to make the most of and compensate for them respectively. Finally, arguably the furthest deviation from the factor analytic approach seen in most other models was Piaget’s Theory of Cognitive Development (Piaget, 1971). Piaget conceptualized cognitive development as caused by a biological maturation and environmental experience, resulting in progressive reorganization of mental processes. He argued that children construct an understanding of their world, experiencing discrepancies between what they know and what they discover, and adjust accordingly. In this way, it is more aligned with Gardner’s MI theory in that environmental stimulation is the primary drive evoking cognitive development.

This summary is justifiably not a comprehensive list of all who have studied intelligence or significantly influenced the field; however, the intention is that is provides an overview of some of the more prominent theorists and academic influences to better contextualize and make sense of the modern approaches discussed and used in this dissertation work.

1.2.5 Reigning Model. With its origins in Spearman’s g, the Cattel-Horn-Carroll (CHC; Schneider & McGrew, 2012) model of intelligence is the prominent theory for the structure of human cognitive ability. It serves as the basis upon which many modern intelligence assessments are predicated on and is widely accepted as the most comprehensive and empirically supported theory of cognitive abilities (Alfonso et al., 2005; Kaufman, 2009). The CHC model houses the two most popular psychometric models of human cognitive abilities including: Horn and Cattel’s (1966) expanded Gf-Gc
theory and Carroll’s (1993) Three-Stratum Model. Based on the observed need for assessments to be informative at both narrow and broad $Gf$-$Gc$ ability levels, the two models were amalgamated into one model (Flanagan & McGrew, 1998). Authors felt the two major models (Cattell & Horn vs. Carroll) had differences and lacked a single taxonomy, so instead of selecting one model over the other, they synthesized the two. The central tenant of CHC model is that while there are many distinct individual differences among cognitive ability in human beings, the relationships among these can be derived by categorizing them into three levels. It is a hierarchal model of intelligence that consists of three levels: Stratum 1 “narrow” abilities, Stratum II “broad abilities” and Stratum III “single general ability”. At the apex, the general ability ($g$) is the broadest of all cognitive ability constructs. The development of CHC theory is a systematic synthesis of hundreds of studies, spanning over a decade of empirical investigation from a variety of researchers. This puts it forward as a strong candidate for the working framework for cognitive ability researchers, and of course, like any sound scientific theory, is open to scrutiny and critical tests of its assumptions.

This summarized historical overview of intelligence theory lays important foundation for current ability assessment models and test structure. Most relevant to this dissertation is that the measure used for data collection, the Weschler Intelligence Scale for Children-Fifth Canadian Edition (WISC-V$^{CDN}$; Wechsler, 2014) utilizes a hierarchal ability model, which is discussed in detail below. The WISC-V$^{CDN}$ was used as the guiding outline for the development of the screening measures\(^1\). To build upon this foundation, the focus of the literature review will now turn to assessment measures, providing first a description of the various measurement and assessment procedures employed, as well as examining the specific concerns relevant to the evaluation of cognitive abilities.

1.3 Measurement and Assessments of Cognitive Ability

Assessment of cognitive abilities is multifaced; it involves a complex history of theoretical modelling approaches, knowledge, and expertise across the fields of

---

\(^1\) Unless otherwise noted, any future in-text references to the WISC-V refer to the fifth Canadian edition but will be noted without the superscript ($^{CDN}$) for ease of reading.
psychology, education, and statistics, as well as scientifically informed practice. There are several published, psychometrically sound assessments of cognitive ability available; while they sometimes differ in theoretical underpinnings, most assessments are developed with some aspect, or a combination of, the hierarchal modelling. Therefore, there is considerable overlap across measures. Further, while these tests may differ in their nomenclature or categorization of abilities, they share many commonalities in terms of the psychometric, societal, and practical considerations inherent to the assessment structure. These topics are relevant to this dissertation because they provide significant context for understanding the rationale behind the use of specific measures, as well as the development of the research questions and goals.

### 1.3.1 Psychometric Considerations

Following the initial development of g-based tests, test development and psychometrically driven research on the structure of intelligence was rampant (Newton & McGrew, 2010). This led to the modern perspective of multidimensional testing that we have today. Currently, cognitive ability assessments use a multilevel approach; capturing one overarching primary ability measure (e.g., ‘g’) by evaluating a variety of subcomponents of that ability that are thought to contribute to g. These specific domains are most often captured using a variety of measures of the ability (e.g., subtests) as multiple measures of the same domain allows for more comprehensive data collection and promotes reliability in the measure. This is the framework for the WISC-V assessment used in this study. This multilevel approach aligns with the CHC model which purports that there are a very large number of distinct individual differences in cognitive ability, however, the relationships among them can be understood by organizing into three levels: narrow abilities (i.e., subtests), broad abilities (i.e., composites), and a general ability (i.e., FSIQ).

In addition, cognitive ability study is closely linked to statistical advancements. Factor analytic approaches have been the principal methodological approach for the development of intelligence and ability assessments for over 100 years (Cudeck & MacCallum, 2012); it allows for the relationships between variables and underlying structure to be uncovered. Psychometric support for the measure used in cognitive assessment is of the utmost importance in terms of utility. It must not only reliably
capture information, but also demonstrate construct and criterion validity. Further, the organization of the assessment and any subsequent interpretation is only valid if psychometric data supports the structure. Therefore, when choosing an assessment, it is vital that this is considered, and that psychometric quality is established. In developing this dissertation study protocol, the psychometric rigour of the WISC-V (Weschler, 2014) reflected these considerations. Therefore, it’s five factor model was selected as an ideal candidate to use as the foundation to build the new screening measures around.

1.3.2 Societal Issues. The conceptualization of intellectual ability, as well as its measurement across research, educational, and occupational settings have not been without conflict and debate, and in some instances, controversy. There are a number of issues that influence how we as both a society and academic community conceptualize, apply, and test human abilities, therefore it is important to properly identify some of these matters before going forward. The most dramatic upsets around measurement of intelligence have largely been routed in questions surrounding genetic and environmental influences of development and expression of intelligence (see Bouchard & McGue, 1981; Jensen, 1969; Neisser et al., 1996; Plomin & Petrill, 1997; Vernon, 1993), discussions on the influence of race (see Gottfredson, 1997; Rushton, 1996; Sternberg et al., 2005; Weiss et al., 2006), and finally, the use of intelligence tests in court cases surrounding mental competency and the death penalty (see Duvall, 2006; Ellis, 2002). These are undeniably significant issues with serious consequences, but a comprehensive analysis of these controversies is outside the purview this dissertation. However, I believe an appreciation for how some of these social issues affect assessment today, particularly within education settings, is valuable not only for well-rounded understanding of topic of study, but also for the context of this project. Therefore, I have provided a brief overview of examples including the Flynn effect, demographic and group differences observed in scores, test bias, and the use of culturally appropriate norms.

1.3.2.1 The Flynn Effect. The term Flynn Effect originates from researcher James R. Flynn and his observation of continuous increase in both fluid and crystalized intelligence scores over time. In Flynn’s seminal study (1984), he analyzed 73 U.S. studies (N = 7,431) comparing the scores on several intelligence tests across time. Results
revealed consistent gains in the standardization samples of successive versions of the Wechsler and Stanford-Binet intelligence tests. Findings showed a 13.8 increase in standard score between 1932 and 1978, equating to an increase of 0.3 per each year (i.e., 3-points per decade). Flynn (1987) then extended his U.S. analysis to replicate this work, collecting data sets from 14 countries using the same test longitudinally. Findings demonstrated that over the decade, across cultures, scholars consistently observed IQ gains ranging from 5 to 25 points in a single generation, with the largest gains in fluid intelligence. More recently, Trahan Stuebing, Fletcher, & Hiscock (2014) used a meta-analytic approach to examine IQ data from across 285 studies (N=14, 031) collected between 1951 to 2006. Results showed supporting evidence for the presence of the Flynn effect, with scores on average increasing by 0.31. This proposes that an individual is likely to attain a higher IQ score on an earlier version of the test than they would on the current version; subsequently, that test will overestimate the individual’s IQ by an average of 0.3 points per year between when the test was normed and when the individual is administered the assessment. The significance and possible consequences of this are particularly pertinent to the diagnosis of disability where IQ score “cut point” is used as a necessary part of the decision-making process. Therefore, it is imperative that the Flynn Effect’s driving factors and implications for clinicians are made clear.

The first important consideration is that the Flynn effect is not uniform across the various domains of cognitive ability. Most of the research in children and adolescents has focused on the overall score of ability, and very few expand to study it at stratum I or II levels. Kaufman and Lichtenberger (2006) showed the observed effect is higher for fluid/perceptual intelligence than it is for crystalized and moreover, the effect does not immediately occur when new norms are published; it appears gradually over time. This makes logical sense, as the assessment’s norms remain fixed over time, while the population shifts and changes. Moreover, literature suggests that there does not appear to be one identifiable underlying cause of the effect; rather, it is the consequence of a combination of numerous factors (Grégoire et al., 2015). One of the strongest candidates is advances in education, especially given the observed relation between academic foundation and observed cognitive ability. The 20th century brought with it significant changes with regards to education, including decreased illiteracy, higher attendance rates
at school, and more enrolment in post-secondary education. The 21st century continued these trends, as well as had the added benefit of advances in technology resulting in increased information access and mobilization. Therefore, the population at large is continuously more highly educated and has more exposure to educational resources. The 20th and 21st centuries also saw notable changes in familial demographics, with decreases in family size and increases in household incomes, educational, professional qualifications, and subsequent access to resources. Consequently, parents have comparatively more emotional, financial, and academic resources to support their children which may also contribute to this observed increase.

The implications of the Flynn Effect are significant for applied academic and psychological settings where cognitive assessments are at the heart of diagnosis for intellectual, developmental, and learning disabilities. Therefore, as Grégore and colleagues (2015) suggest, best practice includes using the most up-to-date norms available, as this decreases the opportunity for the Flynn effect to have an impact. The measure used in this study was standardized in 2014 and provides the most recent Canadian norms for a full-scale cognitive measure available.

1.3.2.2 Cultural Appropriateness. A primary social concern surrounding intelligence testing pertains to the cultural appropriateness of assessments. It is important to understand the group differences that do and do not exist, especially within the Canadian context. Evidence suggests that IQ differences across various ethnicity groups are consistently observed, both in Canadian and U.S. samples (Miller et al., 2015; Weiss et al., 2015). However, score differences across ethnicity must be interpreted with extreme caution, as many interlinked factors can drive these results. For example, typically in standardization studies the participant sample matrix is generated based off the country’s most recent census data. The WISC-V (Wechsler, 2014) development is an example of this. However, the ethnicity variable is crossed-sampled across parent education level as well as geographical region when the sample targets are derived. Therefore, this results in an ethnicity target sample that will also reflect all the social inequities that exist between education level and region within the country’s population.
Census-matching sampling approach is appropriate when trying to generate accurate and representative country norms, however, the result is that in some cases, performance differences in IQ across different racial groups may be observed. However, it is critical to recognize that these differences are not genetically driven in any pure sense, but rather, reflect the social and cultural influences inherent in racial group differences (Weiss et al., 2015). While ethnicity differences in scores do appear, data suggests that race and ethnicity categorizations serve more so as a proxy for a variety of active mechanisms and factors (e.g., SES, education, differential access). My previous work examining the demographic differences in the WISC-V standardization sample provides supporting evidence for this in the Canadian context. Findings demonstrated that all observed ethnicity differences reduced and, in some cases, entirely disappeared when socioeconomic status was controlled for (Babcock, 2017). Taken together, observed racial or ethnic score differences in psychometrically sound, correctly standardized assessments do not reflect true differences in genotypic ability, rather, represent a differential opportunity for development of abilities and exposure to environmental variations, not genetic ones.

1.3.2.3 Test Bias. A second, and related, cultural consideration when assessing appropriateness and portability of an assessment is the concept of test bias. Test bias refers to systematic error in the measurement process that differentially influences scores for particular groups. When only considered at a superficial level, observed differences in IQ scores between different groups can easily be misinterpreted as evidence of poor construction and bias, as previously discussed. However, there are many situations where this is simply not the case. This is not to say that test bias does not exist. Rather, that if adequate methodological measures are taken at both the development and adaptation stages, the risk of actual test bias can be mitigated. As a part of adequate test construction, a systematic review should be conducted by cultural experts to assess for potential bias and item-level concerns. Further, after items are established, differential performance by demographic groupings should be assessed. Differential item functioning (DIF) is essential as it allows for the identification of items where individuals from different demographic groups within the same category (e.g., ethnicity) differ significantly in performance, despite an overall similar ability level for that construct.
This process allows those problematic items to be removed before the test is finalized. Moreover, construct bias can be examined using techniques of factor analysis and measurement invariance. If subtests are correlated in similar ways across those groups, it suggests that the same construct is being measured for all. Rigorous bias evaluation of items was conducted in the development of WISC-V assessment used in this study.

1.3.2.4. Country-Specific Normative Data. The final societal consideration explored for the purposes of this study is the importance of appropriate normative data. The need for country-specific norms has been discussed at length (see Georgas et al., 2003). Given the relative similarity in nation cultures and proximal location of Canada and the U.S., it is reasonable to understand why one may not think that the two countries differ significantly in terms of item response or overall test performance. In many assessment instances, this is true. For example, assessments based on mental health symptomatology (e.g., depression, anxiety) do not differ significantly by country, and thus do not require unique normative data to evaluate the individual. Moreover, assessments which focus specifically on neurological deficits/injury and memory impairment (e.g., Wechsler Memory Scale-Third Edition; WMS-III, 1997) often do not have significant enough differences to warrant country-specific norm. However, cognitive ability assessments do not fall into this same category.

Development of country-specific Canadian normative data for U.S.-based intelligence and ability assessments began originally as a result of Canadian practitioners voicing strong concerns about the representativeness of American norms in their Canadian clients (Beal, 1988). This followed earlier studies by Holmes (1981) where investigators found that U.S. normative data yielded significantly higher than expected ability scores, and significantly lower variability across the verbal and full-scale IQ scores on the Wechsler Intelligence Scale for Children – Revised (WISC-R; Wechsler, 1971). Based on clinician feedback and practitioner requests, the development of Canadian normative data has henceforth remained the precedent; since the Canadian publication of the third edition of the WISC (WISC-III; Wechsler, 1996), the development of unique Canadian norms has continued in this effort to provide Canadian practitioners with a dataset that reflects their country’s unique demographic characteristics (Miller et al., 2015).
Research continues to show the importance of utilizing Canadian-specific norms in the evaluation of cognitive abilities. When evaluating assessment scores between country norms, evidence suggests that there continues to be a consistently small, but significant, difference between the score, ranging from 2-5 standard Full-Scale IQ (FSIQ). A thorough explanation of the reasons behind this difference in performance is out of range for this project (see Weiss et al., 2015), however, to summarize, norm differences are driven by a variety of demographic, economic, and cultural variances between the two countries. Of note, the score differences between the two norms are most notable in the clinical and exceptional groups (Miller et al., 2015; Babcock et al., 2018), which are the most predominant groups where the assessment will be used. This further highlights the importance of using appropriate norms in the cognitive ability evaluation of Canadian children.

This overview of the societal concerns around ability assessment articulates the importance of rigorously designed, psychometrically sound, up-to-date tools with country-specific norms for the purposes of psychoeducational assessment. These factors were all integral considerations in this dissertation study protocol design.

Thus far, the focus of this literature review has been foundational. First, the relationship between cognitive ability and student academic success and well-being was discussed. Next, the historical foundations and expansion of intelligence and cognitive ability model development was considered. Finally, the psychometric and societal considerations for cognitive ability assessment was explored. With this foundation established, the attention now turns to a more applied focus. Here, the various roles of and processes used in Canadian psychoeducation practice will be examined.

1.4 Canadian Psychoeducational Assessment Practices

The role of cognitive ability testing, and the supports provided by the school board, school, teachers, and psychologists in special education settings has changed dramatically over the past decade. All considered, for the most part these changes have been for the better; there are a variety of new and updated practices in place. This allows for more effective individualized student support and resources. This section outlines the role of
the various approaches and programs, as well as the individuals who inform and enforce them in the psychoeducational environment. While this review focuses on the current practices in place, it is not intended to be an exhaustive list of all the roles and responsibilities of the various individuals, nor could it sufficiently cover every aspect of diagnostic and tracking process for disability. To my knowledge, there is not one distinctly “Canadian protocol”. Rather, education, and subsequently, special education is mandated at the provincial level. Further, the process of psychoeducational assessment is a dynamic one which can vary greatly depending not only on the individual child, but on both provincial directives and individual school district, as each have autonomous decision-making over key aspects. However, the intent of this review for the purposes of the current study is to provide contextually relevant insight on who the core members of the special education team are, as well as the diagnostic and intervention strategies employed.

1.4.1 Response to Intervention. The Response to Intervention (RTI) approach, sometimes referred to as the multitiered system of supports (MTSS), is a tiered system intended to provide appropriate instruction, support, and evidence-based interventions to struggling students (Cortiella, 2005). The RTI process begins with universal screening of all children, and then provides students who are struggling with interventions at increasing stages of intensity to ultimately accelerate their individual rate of learning (Cortiella & Horowitz, 2014). The RTI approach is used in some schools across Canada in conjunction with IQ assessments for identifying students as having a specific learning disability. However, for this approach to be successful there needs to be strong commitment and expertise at all levels of school professionals, not just specific special education teachers and school psychologists; it is successful only when coordination and collaboration at the district and staff levels is attained (Duffy, 2007). As a result, it has been met with varying acceptance in school systems based on resources and investment of staff (McIntosh et al., 2011), and evidence suggests that Canada has been slower to adopt the RTI approach.

1.4.2 Individualized Education Programs. The Individualized Educational Program (IEP) is an educational plan developed for students with an identified disability
to ensure they are receiving specialized instruction and related services. In some provinces, this is referred to as Individual Program Planning (IPP), however for the purposes of this discussion, the term IEP will be used as this is the terminology in Ontario where the study is being conducted (Special Education in Ontario, 2017). The purpose of the IEP is that it identifies the student’s specific learning needs and subsequently outlines how the school, teacher, and classroom will address and support them. The student’s learning program is modified based on the results obtained through continuous assessment. The IEP allows teachers, school administration, parents, and even students to collaborate and work together to improve instruction and educational results for the child; the main goal being to increase accountability and family participation and serve as a vehicle for shared decision making among different parties (Gallagher & Desimone, 1995). According to Goepel (2009), the IEP should be a record of what is both “additional to and different from” the teacher’s regular planning and approach and should be reviewed twice annually at minimum.

As previous suggested by varied provincial requirements, the IEP process will vary from province to province. However, there are commonalities among the general processes. Generally, the IEP (1) must be developed within 30 days of placement of an exceptional student in a particular classroom, (2) must be established with input by parents, who will receive a copy, (3) children 16 years or older must also be given a copy (Ontario Ministry of Education, 2017). Unlike RTI, the IEP may also be prepared for students who require accommodations or program modifications but have not yet been identified by an Identification, Placement, and Review Committee (IPRC), and are on a waiting list.

There is ample research exploring the utility, effectiveness, and outcomes of the IEP. However, to my knowledge, there is no literature that examines IEP at the national level to comprehensively summarize findings across the country. In terms of IEP effectiveness, a review study by Gallagher & Desimone (1995) suggests that IEPs are not always successful for four major reasons: missing data, poorly written goals, difficulty linking goals to program/evaluation, and lack of systematic monitoring. Further, a more recent examination by Williams-Diehm and colleagues (2014) revealed that IEPs are most often completed by teachers who draw information from other sources, including professional reports, however, there is little to no discussion between these bodies. Further, they
reported that members of the IEP rarely meet to discuss goals and objectives together, and parents feel their advice and suggestions are rarely taken. While some literature reflects the breakdown of the IEP system, it is not all negative. In the same review by Gallagher, four advantages to the program were also observed over studies, including: increased understanding of special education by the family, improved relationship between teacher and family, increased information about academic progress, and some clarification of program goals.

1.4.3 Special Education Status: Identification and Diagnosis. The Learning Disabilities Association of Canada (LDAC, 2015) suggests that learning disabilities refer to several disorders, which can affect the acquisition, organization, retention, understanding, or use of verbal or nonverbal information. Specific learning difficulties or disabilities (SLD) refers to a group of disorders characterized by difficulties in learning basic academic skills which are not consistent with the person's chronological age, educational opportunities, or intellectual abilities (American Psychiatric Association, 2000). An SLD may hinder achievement in four broad development areas: oral and/or written language (e.g., listening, speaking, spelling, written expression); reading (e.g., decoding, word recognition), nonverbal learning (e.g., spatial or motor coordination); and mathematics (e.g., computation, problem solving). Learning disabilities are separate and distinct from global intellectual deficiencies because the disorder affects the learning of individuals who otherwise demonstrate at minimum, average intellectual abilities essential to thinking and reasoning.

Intellectual disability (ID) is categorized by significant deficits in both intellectual and adaptive functioning across multiple situations, originating before the age of 22 (American Association on Intellectual and Developmental Disabilities; AAIDD, 2021). It is typically categorized using a (or some combination of) intellectual ability measures (i.e., global score or full-scale intelligence score). A score of two standard deviations or more below the mean (e.g., ≤70) on a standardized measure would be categorized as ID. On the other end of the spectrum, gifted identification is a more complex classification, and eligibility criteria for gifted and/or advanced placement programs across Canada varies considerably. While there is not a universally accepted definition, in a review of
gifted education policies across Canada, Kanevsky & Clelland (2013) identified the two most frequently cited conceptualization of giftedness were speed of learning and the precocious development of abilities. Generally, for an individual to be considered gifted, they must have a score $\geq 2$ SDs above the mean on a standardized, individually administered measure of intellectual ability (e.g., IQ $\geq 130$).

While the definitions of various special education classifications are nationally recognized and defined similarly across the country, the assessments that are used and the specific identification process varies. Learning disabilities can be assessed using a variety of tools, and there is no evidence of one reigning protocol consistent among provincial or even within specific school board systems. Moreover, the special education categories and subsequent eligibility criteria for services various by province. For example, in Ontario schoolboards, many specialized or intensive support programs require formal identification of a LD or a formal educational exceptionality for specific forms of support to be available (Special Education in Ontario, 2017). However, for diagnosis of ID, there is considerably more clarity and consistency, likely because of this being a diagnostic category in the DSM-5 (American Psychological Association, 2013) and the associated criterion outlined. According to the DSM-5 (American Psychological Association, 2013), deficits must be confirmed by both clinician assessment and individual standardized intellectual testing. It must also have its onset in the developmental period (i.e., before age of 22). Both the DSM-5 and AAIDD specify that low performance on a test of intellectual ability is necessary, but not sufficient for diagnosis; an assessment of adaptive functioning must also be collected. This emphasizes the need for careful clinical judgment in identifying children with ID. Regarding gifted identification, like learning disability, there is considerable variability in eligibility criteria. However, as with ID, this identification is more consistently based predominately on the score of an assessment of global intellectual functioning. A provincial policy review by Kanevsky and Clelland (2013), found that two features characterized current Canadian policies: flexibility and variability. Flexibility was evident by the permissive language allowing decision makers at the district, school, and classroom levels to decide what was appropriate for the learner, which ultimately results in variability of intervention and support.
1.4.4 Summary. All considered, the Canadian psychoeducational assessment landscape is diverse. Through this review however, clear overarching themes emerged:

1. the general approach is to test when needed, not at a broad level;
2. formal documentation of the assessment upon which diagnosis or identification is made is required;
3. the customized program created for the student which will vary significantly based on who is involved and what resources are available;
4. the importance of multiple perspectives (e.g., administration, psychologists, teachers, parents, and students) are identified as a vital and intended part of the process to have accurate information.

The appraisal of this applied literature, and subsequent conclusions drawn, was integral to establishing core features of the dissertation study. Most notably, the premise of collecting multiple perspectives for richer data. Still, before the current study is detailed, a final collection of literature must be appraised. Not only is it imperative to know the processes in place, but also, to understand who the core members of the process are and specific roles that they play. This final literature review provides these details.

1.5 Psychoeducational Assessment Roles and Allies

 Teachers (refers to both classroom and special education teachers) arguably play one of the most central roles in the child’s educational experience. They design and implement lesson plans, monitor provincial guidelines and curriculum, develop creative strategies and tools to engage learning, and support the child day-to-day. Teachers must also contend with the reality of significant heterogeneity in their classrooms. This heterogeneity is increasing for a variety of reasons, including immigration, increased levels of at-risk students and unique learning needs, and incorporation of exceptional students in general education classrooms (Stanovich & Jordan, 2004). The overarching expectation of teachers is that they will make decisions every day that positively affect academic development of their students as well as continually evaluate the students’ short (e.g., daily, weekly) and long- term (e.g., semester, yearly) progress. Therefore, it is common for the teacher to be the originating source of the referral for psychoeducational
assessment and/or specialized education intervention. However, while teachers are often the source of a referral or recommendation, in almost all cases they are not the assessors, nor do they make diagnostic identification or classifications. Nevertheless, they are primarily responsible for implementing the suggested modifications (sometimes with support of an educational assistant) and monitoring the student’s progress after identification and/or diagnosis is in place.

In instances where evaluation is needed, school psychologists are considered the experts in assessment and can provide invaluable insight to better understanding the student’s learning challenges and observable behaviours. In terms of psychological services, each province will differ. In Ontario for example, education-related psychology services are most commonly provided by school psychologists. In some cases, contracted psychologists (who are primarily private practitioners) are also consulted to conduct an ability assessment. Education and/or school psychology has evolved considerably in Canada to being considered an important partner in promoting both the psychological and educational needs of children (Jordan et al, 2009). These psychologists are formally trained with depth and breadth of knowledge regarding both psychological and educational matters, including measurement, assessment, prevention, program evaluation, research, intervention and promoting learning (Jeary & Schwean, 2011; Jordan et al., 2009; Khalil, 2017). For evaluation and support for intervention, they are a vital part of the team.

Based on these responsibilities, it seems evident that communication and a common “language” between teachers and school psychologists is an important part of successfully supporting the learner. While psychologists provide a valuable evaluation, the teacher plays a pivotal role in developing and implementing the IEP for the child, using assessment information and insight from various sources (psychologists, parents, school administration, the child). Therefore, teachers are at the forefront of implementation of the individualized education approach to support those with more complex learning needs. However, they cannot do this alone and without support, and rely on the insights and expertise of the psychologists to guide them, as well as assistance in the form of administrative resources and familial support.
Gaining this appreciation for the roles that teachers and psychologists play, the next central component is to better understand the challenges they face. To productively create support systems and provide solutions, one must first recognize the barriers to success that exist in the current climate. Again, this was integral to informing the current study design.

**1.5.1 Identifying the Issues in Current Psychoeducation Practices.** While significant improvements to special education practices have been made, no system is without flaws or limitations. Thoughtful consideration and review of these processes is imperative, given that equity of treatment for children with significant learning needs is consistent with new ideals that having access to quality supports is a possible human right (Ontario Human Rights Commission, 2019).

The current special education resources and support procedures do not happen without considerable work on the part of those who facilitate them. As a result, there are instances where both individuals and groups struggle to accomplish their goals, and as expected in any high-stakes collaboration, instances where frustration between members exists. To appreciate these dynamics, the central issues from the perspective of each of the key stakeholders (*school administration, teachers, school psychologists, children and families*) are examined.

**1.5.1.1 School Administration.** At the administration level, one of the most pressing concerns is availability of resources. With the continuously growing number of children who require specialized and individualized support, resources are harder to come by. A study by Jordan and colleagues (2009) found that psychologists reported a mean case load of approximately 2500 children across their schools/district. Even with this high demand, schools rely on a limited number of psychologists to assess the needs of all their students, as well as provide assessment as efficiently as possible. This swiftness of assessment comes at a cost, most notably, lack of time with the child and lack of ability to communicate with the administration and other parties (Reader, 2014). In some cases, heavy caseloads result in the school district contracting out external private practitioner psychologists to facilitate faster assessment. However, this is a disadvantage, as only
school-based psychologists (who are employees of the school district) can collaborate with school personnel and relevant agencies to tailor intervention and recommendations (Lean, 2016), which strengthens the quality of support.

Moreover, given high ratio of students to psychologists, most schools sit with long wait lists. This not only delays resources to the child but can frustrate teachers and parents in the interim. In addition, the divergent needs of the children in various special education situations means that the school needs to provide resources to be available to assist in the classroom. Without efficient assessment time, many of these resources are not allocated appropriately, which can ultimately result in essential claw back of resources in other places.

1.5.1.2 Teachers. The demanding caseloads of school psychologists is no secret to teachers, and they acknowledge this while balancing their own heavy workloads with regards to special education support. In a study conducting by Reader (2014), teacher perceptions of the school psychologist role across Newfoundland were evaluated. Results indicated that teachers were frustrated by the current school psychologist to student ratios, and the subsequent waitlists and issues with prioritization of services that were a result. Teachers in this study also expressed the need for school psychologists to be present on a more regular basis, and available for consultation and referral. These results are consistent with other Canadian provincial examinations, where teachers report frustration in the lack of availability of psychologists for consultation, discussion, and inclusion in the support provided to the child (Corkum et al., 2007).

Beyond the availability of psychological resources, another issue for teachers that arose in the literature is the lack of clarity around the school psychologist role and how to appropriately interpret their feedback. A 2016 study of Alberta elementary school teachers showed that teachers have only little to some knowledge of the role of school psychologists, and further, there was little consistency on when to contact them for assistance (Craig, 2016). Specific to the implementation of psychologist feedback, Reader’s 2014 study indicated that most teachers try to implement the psychologist’s recommendations in their classrooms, but that they often find the reports vague, lengthy,
and difficult to implement. This finding is consistent with previous evidence, showing teachers struggle to effectively integrate psychological input from assessment reports (Groth-Marnat, 2009; Mallin et al., 2012). Therefore, more time with the psychologist to clarify suggestions and discusses implementation in the classroom would be a significant improvement to the process.

**1.7.1.3 School Psychologists.** The frustration felt by teachers does not exist within a vacuum, it is shared and echoed by school psychologists across Canada. Increasing demand for psychological support and assessment makes it challenging for psychologists to deliver comprehensive and quality services (Reader, 2014; Khalil, 2017). A study by Jordan and colleagues (2009) finds that psychologists reported spending a very small proportion (2%) of their time consulting with teachers, however more that 50% of the sample indicated their desire to spend more time doing this. To a lesser extent, they also reported wanting to spend more time in discussion with administration (29.2%) and with parents (46.8%). Harris and Joy (2010) evaluated educational psychologist’s perspective on professional practice, which showed psychologists engaging in a wide range of activities and responsibilities, with psychoeducational assessment the most time consuming. They also reported a preference for spending more time on counselling and consultation, research, and prevention activities. This was replicated in a more recent study by Khalil (2017), which showed Nova Scotian school psychologists spend most of their working hours conducting psychoeducational assessments and would prefer to reduce the amount of time spent here so that they could spend more time building and engaging in tasks that build on their core competencies. This evidence suggests that the motivation and need for increased consultation in the special education climate is a shared, mutually important mentality.

**1.5.1.4 Children and Families.** This section would not be complete without addressing the ultimate stakeholder in this, the child. The issues of limited resources, delay in assessment, dismantled communication between teachers and psychologists ultimately all result in a less-than-ideal learning environment for the child. The roles of both the teacher and psychologist are to promote a healthy, stable, and productive learning environment that allows the child to thrive both academically and
psychologically. The breakdowns in assessment system only serve to further delay and interrupt the services and best interest of the child.

Moreover, this burden not only falls on the child, but onto parents and families. Parents are the strongest advocate for their child, and when the child struggles it can cause frustration and distress for the parent as well. Parents are also required to be an active contributor in the development of the IEP. In a U.S. study by Hanscom (2015), researchers explored the relationship between public school educators and parents of children with disabilities. Individual interviews with each of the team members of three separate IEP teams were conducted. Findings suggested that parental training, parent-friendly language, and more regular meetings would reduce frustration on the part of the parents and increase success for IEPs. There is limited research on the parental experience in Canada. However, one Canadian study by MacKichan and Harkins (2013) provided a qualitative account of parental perceptions of special education planning process in Nova Scotia. This was a small study using guided interview of eight parents. Results showed parents to be a vital component of the process, and that inclusion of their feedback and support from the very start of the plan was integral to success and growth of the child. The literature points to involving both the child (where appropriate) and the parent(s) in for success of the special education plan.

1.5.1.5 Summary. This overview articulates the concerns of and barriers for success across multiple stakeholders. While they are all different perspectives, key themes emerged. Taken together, these issues are summarized into three central categories: limited resources, breakdown of communication, and lacking knowledge of other’s roles.

Each of the individual stakeholders discussed are an integral part of the special education support system and the issues raised are valid and important to understand for progress to be made. However, while multiple perspectives are touted as the right approach, multiple perspectives are only useful when they are actually hearing and learning from one another, in other words – communicating. In my analysis, communication was the common theme that underscored all the different stakeholders’ concerns. Therefore,
increasing communication between interested parties seems like a logical approach for establishing a more effective system. As research in this area articulates, a common understanding from all participants is problematic in the current system; this common understanding was shown to be fundamental to better partnership and more effective IEP implementation (Goepel, 2009). At the current time, there is a considerable lack of communication and collaboration between teachers, parents, and psychologists that disrupts the efficacy of the assessment process and delegitimizes the development of the IEP.

1.6 Literature Review Summary

This examination of the field of study began with an overview of the historical influences of ability assessment and measurement, and how our contemporary interpretations of test structure came to be. Next, the psychometric and societal considerations of ability assessment were explored to appreciate the context in which assessments take place and how they must be carefully interpreted. From there, the focus shifted to surveying the assessment practices and diagnostic approaches specifically in the Canadian context. Finally, this summation of topic collections was rounded out with an examination of the psychoeducational roles and allies.

This literature review provides a comprehensive foundation upon which the research questions were developed and set the stage for the study protocol designed for this dissertation. Based on this review, my program of study was focused on moving psychoeducational assessment practices outside of simply using a standardized test. The goal was to utilize robust intelligence measures to create new tools that would capture the real-world manifestations of cognitive ability strengths and weaknesses. By designing classroom and home measures that capture teacher and parent perspectives, this would offer a more wholistic approach psychoeducational data collection, broadening both the breadth of data collected and strengthening collaboration between personnel in diagnosis, intervention, and monitoring.
1.7 The Present Study

As evidenced by literature across intelligence and ability assessment, psychoeducational practices, and the relevant stakeholders’ challenges, the identification process for children with learning challenges and special education needs is complex and multifaceted, involving several approaches, processes, and individuals. It also involves a deep history of theoretical development and modelling approaches, expertise in both education and psychology, knowledge of scientifically informed practice, and an awareness of the vast number of assessments available and what they can offer. There are societal and practical concerns that must be accounted for, and the assessment of young children is complicated further by their unique needs and rapid development. Cognitive assessment in the context of special education is made more complex by the need for collaboration of many different individuals, all with varying levels of knowledge and differing motivations. However, the shared motivation among these individuals is the success and well-being of the child. This understanding led us to explore how we as researchers can expand upon the current assessment and models for evaluation used to improve the quantity and quality of data collected and consultant in the psychoeducation process.

1.7.1 Research Problem. Considering the various collections of literature together, three primary limitations to the current assessment process were identified to address in the current study; *lacking communication, limited richness of information*, and *delays to support*.

1.7.1.1 Communication. The use of ability assessments has been established as an integral piece of the special education puzzle; however, it is the area where there is considerable deficit in communication between parties. Canadian teachers’ feel uninvolved, misinformed, and unsupported in the assessment process, while school psychologists feel overwhelmed by case load, unable to participate in collaboration, and that it is often difficult for them to invest as much time as they feel is appropriate into the support of the child referred. Moreover, though evidence suggests the importance of parental insight for success, contributions from parents are often overlooked or considered as an afterthought. Based on these findings, it became evident that one of the
ways to improve the assessment process is by facilitating easier and more efficient interaction and knowledge sharing between school psychologists, teachers, and parents.

1.8.1.2 Richness of Information. In addition to the missing communication between stakeholders, the nature of the current standalone assessment piece is that the richness of information available is lacking. Additional details, conformation from multiple sources, and understanding how ability manifests itself differently in home and classroom environments all adds to establishing patterns of strengths and weaknesses for that child and having a more well-rounded understanding of what “intelligence” means and how it manifests in real life.

1.7.1.3 Delays to Support. Finally, the assessments needed for the identification and diagnosis of learning and behavioural challenges have excessively long wait times, which is a major concern because it results in delayed support for the child. Left unidentified, these challenges put enormous strain on the child, their teachers, and families and can negatively affect the child’s educational progress, academic success, and well-being (Cortiella & Horowitz, 2014). Research also suggests that identification needs to occur as early as possible to minimize negative impact (Al Otaiba & Fuchs, 2006; Johnson, 2017; LDAC, 2015) and that early identification allows more effective implementation of learning strategies to benefit the child (Fletcher & Foorman, 1994; Ferrer et al., 2015; Lovett et al., 2017; Vaughn & Fuchs, 2003). Contributing to this is that integration of teacher and parent observations into psychological diagnosis has been seriously neglected; with assessments often completed in isolation of teacher and parent input, background information is limited, and testing time can be lengthened as more components are needed to understand the child’s full scope of functioning and challenges. Therefore, the need for an evidence-based tool is clear; this can help to identify children needing intervention earlier, and further, integrate teacher and parent input into the assessment to allow for a more comprehensive picture of the child’s abilities and challenges.

1.7.2 Study Rationale. School has a powerful influence on the child’s health and well-being and is in part, largely responsible for shaping the child’s experiences,
especially regarding learning and academic success. Children need support as early and effectively as possible to maximize their success and to allow both academic and personal growth.

School psychologists and teachers are both integral parts driving support and development of children, particularly those with special education needs. Therefore, a system that allows those two key members to work more closely with each other and collaborate more effectively would be beneficial to the special education system, and to the individual students. While there have been previous attempts to build alliance between school psychologists and teachers, a unified process for identifying difficulties in learning is still missing. Currently, tools that combine the best principles of psychoeducational measurement with teacher observations are not available, and this dissertation research addresses this gap. While teacher- and parent- based assessments are available, classroom- and home-centered assessments that align specifically with the diagnostic tool are lacking. Therefore, when a child scores in a particular way we do not know how this will manifest in the classroom and in the home. These tools will help to empower teachers; rather than simply being given assessment results, teacher observations feed into assessment and decision-making process from the start. Moreover, parent perspectives and observations will be accounted for when designing specific learning plans. This contributes to a more collaborative and interactive approach to assessment and intervention planning. Finally, the creation of these tools can help streamline the assessment for psychologists by providing them with more detailed insight into the child’s behaviour to facilitate more efficient assessment plans, and further, provide feedback in language that teachers and parent can understand and successfully implement.

1.7.3 Purpose and Objectives. The purpose of this study is to create a Classroom Cognitive Ability Screener and Home Cognitive Ability Screener that would be completed by teachers and parents, respectively, to capture relevant background and contextual information about the child prior to psychoeducational assessment. To do this, the objectives were to identify specific behaviours observed in the learning and social environment of the classroom and home, and then use these behavioural data to create a
set of screening measures that could align with current cognitive measures used for diagnosis (the WISC-V).

By identifying these observable classroom and home behavioural markers, we can use them to create a pre-screening assessment tool. Teachers capture evidence from a pedagogical perspective, parents from daily functioning perspective, and psychological assessments show the patterns of strengths and weaknesses in abilities; therefore, combining these three data sources is key to making the evaluation data richer and the overall assessment process more useful. By linking assessment of cognitive abilities to real-world behaviour, we can provide corroborating evidence between what the psychologist observes with what the teacher sees in the classroom.

Moreover, given the monumental impact of the pandemic on classroom experience and learning over the past 18 months, when a vast majority of the data collection for this study took place, an additional purpose of this research program that emerged was to examine the impact that the pandemic has had on complex and diverse learners, through qualitative interviews with parents.

1.7.4 Research Questions.

1. Are there identifiable, observable behaviours that occur in the home and classroom environments that will correlate with key facets of the five-factor model of cognitive domains?

2. Can the presence and frequency of these behavioural descriptions be used as reliable questionnaire items on home and classroom screening measures?

3. From the perspective of parents, in what ways has the COVID-19 pandemic affected learning and development in children with diverse learning needs?
CHAPTER 2

2. Method

Given the sequential and iterative nature of this multi-phase collection of studies, to begin, a summary of test construction methodological approach is presented. Next, detailed descriptions of the participants, materials, and procedures for each of the four studies is outlined.

2.1 Test Construction Approach

The methodological approach for the development of the pilot Classroom Cognitive Ability Screener measure followed the test construction steps and guidelines outlined by DeVellis (2016). This includes eight main steps, including: (1) establishing what it is you want to measure, (2) generating an item pool, (3) determining the format for measurement, (4) have initial item pool review by experts, (5) consider inclusion of validation items, (6) administering items to pilot sample, (7) evaluating the items, and (8) optimizing scale length.

2.1.1 Establishing Study Measures. The first step was to clearly establish which measure of cognitive ability would be used to model the screening tools after. The WISC-V was selected for a variety of reasons. First, there is published documentation reporting the psychometric rigour of the measure’s development and norms (see Technical Manual, 2014), and it also provides a comprehensive evaluation of cognitive abilities. Next, given its Canadian standardization and subsequent publication in 2014, it provides both up-to-date and Canadian normative data. Finally, Weschler assessments, and specifically the WISC-V, are some of the most used tools across the country, allowing for generalizability across the provinces and territories.

2.1.1.1 The Five-Factor Model. The WISC-V structure falls within the hierarchical model of cognitive ability previously discussed. It is composed of five primary ability constructs (stratum II), each comprised of various narrow abilities (stratum I), which all contribute to a single general ability (stratum III). While not specifically structured on CHC theory, the WISC-V structure was developed based on
factor analytic analyses employing a hierarchical model of general intelligence at the top, with various related abilities at the level beneath (Wechsler, 2014). The WISC-V framework allows for four levels of interpretation.

1. **Full Scale IQ (FSIQ) Score.** One, overall score of ability based on performance as the primary index level.
2. **Primary Index Scores.** There are five primary domains captured.
   a. **Verbal Comprehension, Visual Spatial, Fluid Reasoning, Working Memory, and Processing Speed.**
3. **Ancillary Index Scores.** Further breakdown of abilities, including:
   a. **Quantitative Reasoning, Auditory Working Memory, Nonverbal, General Ability, and Cognitive Proficiency.**
4. **Complementary Index Scores.**
   a. **Naming Speed, Symbol Translation, and Storage and Retrieval.**

For the purposes of this study, only the primary index scores (see Figure 1) were used.

**Figure 1**

*WISC-V Primary Index Scores*

*Note.* Each of the primary index scales is composed of two subtests scores.
2.1.1.2 Establishing Item Measurement. After deciding on the WISC-V as the model of cognitive ability, the next step was to clearly establish what the new tools would capture. This process began with the development of the Classroom Cognitive Ability Screener. The purpose of the home and classroom screener tools is to capture behavioural characteristics that conceptually map onto and align with the five primary indexes of the WISC-V. Therefore, to align with the project goals, *behavioural characteristics* were defined as day-to-day, discernable behaviours that could be observed in the classroom by the teacher.

This approach allowed for the generalizability across classroom experiences (and informants) and allowed for objective behaviours, or lack thereof, to be captured. Here the principle of specificity (DeVellis, 2016) was applied by way of locus of control; by creating items within the specific context of the classroom this allowed for streamlined and context-focused item generation. Moreover, the principle of theory as an aid to clarity (DeVellis, 2016) was applied by conducting a thorough review of the psychoeducational assessment literature and making methodological decisions based upon relevant findings.

2.1.2 Sample Item Pool and Format. The next step was to generate the pool of sample items. The sample items (*N*=20) were descriptions of behaviours that are likely to be observed in the social and academic environments of the classroom. The sample items were developed by identifying examples of specific behaviours that might be observed in a classroom environment that would align with one of the five primary indexes. An example from the Verbal Comprehension includes “*Looks lost/confused after instructions have been given*”.

Inspiration for sample items was supported by a thorough review of a variety other sources. This included other behavioural assessment measures like the Behavior Assessment Scale for Children – Third Edition (BASC-3; Reynolds & Kamphaus, 2015) and the Cognitive Assessment System – Second Edition (CAS-2; Naglieri et al., 2014). In addition, teacher resources like the Cognitive Processing Assessment and Intervention Tool (York Region District School Board, n.d.) and the Trouble Shooting Tool for
Learning Support and Classroom Teachers (Thames Valley District School Board, n.d.) as well as interpretive chapters on use of the WISC assessment for cognitive ability assessment in children (Weiss et al., 2006; Weiss et al., 2015). The purpose of generating the sample item pool was to allow for items to be reviewed and refined by the various focus groups in Study 1.

In addition to the creation of a pool of sample items, the format and layout of the Classroom Cognitive Ability Screener was developed and revised alongside the development of items. Based on review of other behavioural measurements, it was decided that capturing the frequency with which the observable behaviours took place on a 5-point Likert scale (*Never* to *Always*) would be appropriate for the intended purpose of this measure. While both strength-oriented and challenge-oriented items would be used, challenge-oriented items would be reverse coded, such that higher scores would always represent a strong command (high frequency) of the behaviour, and lower scores a challenge (or lacking frequency).

Next, to bolster the quality and strength of the screener items and layout, a series of focus groups were conducted by investigators. Participants were invited to participate in sessions to revise, eliminate, and generate new items for the initial item pool. In addition, participants were also invited to review and comment on the screener’s format and instructions. See Figure 2 for a visual overview of the progression of the screener development across Studies 1 and 2.
2.2 Classroom Cognitive Ability Screener Item Review (Study 1)

2.2.1 Participants. Focus group participants included 17 graduate students in the School and Applied Child Psychology, Clinical Psychology, and Social, Personality & Developmental Psychology (SPDP) programs at the University of Western Ontario.
Graduate students in the Clinical or the School and Applied Psychology programs were recruited based on their assessment course instruction and experience and/or familiarity with psychoeducational assessments. Graduate students in the SPDP program, while not specifically trained in the field of psychoeducational assessment, were recruited based on their enrollment in a Test Construction and Scale Development graduate course, and therefore had relevant knowledge of test construction procedure and specific training in the measurement and item development.

A total of three focus groups were conducted; each had four to seven students enrolled. All students were PhD-level, ranging in year of study from first to fourth year. While generally evenly split across first to fourth year levels, majority were PhD 3 (35%), with the remaining in PhD Years 2, 3, and 4 at 12%, 29%, and 24% respectively.

2.2.2 Materials. Participants were provided with the Graduate Student Focus Group Package; see Appendix A), which included the following.

2.2.2.1 Session Preparation Document & Sample Items. This outlined the content to be covered in the session, provided working definitions for the WISC-V (Wechsler, 2014) Composite Score constructs, including: Verbal Comprehension, Fluid Reasoning, Visual Spatial, Working Memory, and Processing Speed, and listed sample items, which consisted of descriptions of behavioural qualities conceptually aligned with the five indices of the WISC-V.

2.2.2.2 Background Information Document. This document outlined the general formatting approach, and proposed scale of answers. (Note: This document was only provided to Groups two and three as it was developed after the initial session with Group one).

2.2.3 Procedure. For the first two focus group sessions, participants were recruited via email recruitment poster, distributed through their individual program coordinators. Eligibility to participate included: 1) MSc or PhD level student, 2) Clinical or School Psychology program and 3) Familiarity with Wechsler Intelligence Assessments. The third focus group was conducted within Test Construction and Scale
Development graduate course as a part of the course requirement; all students were part of the SPDP cluster. Data collection for the sample item development was approved by the University of Western Ontario Non-Medical Research Ethics Board (REB ID#: 111746).

All graduate student focus groups took place between September and November 2018. Focus groups were conducted on university property and facilitated by the research team. The principal investigator gave a brief overview of the study aims and overall goal of the study (approximately 15 minutes), and the graduate student researcher provided the instructions for the focus group (approximately 10 minutes). Focus group participants were given a list of sample items, as well as a definition of each of the relevant study constructs.

Participants were instructed to review the sample items and were also invited to generate new items (specific, observable classroom behaviours). The focus group participants were instructed to 1) assess how relevant they felt each item was to the intended construction 2) evaluate the item’s clarity, and 3) point out ways of tapping into the phenomenon that the researchers had not yet captured. Participants worked in pairs or small groups and were encouraged to discuss opinions and ideas openly. In addition to the print versions of the sample item pool and construct definitions, participants were also provided with highlighters, pens, post-it notes, and blank paper and were encouraged to document feedback on the printed documents and stationery supplied. They were informed that all study material and stationery would be collected at the end of the focus group session.

In the latter half of the session, the participants came together with researchers and discussed ideas as a group. During this portion of the session, oral feedback was documented to make note of suggestions and concerns. At the end of the session, all stationery used by participants was collected. Based on the researcher’s notes as well as all written feedback from the participants on documents, the sample item list was updated.

2 The ethics application approval letter for this protocol (Study 1), as well as all subsequent studies that followed, are documented in Appendix B.
and refined by the researcher after each focus group session. All revisions were completed within two days of the focus group sessions. Both general and specific item feedback was documented in a summary document after each focus group session to capture and document the progression of the tool. Items generated and revised during this study became the initial item pool for the subsequent expert review.

2.3 Expert Review (Study 2)

After generating the initial item pool, the next step was to have the items undergo expert review. Researchers determined that the expert review process should capture both applied and academic feedback, and from multiple informants within the applied context. Therefore, the expert review included three expert groups including: school psychologists, faculty researchers, and teachers.

School psychologists (representing both academic and applied experience) were selected given their formal education, training, and experience with psychoeducational assessment and expertise in conducting psychoeducational assessments with children. Faculty researchers whose research focus and/or clinical experience was based in assessment or clinical practice were invited as the academic insight. Finally, classroom teachers (applied) were consulted to ensure the appropriateness, feasibility, and user-friendliness of the Classroom Cognitive Ability Screener. A sequential, iterative review process approach was utilized; the review process was conducted separately for each of the three expert groups, and after receiving feedback changes were made at each stage of the review and then moved to the next group for review.

2.3.1 School Psychologist Focus Group (Study 2A).

2.3.1.1 Participants. Participants included practicing school psychologists recruited from the Thames Valley District School Board (TVDSB) who had familiarity with and had previously used Wechsler assessments. A total of three participants were included in the focus group. Participants ranged in years of experience working from 10-20 years. All participants worked with a variety of age groups, ranging from 3 to 21
years, and their areas of specialty included: learning disability, intellectual disability, ADHD, and Autism.

**2.3.1.2 Materials.** Psychologists were provided with the School Psychologist Focus Group Study Package; see Appendix C), which included the following:

*Classroom Cognitive Ability Screener Initial Item Pool.* Initial item list (N=90) based on focus group derived from Study 1. Items were descriptions of behavioural qualities that conceptually aligned with the five indices of the WISC-V (Wechsler, 2014). Items for each of the constructs ranged from 15-21 items.

*Construct Definitions_V1.* Working definitions for the five Primary Index Scales.

**2.3.1.3 Procedure.** Participants were recruited by email advertisement. An email was distributed by TVDSB administration to all psychology staff as a general call-out to qualified individuals (*Psychologists, Psychological Associate, or Psychometrist*) who might be interested in participating. Individuals interested in participating were invited to contact the researchers directly. When contacted, researchers shared the Letter of Information and Consent Form with the individual to review and decide if they wanted to pursue participation. Interested individuals were polled to determine and schedule a convenient meeting time for all participants. Data collection for the sample item development was approved by the University of Western Ontario Non-Medical Research Ethics Board (REB ID#: 111746).

This focus group was conducted in April 2019. The session was conducted on university property and was facilitated by the research team. Upon arrival participants completed and signed the consent form and the researchers(s) reviewed and signed-off. Prior to sign-off, the researcher asked if the participants had any questions or concerns regarding what they read in the Letter of Information or Consent. As with graduate focus groups, the principal investigator provided a brief overview of the study aims and overall goal of the study and the graduate student researcher provided the instructions for the focus group. The focus group participants were given the School Psychologist Focus Group Study Package of documents to reference. The psychologists first worked individually to review
items for approximately 20 minutes. They were instructed to 1) assess how relevant they felt each item was to the intended construction 2) evaluate the item’s clarity, and 3) point out ways of tapping into the phenomenon that the researchers had not yet captured. They were encouraged to document feedback on the printed documents. After the initial individual review session, the group came together to discuss potential item revisions and additions. Participants were encouraged to discuss opinions and ideas openly. Researchers facilitated this discussion, providing clarification to participants and documenting feedback. A light dinner was provided during the sessions, and overall, the focus group took approximately 2 hours. At the end of the session, participants were thanked, debriefed, and given a small gift as a token of thanks for their time and efforts.

The graduate student researcher took notes during the focus group session as well as collected all paperwork from participants. Based on the researcher’s notes as well as all written feedback from the participants, the item list was refined which included item removal, additions, and revisions. Revisions to the construct definitions were also made to address participant concern that the language was too advanced. Revisions were completed within one month of the focus group session. Both general and specific item feedback was documented in a summary document to document the progression of the tool. This refined item list and revised construct definitions were used to create the updated list of items (Version 2) to be used in the next phase of review, the faculty review panel.

2.3.2 Faculty Member Panel Review (Study 2B).

2.3.2.1 Participants. The expert panelist members were faculty researchers who were recruited specifically based on their research focus and/or clinical experience. Potential participants were identified based on their expertise in one (or more) of the following areas: 1) psychoeducational assessment, 2) scale and measurement development, and 3) clinical or school psychologist practice. A total of four experts participated in the review; three were Associate Professors and one an Assistant Professor. All four participants were also either a director or senior scientist at either a
community mental health organization or training institution for child mental health and assessment.

2.3.2.2 Materials. Each of the faculty review participants were given a Faculty Panel Review Study Package; see Appendix D), which included the following.

*Classroom Cognitive Ability Screener Initial Item Pool V2*. The updated item list (N=90) was generated based on feedback from Study 2a. As with version 1, it consisted of descriptions of behavioural qualities that conceptually aligned with the five indices of the WISC-V (Wechsler, 2014). Items for each of the five constructs ranged from 15-22 items.

*Construct Definitions V2*. Updated construct definitions were provided for each of the five Primary Index Scales. Updated definitions were based on feedback from Study 2a.

2.3.2.3 Procedure. Participants were recruited by email. Participants were given a brief summary of the project and asked if they were interested in serving on an expert faculty review panel. Four faculty experts were contacted, and all agreed to be a part of the panel. All data collection took place electronically; no in-person or group discussions were held. The review took place between May – June 2019. Panel review data collection was approved by the University of Western Ontario Non-Medical Research Ethics Board (REB ID#: 111746).

All participants were given the Faculty Panel Review Study Package. They were instructed to evaluate the items to ensure that they appropriately capture the intended construct and are representative of key behaviours, as well as suggest new items that would capture the associated construct. They were asked to document all comments and revisions using the Word tracked changes feature (Microsoft Office 365, 2019) and confirm via email upon completion. All panelist feedback was collected within two months of the original distribution. All feedback was reviewed and compiled it into one summary document to capture and document the progression of the tool. Minor editorial or wording changes were made to the items as appropriate. Alternative item suggestions
or major item revisions were discussed with the principal investigator, and final item
decisions were made. This list of items will be used to create the draft pilot Classroom
Cognitive Ability Screener that was shared with teachers for the final phase of expert
review.

2.3.3 Teacher Review Panel (Study 2C).

2.3.3.1 Participants. Teachers were invited to participate in a review of the
Classroom Cognitive Ability Screener (Draft Pilot Version). Teachers with varying levels
of experience teaching were eligible to participate. Eligible participants were: 1) classroom teacher (full-time or part time) and 2) currently taught in an Ontario school.
A total of three teachers participated in this study. Participants ranged in years of
experience working from 6-33 years. All participants worked with a variety of grades,
ranging from Kindergarten to Grade 9, and two of the participants had previously or
currently worked with special education groups.

2.3.3.2 Materials. All teacher participants received the Teacher Review Study
Package (Appendix E) to review provide feedback on. This included:

*Classroom Cognitive Ability Screener (Draft Pilot Version).* The draft pilot
version of the Classroom Screener included a section to capture relevant demographic
information (e.g., physical, or medical conditions that may limit or impact performance,
current special education accommodations the child may be currently receiving, and other
special circumstances or details that the teacher may feel would impact performance).
The items \(N=105\) were finalized based on feedback from Study 2B. As with the
previous versions, items were descriptions of behavioural qualities that conceptually
aligned with the five indices of the WISC-V (Wechsler, 2014). There were 18-25 items
per construct.

2.3.3.3 Procedure. Participants were invited to participate in an expert review of
the pilot Classroom Cognitive Ability Screener. Participants were invited via public
social media outlets (e.g., Facebook). All review and data collection took place
electronically; no in-person or group discussions occurred. The review took place
between January - April 2020. The teacher review of the pilot screener data collection was approved by the University of Western Ontario Non-Medical Research Ethics Board (REB ID#: 115313).

All participants were given draft pilot version of the Classroom Cognitive Ability Screener to review, via a secure, individual OneDrive folder (Microsoft Office 365, 2019). They were instructed to evaluate the items to ensure that they are clear, as well as appropriate and applicable to classroom behaviours. In addition, they were asked to comment on the feasibility and user-friendliness of the developed scale, as well as welcomed to suggest new items if they had any specific ideas. They were asked to document all comments and revisions using the Word tracked changes feature (Microsoft Office 365, 2019) and confirm via email upon completion.

All participant feedback was collected within two months of the enrollment in the study. All feedback provided by participants and compiled it into one summary document to capture and document the progression of the tool. Minor editorial changes were made to the items as appropriate. More specific changes included: modifying some of the language to align with terminology used on provincial report cards for ease and consistency across measures, updating demographic items that captured information about the child’s current IEP or special education support, and adding examples to items to make the behaviour more specific. New item suggestions and major item revisions were discussed with the principal investigator. Finally, based on participant feedback and in consultation with the principal investigator, items were reduced to 12 items per construct, for a total of 60 items. Removal of items was determined based on items meeting one (or more) of the following criteria: repetitive/too similar to another item in the same construct, identified by teachers as not applicable or confusing/unclear, and identified as potentially tapping into multiple factors or personality variables. An example of a conceptually similar item reduction item is “Able to solve or construct simple visual problems (e.g., puzzle)”; this was deemed repetitive of the item “Able to take things apart (e.g., puzzles, objects) and put them back together”. Therefore, only the more detailed item was retained in the Visual Spatial construct. An example of an item that was deemed unclear by teachers was “Communicates appropriately with peers”.
Feedback indicated this item was too vague and would not be a particularly good discriminator of Verbal Comprehension, and therefore it was dropped. Finally, an example of an item that was identified as possibly tapping into other constructs was “Does not accept answers at face value”. This was noted as potentially capturing individual differences in personality characteristics, rather than cognitive ability. Therefore, it was not retained on the Fluid Reasoning construct. This implementation of changes and item reduction resulted in the finalization of the Classroom Cognitive Ability Screener - Pilot Version (See Appendix F).

2.3.4 Important Note on Scale Development Process. Before moving forward in the discussion of the Study 4, a significant note to take into consideration is that the next logical step in the development process, after the initial screener development, would be to administer the items to a pilot sample (DeVellis, 2016). This step would allow for the assessment of the screeners’ factor structure and item reliability. Ascertaining psychometric properties of a tool is an essential part of the test development process and was initially a major component of the approved study protocol. Classroom pilot sample testing was scheduled to take place beginning in March 2020. However, due to the pandemic and subsequent health regulations that took effect, this component of the study protocol was not able to proceed as planned. As a result of the ongoing in-person learning school closures and cessation of research applications in the school systems, it became clear that the possibility of in-person, classroom pilot sample would not be feasible, and therefore an amendment to the study protocol was proposed, and subsequently approved. The decisions to 1) create an additional screener component (i.e., Home Cognitive Ability Screener) to strengthen the breadth of data collection and possible validation points and 2) bypass the formal pilot sample data collection and move forward in the development of the screeners by conducting a preliminary validation (i.e., Study 4) were made. As part of the preliminary validation described (Study 4) psychometric qualities of the screeners will be evaluated as data allows; however, it is imperative to recognize that procedurally, this approach does not represent standard, best practice for scale development.
2.4 Home Cognitive Ability Screener Adaptation (Study 3)

Along with important teacher insights, the child’s parents are also able to provide valuable context about the child’s daily behaviour and evaluate relevant behaviours successfully. They can assess how the child handles challenges in the home across various contents (during game playing, sibling interaction, homework, chores, daily functioning). Thus, the Classroom Cognitive Ability Screener was adapted to create a Home Cognitive Ability Screener to be completed by parent(s) and/or guardians. See Figure 3 for a visual overview of the Home Cognitive Ability Screener development process.

Figure 3

Home Cognitive Ability Screener Development Process

2.4.1 Item Development. For the Home Cognitive Ability Screener, establishing what to measure was in practice, a comparatively more straightforward process given the
previous development the pilot classroom screener. The purpose of developing this additional screener was to increase the amount of available background information about the child by capturing behavioural data from multiple informants. Specifically, researchers deemed that a home version of the screener would allow parents (and/or primary caregivers) to provide behavioural evidence in a different context. Therefore, it was determined that the same core constructs would be measured by capturing day-to-day, discernable *behaviours* that could be observed in the home environment by the parent(s) and/or primary caregivers. Given that children spend most waking hours in school or at home, the approach to capture both of these contexts felt reasonable. Moreover, other behavioural measures (see BASC-3; Reynolds & Kamphaus, 2015) successfully utilize and advocate for the multi-informant approach of teacher, parent, (and self, where appropriate) data, therefore, investigators felt this approach could be useful in this context as well.

### 2.4.1.1 Initial Item List and Establishing Format.

Given the thorough item development and review process across both academic and applied settings for the Classroom Cognitive Ability Screener (Pilot Version), this was used as the basis for the Home Cognitive Ability Screener item development. The initial item list was generated by modifying relevant items from the pilot classroom screener to the home environment context. The initial item list ($N = 41$) were descriptions of behaviours that are likely to be observed by parents in the home. An example from the Working Memory construct includes “*Successfully collects & organizes different pieces of information to solve a problem* (e.g., *clues, pieces of a puzzle when playing a game*).” To allow for comparison between the home and classroom measures, the format of the Classroom Cognitive Ability Screener was mimicked in the Home Cognitive Ability Screener. Parents, like teachers, responded to the frequency of each of the behaviours on a 5-point Likert scale (*Never to Always*). Again, both strength-oriented and challenge-oriented items were included, and challenge-oriented items would be reverse coded, such that higher scores would always represent a strong command of the behaviour, and lower scores a challenge.
In addition to sample item development, the five construct definitions were adapted into lay language for the purposes of the community parent sample review. Inclusion of the definitions was important for the community parent sample review to ensure that participants understood the nature of the construct that they were evaluating items against.

2.4.1.2 Preliminary Item Review. After the extensive item review process of the Classroom Cognitive Ability Screener (Pilot Version), another in-depth qualitative review process was deemed not necessary. However, once the initial item development was complete, the dissertation advisory committee members were consulted to review. The draft item list (see Appendix G) was distributed to three faculty members (two in Psychology; one Faculty of Education) for review. All committee members had familiarity the project, experience with clinical assessment and/or scale development. This feedback was collected in October – November 2020. Based on the feedback from the committee, items were revised. Changes consisted primarily of minor wording changes and addition of relevant examples. After revision, the result was a finalized list of items (N=42). In addition to the items, committee members were also invited to review the five construct definitions that were adapted for the lay audience; minor editorial suggestions and wording changes were implemented.

2.4.2 Item Review Study.

2.4.2.1 Participants. A community sample of parents were invited to participate in the study to review the Home Cognitive Ability Screener list of items. This sample included a total of 67 participant responses, after data cleaning. Eligible participants were required to be 1) at least 18 years of age and 2) a parent of a child (or children) aged 6-16.

2.4.2.2 Materials. All consenting parent participants received access to an online survey, which included the following components of the Home Cognitive Ability Screener Item Review Study Package (see Appendix H):
Review Instructions. All participants were given information on how to rate items, particularly with regard to the difference between what a child can and will do. They were reminded that sometimes a child’s specific mood, interest, and motivation in a task will impact how they behave and how well they complete that task, and that this is very typical behaviour for all children. They were informed that the purpose of this questionnaire is for parents to assess what the child can do (e.g., is able to do) on the average day and how often that is the case, even though they might not always do it.

Home Cognitive Ability Screener Draft Items. The updated item list (N=42) was generated based on feedback from the Advisory Committee Review. It consisted of descriptions of behavioural qualities that may commonly occur in the home that aligned with the five WISC-V Primary Index Scales. Items for each construct ranged from 7-9 items.

Construct Definition (Parent Study). Updated construct definitions were provided for the five Primary Index Scales. Definitions were adapted into lay language for parents.

2.4.4.3 Procedure. Participants were invited to participate in a review of the Home Cognitive Ability Screener draft items. Participants were invited via public social media outlets (Facebook, parent blogs, etc.). All review and data collection took place electronically; no in-person or group discussions occurred. The review took place in February 2021. The parent review of the pilot screener items data collection was approved by the University of Western Ontario Non-Medical Research Ethics Board (REB ID#: 118012).

All participants were given the Home Cognitive Ability Screener draft items to review via the Qualtrics platform (Qualtrics, 2021). After completing the eligibility and consent documentation, participants were provided with each construct definition and the list of corresponding items. Items were presented one construct at a time. They were instructed to rate each item for both its clarity (i.e., does the item make sense) and appropriateness (i.e., does the item actually measure the specific topic). Participants rated clarity and appropriateness on individual 5-point Likert scales (Very Poor to Very Good). In addition to the ratings, participants also had the option to comment on any specific item you feel
should be changed in some way to make it more relevant and/or clear, as well as suggest new items that they felt would be a good addition to the screener. All participant feedback was collected within one week of the enrollment in the study.

Item ratings were analyzed using descriptive statistics and problematic items (i.e., those that did not meet appropriate threshold for appropriate item rating criteria) were revised for use on the finalized Home Cognitive Ability Screener – Pilot Version (Appendix I).

2.5 Exploratory Validation & Case Study (Study 4)

2.5.1 Validation Data (Study 4A).

2.5.1.1 Participants. A collaborative partnership with the Child and Youth Development Clinic was formed to collect relevant data from children who have already been identified as in need of a WISC-V assessment (or had already had one completed). Children of all ethnicities, socioeconomic status backgrounds, and ability levels were welcome to participate.

A total of four participant cases were enrolled in the study. Child participants ranged in age from 9:0 to 11:0 ($M=10, SD=0.81$), and included both male (66%) and female participants. All participants were English speaking, with no reported gross motor difficulties, and all were reported to have been on an IEP at school. Participants were originally referred to the clinic for various reasons, including, reading concerns, math concerns, attention challenges, academic concerns, and anxiety challenges. Eligible children had been administered a WISC-V assessment within the past 2 years. Parents and teachers of these children were invited to participate to complete the Home and Classroom Cognitive Ability Screeners.

2.5.1.2 Materials.

Classroom Cognitive Ability Screener (Pilot Version). The pilot Classroom Cognitive Ability Screener is a 60-item questionnaire that consists of five categories, including Verbal Comprehension, Visual Spatial, Fluid Reasoning, Working Memory, and Processing Speed items. There are 12 items for each construct. Responses are made
on a 5-point Likert-type scale ranging from 0 (Never) to 4 (Always). As previously discussed, an evaluation of the screener’s factor structure and reliability has not yet been established.

**Home Cognitive Ability Screener (Pilot Version).** The pilot Home Cognitive Ability Screener is a 42-item questionnaire that consists of five categories, including Verbal Comprehension, Visual Spatial, Fluid Reasoning, Working Memory, and Processing Speed items. There are between 9-11 items for each construct. Responses are made on a 5-point Likert-type scale ranging from 0 (Never) to 4 (Always). As previously discussed, an evaluation of the screener’s factor structure and reliability has not yet been established.

**CYDC Background Questionnaire.** Relevant intake information details from the background questionnaire that is collected by the clinic will be used for sample description and relevant background information. This includes the following variables: child’s age, grade, sex, any documented vision, hearing, or gross motor difficulties, language spoken in the home, IEP status, and reason for referral (e.g., current school achievement, clinical and/or behavioural issues). [See Appendix J]

**WISC-V Data (Primary Index Scores).** The WISC-V is an individually administered, norm-referenced intelligence assessment that allows for a comprehensive diagnostic profile of a child or adolescent’s cognitive strengths and weaknesses. It is used with children and adolescents ranging from 6 years, 0 months to 16 years, 11 months of age. The WISC-V CDN allows for a Full-Scale IQ score and is further broken down into five primary domains (primary index scores): Verbal Comprehension, Visual Spatial, Fluid Reasoning, Working Memory, and Processing Speed. The assessment allows further breakdown of abilities through its Ancillary and Complementary Index scores. However, for the purposes of this study, only the primary index scores were utilized.

**2.5.1.3 Procedure.** Eligible participants identified by the CYDC were provided with a Letter of Information (see Appendix K) to decide whether they wanted to participate. Participants who agreed and consented were provided with a unique study ID number (by the CYDC) to allow for matching of WISC-V, Home Cognitive Ability
Screener, and Classroom Cognitive Ability Screener data. Parents were provided with the Home Cognitive Ability Screener link and asked to complete this at their convivence. Parents were also given an online survey link to the Classroom Cognitive Ability Screener; parents were be asked to share this with the child’s primary teacher using a provided email template. When study links were accessed, participants were provided with Letter of Information and Consent, and consent was acquired via electronic link. After completing the screener, participants were debriefed (see Appendix K). All data collection took place electronically via the Qualtrics platform (Qualtrics, 2021). This data collection was approved by the University of Western Ontario Non-Medical Research Ethics Board (REB ID#: 118305).

Item-level performance, including inter-item correlations, item-scale correlations, and coefficient alphas, as well as correlation analyses were conducted.

2.5.2 Qualitative Interviews (Study 4B). In addition to collecting quantitative data of the child’s behaviour (i.e., parent and teacher ratings), a qualitative data collection component was also implemented to assess how the COVID-19 pandemic has impacted the child’s educational experience, especially given the unique learning needs often observed in this population.

2.5.2.1 Participants. Eligible participants consisted of parents who had already consented to and participated in the preliminary validation study (Study 4A). Participants were parents of a child who was a client at the CYDC and were at least 18 years of age. Participants were recruited via an email invitation to continue their study involvement by participating in this additional, optional component of the study. A new, additional Letter of Information and Consent, as well as Debriefing Form was provided to parents who participated in this study (see Appendix L). A total of three participants consented to participate and completed the interview session.

2.5.2.2 Materials.

COVID Impact Interview Script. This consists of a series of questions regarding the experience of the pandemic in relation to the child’s learning (see Appendix M). For
example, questions such as “Compared to before the pandemic, what changes (if any) have you noticed in terms of your child’s learning or academic development?”

Interview questions were designed using a phenomenological approach, focusing on obtaining rich information about what was experienced and how it was experienced by the individual. The qualitative approach of phenomenology describes the common meaning for several individuals of their lived experiences of a concept or phenomenon. The focus is on describing what all participants have in common as they experience the phenomenon, with the goal of understanding the essence of the experience (Creswell, 2013). Phenomenology was reinvigorated by Giorgi (2009) for its use in psychological research, asserting that phenomenological theory of science allows for a more adequate psychological picture of development, detailing how phenomenological approach can be applied rigorously within a psychological framework. The goal in developing these questions from a phenomenological perspective was to elicit as much information as possible, ideally capturing the essence of the lived experience.

2.5.2.3 Procedure. This collective instrumental case study data collection was conducted via in-depth semi-structured interviews. This is an exploratory approach which allows for participants to answer open ended questions, given an account of their own experiences in the level of detail they are comfortable with. An interview script was followed for the interviews, with slight modifications made in each interview to adjust for things that the participant might have already brought up. These modifications were made to avoid sounding robotic, and to maintain rapport with the participant by letting them know that I had been actively listening. To establish trustworthiness of the data results, during the interview I asked for clarification of intended meaning or feelings if I felt it was not clear or seemed open to interpretation, as well as asked for expansion of ideas when I felt there may be more to understanding their ideas. Participants were interviewed by the researcher via online video conferencing software (i.e., Zoom; Zoom Video Communications Inc., 2016). Participants had the option to have their camera on or off during the interview. With participants consent, sessions were recorded to allow for review and transcription. Transcriptions of the interviews are provided in Appendix N.
**Data Analytic Plan.** Data was transcribed from the audio sessions into written transcripts. The interview transcripts were then analyzed via holistic thematic analysis, including both within- and cross-case analyses. The coding approach evaluated for *meaningful units* (codes) and in the transcribed text (Creswell, 2013). The method was to examine the response given to each question, as a whole, aiming to identify one to three codes in each response depending on overall response length. On average, a code is for every three to five sentences of text.

The process of thematic analysis in qualitative research is fundamentally led by an inductive approach, where patterns and themes emerge *from* the data, rather than being imposed upon data (Patton, 1980; Strauss & Corbin, 1998). However, these data categorizations do not emerge on their own. Rather, they are driven both by what the investigator wants to know and how they interpret the data they are given. Therefore, the process requires skillful interpretation and appropriate handling of the data in a systematic and rigorous way (Srivastava & Hopwood, 2009). A simple iterative framework, first devised by Srivastava (2005) provides a mechanism to do so. It allows the researcher to engage in the process of continuous meaning-making and progressive focusing over time and interviews. However, the role of iterative process is not just to be mechanically repetitive, but rather, deeply reflexive. Reflexive iteration allows for interpreting data in sequence and connecting them with emerging insights that have previously emerged. Therefore, each interview (i.e., verbatim transcripts) was thematically analyzed and coded after completion, prior to the next interview’s analysis, in an iterative fashion. This sequencing promoted continuous revaluation of concepts emerging and leads to a progressive understanding of key themes and refined focus (Srivastava & Hopwood, 2009). This analysis has a descriptive approach in terms of analysis but also captures interpretative ideas in the discussion as well. As Creswell (2013) points out, the descriptive phenomenological approach captures both the textural and structural description, outlining not only what happened but also how it was experienced by the individual.
CHAPTER 3

3. Results

3.1 Classroom Cognitive Ability Screener Item Development (Study 1)

3.1.1 Initial Item Pool Generation. The completion of the graduate student focus groups resulted in an initial item pool of 90 items, spanning across the five constructs: Verbal Comprehension, Visual Spatial, Working Memory, Fluid Reasoning, and Processing Speed. Each construct had between 16-25 sample items. The format of the tool was developed simultaneously with the items generation to ensure compatibility. At this stage, it was confirmed that items would be scored on a scale of frequency, with the respondent indicating the rate at which something occurs, on average. Ratings occurred on a 5-point Likert scale from 0-4 (0 = never; 1 = rarely; 2 = sometimes; 3 = often; 4 = always). Response options will be presented in a horizontal fashion to reduce ambiguity of choices and indicate a clear order for frequency of behaviour. Items would be scored such that higher scores represented a stronger possession of the ability. Therefore, while items were worded in both strength-oriented (e.g., “can”; “able to”; “successfully”) and challenge-oriented (e.g., “struggles to”; “has difficulty with”) ways, the challenge-oriented items (labeled “R”) were reverse-coded in scoring, such that higher scores represent a strong command of the behaviour.

3.1.2 Summary of Feedback. The primary editorial themes that emerged in the feedback included the clarification of instructions to ensure clarify for the intended respondent (i.e., the teacher), the need for collection of increased background information, the addition of examples to ensure clarity in items, and finally, the removal of items that were not a precise representation of the construct. The following (see Table 1) provides a summary of the specific feedback received across the three focus groups. This feedback has been grouped by ability construct.
Table 1

*Summary of Focus Group Feedback*

<table>
<thead>
<tr>
<th>Construct</th>
<th>Concern Raised or Suggestion</th>
</tr>
</thead>
</table>
| **General**            | a. Instructions should state that items be considered in comparison to the student’s same-age peers  
b. Clarify frequency descriptors  
c. Need to capture demographic and special-circumstances information  
d. Felt there should be more equal representation of both strength-oriented and challenge-oriented questions  
e. Back and forth between strength- and challenge-oriented questions is confusing |
| **Verbal Comprehension** | a. Ensure both Oral and Written components are covered  
b. Add in word “articulation” to the VC construct definition; Take “spoken” out of the definition to account for written VC  
c. Watch to distinguish between HAVE and USE language |
| **Working Memory**     | a. Give more tangible examples for Working Memory because this is a somewhat misunderstood construct. there as aspects of attention and multitasking that play a role in working memory and should be captured  
b. Ensure tone not too childish (esp. for working memory) |
| **Processing Speed**   | a. A lot of overlap between items |
| **Visual Spatial**     | a. Try to avoid things that would capture a motor disorder or physical impairment  
b. Clarify “manipulatives”  
c. Remove: Able to effectively recognize facial affect and/or non-verbal cues; Facial processing different |
| **Fluid Reasoning**    | a. Found this to be challenging to isolate construct – focused on problem solving and abstract thought  
b. Might be capturing lack of assertiveness or shyness – drop some  
c. Missed out on capturing written components of FR |

3.1.3 *Description of Major Revisions.* Revisions to the content were applied based on feedback received and documented throughout the three focus group sessions.
To address the general screener feedback, the instructions were updated to specify that items should be considered “in comparison to the student’s same-age peers”. Moreover, I added descriptions for each of the frequency labels to clarify for respondents (see Table 2). In addition, I incorporated a preliminary “Demographic Information” section which allowed academic, medical, and relevant background information to be captured (see Table 3 for a summary of demographic variables added). Finally, regarding the directionality of questions (i.e., strength vs. challenge oriented), some items were revised to establish more balanced approach, and items were grouped together, such that all the strength-oriented items were listed first, and the challenge-oriented items second.

Table 2

Frequency Descriptions

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>On no occasion</td>
</tr>
<tr>
<td>Rarely</td>
<td>Seldom</td>
</tr>
<tr>
<td>Sometimes</td>
<td>Happens occasionally, but not the most typical behaviour</td>
</tr>
<tr>
<td>Often</td>
<td>Frequently occurs</td>
</tr>
<tr>
<td>Always</td>
<td>On all observed occasions</td>
</tr>
</tbody>
</table>

Table 3

Demographic Pre-screen questions

<table>
<thead>
<tr>
<th>Category</th>
<th>Questions Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>Is the child on an IEP (or other modified education program)?</td>
</tr>
<tr>
<td></td>
<td>Are you making any special accommodations for the child already in the classroom (with or without an IEP)?</td>
</tr>
<tr>
<td></td>
<td>If YES, please describe:</td>
</tr>
<tr>
<td>Physical and/or Medical</td>
<td>Does that child have any hearing impairments?</td>
</tr>
<tr>
<td></td>
<td>Does that child have any visual impairments?</td>
</tr>
<tr>
<td></td>
<td>Does this child any speech difficulties or impairments?</td>
</tr>
<tr>
<td></td>
<td>Does this child have any motor/mobility issues?</td>
</tr>
<tr>
<td></td>
<td>Does this child have any known medical conditions?</td>
</tr>
<tr>
<td></td>
<td>If YES to any of the above, please describe:</td>
</tr>
<tr>
<td>Special Circumstances</td>
<td>Have any other special circumstances (e.g., limited English, new to the country)?</td>
</tr>
<tr>
<td></td>
<td>If YES, please describe:</td>
</tr>
<tr>
<td></td>
<td>Have you noticed any recent dramatic shifts/changes in behaviour?</td>
</tr>
<tr>
<td></td>
<td>If YES, please describe:</td>
</tr>
</tbody>
</table>
For the Verbal Comprehension items, additional items were added to ensure written aspects of verbal comprehension were captured, and attention was paid to distinguish between have (i.e., can) and use (i.e., does) language. Moreover, the construct definition was updated to remove the term “spoken” and to incorporate the concept of articulation of language, alongside understanding. The Working Memory items were modified primarily by adding in more concrete examples. Moreover, items were adapted or removed to ensure they were appropriate for the 6-16 age range. The only change to the Processing Speed items at this stage of development was removal of some conceptually similar items to avoid overlap. For Visual Spatial items, behavioural examples were revised to eliminate most items that capture exclusively motor difficulties or facial affect recognition. Finally, the Fluid Reasoning items were adapted to eliminate items that may instead be tapping into shyness or introverted tendencies. Moreover, items were broadened to allow for both verbal and written expressions of fluid reasoning skills.

The result of this study was a list of 90 items to be used in Study 2A.

3.2 Expert Review (Study 2)

3.2.1 School Psychologist Focus Group (Study 2A).

3.2.1.1 Summary of Feedback. The primary editorial theme that emerged in the school psychologist focus group session was the revision of language, both in tone and terminology. Across all participants, it was suggested that the construct definitions were revised to be less scientific. Moreover, participants noted that certain terminology was potentially problematic in a classroom setting, in that it was confusing or misleading. Table 4 summarizes the feedback from the school psychologists.
### Summary of School Psychologist Focus Group Feedback

<table>
<thead>
<tr>
<th>Construct</th>
<th>Concern Raised or Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td>a. Ensure brackets providing additional clarification are left to the end of the item, for clarity and ease of reading.</td>
</tr>
<tr>
<td></td>
<td>b. Make sure to capture the “or better” component rather than just as good as peers</td>
</tr>
<tr>
<td></td>
<td>c. Make construct definitions a less “scientific” – more lay language</td>
</tr>
<tr>
<td><strong>Verbal Comprehension</strong></td>
<td>a. Remove term “actively” – this is a loaded word, implies hyperactivity</td>
</tr>
<tr>
<td></td>
<td>b. Be mindful of term “clarity”; has double meaning (e.g., acoustically clear vs. content clear)</td>
</tr>
<tr>
<td><strong>Working Memory</strong></td>
<td>a. Scale back WM construct definition</td>
</tr>
<tr>
<td></td>
<td>b. Important to capture the sequencing of tasks for working memory</td>
</tr>
<tr>
<td></td>
<td>c. Important to distinguish in terms of guiding a group whether they will naturally do this or if they can do it. (e.g., asks for vs. requires repeated instructions)</td>
</tr>
<tr>
<td><strong>Processing Speed</strong></td>
<td>a. Capture a decline over time; students who struggle here will get worse and worse over term because they cannot keep up</td>
</tr>
<tr>
<td><strong>Visual Spatial</strong></td>
<td>a. Simplify definition of construct</td>
</tr>
<tr>
<td></td>
<td>b. Some items very “young”</td>
</tr>
<tr>
<td><strong>Fluid Reasoning</strong></td>
<td>a. Important to distinguish in terms of guiding a group whether they will naturally do this or if they can do it. The tone sort of implies it to be natural, and that might be tapping more-so into personality characteristics</td>
</tr>
<tr>
<td></td>
<td>b. Explore the term “diversive exploration” and develop an item that taps into this</td>
</tr>
<tr>
<td></td>
<td>c. Need to better tap into visual fluid reasoning</td>
</tr>
</tbody>
</table>

**3.2.1.2 Description of Major Revisions.** Revisions to the content were applied based on the feedback received and documented throughout the focus group session.

To address the general screener feedback, brackets including examples were moved to the end of the item, for ease of reading. Moreover, construct definitions were refined to reduce complexity and tone. In Verbal Comprehension, items with the word “actively” were revised and items referring to “clarity” were revised to explicitly state that the intent was to capture content clarity, rather than acoustic. For Working Memory, an item
tapping into the sequencing of tasks was added. In addition, language was modified to distinguish between the natural tendency to do something (e.g., asks for repeated instructions) versus ability to do so (e.g., requires repeated instructions). Processing Speed was modified to incorporate an item which would capture decline over time. Visual Spatial items were modified to remove items which were duplicating concepts or too age-specific (e.g., too young in tone). Finally, Fluid Reasoning items were revised to update the tone from capturing the natural tendency to do something, versus the ability to do it (e.g., takes the lead to guide group vs. is able to lead or guide group) to ensure ability is being captured. Additionally, an item was added to ensure diversive exploration was captured.

The result of this study was a list of 90 items to be used in Study 2B.

3.2.2 Faculty Member Panel Review (Study 2B).

3.2.2.1 Summary of Feedback. The overarching theme of this feedback was the characterization of terminology that could be misleading or problematic in capturing the true nature of the construct, as well as the identification of new items to capture the constructs being measured. A summary of the feedback as well as the new items suggested is presented in Tables 5, and 6, respectively.
Table 5

Summary of Faculty Member Panel Review Feedback

<table>
<thead>
<tr>
<th>Construct</th>
<th>Concern Raised or Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Comprehension</td>
<td>a. For “Is easily confused by more complex verbal discussion or instruction”: not clear was it meant by “more complex”. It is also problematic to have both discussion in instruction in one item because verbal discussion requires back and forth and often involves multiple parties whereas instruction is more structured and one person</td>
</tr>
<tr>
<td></td>
<td>b. For “Successfully collects &amp; organizes different pieces of information (e.g., clues, pieces of a word puzzle) to solve a problem”: Would suggest splitting up collecting organization - they pick up on different underlying skillsets</td>
</tr>
<tr>
<td></td>
<td>c. For “Efficiently takes timed-tests that require decision making”: What type of test wouldn’t involve decision making? This is confusing</td>
</tr>
<tr>
<td></td>
<td>d. Scaffolding might mean different things to different teachers. Clarify what you are implying.</td>
</tr>
</tbody>
</table>

Table 6

New Items Suggested for the Classroom Cognitive Ability Screener

<table>
<thead>
<tr>
<th>Construct</th>
<th>Concern Raised or Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Comprehension</td>
<td>a. Seems to provide off-topic answers to questions</td>
</tr>
<tr>
<td></td>
<td>b. Shares ideas or opinions with interesting information</td>
</tr>
<tr>
<td>Working Memory</td>
<td>a. Forgets to use well-known strategies when needed (e.g., forgets “l” before “e” except after “c”) etc.</td>
</tr>
<tr>
<td></td>
<td>b. Struggles to summarize or paraphrase information</td>
</tr>
<tr>
<td>Processing Speed</td>
<td>a. Difficulty answering questions when there is a gap or lag-time between the question and the response</td>
</tr>
<tr>
<td></td>
<td>b. Slow at decision-making</td>
</tr>
<tr>
<td></td>
<td>c. Does not like to complete writing tasks</td>
</tr>
<tr>
<td></td>
<td>d. Frequent incomplete homework/assignments</td>
</tr>
<tr>
<td>Visual Spatial</td>
<td>a. Has problems copying notes from the board</td>
</tr>
<tr>
<td></td>
<td>b. Easily loses place on page when reading/writing</td>
</tr>
<tr>
<td></td>
<td>c. Difficulty with symbols and copying them</td>
</tr>
<tr>
<td>Fluid Reasoning</td>
<td>a. Difficulty seeing the big picture and how concepts are related to each other</td>
</tr>
<tr>
<td></td>
<td>b. Struggles with organizing thoughts in a way that communicates their ideas effectively</td>
</tr>
<tr>
<td></td>
<td>c. Can problem-solve in flexible, creative ways</td>
</tr>
<tr>
<td></td>
<td>d. Is successful in pursuing independent learning in areas of interest</td>
</tr>
</tbody>
</table>
3.2.2.2 Description of Major Revisions. Revisions to the content were applied based on the feedback received and documented in the review panel.

For Verbal Comprehension items, the word “more” was removed to avoid ambiguity that the item needed to be compared to something else. For items that had the concepts of discussion and instruction, items were separated to capture distinct skill. In Working Memory, the concepts of collecting versus organizing were separated into distinct items. In Processing Speed, the concept of “making decisions” when taking time tests was removed. In visual spatial the items were revised editorially as needed. Finally in fluid reasoning construct scaffolding as a term was replaced with strategies and techniques of the teachers were clear as to what was intended by this item. Across the measure, new items suggested were incorporated, as suggested.

The result of this study was a list the Classroom Screener (Draft Pilot Version), consisting of 105 items that went forward to Teacher Review study.

3.2.3 Teacher Review (Study 2C)

3.2.3.1 Summary of Feedback. The primary editorial themes that emerged in teacher review were integration of language consistent with report cards and teacher vernacular, and the addition of teacher-specific examples and prompts incorporated into the items. A summary of this feedback is provided in Table 7.
### Table 7

**Summary of Teacher Feedback**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Concern Raised or Suggestion</th>
</tr>
</thead>
</table>
| **General**              | a. Incorporate learning skills as presented on the provincial report card (self-regulation, independent work, initiative, responsibility, organization, and collaboration) as teachers are very familiar with these learning skills and are common terms in reporting  
                          | b. Add specific examples using teaching terminology  
                          | c. Revise instructions to capture whether “accommodations or modifications) were being made in the classroom; Sometimes we modify curriculum unofficially prior to an assessment because that is where they are functioning.                                         |
| **Verbal Comprehension** | a. Generating questions and expressing one's thinking are two different skills. Specifically, younger children are much more capable of telling you their thoughts than generating questions in their writing.  
                          | b. “Appears to have language knowledge similar (or better) to peers”: Be more specific. This is highly ambiguous, and many teachers will be confused.                                                                 |
| **Working Memory**       | a. “Only able to complete larger tasks when they are broken down into smaller components”: incorporate the idea of chunking information  
                          | b. “Performance is substantially improved if there is visual information to reference throughout the task”: add specific example like anchor charts                                                                 |
| **Processing Speed**     | a. Add additional terms: to “looks confused or lost”: e.g., “spacy”; “zoned-out”  
                          | b. Replace word “urged” with “prompted” or “encouraged”, more in line with teacher vernacular  
                          | c. Successfully completes writing tasks in a reasonable time frame is vague, say within allocated timeframe                                                                                                         |
| **Visual Spatial**       | N/A                                                                                                                                                                                                                         |
| **Fluid Reasoning**      | a. Clarify what you mean by underlying relationship                                                                                                           |
3.2.3.2 Description of Major Revisions. Revisions to the content were summarized and applied based on the feedback provided by teacher participants in the review files.

To address the general feedback provided by teachers across the assessment an effort was made to incorporate learning skills and terminology as presented in provincial report cards so that the teachers were familiar with the learning skills and there were common terms across materials. Additionally, examples using teaching terminology such as anchor charts were incorporated. In addition, at the demographic data collection level instructions were revised to capture whether accommodations and or modifications were being made in the classroom. For Verbal Comprehension items pertaining to written questions and expressing one’s thinking were separated into separate distinct items. Items that were evaluated as ambiguous by teachers were removed. For the Working Memory items, items were revised to incorporate teaching terminology such as chunking information when referring to breaking down larger tasks as well as the use of specific examples such as anchor charts that are currently used in classrooms. Processing Speed items were modified to add colloquial terms for students who appear confused, as well as replacing the word “urged” in a variety of items with terms such as “prompted” or “encouraged”. Visual Spatial items were reviewed and revised for editorial changes as necessary. Finally for Fluid Reasoning, clarification on “underlying relationship” was addressed for clarity. It was also at this stage that items deemed repetitive or unnecessary or removed, and the pilot item list was refined to be in line with a more appropriate length to be completed by teachers.

The result of this study was the Classroom Cognitive Ability Screener (Pilot Version), consisting of 60 items.

3.3 Home Cognitive Ability Screener Adaptation (Study 3)

As previously stated, the preliminary items for the Home Cognitive Ability Screener were developed by adapting relevant items from the Classroom Cognitive Ability Screener to be appropriate for the home environment, as well as removing items that did not make sense for this context. This list included 41 items.
3.3.1 Preliminary Item Review. The primary themes that emerged in this review by the advisory committee included addition of relevant examples, wording revisions for clarity, and revising of the construct definitions to be more appropriate for a lay audience. Table 8 provides a summary of the specific feedback received from the committee members. This feedback has been grouped by ability construct.

Table 8

Preliminary Item Review Feedback Summary

<table>
<thead>
<tr>
<th>Construct</th>
<th>Concern Raised or Suggestion</th>
</tr>
</thead>
</table>
| General            | a. Construct definitions should be modified to use lay language & add examples for each for parents to reference  
b. Additional instruction should be added of can vs. will do  
c. “Items should be considered in comparison to the child’s same-age friends...” – add, “peers or cousins”. |
| Verbal Comprehension | a. Add in “Signs” – not just speaks to construct definition  
b. Many items seem very high-level for parents, who may not be trained in this type of thing. |
| Working Memory     | a. Update “the current situation” in construct definition, it is sort of vague  
b. Requires consistent prompts and reminders to do a task: add concept of even when that task is something enjoyable or interesting & examples to help parse out can vs. will do |
| Processing Speed   | a. Consistently needs to be encouraged to continue moving through/completing a task (e.g., doing their homework) (R): homework probably not a good example because there isn’t motivation necessarily.  
b. Make sure to separate concepts of motivation from processing speed |
| Visual Spatial     | N/A |
| Fluid Reasoning    | a. “Ideas and comments are unique, surprising, or advanced for child’s age/maturity level (e.g., very abstract, high-level, applied to unique topic)” - This will be hard for parents to rate. If you have a surprising kid/kids, this will be normal and not surprising |
3.3.1.1 Description of Major Revisions. Revisions to the items were applied based on the feedback received from committee members. Overall, construct definitions were revised to reduce language complexity and increase inclusion of examples. In addition, a description of the ability of the child to do something compared to their willingness to do so (i.e., can vs. will) was detailed in the instructions, as well as the comparison or reference group parents should refer to. For Verbal Comprehension, conceptually complex items were simplified, and separated into multiple items were appropriate to clarify language. The concept of “spoken” language was expanded to include signing as well. For Working Memory, added item examples were identified by reviewers to facilitate clarity. For Processing Speed, examples were included to distinguish concepts of motivation or willingness to do a task from processing speed ability. The Visual Spatial items were reviewed, and minor editorial revisions applied if needed. Finally, Fluid Reasoning items were modified to address reviewer’s concern that concepts that may seem surprising to a teacher who has a broad reference group, likely would not to a parent. All items were reviewed, and minor editorial revisions applied, where appropriate. This revised list of items was used in the following item review study.

3.3.2 Item Review Study.

3.3.2.1 Data Screening. A total of 141 survey responses were recorded in Qualtrics. After data export review, a total of 74 responses were not included in analyses; 20 submissions did not meet eligibility criteria and/or did not complete the Consent and therefore, no item ratings were completed by respondent, 17 submissions were missing more than 50% of ratings data, and finally, an additional 37 submissions were completed in under 5 minutes and were therefore removed as unreliable data. Therefore, a total of 67 participant survey response data were analyzed.

3.3.2.2 Analyses. An analysis of central tendency was conducted to establish the mean and median ranges for all item ratings. This was done for both relevance and clarity ratings. All items are cross constructs had a mean ranging from 3.10 - 3.37, and a median rating of 3 or 4. Next, an analysis of frequency was conducted to evaluate item ratings. Given that a rating of 3 represented an “adequate” level, this was treated as the cut point.
Any item that did not get 75% (or more) of a rating of 3 or higher (i.e., >25% of the sample rated it a 1 or 2) was reviewed for potential drop or substantial revision. Any item that met criterion for relevance but not clarity was identified for minor revisions. All analyses were conducted using IBM SPSS Statistics, Version 21 (IBM Corp, 2012).

3.3.2.3 Summary of Revisions. A total of five items did not meet criteria for both relevance and clarity, therefore, were revised substantially. See Table 9 for a description of revisions. A total of eight items did not meet criteria for clarity and were revised editorially to simply language. Additional items were added, in consultation with qualitative feedback from respondents.

Table 9

Major Revision Summary of Home Cognitive Ability Screener Items

<table>
<thead>
<tr>
<th>Construct</th>
<th>Proposed Item</th>
<th>Revised Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Comprehension</td>
<td>Is easily confused by verbal discussion (e.g., gets lost of seems unable to follow conversations)</td>
<td>Gets lost or seems unable to be a part of conversations and discussions with others</td>
</tr>
<tr>
<td>Working Memory</td>
<td>Performance enhanced if there is visual information to reference throughout the task (e.g., task chart with pictures)</td>
<td>Performance is substantially improved if there is information to reference during the task (e.g., chart with pictures, step-by-step list/guidelines)</td>
</tr>
<tr>
<td>Processing Speed</td>
<td>Takes more time than expected to complete simple tasks, despite understanding how to do the task (e.g., getting a bowl out for a snack)</td>
<td>Takes longer than expected do simple, everyday tasks (e.g., getting a bowl for a snack, getting dressed)</td>
</tr>
<tr>
<td>Visual Spatial</td>
<td>Effectively arranges materials in personal spaces (e.g., play area, desk/table workspace)</td>
<td>Effectively organizes and arranges materials they are working with (e.g., craft materials, building a birdhouse or model)</td>
</tr>
<tr>
<td>Visual Spatial</td>
<td>Displays lack of body awareness (e.g., bumps into household items, walls)</td>
<td>Appears generally unaware of their physical environment or space (e.g., bumps into household items)</td>
</tr>
</tbody>
</table>
The result of this study was the Home Cognitive Ability Screener (Pilot Version), consisting of 42 items that went forward to the exploratory validity study.

3.4 Exploratory Validity and Case Study (Study 4)

3.4.1 Validation Study (4A).

3.4.1.1 Data Screening. Eligibility questions screened to ensure admissibility in the study data; all participants responses met criteria and were included. A total of two completed protocols were collected, one additional protocol that had both the Home Cognitive Ability Screener and WISC-V data, but the Classroom Cognitive Ability Screener was missing, and one enrollment where no screener data was submitted. Therefore, a total of three cases were used in the analyses comparing the WISC-V and the home screener, but only two for the remaining analyses. Given the case study nature and therefore subsequent N count, standard data screening procedures (i.e., multivariate normality) were not appropriate to apply.

Analyses. Again, given the sample size, the standard reliability analyses of the scale (i.e., inter-item correlations, item-scale correlations, & coefficient alphas) were not applied. To establish preliminary data on the correlation between parent and teacher feedback, total scores for each of the constructs were calculated. Challenge-oriented items were reverse-coded; high scores corresponded to a strong command of that ability. Given that all the constructs on the Home Cognitive Ability Screener did not have the same number of items, scores were converted into a score out of 100 for each. To allow comparison between measures, the Classroom Cognitive Ability Screener total scores were also converted to a score out of 100.

To conduct a preliminary evaluation of the relationship between the two screeners a Pearson’s r correlation was conducted to analyze the correlation between the construct scores on the Home Cognitive Ability Screener and Classroom Cognitive Ability Screener. This analysis revealed mixed alignment between measures. For Verbal Comprehension, Visual Spatial, and Fluid Reasoning, correlations were moderate to strong, ranging from .41 to .92. For Processing Speed and Working Memory however,
the scores were low to moderately (0.24 – 0.47) correlated in a negative direction. See Table 10 for a summary of each construct correlation between the Home and Classroom Cognitive Ability Screeners.

Table 10

*Correlations between corresponding constructs on the Home and Classroom Cognitive Ability Screeners*

<table>
<thead>
<tr>
<th>Cognitive Constructs</th>
<th>Verbal Comprehension</th>
<th>Working Memory</th>
<th>Processing Speed</th>
<th>Visual Spatial</th>
<th>Fluid Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.66</td>
<td>-0.24</td>
<td>-0.47</td>
<td>0.41</td>
<td>0.92</td>
</tr>
</tbody>
</table>

To conduct a preliminary evaluation of the relationship of the screener data with the psychoeducation assessment measure, a Pearson’s *r* correlation was conducted to analyze the correlation between the construct scores on the Home Cognitive Ability Screener and the WISC-V, as well as the Classroom Cognitive Ability Screener and the WISC-V. For the comparison between the Home Cognitive Ability Screener and the WISC-V scores, the analysis showed strong correlations for the Verbal Comprehension, Visual Spatial, and Fluid Reasoning constructs (ranging from 0.87–0.91), a low correlation for the Processing Speed construct (0.32), and no correlation for the Working Memory construct. For the comparison between the Classroom Cognitive Ability Screener and the WISC-V scores, the analysis showed strong correlations for the Verbal Comprehension, Working Memory, and Fluid Reasoning constructs (ranging from 0.91–0.94), and no correlation for Visual Spatial and Processing Speed. See Table 11 for a summary of the correlations between the WISC-V five factors and the corresponding construct on the Home and Classroom Cognitive Ability Screeners.
Table 11

*Correlations between WISC-V Five Factors and Corresponding Constructs on the Home and Classroom Cognitive Ability Measures*

<table>
<thead>
<tr>
<th>WISC-V Measure</th>
<th>Classroom Cognitive Ability Screener</th>
<th>Home Cognitive Ability Screener</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Comprehension</td>
<td>.94</td>
<td>.89</td>
</tr>
<tr>
<td>Working Memory</td>
<td>.91</td>
<td>.18</td>
</tr>
<tr>
<td>Processing Speed</td>
<td>-.08</td>
<td>.32</td>
</tr>
<tr>
<td>Visual Spatial</td>
<td>.09</td>
<td>.87</td>
</tr>
<tr>
<td>Fluid Reasoning</td>
<td>.92</td>
<td>.91</td>
</tr>
</tbody>
</table>

3.4.2 Qualitative Interviews (4B). The qualitative interviews revealed very rich information pertaining to the impact of COVID-19 on their child’s learning and well-being.

3.4.2.1 Within-Case Analyses. First, each case was analyzed individually, using qualitative coding and thematic analysis. A summary of the themes and associated codes that were extracted from each case is provided in Table 12.

Table 12

*Associated Codes & Themes for Each Case*

<table>
<thead>
<tr>
<th>Themes</th>
<th>Associated Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant Interview #1</td>
<td></td>
</tr>
<tr>
<td>Pedagogical knowledge helpful</td>
<td>Experience essential</td>
</tr>
<tr>
<td></td>
<td>Overwhelmed, as teacher</td>
</tr>
<tr>
<td></td>
<td>Online intervention tough</td>
</tr>
<tr>
<td>Regular intervention required</td>
<td>Support day-to-day</td>
</tr>
<tr>
<td></td>
<td>Check/Review work</td>
</tr>
<tr>
<td></td>
<td>Ensure completed/submitted</td>
</tr>
<tr>
<td></td>
<td>Ask teacher</td>
</tr>
<tr>
<td></td>
<td>Co-teach</td>
</tr>
<tr>
<td>Concern for mental health</td>
<td>Anxious</td>
</tr>
<tr>
<td></td>
<td>Nervous</td>
</tr>
<tr>
<td></td>
<td>Frustrated</td>
</tr>
<tr>
<td></td>
<td>Disengaged/Unmotivated</td>
</tr>
<tr>
<td></td>
<td>Mental health decline</td>
</tr>
<tr>
<td></td>
<td>Struggled without social interaction</td>
</tr>
<tr>
<td></td>
<td>Concern for personal safety</td>
</tr>
<tr>
<td>Balancing mom/teacher roles</td>
<td>Managing own workload</td>
</tr>
</tbody>
</table>
Needing prompting throughout
Competing demands
Role challenging
Stressful to be his teacher
Got through it

**Participant Interview #2**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Details</th>
</tr>
</thead>
</table>
| Lacked content/academic knowledge               | External support
Tutor needed
Ask teacher                                      |
| Demanding work schedule                         | Too busy
Couldn’t help
Evenings/Weekends                                |
| Academic development stunted                    | Didn’t progress
Got through it
Behind a year                                     |
| Mental health decline                           | Lonely
Isolation
Low point
Grumpy/irritable                                   |
| Substantial administrative support              | Reviewed/ Checked
Formatted
Organized
Facilitated
Made sure stayed focused
Needed reminders                                    |

**Participant Interview #3**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Details</th>
</tr>
</thead>
</table>
| Learning style/needs too complex                | Different learning styles
Needed support
Only admin support
Cannot work alone                                  |
| Couldn’t moderate attendance                    | At work full days
Watched TV/iPad “in school”
Doesn’t work unsupervised                        |
| No academic progression                         | Advocated to hold back
Learned nothing
Lost 1.5 year of learning                          |
| Change in emotional well-being                  | Anxiety
OCD
New issues
Challenging
Didn’t want to go back                           |

**3.4.2.2 Across-Case Analyses.** While each interview was unique, common elements united the transcripts and coding allowed unified themes to emerge. Five major themes were extracted from the verbatim transcripts. Table 13 summarizes these themes and provides a brief description of the category. What follows is a detailed summary of the theme and some of the participant quotes that contributed to the theme extrapolation.
Table 13

Emerging Themes Across Cases

<table>
<thead>
<tr>
<th>Themes</th>
<th>Description of Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Education Needs More Complex</td>
<td>Parents with children who have diagnosed with learning disability and/or have complex learning needs experience increased difficulty supporting the specific academic and socioemotional needs to support their children</td>
</tr>
<tr>
<td>Parent Knowledge of Academic Content Is Important</td>
<td>Parents who do not have specific pedagogical training or up-to-date curriculum knowledge struggle to support children in their daily lessons and homework</td>
</tr>
<tr>
<td>Balancing Roles Proved Challenging</td>
<td>For parents who worked full-time outside of the home, monitoring their child’s engagement and participation in school was difficult, and parents took on additional hours each day to support learning and completion of tasks.</td>
</tr>
<tr>
<td>Observed Decline in Academic Engagement and Development</td>
<td>All parents reported an obvious decline in engagement, interest, and positive attitude towards school in the remote environment. While significant decline in abilities was not reported, parents felt that development was stunted/did not progress as would typically over a school year.</td>
</tr>
<tr>
<td>Concern For Child’s Mental Health and Well-Being</td>
<td>Parents reported that as a result of the pandemic and at-home learning, they observed increased expression of existing mental health concerns (e.g., anxiety, loneliness, emotional instability) as well as in some cases, new challenges or diagnoses emerging</td>
</tr>
</tbody>
</table>

Special education learning needs more complex. Across interviews with parents, it was evident that parents of children with diverse learning needs experienced feelings of being overwhelmed, frustration, and at times, hopelessness in supporting their child’s learning. This was particularly evident when parents observed their child’s learning experiences related specifically to their learning disability and other psychoeducational challenges. Examples include:

“And fortunately, his math skills are quite strong, and he understands math so we could always get his math done independently that is no problem. But anything to do with language or you know that kind of thing, honestly there were some assignments I don't think he would have even known that he needed help or how to ask for help without my intervention.”

“You know, even for children who are, I don’t know what the word is...who don't suffer from some of the challenges that my child suffers from as far as learning goes... I think the pandemic was difficult. But for
children like mine, and I know a lot of parents who are the same position, it was almost impossible.”

“I know there are kids who can and were able to go online and were completely independent. My daughter, she's a bit older and doesn’t have a learning disability, but I mean she did everything on her own, right? It is just very different learning profiles.”

Another common experience was that parents felt that the same individualized, personalized support that their child needed simply wasn’t possible in the same ways in an online environment. This is evidenced in the direct quotes excerpted from interviews:

[Compared to small working groups in-person] “...when they did the online classes it was all of the students at once, they still did small groups like they used to, like they would do like a morning meeting with everybody and then then then it would break off throughout the day. But it’s hard to modify things individually when you're online”.

“You know there are some things in class that the teachers would notice and make adjustments for, but that's not possible online... honestly there were some assignments I don’t think he would have even known that he needed help or how to ask for help without my intervention”

“...they would have they would hold office hours where kids could go and get help if they need. And I would say “Hudson, you can go to your teacher and go and ask for help” and he would say “but I don't know what to how to ask”. ... The role of taking initiative to initiate that support kind of fell on him, but that wasn't really something he was comfortable with.”

“...if you’re a child who has some kind of learning difference, like ADHD, it would be very difficult for you to sit and attend in front of the screen. There were kids who were able to make some good progress and be somewhat successful, but those were the kids who clearly had that parental support you know, and likely typically developing.”

**Parent knowledge of academic content is important.** Another very common theme that emerged was the experience of feeling like as parents, they had to step in to guide and support their child’s academic progression, but at the same time, lacked some (or many) of the skills to do so adequately. For example:

“I think he's on track but that being said, like because I'm a trained Montessori teacher and I worked in all the levels that he's done, I was able to fully support him in a way that parents of other children with learning differences would not have been able to do. There were many
times I thought “Oh my God, like how are parents of these children who have these other needs”.

“... he does not do well with me helping him with school. There is, well there's a lot of conflict if I try to help him with homework and you know, he says, “I'm stupid” and “I don't know what I'm talking about” and “you don’t know my teacher knows” I would try to just encourage him, but I wasn’t really able to academically.”

“She has resources all the time when she’s in school, and all the help she needs there. And like I try but I have a different learning style that her obviously that's fine yeah, but it's very challenging.”

And moreover, that they were responsible for managing the administrative part of their child’s learning, taking on new roles to ensure work was being done and that it was submitted correctly.

“I would help him with assignments, and formatting and finding resources to complete some of his work online”

“Then in terms of his work that he did, because he didn't have his teachers there supporting him in the way that they were able to before, I helped him out as much as I could to get things done and submitted.”

“I was pretty lucky that I was able to step away for the first month in January, so I was able to be away from work. Yeah, you know, help her with the work and answer questions, and figure out how send the document like into teams or whatever.”

**Balancing Roles Proved Challenging.** In alignment with lacking content or pedagogical skillsets, parents also overwhelmingly reported struggling to balance responsibilities of their own work schedules and home lives, alongside the new role of providing academic support to their child(ren). Oftentimes, they felt that they could simply not manage both roles. Evidenced in the following direct quotes:

“...it was it wasn't just peripheral support like checking over things, it was very involved, almost like co-teaching.”

“But then in the second lockdown, I had a different boss and then I wasn’t able to stay home. So she literally didn’t go to school at all. I mean, she would log on online, but she would be watching TV or on her iPad or not participating anyway... I just was like well “if you're not go, you're not gonna go”, I just can't fight about it right? Like it is what it is at this point you can only do so much.”
Moreover, in many cases, the only way to get by was to pay for additional resources to support their child when they could not. This is something that is not only a financial burden to the family, but in some cases, not financially possible which adds to the gap in accessible learning. For example,

“His teacher at the time was phenomenal and she allowed me to have his babysitter, who was on EA and going through teachers’ college, to have access to his Google Classroom. She would log into his classroom and work with him he would talk through my cell phone, and they would do his work together ’cause he couldn't work independently.”

“... getting him signed up online [for extra support and tutoring] and making sure he was staying focused during the sessions, 'cause they all happened from the home usually in the evening.”

**Observed decline in Academic Engagement and Development.** Overwhelmingly, a repeated sentiment throughout the interviews was the parent’s concern for their child’s well-being and development, both emotionally and academically. First, all parents who participated reported that their children were at times (and often) disengaged, unwilling, and unmotivated learners. For example:

“...she would log on online, but she would be watching TV or on her iPad or not participating anyway.”

“He just didn't feel it, it wasn't for any lack of the teachers trying but he just didn't feel engaged, and he didn't like participating at all you know, and he, well it was hard for him to sit in front of the screen, you know.”

“He was not enthusiastic about school whereas before he kind of liked it... Whenever he could go back, he went back because it's just so much better for him, being able to interact in person with his teachers and his classmates.”

Moreover, parents expressed that while they didn’t feel their child necessarily declined over the year academically, most reported that their child did not advance or develop new skills. Further, that the lack of decline was a result of concerted effort on their part as parents to get external support.
“He’s like a C level student, and that's kind of where he stayed through the year. So yeah, I don’t think there was a decline but I made sure he had a lot of extra support outside of school so that that wouldn't happen.”

“…I would say it's kind of status quo there hasn't been really a decline but there hasn't been increase really in this academic progress.”

[On asking the school to hold her child back a year] “...why do we not just keep them back even if they if their age group is not with them like if they’ve learnt nothing you can’t continue learning. Like they’ve missed a year and a half of learning.”
CHAPTER 4

4. Discussion

The goal of this study was to expand the current psychoeducational approach of psychologist-administered evaluation using intelligence measures. This was achieved by creating both a classroom and home cognitive ability screening measure that aligned with the WISC-V five factor model of intelligence. The intention behind developing these measures is that they can completed by teachers and parents, and subsequently used in a complementary manner alongside the WISC-V, a commonly used individually administered standardized test of intelligence across Canada. The purpose of developing these measures was to enable collection of additional important contextual information about how a child’s cognitive abilities manifest themselves in behavioural indicators in both the home and classroom. Teachers are uniquely positioned to capture behavioural indicators from a learning as well as social perspective, while parents see the adaptive skills and daily functioning of their child in home and the larger community. Standardized psychological assessments on the other hand, show the patterns of strengths and weaknesses in the child’s ability compared to a normative sample. By combining and triangulating these three sources of data, it creates the opportunity for richer information to support both assessment and intervention of cognitive ability, which plays a significant role in current and future lives of children and adolescents.

To successfully accomplish this, specific behaviours observed in the learning and social environments of the classroom and home were identified as potential behavioural markers of the five primary underlying cognitive constructs measured by the WISC-V. These behavioural indicators were grouped along the same primary index scores to promote alignment between measures. By linking the formal assessment of cognitive abilities to their everyday manifestation in the real-world, this creates the opportunity for corroborating evidence between what the psychologist observes in the assessment environment with what the teacher and parent see on a daily basis. The development of the screeners advances the field of psychoeducational evaluation and intervention by designing contemporary screening measures that allow for wider, more inclusive approach to data collection and sharing. These measures can be used not only for pre-
screening purposes, but to track progress over time. This not only strengthens the range of information available upfront but encourages more collaborative and comprehensive assessment and monitoring of cognitive abilities in children and adolescents over time.

4.1 Summary and Interpretation of Key Findings

4.1.2 Classroom Cognitive Ability Screener Item Development. The development of this measure began with a meticulous analysis of the primary index scores of the WISC-V to create operational definitions of constructs and develop a list of preliminary items that would reflect the manifestation of these constructs that would be likely to be observed by the classroom teacher. The five factors, which also map onto CHC theory and measurement, include verbal comprehension, working memory, processing speed, visual spatial reasoning, and fluid intelligence. The completion of this study (Study 1) focused on creating the initial item pool and scale format. The subsequent use of focus group sessions with trainees in both the psychoeducational assessment and scale development communities allowed for rich qualitative feedback to be collected and applied to the initial pool of items. In addition, incorporating preliminary demographic information about the child from the teacher’s perspective relating to curriculum modifications, instructional methods, and their approach to modifying the learning environment allowed for relevant background information (e.g., academic, medical, social) be adequately captured. This is particularly important for contextualising findings in applied use. Finally, regarding the directionality of questions (i.e., strength vs. challenge oriented), some items were revised by the researcher and internal team to establish more balanced approach, and items were grouped together, such that all the strength-oriented items were listed first, and the challenge-oriented items second. This allows for ease of completion by the respondent, facilitating more accurate responses.

4.1.3 Expert Review. The purpose of Study 2 was intensive item refinement and generation, consulting expertise from both applied and research settings. This approach allowed for sequential and adaptive item refinement over the development process. The completion of this study ensured appropriate terminology and behavioural examples were used, as well as addressed issues of readability and complexity of language.
In general, this expert review, including feedback from school psychologists, faculty researchers, and teachers provided valuable revisions to the construct definitions ensuring appropriate complexity of language and pedagogically specific terminology for the teachers who would eventually use these measures. This was essential to ensure participants had a clear understanding of the concepts that they were evaluating. Another important revision resulting from the feedback from this study was updating the pre-screen /demographic questions that were being asked before item ratings. For example, feedback indicated that teachers often modify curriculum *unofficially* prior to assessment and make other accommodations to address individual student needs and specific learning challenges. Therefore, it is important to capture this type of information to help contextualize the data.

Items operationalizing the five primary indexes of WISC-V were reviewed and revised as needed for general editorial clarity and to fit into comprehensive, yet user-friendly measure that could be readily and accurately responded to by teachers. However, specific revisions to the items for each construct were essential to establish quality item content. Some key examples of modifications and changes to the original item are noted here.

For the Verbal Comprehension factor, items utilizing the term “actively” were revised to avoid the implication of hyperactivity, which could be misconstrued, especially in a special education context. In addition, the word “spoken” was removed from any items to ensure inclusivity of all communicators, as well as incorporate written verbal comprehension skills. Finally, important distinctions between generating questions and expressing ideas were made. This was particularly important given that these skills are also not located in the same place along the developmental continuum of writing, with expression of ideas emerging first.

For Working Memory, items were modified primarily by adding more concrete examples to ensure that teachers were clear on what behaviours would qualify as examples of the specific item. In addition, terminology was modified to be more in line with teacher vernacular; to align wording with that of which would be used in everyday discussion of student abilities and as reflected on report cards or support and resource documents.
Revisions to the Processing Speed items were primarily to address the criticism that “reasonable time frame” was too vague and could be interpreted many ways, and therefore, to utilize “allocated time” instead. Moreover, one of the reviewers pointed out that the item “Efficiently takes timed-tests that require decision making” was confusing because decision making is an essential component of taking a test; therefore, this wording was removed. In addition, as with working memory, terminology was employed to be more consistent with the language and descriptions more commonly used in teaching environments.

For Visual Spatial items, the behavioural examples were revised to eliminate most items that capture exclusively motor difficulties or facial affect recognition. These were removed to avoid mis-categorizing a gross motor or physical impairment, or deficit in facial processing as a visual spatial challenge; these are distinctive, and a function of different neurological and bodily mechanisms. Moreover, items that captured relevant behaviours only for a younger age group were removed to allow the screener to be as generalizable as possible across the elementary age span.

Finally, the Fluid Reasoning items were revised to eliminate items that may instead be tapping into personality traits or personal characteristics (e.g., shyness or introverted tendencies). Moreover, items were broadened to allow for both verbal and written expressions of fluid reasoning skills, to ensure the construct was captured across the spectrum of modalities. Finally, the concept of diversive exploration, which refers to exploratory behaviour used as a means of seeking novel or otherwise activating stimuli and thus increasing arousal (Berlyne, 1965) was incorporated into item examples. This concept is familiar to both school psychologists and special education teachers and was an important part of the construct that should be captured. It also aligns conceptually with the agreed upon understanding of fluid reasoning, which refers to the capacity to solve novel problems, independent of any knowledge from the past, and identify patterns and relationships that underpin these problems. An important part of this is exploratory behaviour to test “hypotheses” and seek out new information to solve problems.
The feedback collected and subsequent results from Studies 1 and 2 have resulted in the development of this pilot version of the Classroom Cognitive Ability Screener. Based on the amount and detail of feedback received and items generated through focus groups and review panels with their relevant expertise and insight, future researchers should feel confident that this pilot tool is well-constructed, clear, and representative of the intended purpose of the scale. And with some further work, once subjected to validity and reliability studies, can help guide interpretation of assessment results.

4.1.4 Home Cognitive Ability Screener Adaptation. The purpose of the adaptation of the Classroom Cognitive Ability Screener (Pilot Version) into the Home Cognitive Ability Screener was to capture relevant information about the child's behavioural strengths and challenges in the home environment. This expansion to include an additional, yet parallel and aligned measure, extends the range of background data available prior to assessment. Specifically, this allows parents (and/or primary caregivers) to provide behavioural evidence and insight from a different context that also more accurately reflects developmental considerations. Importantly, this addition also allows for relevant data on the same constructs to be collected from multiple informants, akin to a 360-degree analyses, albeit using a questionnaire/checklist format. The importance of collecting information from multiple informants is well-documented in child and adolescent personality and behaviour research (Kerr et al., 2007; van der Ende et al., 2012; Major et al., 2012). Children and adolescents may display behaviours in some contexts more often, or differently depending on the environment (De Los Reyes, 2015). Therefore, the addition of the Home Cognitive Ability Screener collecting parent data along the same ability constructs strengthens the utility of the tools in applied settings.

Given the thorough item development and review process across both academic and applied settings for the Classroom Cognitive Ability Screener (Pilot Version), this was used as the basis for the Home Cognitive Ability Screener item development. Therefore, the same level of item review was not deemed necessary for the development of the Home Cognitive Ability Screener, and rather, this measure was developed as an adaptation from the Classroom Cognitive Ability Screener (Pilot Version). However, the
items on this particular measure were developed with thoughtful review and revision for the home environment and parents.

As a part of the preliminary item review, in addition to editorial revisions for item clarity and tone, the most critical revision from the initial measure was to the instructions. New instructional details were added to outline the difference between what a child *can* do versus *will* do. This was an important addition to this version of the screener. In general, most parents are not trained specifically in child development or behaviour, nor do they have ample experience working with children outside of their own and other family members. However, there are many ways that specific mood, interest level, motivation and the specific task or context may impact how the child behaves and how well they complete a task. While differential performance and approach to everyday tasks based on the child’s mood and motivation level is very typical behaviour for all children (e.g., getting dressed and ready in the morning on a school day vs. on the weekend) the important part of the questionnaire is to assess what the child can do, or in other words, *is capable of doing*, on the average day and how often that is the case. This distinction is particularly important for items in Working Memory or Processing Speed where lack of interest or motivation could be misconstrued as deficits in those areas if only particular situations are accounted for. In addition, parents were reminded in the instructions to consider their child’s behaviour as a whole and that while it is often easier to remember times when things have not gone well, compared to days when things went smoothly, it is important to get an accurate picture of the child's behaviour overall and to reflect on as many instances as possible, including both successes and frustrations. Clear and accurate instructions are essential to collecting data that is reliable and comparable across tools.

As a result of the community parent sample item review study, there were five items that did not meet criteria for both *relevance* and *clarity*. However, given the early stages of the Home Cognitive Ability Screener tool development, the researcher and advisory committee elected to revise rather than remove the items based on this feedback alone. These items are detailed in Table 9 in Chapter 3. Specifically, the Verbal Comprehension item (i.e., *easily confused by verbal discussion*) was revised to make more direct, by removing the first part of the item. The Working Memory item (i.e., *performance*
enhanced by visual references) was modified to remove exclusive reference to the visual component and to give an additional example. In Processing Speed (i.e., takes more time than expected), simpler, more lay terminology was applied. Finally, for the Visual Spatial items (i.e., arranges materials in personal spaces & lack of body awareness), more concrete examples were added to clarify that it is not related to awareness of body parts, but rather, to body movements in space and environment.

4.1.4.1 The significance of the new measures. Overall, the creation of these pilot measures developed in Studies 1-3 provide the opportunity to collect more extensive information about the child’s functioning in the psychoeducational assessment process. First, by tapping into the behavioural indicators of underlying ability constructs, this allows for a daily observational approach, capturing psychoeducational assessment data in new ways but that still align with the standardized measures. To the researcher’s knowledge, this has never been done before with nationally standardized intelligence measure like the WISC-V.

In addition, this approach offers triangulation of data. The term triangulation originates in the field of navigation; a specific point of location is determined using angles from two other known points (Heale & Forbes, 2013). The purpose of using triangulation in research in measurement is to increase confidence in the findings by using two (or more) independent measures or sources, to confirm results (Bryman, 2004). The use of triangulation methodology in assessment has documented benefits. This combination of findings from multiple sources provides a more comprehensive picture of results, compared to either source or approach alone (Tashakkori & Teddlie, 2010). Moreover, there has been a call for more triangulation of data collection tools and analyses in school psychology research (Leech & Onwuegbuzie, 2007; Onwuegbuzie et al., 2010) and research suggesting that triangulation provides estimates with stronger relations to various life outcomes, compared with individual reports from the student, teacher, or parent (Kankaraš et al., 2019).

Finally, the importance of early identification for future success and the negative implication of delayed support is well-documented in academic development literature,
particularly for children with diverse learning needs (Cortiella & Horowitz, 2014; LDAC, 2015; Lovett et al., 2017; Johnson, 2017). The development of these measures promotes more collaborative, detailed data collection approach, which facilitates earlier and more efficient screening and intervention.

4.1.5 Exploratory Validity and Case Study. The first part of this final study involved a quantitative comparison using correlation estimates to screen the relationship between the WISC-V Primary Index Scores and both the Home and Classroom Cognitive Ability Screeners. The inspection illustrated that overall, there was good conceptual overlap between the primary index scores and their corresponding construct on the Home Cognitive Ability Screener. Correlation results showed strong relations for the Verbal Comprehension, Visual Spatial, and Fluid Reasoning constructs (.87-.91) and a low correlation for the Processing Speed construct (.32). The exception, however, was the Working Memory construct, where essentially no relationship was observed between the screener and the standard score on the Working Memory factor of the WISC-V. The lacking alignment between the WISC-V Working Memory primary index score and the Working Memory construct on the Home Cognitive Ability Screener is not ideal, but also not particularly surprising, given that working memory can be difficult to isolate conceptually, especially for parents who are not familiar with or trained in cognitive ability measurement. It is possible that a more clearly operationally defining Working Memory for parents would allow for identification of behaviours indicative of the underlying construct of working memory. As previously stated, this was a specific revision stressed in the adaptation of the home screener instructions. Further, working memory as a construct tends to underlie several skills overall, so isolating it in this context could have been problematic. However, it is important to recognize that the results of this study are merely an indicator of potential relationships, given the lack of power to effectively estimate significance and establish these relations psychometrically. Therefore, the current results should be considered as preliminary observations and as previously noted, a large-scale pilot study would be necessary to establish sound estimates of the relationship between constructs. If at that point, the Working Memory constructs were not aligned, revisions to items would be necessary. A preliminary consideration for revision would be to remove the item that did not meet initial clarity
and relevance ratings in Study 3 and replace this with a new item. Moreover, adding additional items to this construct could be beneficial to ensuring the construct is captured across a range of behaviours.

Examining WISC-V scores obtained by school psychologists and linked with the Classroom Cognitive Ability Screener using Pearson’s $R$ correlation analyses showed strong relations between three of the five constructs. For the comparison between the Classroom Cognitive Ability Screener and the WISC-V scores, the analysis showed strong correlations for the Verbal Comprehension, Working Memory, and Fluid Reasoning constructs (ranging from .91-.94), and no correlation for Visual Spatial and Processing Speed. This lack of overlap is potentially problematic, and suggest that perhaps these two ability constructs, as defined on the WISC-V, did not come through in the Classroom Cognitive Ability Screener. Again, this is only preliminary evidence, and to establish whether more substantial changes are required, a larger-scale pilot study is necessary. However, for this to be a valid measure, one should see manifestations of all the constructs coming through; therefore, it is possible that revisions to these two constructs on the screener are required to ensure that they are adequately captured. One preliminary consideration for revision would be remove the items from the Visual Spatial ($n=2$) and Processing Speed ($n=1$) that did not meet initial clarity and relevance ratings in Study 3 and replace these with new items.

When examining the relationship between the Home and Classroom Cognitive Ability screeners, correlation analysis again revealed mixed alignment. For Verbal Comprehension, Visual Spatial, and Fluid Reasoning, relations were moderate to strong, ranging from .41 to .92. This finding is encouraging and suggests that the items used to capture these abilities are accurately tapping into the underlying psychological constructs. However, for Processing Speed and Working Memory, these scores were low to moderately related ($0.23 – 0.47$), and unexpectedly, correlated in a negative direction. This in particular was surprising; however, when considering that these were the two constructs that proved most problematic for adapting item onto Home Cognitive Ability Screener, particularly with regard to distinguishing between motivation, mood, and interest from these abilities. If this finding is replicated in future work using larger
samples of children, revisions to the items would be warranted. Further, lacking alignment between parents and teachers is not uncommon in previous literature. Data suggests that multiple informant agreement is often lacking between parent and teacher ratings (Major et al., 2015; Miller et al., 2014). This misalignment is often the result of different contexts that the child is observed in and the level of compliance the child displays with their parents compared to teachers. However, again, it is important to note that these data must be considered with caution, given the low \( N \) count. This analysis was done for the purposes of exploratory data inspection.

The second part of this study utilized a qualitative approach to understanding the unique experiences of the COVID-19 pandemic on parents and children with diverse learning needs. While this approach was a significant deviation the original study protocol which included a large-scale preliminary validation the classroom screening instrument, the addition of this qualitative component permitted a more in-depth appreciation of the data collected in supporting the structure of the screening measures.

An important consideration here is that qualitative analysis is inherently an iterative set of processes; the analyst is constantly looking for ideas and themes that when considered all together, provide the best explanation of “what’s going on” (Srivastava & Hopwood, 2009) in an inquiry. Therefore, it is critical to acknowledge the role of “I” when examining data, which in qualitative research methodology is formally referred to as bracketing. In this context, by definition, bracketing refers to the researcher’s self identification of vested interests, personal experience, cultural factors, and assumptions that may influence how they view the study's data (Creswell, 2013). Bracketing myself as the researcher in this study, it was important to acknowledge how my experience, knowledge, and of the psychoeducational assessment process may influence my interpretation of the parent feedback. One of the primary reasons for my engaging in this study initially is the finding that, based on extensive literature review, the current approach for psychoeducational assessment and support lacks parental involvement or extensive communication between parents and teachers. Therefore, when reviewing parental feedback, it is likely that I will look to statements that support that and will be interpreting as in line with the difficulties faced by parents based on literature. This was
something I was mindful of in both the development of interview materials and in the analysis phases. When designing the interview questions, specific attention was paid to ensure the “if any” component was included (e.g., *Compared to before the pandemic, what changes (if any) have you noticed in terms of your child’s learning or academic development?”) so that it wasn’t implied by the question that there should have been/had to have been changes comparatively. Further, in the interview process I made every effort to limit my own personal remarks as much as possible while still maintaining rapport. In addition, to validate responses without any emotional valence, I responded with “OK” or “makes sense”. Finally, when reviewing transcripts, the entirety of the transcript was coded (every three to five sentences of text) so that content was not missed or only confirming text in alignment with assumptions was analyzed and coded. With managing my own bias as carefully as possible, I believe that the familiarity with the participant experience was overall an asset in facilitating conversation and allowing the participant to be open with their responses. They seemed to get the sense that their feelings were not unjustified and were very open to discuss their personal struggles and frustrations.

This qualitative component allowed researchers to better understand the experiences of parents of children with diverse learning needs who were enrolled in the study, and referred by the CYDC, and to evaluate the potential utility of these new screening measures for this subgroup of learners. The design of Study 4 as a whole, in essence, is an introductory, quasi-validation study. The addition of qualitative data enables a more well-rounded, wholistic understanding of each participant case. This allows researchers to ascertain how effective this screener will be at tapping into children’s cognitive abilities and functioning, especially in this unprecedented societal and learning environment. Moreover, the addition of this component was also significant because the preliminary quantitative WISC-V and screener data was collected in the middle of a pandemic, the likes of which learners, and their parents, have not experienced in their lifetime. By incorporating a more phenomenological approach, researchers were able to contextualize the feedback and make sense of the data within the context of the lived experience, in what is considered an anything but normal academic year.
Semi-structured interviews allowed for parents to answer open-ended questions, giving as much detail as their own experiences and personal comfort with sharing allowed. Via both within- and cross-case coding and analyses, key themes qualifying parental and perceptions of their child’s experiences emerged. These were categorized by five overarching themes observed across cases: *special education learning needs are more complex, parent knowledge of academic content is important, balancing roles proved challenging, observed decline in academic engagement and development,* and *concern for child’s mental health and well-being.* The strength of these data, connecting back to the development of these screening measures, is that it highlights the benefit of linking parental feedback with teacher and assessment feedback, because it enables the child’s support team to connect signs and symptoms of learning struggles, as expressed though behaviours, to cognitive ability. Moreover, it allows us to link the behaviours that parents report with what is captured on the home screening measure, to evaluate if the items included on the measure can tell us how these children are functioning along the various five factors of the WISC-V. What follows, is a discussion of each of these themes in relation to the direct quotes from parents (see pages 83-87) and overall findings.

### 4.1.5.1 Special education learning needs more complex

Parents, across all interviews, reported feeling overwhelmed and frustrated supporting their child’s learning. In addition, the feeling that the individualized support that their child needed could not take place effectively in an online environment; explaining that while in-person learning allows the teachers to observe the child and recognize times where they might need help and intervene, in remote learning environments, this is less so the case. The onus often falls on the student to reach out for support, which is not always comfortable or even possible for the student.

These descriptions speak to the experience that learning remotely, while certainly challenging for all learners in many ways, was exponentially difficult for children who require modified programs and instructional support. Looking back to the home screening measure, it captures behaviours such as *being able to ask for help, express thoughts and ideas, and follow verbal instructions,* all of which are all codes that emerged as a part of the qualitative analyses. Therefore, the use of the home measure would allow us to pick
up on these behavioural indicators. This type of information has applied utility, and the use of the Home Cognitive Ability Screener in this type of situation would help the school support team to better understand the unique challenges that child faces while at home, and how those behaviours manifest themselves. Moreover, perhaps if there were clearer understanding by parents about what processing speed is and how deficits might manifest behaviourally, this information could be used to connect with the teacher to modify the pace or delivery method of online instruction for that child.

These findings are also consistent with other recent research exploring the impacts of learning challenges for children not yet identified with a formal diagnosis, but struggle with traditional learning. In a study by Capozza (2020), a mixed-method study revealed that even without formal diagnostic recognition, for children impacted by learning challenges, both children and their families were significantly impacted. Most notably, the researcher identifies three overarching themes, including: parents’ knowledge and understanding of the children learning challenges, prominent caregiving needs, and available supports. Overall, their findings suggest that parents of children with learning difficulties report a range of concerns and needs that are not met through various support systems (e.g., those offered by school, community, or by a professional). These findings also add to previous research by Chein and Lee (2013) who collected semi-structured interviews with 25 couples who were caring for a child with specific learning difficulties (SLD). The results of this work demonstrated that support systems (i.e., parents) often lack both knowledge and skills to adequately support their child’s learning challenges.

The evidence from both this data collection and the observations reported in previous literature suggest that parents do not have enough training and knowledge to adequately support their child with learning challenges. Therefore, using the screeners developed as a part of this study will enable not only more integration of feedback from parents, but the opportunities for teachers to see what parents are experiencing so they can provide more personalized support and direct parents to appropriate resources.

4.1.5.2 Parent knowledge of academic content is important. Another consistent sentiment among parents was that while they felt obligated to step in to guide their
child’s academic progression, they lacked essential skills to do so. These experiences are aligned with other research exploring parental experiences with their children’s remote learning. In a mixed-methods data collection, Garbe and colleagues (2020) investigated parents’ experiences and struggles during school closures. Overwhelmingly, parents described having difficulties learner motivation and supporting learning outcomes. In addition, a qualitative study by Budhrani and colleagues (2021) reports that parents felt as if they served as digital classroom managers, completing tasks such as assisting with assignments, organizing schedules, and guiding participation. Therefore, the experience of parents was such that they felt they had to be co-instructors or classroom support, but didn’t have the training, experience, or often the time to do this as effectively as they felt was needed. This feedback is also consistent with previous other literature exploring remote learning for children with diverse learning needs. For example, in a study by Lambert & Schuck (2021), teachers reported that supporting students with disabilities, particularly when teaching mathematics and language, requires also considering the emotional and affective dimensions of learning, not just the academic ones. Particularly, teaching children with diverse learning needs often involves supporting self-regulation and expressing emotions, as well as administrative support beyond content learning. This is simply not something most parents are trained in or supported with.

**4.1.5.3 Balancing Roles Proved Challenging.** An experience overwhelmingly reported by parents was the struggle to find balance between providing academic support to their child and the demands of their own work schedules and home lives. These descriptions echo the sentiments reported by parents across a variety of other studies investigating parents’ experiences during school closures and the pandemic overall. Parents report feeling overwhelmed at that they struggling to balance responsibilities, with 62.3% of parents stating that they had to spend more than one hour per day supporting learning at home (Garbe et al., 2020). The switch to at-home remote learning also involved repurposing living spaces, furniture, and resources for makeshift study and work areas (Budhrani et al., 2021). These changes put additional pressure on parents. This screener captures behaviours such as **being able to complete tasks in appropriate time frame, needing encouragement to move though tasks, and when to apply information given to them.** These are all examples of the types of codes documented in the
identification of this theme, demonstrating the screener’s ability to capture relevant information about how the child functions at home. Again, this is one of the ways that creating the avenue for shared knowledge exchange between teachers and parents would strengthen the ability for the teachers to understand what support the child does (or does not have) at home, and where parents are struggling the most in supporting their child’s learning. Using the screening measures to facilitate sharing knowledge is an integral first step in addressing these concerns.

One interesting observation of this data collection is that all the parents that participated in this study were mothers of the child. This is consistent with other research which finds that while parents overall were impacted by the pandemic, in most cases, it was the child’s mother who provided this support (Daniela et al., 2021). Moreover, this influx of change and additional roles does not come without a physical and emotional price. As Gadermann and colleagues (2021) report, 44.3% of parents with children under the age of 18 years old living at home report worse mental health as a result of the COVID-19 pandemic, compared with only 35% of respondents without children living at home. In addition, more parents compared with the rest of the same, reported increased alcohol consumption, suicidal thoughts or feelings, and stress about being safe from physical or emotional violence.

4.1.5.4 Observed decline in Academic Engagement and Development. Concern for their child’s academic development and well-being was also a common response throughout the interviews. While academic decline was not always articulated, the sentiment on lack of advancement on development was consistent. These impressions align with other qualitative reporting on parents’ experiences of remote learning. For example, using the Home Adjustment to COVID-19 Scale (HACS; Becker et al., 2020) researchers evaluated responses across three studies conducted in the United States and Australia (N=606). Results indicated that the challenges most expressed by parents were the child’s difficulty in staying on track, lack of motivation to do online schooling, and lack of social interaction (Roy et al., 2021). This feedback was also consistent with quantitative research estimating the impact of school shutdowns and qualitative research exploring both parental and teacher experiences with remote learning. A study by
Kuhfield and colleagues (2020) utilized estimates from absenteeism literature and previous summer learning patterns of data from over 5 million students in the United States. The projects indicated that students were expected to start Fall 2020 with approximately 63 – 68% of learning gains in reading, and 37-50% of the learning gains in mathematics, relative to the typical school year. It is important to note that this quantitative research utilizes pre-COVID data points for projection modelling and does not consider the online instruction and support during the pandemic which could mitigate the losses that students experienced. However, there is also evidence that measures taken by schools, especially in the initial months, were not as effective as hoped. For example, a national U.S. survey of teachers conducted by Education Week found that only 39% of teachers reported regularly personally interacting with their students (i.e., at least once a day), and most teacher-student communication occurred via email (Kurtz, 2020). Other literature supports this finding of minimal contact between teachers and most students (Lieberman, 2020). Closer to home, a Canadian national longitudinal survey collected data from teachers (N=1626) at two separate points early in the pandemic (April and June 2020). Teachers were asked to rate their experiences on several variables, including stress levels, resilience, teaching efficacy, attitudes toward change, and attitudes toward technology. Results indicated that over the first three months of the pandemic, teachers overall demonstrated increasing levels of burnout (measured by ratings of exhaustion and cynicism). And while teachers also reported feeling more efficacious in their teaching abilities, they reported more negative cognitive and emotional attitudes toward change and technology. The reported lack of “success” of schools and teachers to facilitate a swift change from in-person to remote learning is not surprising, given the nature of the lockdown occurring so suddenly, and the extent to which is has persisted far beyond initial expectations and health data. This pandemic impacted education and teaching in ways never experienced in our lifetimes. Teachers were required to modify pedagogy alarmingly quickly, and students and parents to adjust, in a time where uncertainty was widespread, which made long-term planning difficult, especially when many believed it would be a temporary, short-term change.

The pandemic brought forth an unprecedented and swift change to education delivery as we had come to know it. Further, at this point, while there is some very preliminary
evidence illuminating academic trends, we still do not have a full appreciation for what the long-term effects will be on students academically. Therefore, this is an ideal time to integrate more cohesive, collaborative assessment processes, most especially given that parents have been a large part of their child’s learning over the past year and a half. This is where the Home Cognitive Ability Screener could be incredibly helpful at capturing cognitive functioning manifestations. Moreover, given the dramatic shift to remote learning and in many cases, both underprepared platforms and resources to support learners, it is not unreasonable to hypothesize that many more learners may need more personalized learning support in subsequent academic years, given the dramatic losses or lack of progression that parents are reporting. Therefore, implementation of wholistic psychoeducational assessment in the coming year could be pivotal in addressing this national concern.

4.1.5.5 Concern for child’s mental health and well-being. Finally, parental reports consistently expressed concern for the decline they had observed in their child’s mental health and psychological well-being. These concerns are not unfounded. While public health emergencies take their toll on all individuals, children are often particularly vulnerable because of their limited understanding of the event, as well as lacking autonomy to make decisions (Imran et al., 2020). Parents concerns about lacking social and emotional development as a result of limited interactions with peers are also consistent with preliminary research examining the psychological implications of the COVID-19 pandemic, which indicates that overall, the mental health of Canadian children and adolescence has worsened compared to before the pandemic (Cost et al., 2021; Courtney et al., 2020; Gadermann et al., 2021; Ji, D, 2020). For example, a survey of Canadian adolescents (N=1054) showed that students are concerned about the pandemic, particularly about school and peer relationships. Moreover, COVID-19 stress was related to increased feelings of loneliness and depression (Ellis et al., 2020).

Moreover, while negative impacts to mental health as a result of the continued pandemic and global crisis affect everyone, children with neurodevelopmental disorders (e.g., intellectual disability, attention deficit/hyperactivity disorder, autism spectrum disorder) can be especially vulnerable. For children with NDD, predictable routines and expectations, specifically developed behavioural and environmental supports and vital for
psychological well-being. Therefore, the abrupt disruption of those established schedules, supports, and resources, as well as extended isolation from peers and educations, creates a significant risk for behavioural difficulty in this population of learners (Summers et al., 2021). And while it might be the case for a small number of children who in fact, experience less stress and anxiety due to reduce social and academic expectations, the overarching experience tends to be the opposite. Overall, this exploratory qualitative data collection explores the experiences of parents of diverse learners in the pandemic during online learning. Overarchingly, this experience has been a considerable adjustment with unique challenges and experiences. However, before ending this summary, it is also worth noting, that while remote learning has been rife with difficulties for both learners and their parents, the participants did report some positive experiences and observations. This included spending more time with their child overall, getting creative to learn things in new ways, and improved technological skills for both parents and children.

As noted for academic development, again, the psychological and socioemotional impacts of this remote learning environment are still largely not understood, nor can they be fully appreciated at this time. The use of the screening measures could be helpful in tracking how behaviours have changed or evolved. This dramatic isolation and removal of in-person interaction with peer groups, and even friend groups outside of school at a time when children are developing critical socioemotional skills is undoubtedly influential and will have downstream repercussions going forward. As the SickKids (2020) report points out, for young children in particular, face-to-face interaction improves learning, including skills of non-verbal communication, empathy, and emotional regulation. Incorporating the addition of the home and classroom cognitive ability screeners into psychoeducational assessment processes in Canada will aid in the communication between the school and parents about how the child is functioning in different contexts during these changed and often increasingly challenging conditions, and the behaviours that might be cause for concern.

Taken together, the results of the body of research have important applied implications, and there are vital learnings from this work that should be applied going forward. This is discussed in the sections that follow.
4.2 Implications

In Studies 1 and 2, significant effort was put into the development of the initial items and subsequent pilot Classroom Cognitive Ability Screener. The development of this tool was such that it involved numerous revisions and expert review, across a variety of applied and academic backgrounds. This careful and specific attention to data collection from a variety of sources was vital to ensuring a conceptually valid and useful instrument. In developing this tool, we provide teachers with the opportunity to contribute vital information upfront, and to inform the psychologist(s) who is assessing the child. Teacher feedback provides real-world observations that capture how the child functions day-to-day. Currently, we lack tools that combine best principles of psychoeducational measurement with teacher observations, and this research provides measures to address this gap. This information can provide essential insight to the psychologist and support them in deriving logical hypotheses and an appropriate assessment plan to better understand the strengths and challenges of that child. In addition, this approach can streamline the assessment process overall and provide a common language that can facilitate communication and collaboration between the teacher and psychologist.

The extension of this development and subsequent adaptation of the tool into a Home Cognitive Ability Screener in Study 3 is an essential component of both the novelty and utility of this collection of studies. By creating an aligned, conceptually matched tool that can be used in tandem with the classroom version, this not only brings in the parent perspective in the assessment process, but allows for a convergent validity of data collection, given that all tools align along the same constructs. These 360-approach to background data collection is one that to date, as never been done alongside a standard intelligence assessment like the WISC-V and has typically only been employed in behavioural assessments (e.g., BASC-3; Reynolds & Kamphaus, 2015). This additional measure also addresses literature that reports parents feel not actively involved in the child’s IEP, with their input often not considered when assessment(s) and planning take place.
Finally, the results of this qualitative examination build on the existing evidence from other recent literature, demonstrating that the pandemic and subsequent switch to remote, at-home learning had and continues to have a significant impact on families. Parents report feeling unprepared and overwhelmed by their new role of academic support, struggling to balance competing responsibilities, and worry about the development and well-being of their children. There is no doubt that parents overall, on a national and global level have been affected by these changes. However, in the context of the current dissertation, it speaks to the immensely significant impact to parents of children with complex learning needs cannot be discounted. The intent of this additional qualitative component was to evaluate how parents of children with complex learning needs have experienced their child’s academic development and expression of their intelligence and cognitive abilities, in the context of the current environment of the pandemic. This specific attention to understand the experiences of parents of children with a learning disability has, to date, not been explored. This evaluation provides a novel contribution by offering a preliminary look into that phenological experience of these parents, and moreover, explores how the screening measures developed as a part of the larger study could meaningfully support parents and learners going forward. Parental difficulties in supporting their child’s academic and emotional development have meaningful implications for children with diverse and unique learning needs and goals, who often need additional support, resources, and technologies to be successful in their academic environments (Hallahan et al., 2020). Although parents expressed that they felt they often had sufficient access to resources, the additional time commitment and role of supporting their child’s learning at home is significant, and arguably experienced to a greater extent when discussing children with learning disabilities or special needs. The parental feedback collected in this study candidly reinforces the driving force behind the study design, being that parents have the rich opportunity to see the observable behaviours of their child struggling with certain subjects and learning experiences in the home. This research is a novel contribution to the parental experiences of children with diverse and complex learning needs and adds to the body of literature exploring the remote/online/at-home education during the COVID-19 pandemic. Moreover, it points to the clinical utility of using this holistic psychoeducational assessment process in the future.
Taken together, this collection of studies provides the blueprint for a new way to approach psychoeducational assessment. It capitalizes on the psychometric rigour and clinical utility of the WISC-V and adds the novel contribution of incorporating teacher and parent feedback into the assessment process by documenting behavioural indicators of underlying abilities. By capitalizing on triangulation of data sources and observable behavioural evidence, this can revolutionize the way that the child’s support team, including the psychologist school, teachers(s), classroom support staff, and parents, can communicate and share valuable information.

4.3 Limitations

All research has limitations, and this research is no exception. Without a doubt, the most significant and influential barrier to this study design and data collection was the COVID-19 pandemic. This was an unanticipated, unprecedented obstacle which had a major impact on this research process, and subsequently, study design. Primarily, it interrupted and then disabled the ability to collect a pilot sample of data in-classrooms from a large sample of K-12 students. The closure of schools and cessation of in-school research resulted in a pilot data collection becoming beyond of the scope of this study to complete. This pilot data collection was essential to establish the psychometric qualities and evaluate items. An evaluation of item-level performance as well as the internal consistency of the items as a collective scale would have allowed for the removal of items that were not adequately corelated with the collection of items, as well as the supported the optimization of scale length. In addition, a factor analytic approach to evaluate which groups of items constituted a unidimensional set, as well as identify any problematic items due to high cross-loadings. This would have allowed for item refinement, and to make final item decisions based on reliability indicators. Moreover, given that a large-scale validation data collection was not possible, the psychometric integrity of the correlational results exploring the conceptual overlap between measures is currently lacking, in the current state. While preliminary observations point to some potentially problematic items or grouping of items to capture the WISC-V cognitive factors, future evaluation is necessary to determine if, how, and to what extend the item content and design must change. Additionally, a redesign and case study approach were
employed ¾ of the way through the study. However, given the small sample size of this study, there were too few data points to capture nomothetic robustness, and was therefore underpowered to effectively evaluate the reliability of the screener items. Therefore, in its current state, it the psychometric rigour could not be effectively evaluated.

In addition, the development of the classroom screener was originally conceptualized and built in the context of traditional, in-person, classroom learning environment. Therefore, there may be items that do not appropriately translate to the virtual environment, which would need to be considered for future revisions or sampling. Regarding previous literature, the data reporting academic struggles in students is based on U.S. data, as comparable data was not available in Canada. Given the context of this study program being Canadian in nature, this should be considered with this in mind.

Finally, the generalizability of the results is limited by the demographic characteristics of the sample. First, the parent sample only including mothers. As previously reported, data shows that survey respondents were predominately mothers. However, to capture more diverse perspectives, in future work it would be pertinent to collect data from fathers as well. Second, the sample included participants who all had access to digital technologies (laptop, tablet) which allowed for virtual interviews to take place, meaning parents had both access and familiarity with using digital technologies. This may not be an accurate representative of the population as a whole, and efforts should be made to collect data in-person from a wider variety of parent samples.

### 4.4 Future Directions

As previously noted, a comprehensive validation of the tools was not possible and therefore the full life cycle of scale development was not able to be completed. Therefore, future studies are needed to establish both the reliability and validity of the Home and Classroom Cognitive Ability Screener tools. As a result of this study, the tools are ready to be evaluated in pilot data collection, when it becomes safe and possible to do so. A sufficiently powered pilot data collection is integral to provide the statistical power to evaluate items and is integral to ensure item performance and scale integrity. Through
reliability evaluation of items, as well as a factor analytic approach to establish construct organization, the screeners can be psychometrically evaluated and revised, as needed.

In addition, to say this study happened during an atypical academic year would be an understatement. The widespread influence of the COVID-19 pandemic on students, teachers, and families is still largely unknown, especially from a long-term perspective. We are at the precipice of being able to reflectively look back and both qualitatively and quantitatively examine how and to what extent the school closures and transition to remote learning will have on Canadian students. Therefore, further research should aim to explore the unique and complex dynamics, needs, and challenges. Moreover, given what the data suggests, special attention should be examined in the context or special education learners, with particular attention to the diverse and unique needs of this population (e.g., self-regulation and motivation supports). The current study provides the first examination of parental experiences in a special education context, however, this should be built upon with further studies to increase sample size, incorporate both parental experiences, as well as diversify the sample with relation to technology access.

Finally, increasing communication, understanding, and collaboration between parents and teachers is an essential part of moving forward. In addition to academic support, coaching and supporting both students and parents in self-regulation and engagement strategies could be particularly helpful to support at home learning or homework, particularly for children with neurodevelopmental disorders. This is supported by research by Schuck and colleagues (2021) exploring special educator perspectives of COVID-19 online teaching and learning. Educators highlight the important of providing socio-emotional support to families to better support the learner, and the importance of stronger parent-teacher relationships. This is echoed by others, whose research with parents suggests that increased training for parents and better mental and emotional resources for parents and families is essential for student success, especially in a remote learning environment (Garbe et al., 2020). The use of the Home and Classroom Cognitive Ability Screeners developed in this study would be a helpful in this cause; use of these measures supports collaborative knowledge and data exchange going forward. Educating parents about how children are evaluated, the system and approach to psychoeducational assessment, key
pedagogical and ability concepts and terminology would aid in the collaboration going forward.

4.5 Conclusion

Given the daily demands of school psychologists and teachers to support the needs of all school children, most especially, those with diverse needs or learning challenges, it is imperative that research focuses on ways in which assessment and support practices can be improved and facilitated. The literature suggests that wait times are too long, teachers feel uninvolved and underappreciated, and that school psychologists inundated with their caseloads. The research also demonstrates that early identification and expedited individualized learning strategies are paramount to the child’s success. Given the evidence, a clear gap in the assessment process emerges when it comes to the collaboration between teachers and psychologists. To address this breakdown, researchers sought to develop an evidence-based tool, informed by both research and applied practice, that can be used as a classroom screener to assess the abilities reflected in the WISC-V which in turn are linked to learning difficulties. By developing the Classroom Cognitive Ability Screener tool, it provides teachers with the opportunity to contribute vital information upfront, and to inform the psychologist(s) assessing the child. In turn, the psychologist can further enhance their contribution to the diagnostic assessment protocol by noting the correspondence, or lack there of, between their findings from the administration of the WISC-V with what the teacher (and /or parent) observes in the child’s everyday behaviour. This collaborative information effort was expanded further with an adaptation to a Home Cognitive Ability Screener, based upon and aligned with the classroom counterpart. This version was developed to capture observational data from the perspective of parents and primary caregivers. By developing the Home Cognitive Ability Screener in addition to the Classroom Cognitive Ability Screener, this allowed not only for the creation of an aligned tool, but to collect a more full, well-rounded picture of the child’s functioning and behaviour.

Further, with the development of these tools, a preliminary evaluation could be conducted to examine the potential utility of these assessments, the value being that not only could
WISC-V assessment data be reviewed, but both the teacher and parent indicators of behaviour as well. This allowed triangulation of data in each case. Finally, the addition of the qualitative interview component (Study 4B), enabled the collection of rich information about the real-life implications for children with complex learning needs and challenges in this novel, pandemic environment. The was an essential component of the study that provided new insights into the experience of parents who support complex and diverse learners. The data from this component of the study emphasises the benefit of linking parental feedback with teacher and assessment feedback, because it allows for the support team to connect signs and symptoms of learning struggles. This approach is essential to improving how we capture and measure assessment data.

While the trajectory of this collection of studies took a significant deviation from the original research design, the changes implemented allowed for both the development of an additional screening measure for parents, as well as the collection of rich, qualitative data. This study provides not only the foundation for the Home and Classroom Cognitive Ability Screener measures, but also outlines the blueprint for how to adapt and finalize the development of these measures going forward, to ensure clinical and practical utility.

Looking back upon the research problem identified in the early stages of this collection of studies, the weaknesses of the current assessment process that were identified were *lacking communication, limited richness of information, and delays to supports*. This collection of studies successfully addresses these limitations. Ultimately, the kind of background information collected on the Home and Classroom Cognitive Ability Screeners provides essential insight to the psychologist and support them in deriving logical hypotheses and an appropriate assessment plan to better understand the strengths and challenges of that child. This streamlines the assessment process overall and provides a common language that can facilitate communication and collaboration between the parent, teachers, and psychologist. Further, this tool could be used to track the child’s classroom behaviour and psychoeducational development overtime. The researchers’ goal is that by creating a more collaborative assessment approach, a more effective and efficient assessment and intervention process will emerge, enabling children to get the necessary support as soon as possible.
REFERENCES


Thames Valley District School Board (n.d.) *Trouble Shooting Tool for Learning Support and Classroom Teachers*.


York Region District School Board (n.d). *Cognitive Processing Assessment and Intervention Tool*.

Zoom Video Communications Inc. (2016).
Appendix A: Graduate Student Focus Group Study Package

Focus Group Information and Preparation Document

*Focus Group #1

This Session’s Content:

**Working Memory** is defined as: *short-term memory that is concerned with immediate conscious perceptual and linguistic processing. It is the cognitive system with a limited capacity that is responsible for temporarily holding information available for processing. Working memory is important for reasoning and the guidance of decision-making and behavior.*

**Item Generation/Review:**

The group will be brainstorming and reviewing items that have to do with these constructs and how strengths (and issues – reverse items) might manifest themselves in the classroom.

**Some example items for Working Memory might be:**

- Can recall auditory instructions and apply them to task at hand
- Can listen to and understand lengthy discussion
- Can organize information they have to solve a problem
- Can remember ideas when writing
- Can follow multi-step directions
- Looks lost/confused after instructions have been given (R)
- Frequently asks for repeated instruction (R)
- Prefers/remembers best when the information is provided to them visually to refer back to (R)

**Alignment with Assessment Tool:**

At the session, you will work with the others to discuss potential items that a classroom teacher would be able to answer with regards to the child’s behaviour and abilities. The goal is to create items that **capture & mirror the facet of Working Memory as measured by the cognitive assessment batteries** (like the WISC-V). Therefore, if you have access, it might be beneficial to take a quick look at these constructs on the WISC and the type of subtests used capture this information. For your reference, here is some information about these subtests.

**WISC-V Working Memory Subtests**

- Digit Span (Primary)
- Picture Span
- Letter-Number Sequencing
VERBAL COMPREHENSION

This Session’s Content:
Verbal Comprehension is defined as: the ability to understand spoken language. Verbal comprehension skills involve vocabulary knowledge, verbal-reasoning and problem-solving skills using language.

Item Generation/Review:
The group will be brainstorming and reviewing items that have to do with these constructs and how strengths (and issues – reverse items) might manifest themselves in the classroom.

Some examples for Verbal Comprehension might be:
- Can articulate their ideas verbally
- Can understand verbal instructions
- Can give clear directions to peers
- Appears as if not paying attention when hearing verbal instructions (R)
- Delays or pauses before responding (R)
- Have difficulty explaining their thoughts (R)

Alignment with Assessment Tool:
At the session, you will work with the others to discuss potential items that a classroom teacher would be able to answer with regards to the child’s behaviour and abilities. The goal is to create items that capture & mirror the facet of Verbal Comprehension as measured by the cognitive assessment batteries (like the WISC-V). Therefore, if you have access, it might be beneficial to take a quick look at these constructs on the WISC and the type of subtests used capture this information. For your reference, here is some information about these subtests.

WISC-V Verbal Comprehension Subtests
- Similarities (Primary)
- Vocabulary (Primary)
- Information
- Comprehension
PROCESSING SPEED

This Session’s Construct:

Processing Speed is defined as: the time it takes to effectively complete a mental task. It refers to the ability to take in and generate information proficiently, as well as perform tasks quickly and efficiently, within a reasonable timeframe for the task.

Item Generation/Review:

The group will be brainstorming and reviewing items that have to do with these constructs and how strengths (and issues – reverse items) might manifest themselves in the classroom.

Some examples for Processing Speed might be:

- Can efficiently take timed-tests that require decision making
- Can successfully complete writing tasks in reasonable time
- Can comprehend reading material in an efficient matter
- Takes a long time to answer questions (R)
- Takes more time than expected to complete simple tasks, despite understanding task (R)
- Difficulty completing tasks under time pressure (R)

Alignment with Assessment Tool:

At the session, you will work with the others to discuss potential items that a classroom teacher would be able to answer with regards to the child’s behaviour and abilities. The goal is to create items that capture & mirror the facet of Processing Speed as measured by the cognitive assessment batteries (like the WISC-V). Therefore, if you have access, it might be beneficial to take a quick look at these constructs on the WISC and the type of subtests used capture this information. For your reference, here is some information about these subtests.

WISC-V Processing Speed Subtests

- Coding (Primary)
- Symbol Search
- Cancellation
Focus Group #2

In today’s session, you will work with the others assigned to your group (2-3 individuals) to discuss potential items that a classroom teacher would be able to answer with regards to the child’s behaviour and abilities.

The goal is to create items that capture & mirror the facets of Processing Speed, Visual Spatial, or Fluid Reasoning (depending on your group assignment) as measured by the WISC-V, in kids from 6-16. That being said, this is a 10-year age span where there will be developmental changes and variations in the expression of these intelligence factors (e.g. a 6-year-old child may express his/her WM ability differently than a 14-year-old) so you might want to have different options or propose items with variability so that they can be applied across the age-span.

You want to create items that are clear, straightforward, and primarily target the skill/area you are looking to evaluate (this can be particularly challenging as some things will cross many skills!). Therefore, the goal is to be a specific and clear as possible, so we can capture behaviours and skill level that will best represent the subcategory.

We encourage you to dive right it to discussing, critiquing, and refining items presented, and to come up with new suggestions you think could work. The goal of the working session will be to present the researchers with your list of items and discuss with them during the session how/why you came to the conclusions that you did.

After the individual groups have time to work and discuss, we will come together as a full group to go over your suggestions and revisions.

This package contains item information for each of the 3 facet groups. Even if you are not assigned to a specific facet, feel free to take notes or make suggestions on the pages when we discuss as a group – your feedback is welcome!

Please keep notes as you go on your item sheets or using the provided blank paper, so that researchers can collect these at the end to use for writing-up the focus group feedback and editing items!
PROCESSING SPEED

This Session’s Construct:
Processing Speed is defined as: the time it takes to effectively complete a mental task; the speed of mental operation. It refers to the ability to take in and generate information proficiently, as well as perform tasks quickly and efficiently, within a reasonable timeframe for the task.

Item Generation/Review:
The group will be brainstorming new and reviewing sample items that have to do with these constructs and how strengths (and issues – reverse items) might manifest themselves in the classroom.

Some examples for Processing Speed might be:
- Can efficiently take timed-tests that require decision making
- Can successfully complete writing tasks in reasonable time
- Can comprehend reading material in an efficient matter
- Speed/efficiency in tasks decreases as time goes on
- Consistently needs to be urged to start and/or continue a task (R)
- Consistently rechecks smalls components within tasks before moving on (R)
- Takes a long time to answer questions (R)
- Takes more time than expected to complete simple tasks, despite understanding task (R)
- Difficulty completing tasks under time pressure (R)

Alignment with Assessment Tool:
At the session, you will work with the others to discuss potential items that a classroom teacher would be able to answer with regards to the child’s behaviour and abilities. The goal is to create items that capture & mirror the facet of Processing Speed as measured by the cognitive assessment batteries (like the WISC-V). For your reference, here is some information about these subtests.

WISC-V Processing Speed Subtests
- Coding (FSIQ) *
- Symbol Search *
- Cancellation

Primary = required for FSIQ
* = required for PSI
FLUID REASONING

This Session’s Construct:

Fluid Reasoning is defined as: the capacity to reason and solve novel problems, independent of any knowledge from the past. It is the ability to think about stimuli and manipulate it, to analyze novel problems, identify patterns and relationships that underpin these problems and the extrapolation of these using logic.

Item Generation/Review:

The group will be brainstorming new and reviewing sample items that have to do with these constructs and how strengths (and issues – reverse items) might manifest themselves in the classroom.

Some examples for Fluid Reasoning might be:

- Can apply concepts learned in a previous topic to new topic/themes
- Enjoys completing hands-on, problem-solving activities
- Takes the lead to guide group or team in new situations
- Can understand the underlying problem or intended outcome of abstract examples
- Gives up quickly when faced with novel problem or challenge (R)
- Has difficulty seeing an object for any purpose but it’s intended purpose (R)

Alignment with Assessment Tool:

At the session, you will work with the others to discuss potential items that a classroom teacher would be able to answer with regards to the child’s behaviour and abilities. The goal is to create items that capture & mirror the facet of Fluid Reasoning as measured by the cognitive assessment batteries (like the WISC-V). For your reference, here is some information about these subtests.

WISC-V Fluid Reasoning Subtests

- Matrix Reasoning (Primary)*
- Figure Weights (Primary) *
- Picture Concepts
- Arithmetic

Primary = required for FSIQ
* = required for FRI
VISUAL SPATIAL

This Session’s Construct:

Visual Spatial is defined as: is the ability to interpret and organize visually perceived material to navigate space, and to think in visual images and manipulate them with fluency and speed. The ability to visualize the world accurately, modify surroundings based upon perceptions, and recreate the aspects of visual experiences.

Item Generation/Review:

The group will be brainstorming new and reviewing sample items that have to do with these constructs and how strengths (and issues – reverse items) might manifest themselves in the classroom.

Some examples for Visual Spatial might be:

- Successfully understands how parts of objects make a whole
- Can estimate visual lengths and distances
- Can pick out or identify important visual details
- Effectively arranges materials in space, such as desk or workspace
- Can organize the space on the page when completing assignments
- Gets lost easily navigating familiar surroundings (R)
- Displays clumsy behaviour (e.g., bumps into walls, desks) (R)
- Struggles to put things away appropriately or judge location (R)

Alignment with Assessment Tool:

At the session, you will work with the others to discuss potential items that a classroom teacher would be able to answer with regards to the child’s behaviour and abilities. The goal is to create items that **capture & mirror the facet of Visual Spatial as measured by the cognitive assessment batteries** (like the WISC-V). For your reference, here is some information about these subtests.

**WISC-V Visual Spatial Subtests**

- Block Design (Primary)*
- Visual Puzzles *

Primary = required for FSIQ
* = required for VSI
Focus Group #3

Thank you for agreeing to participate in this focus/working group and assisting us with the development and review of items for this new psychometric tool. I wanted to provide you with a little more information prior to our meeting so you can prepare and know what to expect in this session, as well as begin to brainstorm ideas for these concepts.

Based on review of this document, we encourage you to come prepared to the session with a few preliminary ideas, that way you can dive right into discussing, critiquing, and refining items. The goal of the working session will be to present the researchers with your list of items & discuss during the session how/why you came to the conclusions that you did.

This Session’s Content:
In this session, we will focus on the constructs of Working Memory, Verbal Comprehension and Processing Speed.

Working Memory is defined as: short-term memory that is concerned with immediate conscious perceptual and linguistic processing. It is the cognitive system with a limited capacity that is responsible for temporarily holding information available for processing. Working memory is important for reasoning and the guidance of decision-making and behavior.

Verbal Comprehension is defined as: the ability to understand spoken language. Verbal comprehension skills involve vocabulary knowledge, verbal-reasoning and problem-solving skills using language.

Processing Speed is defined as: the time it takes to effectively complete a mental task. It refers to the ability to take in and generate information proficiently, as well as perform tasks quickly and efficiently, within a reasonable timeframe for the task.

Item Generation/Review:
The group will be brainstorming and reviewing items that have to do with these constructs and how strengths (and issues – reverse items) might manifest themselves in the classroom.

Some example items for Working Memory might be:
- Can recall auditory instructions and apply them to task at hand
- Can listen to and understand lengthy discussion
- Can organize information they have to solve a problem
- Can remember ideas when writing
- Can follow multi-step directions
- Looks lost/confused after instructions have been given (R)
- Frequently asks for repeated instruction (R)
- Prefers/remembers best when the information is provided to them visually to refer back to (R)

Some examples for Verbal Comprehension might be:
- Can articulate their ideas verbally

...
- Can understand verbal instructions
- Can give clear directions to peers
- Appears as if not paying attention when hearing verbal instructions (R)
- Delays or pauses before responding (R)
- Have difficulty explaining their thoughts (R)

**Some examples for Processing Speed might be:**
- Can efficiently take timed-tests that require decision making
- Can successfully complete writing tasks in reasonable time
- Can comprehend reading material in an efficient matter
- Takes a long time to answer questions (R)
- Takes more time than expected to complete simple tasks, despite understanding task (R)
- Difficulty completing tasks under time pressure (R)

**Alignment with Assessment Tool:**

At the session, you will work with the others to discuss potential items that a classroom teacher would be able to answer with regards to the child’s behaviour and abilities. The goal is to create items that capture & mirror the facets of Working Memory, Verbal Comprehension, and Processing Speed as measured by the cognitive assessment batteries (like the WISC-V). Therefore, if you have access, it might be beneficial to take a quick look at these constructs on the WISC and the type of subtests used capture this information. For your reference, here is some information about these subtests.

**WISC-V Working Memory Subtests**
- Digit Span (Primary)
- Picture Span
- Letter-Number Sequencing

**WISC-V Verbal Comprehension Subtests**
- Similarities (Primary)
- Vocabulary (Primary)
- Information
- Comprehension

**WISC-V Processing Speed Subtests**
- Coding (Primary)
- Symbol Search
- Cancellation

**A Few Important Points:**

1. The WISC covers an age-range of 6-16. This is a 10-year age span where there will be developmental changes and variations in the expression of these factors (e.g., a 6-year-old child may express his/her WM ability differently than a 14-year-old) so you might want to suggest different items for different age groups. Potential age-group ranges/cut offs will also be discussed at the focus group.
2. You want to create items that are **clear, straightforward, and primarily target the skill/area you are looking to evaluate** (this can be particularly challenging as some things will cross many skills!). Therefore, the goal is to be a specific and clear as possible, so we can capture behaviours and skill level that will best represent the subcategory (i.e., working memory, verbal comprehension, etc.).
BACKGROUND INFORMATION
FORMAT OF QUESTIONNAIRE

**General Formatting Approach:**

- There will be a general statement in instructions that suggests items should be considered “in comparison to the student’s same-age peers”
- Form will include some demographic/pre-screen questions:
  - Section that allows teachers to document any “special circumstances” e.g., new to the country (limited English)
  - Question that asks teacher if the child is already on an IEP
  - Question that asks the teacher if they are making any special accommodations for the child already in the classroom (with or without an IEP) → teachers often go beyond
  - Question (maybe in VC section) that has the teacher identify whether or not there are any SPEECH issues (so that any VC items are not misunderstood because of actual SLP issue)
  - Question that asks if there are any hearing or visual impairments
  - Question that asks if there have been any recent dramatic shifts/changes in behaviour
- Form will make it clear that both sides to be completed (if double sided) and fairly short/easy to complete

**Scale of answers – Frequency**

  - Never (On no occasion)
  - Rarely (Seldomly occurs)
  - Sometimes (happens occasionally, but not the most typical behaviour)
  - Most often (frequently occurring)
  - Always (On almost all occasions)

**Directionality of Questions**

- Will keep both +ve and -ve (reverse) item types for pilot
- Will group the positive and negative questions together for ease of completion

(R) refers to a reverse coded item.
Appendix B: Research Ethics Approval Documentation

Documentation includes all Western Research NMREB Letters for initial approval, amendments, and continuation of study.

This includes documents for:
- Project ID: 111746
- Project ID: 118012
- Project ID: 118305
Date: 20 June 2018  
To: Dr. Donald Soblehike  
Project ID: 111546  

Study Title: Enhancing the Cognitive Assessment of Children with Developmental Disabilities - Bridging the Gap: Revolutionizing psychosocial assessment by building a collaborative evaluation process between classroom teachers and psychologists  
Application Type: NMREB Initial Application  
Review Type: Delegated  
Full Board Reporting Date: July 6 2018  
Date Approval Issued: 20/Jan/2018  
REB Approval Expiry Date: 20/Jan/2019  

Dear Dr. Donald Soblehike  

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WSEM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.  

This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.  

Documents Approved:  

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document Type</th>
<th>Document Date</th>
<th>Document Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus Group Outline_Graduate_Psychologist Group_V2_June 12, 2018</td>
<td>Focus Group Outline</td>
<td>12/Jan/2018</td>
<td>2</td>
</tr>
<tr>
<td>Focus Group Outline_Graduate_Student Group_V1_May 9, 2018</td>
<td>Focus Group Outline</td>
<td>09/May/2018</td>
<td>1</td>
</tr>
<tr>
<td>Letter of Information and Consent_Graduate Student Group_V2_June 12, 2018</td>
<td>Written Consent/Assent</td>
<td>12/Jan/2018</td>
<td>2</td>
</tr>
<tr>
<td>Letter of Information and Consent_Psychologist Group_V1_June 15, 2018</td>
<td>Written Consent/Assent</td>
<td>15/Jan/2018</td>
<td>3</td>
</tr>
<tr>
<td>Recruitment Email_Graduate_Student Group_V1_May 9, 2018</td>
<td>Recruitment Materials</td>
<td>09/May/2018</td>
<td>1</td>
</tr>
<tr>
<td>Recruitment Email_Psychologist Group_V1_May 9, 2018</td>
<td>Recruitment Materials</td>
<td>09/May/2018</td>
<td>1</td>
</tr>
</tbody>
</table>

No deviations from, or changes to the protocol should be initiated without prior written approval from the NMREB, except when necessary to eliminate immediate hazards to the study participants or when the change(s) involves only administrative or logistical aspects of the trial.  

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as investigators in research studies do not participate in discussions related to, nor vote on, such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB-000000041.  

Please do not hesitate to contact us if you have any questions.  

Sincerely,
Date: 21 February 2019

Project ID: 111746

Study Title: Enhancing the Cognitive Assessment of Children with Developmental Disabilities - Bridging the Gap. Revolutionizing psychoeducational assessment by building a collaborative evaluation process between classroom teachers and psychologists

Application Type: NMREB Amendment Form

Review Type: Delegated

Full Board Reporting Date: March 1, 2019

Date Approval Issued: 21/Feb/2019

REB Approval Expiry Date: 20/Apr/2019

Dear [Redacted],

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the amendment, as of the date noted above.

Documents Approved:

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document Type</th>
<th>Document Date</th>
<th>Document Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delegating Form_Psychologists_TVDSB_V2_February 19, 2019</td>
<td>Other Materials</td>
<td>19/Feb/2019</td>
<td>2</td>
</tr>
<tr>
<td>Letter of Information and Consent_Psychologist Group_TVDSB Revised_V3_February 19, 2019</td>
<td>Written Consent/Assent</td>
<td>19/Feb/2019</td>
<td>5</td>
</tr>
<tr>
<td>Recruitment Email_Psychologist Group_TVDSB Revised_V2_February 7, 2019</td>
<td>Recruitment Materials</td>
<td>07/Feb/2019</td>
<td>2</td>
</tr>
</tbody>
</table>

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

[Redacted] Research Ethics Officer on behalf of [Redacted] REB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).
Date: 24 May 2019

Project ID: 111746

Study Title: Enhancing the Cognitive Assessment of Children with Developmental Disabilities - Bridging the Gap: Revolutionizing psychoeducational assessment by building a collaborative evaluation process between classroom teachers and psychologists

Application Type: Continuing Ethics Review (CER) Form

Review Type: Delegated

Meeting Date: 07/Jan/2019

Date Approval Issued: 24/May/2019

REB Approval Expiry Date: 30/Jan/2020

Dear [Name],

The Western University Non-Medical Research Ethics Board has reviewed this application. This study, including all currently approved documents, has been re-approved until the expiry date noted above.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on, such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

[Name]
Research Ethics Coordinator, on behalf of [Name]

REB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).
Date: 15 June 2020

Tag: [redacted]

Project Id: 111746

Study Title: Enhancing the Cognitive Assessment of Children with Developmental Disabilities - Bridging the Gap: Revolutionizing psychoeducational assessment by building a collaborative evaluation process between classroom teachers and psychologists

Application Type: Continuing Ethics Review (CER) Form

Review Type: Delegated

Meeting Date: 03/Jul/2020

Date Approval Issued: 15/Jan/2020

REB Approval Expiry Date: 30/Jan/2023

----------

Dear [redacted]

The Western University Non-Medical Research Ethics Board has reviewed this application. This study, including all currently approved documents, has been re-approved until the expiry date noted above.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University NMBER operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMBER who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMBER is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

[redacted] Research Ethics Coordinator, on behalf of [redacted] REB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).
Date: 10 February 2021  

To: [Redacted]  

Project ID: 118012  

Study Title: Transforming psychosocial assessment by building a collaborative evaluation process between parents, classroom teachers, and psychologists  

Short Title: Home Screener Development (Parent Version)  

Application Type: NMREEB Initial Application  

Review Type: Delegated  

Full Board Reporting Date: March 3, 2021  

Date Approval Issued: 16/Feb/2021 20:57  

REB Approval Expiry Date: 16/Feb/2022  

Dear [Redacted],  

The Western University Non-Medical Research Ethics Board (NMREEB) has reviewed and approved the WREM application form for the above-mentioned study, so of the data noted above. NMREEB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREEB Continuing Ethics Review.  

This research study is to be conducted by the investigator noted above. All other required institutional approvals and mandated training must also be obtained prior to the conduct of the study.  

Documents Approved:  

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document Type</th>
<th>Document Date</th>
<th>Document Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debriefing Form_Parents_V1_Dec_10</td>
<td>Debriefing Document</td>
<td>10/Dec/2020</td>
<td>1</td>
</tr>
<tr>
<td>Letter of Information and Consent_Parents_V1_Dec_10</td>
<td>Implied Consent/Assent</td>
<td>10/Dec/2020</td>
<td>1</td>
</tr>
<tr>
<td>Home Screener_Review_Survey_V1_Dec_10</td>
<td>Online Survey</td>
<td>10/Dec/2020</td>
<td>1</td>
</tr>
<tr>
<td>Home Screener_Gift Card_Survey_V1_Dec_10</td>
<td>Online Survey</td>
<td>10/Dec/2020</td>
<td>1</td>
</tr>
<tr>
<td>Recruitment_Recruitment_Parents_V2_Jan_29_2021</td>
<td>Recruitment Materials</td>
<td>29/Jan/2021</td>
<td>2</td>
</tr>
</tbody>
</table>

Documents Acknowledged:  

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document Type</th>
<th>Document Date</th>
<th>Document Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening Question_Parents_V1_Dec_10</td>
<td>Screening Form Questionnaire</td>
<td>10/Dec/2020</td>
<td>1</td>
</tr>
</tbody>
</table>

No deviations from, or changes to, the protocol should be initiated without prior written approval from the NMREEB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.  

The Western University NMREEB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREEB who are named as Investigators in research studies do not participate in discussions related to, nor vote on, such studies when they are presented to the REB. The NMREEB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000041.  

Please do not hesitate to contact us if you have any questions.  

Sincerely,  

[Redacted], Research Ethics Officer on behalf of [Redacted], NMREEB Chair  

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).
Dear [Name],

The Western University Non-Medical Research Ethics Board (N-MREB) has reviewed and approved the WREEM application form for the above-mentioned study, as of the date noted above. N-MREB approval for this study remains valid until the expiry date noted above, conditional to study submission and acceptance of N-MREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. All other required institutional approvals and mandated training must also be obtained prior to the conduct of the study.

Documents Approved:

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document Type</th>
<th>Document Date</th>
<th>Document Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debriefing Form_CYDC Teachers_V1 Feb 17, 2021</td>
<td>Debriefing document</td>
<td>17-Feb-2021</td>
<td>1</td>
</tr>
<tr>
<td>Recruitment Email_CYDC Parents_V1 Feb 17, 2021</td>
<td>Recruitment Materials</td>
<td>17-Feb-2021</td>
<td>1</td>
</tr>
<tr>
<td>Letter of Information and Consent_CYDC Parents_V1 Feb 17, 2021</td>
<td>Implied Consent/Assent</td>
<td>17-Feb-2021</td>
<td>1</td>
</tr>
<tr>
<td>Debriefing Form_CYDC Parents_V1 Feb 17, 2021</td>
<td>Debriefing document</td>
<td>17-Feb-2021</td>
<td>1</td>
</tr>
<tr>
<td>Participation Email_CYDC Parents_V1 Feb 17, 2021</td>
<td>Recruitment Materials</td>
<td>17-Feb-2021</td>
<td>1</td>
</tr>
<tr>
<td>Teacher Email Template for Parent_V1 Feb 17, 2021</td>
<td>Recruitment Materials</td>
<td>17-Feb-2021</td>
<td>1</td>
</tr>
<tr>
<td>Recruitment Follow-up Place Script_CYDC Parents_V2 April 30, 2021</td>
<td>Recruitment Materials</td>
<td>30-Apr-2021</td>
<td>2</td>
</tr>
<tr>
<td>Letter of Information and Consent_CYDC Teachers_V1 April 30, 2021</td>
<td>Implied Consent/Assent</td>
<td>30-Apr-2021</td>
<td>1</td>
</tr>
<tr>
<td>Classroom Screener QualTics_V2 April 30, 2021</td>
<td>Online Survey</td>
<td>30-Apr-2021</td>
<td>2</td>
</tr>
<tr>
<td>Home Screener; QualTics_V2 April 30, 2021</td>
<td>Online Survey</td>
<td>30-Apr-2021</td>
<td>2</td>
</tr>
</tbody>
</table>

Documents Acknowledged:

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document Type</th>
<th>Document Date</th>
<th>Document Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening Questions_CYDC Parents_V1 Feb 17, 2021</td>
<td>Screening Form Questionnaire</td>
<td>17-Feb-2021</td>
<td>1</td>
</tr>
</tbody>
</table>
No deviations from, or changes to, the protocol should be initiated without prior written approval from the NMEER, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

The Western University NMEER operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMEER who are named as investigators in research studies do not participate in discussions related to, or vote on, such studies when they are presented to the KEB. The NMEER is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 0000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

[Signature]
Research Ethics Officer on behalf of [Signature]
NMEER Chair
[Signature]
Research Ethics Officer on behalf of [Signature]
KEB Vice-Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).
Date: 10 August 2021

To: [Redacted]

Project ID: 118305

Study Title: Transforming psychosocial assessment by building a collaborative evaluation process between classroom teachers, parents, and psychologists.

Application Type: NMREB Amendment Form

Review Type: Delegated

Full Board Reporting Date: September 3 2021

Date Approval Issued: 10/Aug/2021 20:00

REB Approval Expiry Date: 10/May/2022

Dear [Redacted],

The Western University Non Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the amendment, as of the date noted above.

Documents Approved:

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document Type</th>
<th>Document Date</th>
<th>Document Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruitment Email_CYDC Parents_COVID_V1 June 24, 2021</td>
<td>Recruitment Materials</td>
<td>24/June/2021</td>
<td>1</td>
</tr>
<tr>
<td>Consent Form Screenshot MS Office Forms Platform V2</td>
<td>Written Consent/Assent</td>
<td>14/July/2021</td>
<td>2</td>
</tr>
<tr>
<td>Letter of Information and Consent_CYDC_Parents_COVID_V2 July 14</td>
<td>Written Consent/Assent</td>
<td>14/July/2021</td>
<td>2</td>
</tr>
<tr>
<td>Debriefing Form_CYDC_Parents_COVID_V2 July 14, 2021</td>
<td>Recruitment Materials</td>
<td>14/July/2021</td>
<td>2</td>
</tr>
</tbody>
</table>

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000041.

Please do not hesitate to contact us if you have any questions.

Sincerely,

[Redacted] Research Ethics Officer on behalf of [Redacted] NMREB Chair

*Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).*
### VERBAL COMPREHENSION

**Verbal Comprehension** is defined as: *the ability to understand and articulate language.*

*Verbal comprehension skills involve vocabulary knowledge, verbal-reasoning and problem-solving skills using language.*

<table>
<thead>
<tr>
<th>Issue</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocalizes ideas actively and clearly in class discussions and/or group work</td>
<td>Can communicate thoughts and ideas verbally with appropriate level of detail</td>
</tr>
<tr>
<td>Can communicate thoughts and ideas verbally with clarity</td>
<td>Can communicate questions verbally with appropriate level of detail</td>
</tr>
<tr>
<td>Can communicate questions verbally with clarity</td>
<td>Can communicate thoughts, ideas, and questions in written work with appropriate level of detail</td>
</tr>
<tr>
<td>Can communicate thoughts, ideas, and questions in written work with clarity</td>
<td>Able to apply information that is given to them verbally (e.g., following instructions, direction)</td>
</tr>
<tr>
<td>Able to apply information that is given to them in a written format (e.g., following instructions, direction)</td>
<td>Uses appropriate level of vocabulary for age group</td>
</tr>
<tr>
<td>Uses appropriate level of vocabulary for age group</td>
<td>Appears to have language knowledge similar to peers</td>
</tr>
<tr>
<td>Appears to understand what others are saying to them</td>
<td>Communicates verbally in an appropriate manner with peers</td>
</tr>
<tr>
<td>Communicates verbally in an appropriate manner with peers</td>
<td>Has difficulty communicating ideas verbally in class discussion (R)</td>
</tr>
<tr>
<td>Has difficulty communicating ideas verbally in class discussion (R)</td>
<td>Struggles to express themselves in conversations with others (R)</td>
</tr>
<tr>
<td>Struggles to express themselves in conversations with others (R)</td>
<td>Is easily confused by more complex verbal discussion or instruction (R)</td>
</tr>
<tr>
<td>Is easily confused by more complex verbal discussion or instruction (R)</td>
<td>Seems lost when listening to verbal instructions (R)</td>
</tr>
<tr>
<td>Seems lost when listening to verbal instructions (R)</td>
<td>Does not seem to be able to follow written instructions (R)</td>
</tr>
</tbody>
</table>

**NEW ITEM SUGGESTIONS:**
### Working Memory

**Working Memory** is defined as:

*short-term memory that is concerned with immediate conscious perceptual and linguistic processing. It is the cognitive system with a limited capacity that is responsible for temporarily holding information available for processing. Working memory is important for reasoning and the guidance of decision-making and behavior.*

<table>
<thead>
<tr>
<th><strong>Work</strong></th>
<th><strong>Reasoning and Decision Making</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Successfully collects &amp; organizes different pieces of information (e.g., clues, pieces of a word puzzle) to solve a problem</td>
<td></td>
</tr>
<tr>
<td>Able to recall their thoughts or ideas long enough to transfer them into written work</td>
<td></td>
</tr>
<tr>
<td>Effectively follows multi-step directions given verbally</td>
<td></td>
</tr>
<tr>
<td>Able to retain simple information long enough to apply to group work / class work</td>
<td></td>
</tr>
<tr>
<td>Remembers items at the beginning and end of a list of things (e.g., task list, spelling list) but struggles with items in the middle (R)</td>
<td></td>
</tr>
<tr>
<td>Struggles to remember things that they just heard (R)</td>
<td></td>
</tr>
<tr>
<td>Forgets things that they just saw (e.g., on the board, in slides, in a book) (R)</td>
<td></td>
</tr>
<tr>
<td>Asks for repeated instructions (R)</td>
<td></td>
</tr>
<tr>
<td>Has difficulty performing multiple (more than 2) tasks at once (e.g., listening to teacher and writing down notes) (R)</td>
<td></td>
</tr>
<tr>
<td>Requires prompts and reminders while problem solving (R)</td>
<td></td>
</tr>
<tr>
<td>Requires use of manipulatives/aid (e.g., blocks, pictures) to refer to in order to complete a task</td>
<td></td>
</tr>
<tr>
<td>Benefits markedly from additional structure/reference during problem solving (visual aid, pneumonic) (R)</td>
<td></td>
</tr>
<tr>
<td>Has difficulty managing competing pieces of information or instruction (e.g., remembering where to go for group work and what the task is) (R)</td>
<td></td>
</tr>
<tr>
<td>Only able to complete larger tasks when they are broken down into smaller components (R)</td>
<td></td>
</tr>
<tr>
<td>Performance is substantially improved if there is visual information to reference throughout the task (R)</td>
<td></td>
</tr>
</tbody>
</table>

**NEW ITEM SUGGESTIONS:**

- Successfully collects & organizes different pieces of information (e.g., clues, pieces of a word puzzle) to solve a problem
- Able to recall their thoughts or ideas long enough to transfer them into written work
- Effectively follows multi-step directions given verbally
- Able to retain simple information long enough to apply to group work / class work
- Remembers items at the beginning and end of a list of things (e.g., task list, spelling list) but struggles with items in the middle (R)
- Struggles to remember things that they just heard (R)
- Forgets things that they just saw (e.g., on the board, in slides, in a book) (R)
- Asks for repeated instructions (R)
- Has difficulty performing multiple (more than 2) tasks at once (e.g., listening to teacher and writing down notes) (R)
- Requires prompts and reminders while problem solving (R)
- Requires use of manipulatives/aid (e.g., blocks, pictures) to refer to in order to complete a task
- Benefits markedly from additional structure/reference during problem solving (visual aid, pneumonic) (R)
- Has difficulty managing competing pieces of information or instruction (e.g., remembering where to go for group work and what the task is) (R)
- Only able to complete larger tasks when they are broken down into smaller components (R)
- Performance is substantially improved if there is visual information to reference throughout the task (R)
### PROCESSING SPEED

**Processing Speed** is defined as: *the time it takes to effectively complete a mental task. It refers to the ability to take in and generate information proficiently, as well as perform tasks quickly and efficiently, within a reasonable timeframe for the task.*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiently takes timed-tests that require decision making</td>
<td></td>
</tr>
<tr>
<td>Successfully completes writing tasks in reasonable time</td>
<td></td>
</tr>
<tr>
<td>Can comprehend reading material in an efficient matter</td>
<td></td>
</tr>
<tr>
<td>Can copy information efficiently (e.g., from book or from board)</td>
<td></td>
</tr>
<tr>
<td>Proficiency and/or efficiency does not improve despite obvious improvement in understanding (e.g., when asked in multiple-choice format) (R)</td>
<td></td>
</tr>
<tr>
<td>Demonstrates difficulty with fluency (e.g., in reading or writing) (R)</td>
<td></td>
</tr>
<tr>
<td>Has blank look when asked a question (R)</td>
<td></td>
</tr>
<tr>
<td>Appears inattentive in class (e.g., looks confused or lost, “spacy” or “zoned-out”) (R)</td>
<td></td>
</tr>
<tr>
<td>Has difficulty discriminating between similar objects (R)</td>
<td></td>
</tr>
<tr>
<td>Speed/efficiency in tasks decreases as time goes on (R)</td>
<td></td>
</tr>
<tr>
<td>Consistently needs to be urged to start and/or continue a task (R)</td>
<td></td>
</tr>
<tr>
<td>Consistently re-checks small components within tasks before moving on (R)</td>
<td></td>
</tr>
<tr>
<td>Takes a long time to answer questions (R)</td>
<td></td>
</tr>
<tr>
<td>Takes more time than expected to complete simple tasks, despite understanding task (R)</td>
<td></td>
</tr>
<tr>
<td>Difficulty completing tasks under time pressure (R)</td>
<td></td>
</tr>
</tbody>
</table>

**NEW ITEM SUGGESTIONS:**
### Visual Spatial

Visual Spatial ability is defined as: the ability to interpret and organize visually perceived material to navigate space, and to think in visual images and manipulate them with fluency and speed. The ability to visualize the world accurately, modify surroundings based upon perceptions, and recreate the aspects of visual experiences.

<table>
<thead>
<tr>
<th>VISUAL SPATIAL</th>
<th>VISUAL SPATIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successfully understands how parts of objects make a whole</td>
<td>Can effectively estimate visual lengths and distances</td>
</tr>
<tr>
<td>Can effectively estimate visual lengths and distances</td>
<td>Can pick out or identify important visual details (e.g., patterns)</td>
</tr>
<tr>
<td>Can pick out or identify important visual details (e.g., patterns)</td>
<td>Effectively arranges materials in individual/personal space, such as desk or workspace</td>
</tr>
<tr>
<td>Effectively arranges materials in individual/personal space, such as desk or workspace</td>
<td>Can organize the space on the page when completing assignments</td>
</tr>
<tr>
<td>Can organize the space on the page when completing assignments</td>
<td>Able to recreate/copy visual examples (e.g., graphics, calendar, clocks, graphs)</td>
</tr>
<tr>
<td>Able to recreate/copy visual examples (e.g., graphics, calendar, clocks, graphs)</td>
<td>Successfully uses visual aid to understand problem or instructions (e.g., picture, schedule, figures)</td>
</tr>
<tr>
<td>Successfully uses visual aid to understand problem or instructions (e.g., picture, schedule, figures)</td>
<td>Able to take things apart (e.g., puzzles, objects) and put them back together</td>
</tr>
<tr>
<td>Able to take things apart (e.g., puzzles, objects) and put them back together</td>
<td>Recognizes differences in familiar objects (e.g., size, colour, shape)</td>
</tr>
<tr>
<td>Recognizes differences in familiar objects (e.g., size, colour, shape)</td>
<td>Notices changes in environment (e.g., new poster, desks re-arranged)</td>
</tr>
<tr>
<td>Notices changes in environment (e.g., new poster, desks re-arranged)</td>
<td>Can distinguish (e.g., follow directions) using “left” and “right” commands</td>
</tr>
<tr>
<td>Can distinguish (e.g., follow directions) using “left” and “right” commands</td>
<td>Can manipulate shapes or designs in their mind</td>
</tr>
<tr>
<td>Can manipulate shapes or designs in their mind</td>
<td>Able to solve simple visual problems (e.g., easy puzzle)</td>
</tr>
<tr>
<td>Able to solve simple visual problems (e.g., easy puzzle)</td>
<td>Effectively arranges materials in shared space (e.g., circle, cubby)</td>
</tr>
<tr>
<td>Effectively arranges materials in shared space (e.g., circle, cubby)</td>
<td>Can visually represent (e.g., draw, outline) familiar visual objects</td>
</tr>
<tr>
<td>Can visually represent (e.g., draw, outline) familiar visual objects</td>
<td>Seeks out appropriate manipulatives (e.g., blocks, visual aids) in the classroom to solve problems</td>
</tr>
<tr>
<td>Seeks out appropriate manipulatives (e.g., blocks, visual aids) in the classroom to solve problems</td>
<td>Gets lost easily navigating familiar surroundings (R)</td>
</tr>
<tr>
<td>Gets lost easily navigating familiar surroundings (R)</td>
<td>Displays lack of body awareness (e.g., bumps into walls, desks) (R)</td>
</tr>
<tr>
<td>Displays lack of body awareness (e.g., bumps into walls, desks) (R)</td>
<td>Struggles to put things away appropriately or judge location (R)</td>
</tr>
<tr>
<td>Struggles to put things away appropriately or judge location (R)</td>
<td>Shows difficulty in manipulating small objects effectively (R)</td>
</tr>
<tr>
<td>Shows difficulty in manipulating small objects effectively (R)</td>
<td>Struggles to understand visual space and navigate within it (e.g., on, below, in-front, beside, behind) (R)</td>
</tr>
</tbody>
</table>

### NEW ITEM SUGGESTIONS:
Fluid Reasoning is defined as:
the capacity to reason and solve novel problems, independent of any knowledge from the past. It is the ability to think about stimuli and manipulate it, to analyze novel problems, identify patterns and relationships that underpin these problems and the extrapolation of these using logic.

**FLUID REASONING**

Can apply concepts learned in a previous topic to new topic/themes
Takes the lead to guide group or team in new situations
Can understand the underlying problem or intended outcome of abstract examples
Shows good content knowledge but struggles to think abstractly (R)
Adapts well to changes in routine
Utilizes scaffolding techniques in own learning
Thinks abstractly or creatively about topics
Appears to enjoy problem solving and seeks out harder problems
Demonstrates and inquisitive nature (e.g., asks a lot of follow-up questions, interested in learning beyond what is taught)
Ideas are surprising or advanced for child’s age/maturity level (e.g., very abstract, high-level, applied to unique topic)
Raises their hand to contribute unique thoughts or comments on topic
Shows low reading fluency (phonological awareness) but reading comprehension is strong when asked using multiple choice format
Effectively uses metaphors or figurative language (at age appropriate level) to compare concepts that are not on the surface similar
Challenges teacher with logic or fair criticism (that may seem advanced for age)
Demonstrates difficulty in navigating social relationships with peers (e.g., conflict resolution, negotiating, sharing) (R)
Struggles to learn new concepts (R)
Demonstrates observable gaps in knowledge (R)
Has difficulty making inferences, estimates, or predictions (R)
Struggles to apply a learned problem-solving technique to new topic/context (R)
Gives up quickly when faced with novel problem or challenge (R)
Has difficulty seeing an object for any purpose but its intended purpose (R)

NEW ITEM SUGGESTIONS:
Appendix D: Faculty Panel Review Study Package

<table>
<thead>
<tr>
<th>Verbal Comprehension</th>
<th>Vocalizes ideas clearly in class discussions and/or group work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Can communicate thoughts and ideas verbally with appropriate level of detail</td>
</tr>
<tr>
<td></td>
<td>Can communicate thoughts and ideas verbally with clarity (e.g., <em>content</em> is clear)</td>
</tr>
<tr>
<td></td>
<td>Can communicate questions verbally with appropriate level of detail</td>
</tr>
<tr>
<td></td>
<td>Can communicate questions verbally with clarity (e.g., <em>content</em> is clear)</td>
</tr>
<tr>
<td></td>
<td>Can communicate thoughts, ideas, and questions in written work with appropriate level of detail</td>
</tr>
<tr>
<td></td>
<td>Can communicate thoughts, ideas, and questions in written work with clarity</td>
</tr>
<tr>
<td></td>
<td>Able to apply information that is given to them verbally (e.g., following instructions, direction)</td>
</tr>
<tr>
<td></td>
<td>Able to apply information that is given to them in a written format (e.g., following instructions, direction)</td>
</tr>
<tr>
<td></td>
<td>Uses appropriate level of vocabulary (or better) for age group</td>
</tr>
<tr>
<td></td>
<td>Appears to have language knowledge similar (or better) to peers</td>
</tr>
<tr>
<td></td>
<td>Appears to understand what others are saying to them</td>
</tr>
<tr>
<td></td>
<td>Communicates verbally in an appropriate manner with peers</td>
</tr>
<tr>
<td></td>
<td>Links verbal ideas to create new ideas</td>
</tr>
<tr>
<td></td>
<td>Can navigate social problem solving effectively with their words</td>
</tr>
<tr>
<td></td>
<td>Has difficulty communicating ideas verbally in class discussion (R)</td>
</tr>
<tr>
<td></td>
<td>Struggles to express themselves in conversations with others (R)</td>
</tr>
<tr>
<td></td>
<td>Is easily confused by more complex verbal discussion or instruction (R)</td>
</tr>
<tr>
<td></td>
<td>Seems lost when listening to verbal instructions (R)</td>
</tr>
<tr>
<td></td>
<td>Does not seem to be able to follow written instructions (R)</td>
</tr>
</tbody>
</table>

NEW ITEM SUGGESTIONS:
**WORKING MEMORY**

<table>
<thead>
<tr>
<th>Working Memory is defined as:</th>
<th>Successfully collects &amp; organizes different pieces of information to solve a problem (e.g., clues, pieces of a word puzzle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>short-term memory that is concerned with immediate processing. It has a limited capacity and is responsible for temporarily holding information available for use and processing. Working memory is important for reasoning and the guidance of decision-making and behaviour.</td>
<td>Able to recall their thoughts or ideas long enough to transfer them into written work</td>
</tr>
<tr>
<td></td>
<td>Effectively follows multi-step directions given verbally without reminders</td>
</tr>
<tr>
<td></td>
<td>Able to retain simple information long enough to apply to group work / class work</td>
</tr>
<tr>
<td></td>
<td>Remembers items at the beginning and/or end of a list of things but struggles with items in the middle (e.g., task list, spelling list) (R)</td>
</tr>
<tr>
<td></td>
<td>Struggles to remember things that they just heard (R)</td>
</tr>
<tr>
<td></td>
<td>Forgets things that they just saw or heard (e.g., on the board, in slides, in a book) (R)</td>
</tr>
<tr>
<td></td>
<td>Needs repetition of instructions (R)</td>
</tr>
<tr>
<td></td>
<td>Has difficulty performing multiple (more than 2) tasks at the same time (e.g., listening to teacher and writing down notes) (R)</td>
</tr>
<tr>
<td></td>
<td>Requires prompts and reminders while problem solving (R)</td>
</tr>
<tr>
<td></td>
<td>Requires use of manipulatives/aid to refer to in order to complete a task (e.g., blocks, pictures) (R)</td>
</tr>
<tr>
<td></td>
<td>Benefits markedly from additional structure/reference during problem solving (visual aid, mnemonic) (R)</td>
</tr>
<tr>
<td></td>
<td>Has difficulty completing multiple tasks in the correct sequence (e.g., remembering where to go for task and what the task is) (R)</td>
</tr>
<tr>
<td></td>
<td>Only able to complete larger tasks when they are broken down into smaller components (R)</td>
</tr>
<tr>
<td></td>
<td>Performance is substantially improved if there is visual information to reference throughout the task (R)</td>
</tr>
</tbody>
</table>

**NEW ITEM SUGGESTIONS:**
**PROCESSING SPEED**

<table>
<thead>
<tr>
<th><strong>Processing Speed</strong> is defined as: the time it takes to effectively complete a mental task. It refers to the ability to take in and generate information proficiently, as well as perform tasks quickly and efficiently, within a reasonable timeframe for the task.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiently takes timed-tests that require decision making</td>
</tr>
<tr>
<td>Successfully completes writing tasks in reasonable time</td>
</tr>
<tr>
<td>Can copy information efficiently (e.g., from book or from board)</td>
</tr>
<tr>
<td>Demonstrates difficulty with fluency (e.g., in reading or writing) (R)</td>
</tr>
<tr>
<td>Has blank look when asked a question (R)</td>
</tr>
<tr>
<td>Appears inattentive in class (e.g., looks confused or lost, “spacy” or “zoned-out”) (R)</td>
</tr>
<tr>
<td>Significantly improved performance when asked to a recognition task (instead of generating a response) (R)</td>
</tr>
<tr>
<td>Has difficulty discriminating between similar objects (R)</td>
</tr>
<tr>
<td>Speed/efficiency in tasks decreases as time goes on (R)</td>
</tr>
<tr>
<td>Consistently needs to be urged to get started on a task (R)</td>
</tr>
<tr>
<td>Consistently needs to be urged continue moving through/completing a task (R)</td>
</tr>
<tr>
<td>Consistently re-checks small components within tasks before moving on (R)</td>
</tr>
<tr>
<td>Takes a long time to answer questions, but can eventually generate a response (R)</td>
</tr>
<tr>
<td>Takes more time than expected to complete simple tasks, despite understanding task (R)</td>
</tr>
<tr>
<td>Difficulty completing tasks under time pressure (R)</td>
</tr>
<tr>
<td>Has difficulty keeping up with the curriculum (e.g., pace too fast) (R)</td>
</tr>
</tbody>
</table>

**NEW ITEM SUGGESTIONS:**
**VISUAL SPATIAL**

<table>
<thead>
<tr>
<th>Visual Spatial</th>
<th>Can organize the space on the page when completing assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ability is defined as:</td>
<td>Able to recreate/copy visual examples (e.g., graphics, calendar, clocks, graphs)</td>
</tr>
<tr>
<td>is the ability to interpret and organize visual material to navigate space, to think in visual images, and manipulate visual images effectively. The ability to visualize the world accurately, modify surroundings based upon perceptions, and recreate the aspects of visual experiences.</td>
<td>Successfully uses visual aids to understand problems or instructions (e.g., picture, schedule, figures)</td>
</tr>
<tr>
<td></td>
<td>Able to take things apart (e.g., puzzles, objects) and put them back together</td>
</tr>
<tr>
<td></td>
<td>Recognizes differences in familiar objects (e.g., size, colour, shape)</td>
</tr>
<tr>
<td></td>
<td>Notices changes in environment (e.g., new poster, desks rearranged)</td>
</tr>
<tr>
<td></td>
<td>Can distinguish (e.g., follow directions) using “left” and “right” commands</td>
</tr>
<tr>
<td></td>
<td>Can manipulate shapes or designs in their mind</td>
</tr>
<tr>
<td></td>
<td>Able to solve simple visual problems (e.g., puzzle)</td>
</tr>
<tr>
<td></td>
<td>Can visually represent (e.g., draw, outline) familiar visual objects</td>
</tr>
<tr>
<td></td>
<td>Knows where things in the classroom belong</td>
</tr>
<tr>
<td></td>
<td>Seeks out appropriate manipulatives to solve problems (e.g., knows which items - blocks, visual aids - may help them)</td>
</tr>
<tr>
<td></td>
<td>Gets lost easily navigating familiar surroundings (R)</td>
</tr>
<tr>
<td></td>
<td>Displays lack of body awareness (e.g., bumps into walls, desks) (R)</td>
</tr>
<tr>
<td></td>
<td>Struggles to put things away appropriately (R)</td>
</tr>
<tr>
<td></td>
<td>Struggles to understand visual space and navigate within it (e.g., on, below, in-front, beside, behind) (R)</td>
</tr>
<tr>
<td></td>
<td>Underestimates space available when printing on a line (R)</td>
</tr>
</tbody>
</table>

**NEW ITEM SUGGESTIONS:**
**FLUID REASONING**

*Fluid Reasoning* is defined as: *the capacity to reason and solve novel problems, independent of any knowledge from the past. It is the ability to think about stimuli and manipulate it, to analyze novel problems, identify patterns and relationships that underpin these problems and the extrapolation of these using logic.*

<table>
<thead>
<tr>
<th>FLUID REASONING</th>
<th>Can apply learned information into new contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Is able to lead or guide a group in new situations/tasks</td>
</tr>
<tr>
<td></td>
<td>Can understand the underlying problem or intended outcome of abstract examples</td>
</tr>
<tr>
<td></td>
<td>Understands the main idea in complex concepts or stories</td>
</tr>
<tr>
<td></td>
<td>Shows good content knowledge but struggles to think abstractly (R)</td>
</tr>
<tr>
<td></td>
<td>Utilizes scaffolding techniques in own learning</td>
</tr>
<tr>
<td></td>
<td>Thinks abstractly or creatively about topics</td>
</tr>
<tr>
<td></td>
<td>Appears to enjoy problem solving and seeks out new learning opportunities</td>
</tr>
<tr>
<td></td>
<td>Demonstrates an inquisitive nature (e.g., asks a lot of follow-up questions, interested in learning beyond what is taught)</td>
</tr>
<tr>
<td></td>
<td>Engages in exploratory behaviour or experimentation to solve a problem or increase understanding (e.g., seeks out additional stimuli)</td>
</tr>
<tr>
<td></td>
<td>Ideas are surprising or advanced for child’s age/maturity level (e.g., very abstract, high-level, applied to unique topic)</td>
</tr>
<tr>
<td></td>
<td>Does not accept answers at face value</td>
</tr>
<tr>
<td></td>
<td>Shares unique thoughts or comments on topic when asked</td>
</tr>
<tr>
<td></td>
<td>Effectively uses metaphors or figurative language (at age-appropriate level) to compare concepts that are not on the surface similar</td>
</tr>
<tr>
<td></td>
<td>Recognizes the underlying relationship between learned concepts</td>
</tr>
<tr>
<td></td>
<td>Challenges teacher with logic or alternate perspective (that may seem advanced for age)</td>
</tr>
<tr>
<td></td>
<td>Struggles to learn new concepts (R)</td>
</tr>
<tr>
<td></td>
<td>Demonstrates observable gaps in knowledge (R)</td>
</tr>
<tr>
<td></td>
<td>Has difficulty making inferences, estimates, or predictions (R)</td>
</tr>
<tr>
<td></td>
<td>Struggles to apply a learned problem-solving technique to unfamiliar tasks (R)</td>
</tr>
<tr>
<td></td>
<td>Gives up quickly when faced with novel problem or challenge (R)</td>
</tr>
<tr>
<td></td>
<td>Has difficulty seeing an object for any purpose but its intended purpose (R)</td>
</tr>
</tbody>
</table>

**NEW ITEM SUGGESTIONS:**
Appendix E: Teacher Review Study Package

Welcome & Instructions:

Thank you for agreeing to participate in this study as a teacher reviewer! Please find in this email a link to a secure and individual OneDrive folder. Within the folder, you’ll find the document titled Screener Tool for your review.

Your task: Review the tool, and more specifically, the items within each category. We ask that you evaluate the appropriateness, clarity, and effectiveness of these suggested items in capturing real classroom behaviour. In addition, please feel free to provide feedback on the feasibility and ease of use of the tool overall from your perspective as a teacher.

How to Complete Edits: You will be able to open the document in an online browser or directly through Microsoft Word. Please document any suggested changes/deletions/additions using the Tracked Changes and Comments features. If you choose to create a new file with your edits, please upload the file directly back into this folder. If you choose to edit directly within the file that has been uploaded for you in the folder, please remember to save the document!

Timeline: If you are able, could you please complete your review and commentary within 1 month of receiving your study package. If you need additional time, please advise the researcher and we can discuss a revised timeline.

Confidentiality: As a reminder, as a part of the consent documentation, you agreed to respect the intellectual property and clinical sensitivity of the project. Therefore, all study material, discussions with researchers, and/or any other correspondence should be kept confidential.

A Brief Reminder:
Project Summary: We are working to develop a psycho-educational screening instrument that we hope can better bridge the gap between psychologists and teachers in the assessment process of learning challenges in children and adolescents. The goal of this study was to identify specific behaviours observed in the learning and social environment of the classroom and then use these data to create a screening tool that matches up with the current cognitive measure used for diagnosis (WISC-VCDN). This tool could serve as both a preliminary screener of behaviours that could be shared with the assessing psychologist, as well as a way of tracking progress as the child progresses through school. This scale will give teachers an opportunity to both summarize their own observations of a student who may be in need of ongoing or further assessment to support their learning and personal development, as well as facilitate communication and a working alliance with school psychologists and allied professionals.
**Project Status:** At present, the pilot version of the Screening Tool has been developed with the consultation of experts in the field of School Psychology. Now, we are looking to refine and finalize the pilot tool using insight from another expert sample, teachers. This final phase of item development will allow us to ensure the tool is representative of real classroom behaviours and has ease of use for teachers who will be completing the screener.

Thank you for your time and efforts in helping us to develop this tool. Should you have any questions or concerns, please do not hesitate to contact us. My contact information: [sbabcoc5@uwo.ca](mailto:sbabcoc5@uwo.ca). You may also choose to direct any questions about this research or to address any concerns about your participation to the project’s principle investigator, Dr. Donald Saklofske at The University of Western Ontario, in London Ontario by email at: [don.saklofske@uwo.ca](mailto:don.saklofske@uwo.ca) or by telephone at [519-661-2111 ext. 82721](tel:519-661-2111 ext. 82721).
Classroom Cognitive Ability Screener

Demographic Information:
Please complete the following information about the child.

Regarding this student:
- Is the child on an IEP (or other modified education program)? Yes ☐ No ☐
- Have any other special circumstances (e.g., limited English, new to the country)? Yes ☐ No ☐
  - If Yes, please describe: ____________________________________________

Physical or Medical Conditions:
- Does that child have any hearing impairments? Yes ☐ No ☐
- Does that child have any visual impairments? Yes ☐ No ☐
- Does this child any speech difficulties or impairments? Yes ☐ No ☐
- Does this child have any motor/mobility issues? Yes ☐ No ☐
- Does this child have any known medical conditions? Yes ☐ No ☐
If Yes to any of the above, please describe: __________________________________________

As their teacher:
- Have you noticed any recent dramatic shifts/changes in behaviour? Yes ☐ No ☐
  - If Yes, please describe: ____________________________________________
- Are you making any special accommodations for the child already in the classroom (with or without an IEP)? Yes ☐ No ☐
  - If Yes, please describe: ____________________________________________

Instructions:
The following screener lists a variety of behaviours that would typically be observed in the classroom. The behaviours are grouped into one of five categories, based on domains typically assessed in psychoeducational testing (e.g., Verbal Comprehension, Processing Speed).

Please respond to the items with regards to the frequency of the child’s classroom behaviour. Items should be considered in comparison to the student’s same-age peers.

Frequency Descriptions:
- Never = On no occasion
- Rarely = Seldomly occurs
- Sometimes = happens occasionally, but not the most typical behaviour
- Most often = frequently occurring
- Always = On almost every occasion
## VERBAL COMPREHENSION

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classroom Behaviour</strong></td>
<td>Never</td>
</tr>
<tr>
<td>Vocalizes ideas clearly in class discussions and/or group work</td>
<td></td>
</tr>
<tr>
<td>Can communicate thoughts and ideas verbally with appropriate level of detail</td>
<td></td>
</tr>
<tr>
<td>Can communicate thoughts and ideas verbally with clarity (e.g., <em>content</em> is clear)</td>
<td></td>
</tr>
<tr>
<td>Can communicate questions verbally with appropriate level of detail</td>
<td></td>
</tr>
<tr>
<td>Can communicate questions verbally with clarity (e.g., <em>content</em> is clear)</td>
<td></td>
</tr>
<tr>
<td>Can communicate thoughts, ideas, and questions in written work with appropriate level of detail</td>
<td></td>
</tr>
<tr>
<td>Can communicate thoughts, ideas, and questions in written work with clarity</td>
<td></td>
</tr>
<tr>
<td>Able to apply information that is given to them verbally (e.g., following instructions, direction)</td>
<td></td>
</tr>
<tr>
<td>Able to apply information that is given to them in a written format (e.g., following instructions, direction)</td>
<td></td>
</tr>
<tr>
<td>Uses appropriate level of vocabulary (or better) for age group</td>
<td></td>
</tr>
<tr>
<td>Appears to have language knowledge similar (or better) to peers</td>
<td></td>
</tr>
<tr>
<td>Appears to understand what others are saying</td>
<td></td>
</tr>
<tr>
<td>Communicates appropriately with peers</td>
<td></td>
</tr>
<tr>
<td>Shares ideas or opinions with interesting information or vocabulary</td>
<td></td>
</tr>
<tr>
<td>Can navigate social problem solving effectively with their words</td>
<td>✓</td>
</tr>
<tr>
<td>Has difficulty communicating ideas verbally in class discussion</td>
<td>✓</td>
</tr>
<tr>
<td>Struggles to express themselves in conversations with others</td>
<td>✓</td>
</tr>
<tr>
<td>Is easily confused by complex verbal discussion</td>
<td>✓</td>
</tr>
<tr>
<td>Seems lost when listening to verbal instructions</td>
<td>✓</td>
</tr>
<tr>
<td>Does not seem to be able to follow written instructions</td>
<td>✓</td>
</tr>
<tr>
<td>Provides off-topic answers to questions</td>
<td>✓</td>
</tr>
</tbody>
</table>

**WORKING MEMORY**

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Successfully collects different pieces of information (e.g., clues, pieces of a word puzzle) to solve a problem</td>
<td>✓</td>
</tr>
<tr>
<td>Successfully organizes different pieces of information (e.g., clues, pieces of a word puzzle) to solve a problem</td>
<td>✓</td>
</tr>
<tr>
<td>Able to recall his or her thoughts or ideas to transfer them into written work</td>
<td>✓</td>
</tr>
<tr>
<td>Effectively follows verbal, multi-step directions without reminders</td>
<td>✓</td>
</tr>
<tr>
<td>Able to retain simple information long enough to apply to group work</td>
<td>✓</td>
</tr>
<tr>
<td>Remembers items at the beginning and/or end of a list of things but struggles with items in the middle (e.g., task list, spelling list)</td>
<td>✓</td>
</tr>
<tr>
<td>Struggles to remember things that they just heard</td>
<td>✓</td>
</tr>
<tr>
<td>Forgets things that they just saw or heard (e.g., on the board, in slides, in a book)</td>
<td></td>
</tr>
<tr>
<td>Needs repetition of instructions</td>
<td></td>
</tr>
<tr>
<td>Has difficulty performing multiple (more than 2) tasks at the same time (e.g., listening to teacher and writing down notes)</td>
<td></td>
</tr>
<tr>
<td>Requires prompts and reminders while problem solving</td>
<td></td>
</tr>
<tr>
<td>Requires use of manipulatives/aid to refer to in order to complete a task (e.g., blocks, pictures)</td>
<td></td>
</tr>
<tr>
<td>Benefits from additional structure or strategies during problem solving (visual aid, mnemonic)</td>
<td></td>
</tr>
<tr>
<td>Has difficulty completing multiple tasks in the correct sequence (e.g., remembering where to go for group work and what the task is)</td>
<td></td>
</tr>
<tr>
<td>Only able to complete larger tasks when they are broken down into smaller components</td>
<td></td>
</tr>
<tr>
<td>Performance is substantially improved if there is visual information to reference throughout the task</td>
<td></td>
</tr>
<tr>
<td>Forgets to use well-known strategies when needed (e.g., forgets &quot;i&quot; before &quot;e&quot; except after &quot;c&quot;, etc.)</td>
<td></td>
</tr>
<tr>
<td>Struggles to summarize or paraphrase information</td>
<td></td>
</tr>
</tbody>
</table>

**PROCESSING SPEED**

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Efficiently takes timed-tests</td>
<td></td>
</tr>
<tr>
<td>Successfully completes writing tasks in a reasonable time frame</td>
<td></td>
</tr>
<tr>
<td>Can copy information efficiently (e.g., from book or from board)</td>
<td></td>
</tr>
<tr>
<td>Demonstrates ability to make decisions in a reasonable timeframe</td>
<td></td>
</tr>
<tr>
<td>Demonstrates difficulty with fluency (e.g., in reading or writing)</td>
<td></td>
</tr>
<tr>
<td>Has blank look when asked a question</td>
<td></td>
</tr>
<tr>
<td>Appears inattentive in class (e.g., looks confused or lost, “spacy” or “zoned-out”)</td>
<td></td>
</tr>
<tr>
<td>Improved performance when asked to complete a recognition task (instead of generating a response)</td>
<td></td>
</tr>
<tr>
<td>Has difficulty discriminating between similar objects</td>
<td></td>
</tr>
<tr>
<td>Speed/efficiency in tasks decreases as time goes on</td>
<td></td>
</tr>
<tr>
<td>Consistently needs to be urged to get started on a task</td>
<td></td>
</tr>
<tr>
<td>Consistently needs to be urged to continue moving through/completing a task</td>
<td></td>
</tr>
<tr>
<td>Consistently re-checks components within a task before moving on</td>
<td></td>
</tr>
<tr>
<td>Takes a long time to answer questions, but can eventually generate a response</td>
<td></td>
</tr>
<tr>
<td>Takes more time than expected to complete simple tasks, despite understanding task</td>
<td></td>
</tr>
<tr>
<td>Difficulty completing tasks under time pressure</td>
<td></td>
</tr>
<tr>
<td>Has difficulty keeping up with the curriculum (e.g., pace too fast)</td>
<td></td>
</tr>
<tr>
<td>Has difficulty answering questions when there is a gap or time-lag between question and response</td>
<td></td>
</tr>
<tr>
<td>Seems averse to writing tasks</td>
<td></td>
</tr>
</tbody>
</table>
**VISUAL SPATIAL**

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Successfully understands how parts of objects make a whole</td>
<td></td>
</tr>
<tr>
<td>Can effectively estimate visual lengths and distances</td>
<td></td>
</tr>
<tr>
<td>Can pick out or identify important visual details (e.g., patterns)</td>
<td></td>
</tr>
<tr>
<td>Effectively arranges materials in individual /personal space, such as desk or workspace</td>
<td></td>
</tr>
<tr>
<td>Can organize the space on the page when completing assignments</td>
<td></td>
</tr>
<tr>
<td>Able to recreate/copy visual examples (e.g., graphics, calendar, clocks, graphs)</td>
<td></td>
</tr>
<tr>
<td>Successfully uses visual aids to understand problems or instructions (e.g., picture, schedule, figures)</td>
<td></td>
</tr>
<tr>
<td>Able to take things apart (e.g., puzzles, objects) and put them back together</td>
<td></td>
</tr>
<tr>
<td>Recognizes differences in familiar objects (e.g., size, colour, shape)</td>
<td></td>
</tr>
<tr>
<td>Notices changes in environment (e.g., new poster, desks re-arranged)</td>
<td></td>
</tr>
<tr>
<td>Can distinguish (e.g., follow directions) using “left” and “right” commands</td>
<td></td>
</tr>
<tr>
<td>Can manipulate shapes or designs in their mind</td>
<td></td>
</tr>
<tr>
<td>Able to solve simple visual problems (e.g., puzzle)</td>
<td></td>
</tr>
<tr>
<td>Can visually represent (e.g., draw, outline) familiar visual objects</td>
<td></td>
</tr>
<tr>
<td>Knows where things belong in the classroom</td>
<td></td>
</tr>
</tbody>
</table>
Seeks out appropriate materials to solve problems (e.g., books, blocks, visual aids, etc.).

Gets lost easily navigating familiar surroundings

Displays lack of body awareness (e.g., bumps into walls, desks)

Struggles to put things away appropriately

Struggles to understand visual space and navigate within it (e.g., on, below, in-front, beside, behind)

Underestimates space available when printing on a line

Demonstrates difficulty copying notes from the board

Easily loses their place on a page when reading/writing

**FLUID REASONING**

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Most Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can apply learned information to new contexts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is able to lead or guide a group in new situations/tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can understand the underlying problem or intended outcome of abstract examples</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understands the main idea in complex concepts or stories</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilizes strategies and techniques to support their own learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thinks abstractly or creatively about topics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appears to enjoy problem solving and seeks out new learning opportunities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates an inquisitive nature (e.g., asks a lot of follow-up questions, interested)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in learning beyond what is taught</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engages in exploratory behaviour or experimentation to solve a problem or increase understanding (e.g., seeks out additional stimuli)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideas are surprising or advanced for child’s age/maturity level (e.g., very abstract, high-level, applied to unique topic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does not accept answers at face value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shares unique thoughts or comments on topic when asked</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectively uses metaphors or figurative language (at age-appropriate level) to compare concepts that are not on the surface similar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognizes the underlying relationship between learned concepts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenges teacher with logic or alternate perspective (that may seem advanced for age)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can problem solve in flexible, create ways</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is successful in pursuing independent learning areas of interest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Struggles to learn new concepts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates observable gaps in knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has difficulty making inferences, estimates, or predictions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Struggles to apply a learned problem-solving technique to unfamiliar tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gives up quickly when faced with novel problem or challenge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has difficulty seeing an object for any purpose but its intended purpose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty seeing the big picture and how concepts are related to each other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shows good content knowledge but struggles to think abstractly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F: Classroom Cognitive Ability Screener (Pilot Version)

CLASSROOM COGNITIVE ABILITY SCREENER

This screener is intended to be completed by the child’s teacher. All responses are confidential, and will not be shared with the child’s parent; the data collected will be linked to other information using the unique study ID.

DEMOGRAPHIC INFORMATION

Please complete the following information about the child:
Child’s Study ID#: _____
Child’s Age: ______
Child’s Grade: ______
Length of time as child’s teacher (months): ______

Regarding this student:
• Is the child on an IEP (or other modified education program)? Yes □ No □
  o If YES, please briefly describe primary modifications:
  _______________________________________________________
• Are you aware of unique circumstances (e.g., limited English, new to the country)? Yes □ No □
  o If YES, please describe:
  _______________________________________________________
• Are you aware of any social circumstances (e.g., peer interactions, home dynamic) that may be contributing to the behavioural issues observed?
  o If YES, please describe:
  _______________________________________________________

Physical or Medical Conditions:
• Does that child have any hearing impairments? Yes □ No □
• Does that child have any visual impairments? Yes □ No □
• Does this child have any speech difficulties or impairments? Yes □ No □
• Does this child have any motor/mobility issues? Yes □ No □
• Does this child have any known medical conditions? Yes □ No □
If YES to any of the above, please describe:
_________________________________________________________

As their teacher:
• Have you noticed any recent dramatic shifts/changes in behaviour? Yes □ No □
  o If Yes, please describe: __________________________________
• Are you already making any special accommodations or modifications to the curriculum for the child in the classroom (with or without an IEP)? Yes □ No □
  o If Yes, please describe: ___________________________________
INSTRUCTIONS
The following screener lists a variety of behaviours that would typically be observed in the classroom. The behaviours are grouped into one of five categories, based on domains typically assessed in psychoeducational testing (e.g., *Verbal Comprehension, Processing Speed*).

Please respond to the items with regards to the **frequency** of the child’s classroom behaviour. Items should be considered in comparison to the student’s *same-age peers*.

**Frequency Descriptions:**
- Never = On no occasion
- Rarely = Seldomly occurs
- Sometimes = happens occasionally, but not the most typical behaviour
- Often = frequently occurring
- Always = On every occasion

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can communicate <strong>thoughts and ideas verbally</strong> with clarity (e.g., <em>content</em> is clear) and appropriate amount of detail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can communicate <strong>questions verbally</strong> with clarity (e.g., <em>content</em> is clear) and appropriate amount of detail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can communicate <strong>thoughts and ideas in written work</strong> with clarity (e.g., <em>content</em> is clear) and appropriate amount of detail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can communicate <strong>questions in written work</strong> with clarity (e.g., <em>content</em> is clear) and appropriate amount of detail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Able to apply information that is given to them verbally (e.g., following instructions, direction)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses appropriate level of vocabulary (or better) for age group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can navigate social problem solving effectively using words</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has difficulty communicating ideas verbally in class discussion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Struggles to express thoughts and ideas in conversations with others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Is easily confused by complex verbal discussion
Seems lost when listening to verbal instructions
Does not seem to be able to follow written instructions

VERBAL COMPREHENSION

WORKING MEMORY

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successfully collects &amp; organizes different pieces of information (e.g., clues, pieces of a word puzzle) to solve a problem</td>
<td>Never Rarely Sometimes Often Always</td>
</tr>
<tr>
<td>Able to recall his or her thoughts or ideas to transfer them into written work</td>
<td></td>
</tr>
<tr>
<td>Able to follow multi-step verbal directions without prompting or chunking</td>
<td></td>
</tr>
<tr>
<td>Remembers items at the beginning and/or end of a list of things but struggles with items in the middle (e.g., task list, spelling list)</td>
<td></td>
</tr>
<tr>
<td>Forgets things that were just seen or heard (e.g., on the board, in slides, in a book)</td>
<td></td>
</tr>
<tr>
<td>Needs repetition of instructions</td>
<td></td>
</tr>
<tr>
<td>Has difficulty performing multiple (more than 2) tasks at the same time (e.g., listening to teacher and writing down notes)</td>
<td></td>
</tr>
<tr>
<td>Requires consistent prompts and reminders while problem solving</td>
<td></td>
</tr>
<tr>
<td>Has difficulty completing multiple tasks in the correct sequence (e.g., remembering where to go for group work and what the task is)</td>
<td></td>
</tr>
<tr>
<td>Only able to complete larger tasks when they are broken down into smaller components (chunking of information)</td>
<td></td>
</tr>
<tr>
<td>Performance is substantially improved if there is visual information to reference throughout the task (e.g., anchor charts)</td>
<td></td>
</tr>
<tr>
<td>Forgets to use well-known strategies in language and math when needed (e.g.,</td>
<td></td>
</tr>
</tbody>
</table>
forgets "i" before "e" except after "c", or BEDMAS order, etc.)

**PROCESSING SPEED**

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiently takes timed tests and/or quizzes</td>
<td>Never</td>
</tr>
<tr>
<td>Successfully completes in-class tasks in allocated time frame</td>
<td></td>
</tr>
<tr>
<td>Can copy information efficiently (e.g., from book or from board)</td>
<td></td>
</tr>
<tr>
<td>Demonstrates ability to make decisions in a reasonable timeframe</td>
<td></td>
</tr>
<tr>
<td>Appears inattentive in class (e.g., looks confused or lost, “spacy” or “zoned-out”)</td>
<td></td>
</tr>
<tr>
<td>Improved performance when asked to complete a recognition task (instead of generating a response)</td>
<td></td>
</tr>
<tr>
<td>Speed/efficiency in tasks decreases as time goes on</td>
<td></td>
</tr>
<tr>
<td>Consistently needs reminders and/or teacher prompting to get started on a task</td>
<td></td>
</tr>
<tr>
<td>Consistently needs to be encouraged by teacher to continue moving through/completing a task</td>
<td></td>
</tr>
<tr>
<td>Need repeated prompts to answer questions, but can eventually generate a response</td>
<td></td>
</tr>
<tr>
<td>Takes more time than expected to complete simple tasks, despite understanding task</td>
<td></td>
</tr>
<tr>
<td>Has difficulty keeping up with the class work (e.g., pace too fast)</td>
<td></td>
</tr>
</tbody>
</table>

**VISUAL SPATIAL**

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successfuly understands how parts of objects make a whole</td>
<td>Never</td>
</tr>
<tr>
<td>Can effectively estimate visual lengths and distances</td>
<td></td>
</tr>
</tbody>
</table>
Can pick out or identify important visual details (e.g., patterns) | Never | Rarely | Sometimes | Often | Always
---|---|---|---|---|---
Effectively arranges materials in individual/personal space, such as desk or workspace | | | | | |
Able to recreate/copy visual examples (e.g., board notes, graphics, calendar, clocks, graphs) | | | | | |
Successfully uses visual aids to understand problems or instructions (e.g., picture, schedule, figures) | | | | | |
Able to take things apart (e.g., puzzles, objects) and put them back together | | | | | |
Can follow instructions using directional commands (e.g., up/down, left/right, behind/in front) | | | | | |
Gets lost easily navigating familiar surroundings | | | | | |
Displays lack of body awareness (e.g., bumps into walls, desks) | | | | | |
Struggles to understand visual space and navigate within it (e.g., on, below, in-front, beside, behind) | | | | | |
Easily loses place on a page when reading/writing | | | | | |

**FLUID REASONING**

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Applies learned information to new and unique contexts</td>
<td></td>
</tr>
<tr>
<td>Understands the underlying problem or intended outcome of abstract examples</td>
<td></td>
</tr>
<tr>
<td>Demonstrates an inquisitive nature (e.g., asks a lot of follow-up questions, interested in learning beyond what is taught)</td>
<td></td>
</tr>
<tr>
<td>Engages in exploratory behaviour or experimentation to solve a problem or increase understanding (e.g., seeks out additional stimuli)</td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Ideas and comments are unique, surprising, or advanced for child’s age/maturity level (e.g., very abstract, high-level, applied to unique topic)</td>
<td></td>
</tr>
<tr>
<td>Recognizes the connection (underlying relationship) between learned concepts</td>
<td></td>
</tr>
<tr>
<td>Challenges others (e.g., peers, teacher) with alternative logic or unique perspectives (that may seem advanced for age)</td>
<td></td>
</tr>
<tr>
<td>Can problem solve in flexible and creative ways</td>
<td></td>
</tr>
<tr>
<td>Has difficulty making inferences, estimations, or predictions</td>
<td></td>
</tr>
<tr>
<td>Struggles to apply a learned problem-solving technique to unfamiliar tasks</td>
<td></td>
</tr>
<tr>
<td>Gives up quickly when faced with novel problem or challenge</td>
<td></td>
</tr>
<tr>
<td>Shows strong content knowledge but struggles to think abstractly or creatively</td>
<td></td>
</tr>
</tbody>
</table>
Appendix G: Home Cognitive Ability Screener (Draft Items)

HOME COGNITIVE ABILITY SCREENER – DRAFT ITEMS

This screener is intended to be completed by the child’s parent/guardian.

BACKGROUND INFORMATION

Please complete the following information about the child:
Child’s Study ID#: ______
Child’s Age: ______
Child’s Grade: ______

Physical or Medical Conditions:
- Does that child have any hearing impairments? Yes □ No □
- Does that child have any visual impairments? Yes □ No □
- Does this child have any speech difficulties or impairments? Yes □ No □
- Does this child have any motor/mobility issues? Yes □ No □
- Does this child have any known medical conditions? Yes □ No □
If YES to any of the above, please describe:
__________________________________________________

Regarding your child’s academic situation:
- Is your child on an IEP (or other modified education program)? Yes □ No □
  o If YES, please briefly describe primary modifications:
    ___________________________________________________________________
- Does your child receive any formal extra-curricular academic support (e.g., private tutor, Mathnasium)?
  o If YES, please describe: ____________________________
- What format is your child currently attending school?
  o In-class (in-person)
  o At home (virtually)
  o Blended (some in-person, some in-class)
  o Homeschooled

INSTRUCTIONS
The following screener lists a variety of behaviours that would typically be observed in the home. The behaviours are grouped into one of five categories, based on domains typically assessed in psychoeducational testing (e.g., Verbal Comprehension, Processing Speed).

Please respond to the items with regards to the frequency of the child’s behaviour. Items should be considered in comparison to the child’s same-age peers/siblings where appropriate. *Not sure if should keep this*
**Frequency Descriptions:**
- Never = On no occasion
- Rarely = Seldomly occurs
- Sometimes = happens occasionally, but not the most typical behaviour
- Most often = frequently occurring
- Always = On every occasion

**VERBAL COMPREHENSION**
1. Can communicate thoughts and ideas verbally with clarity (e.g., *content* is clear) and appropriate amount of detail (e.g., details of their day, what they learned in school that day)
2. Can communicate questions verbally with clarity (e.g., *content* is clear) and appropriate amount of detail (e.g., when asking how something works or why something is the way it is)
3. Able to apply information that is given to them verbally (e.g., following instructions for getting ready in the morning/evening, take direction for tasks)
4. Struggles to express themselves in conversations with others (R)
5. Is easily confused by verbal discussion (R)
6. Seems lost when listening to verbal instructions (R)

**WORKING MEMORY**
1. Successfully collects & organizes different pieces of information to solve a problem (e.g., clues, pieces of a puzzle when playing a game)
2. Able to follow multi-step verbal directions without consistent reminders
3. Remembers items at the beginning and/or end of a list of things but struggles with items in the middle (e.g., spelling list, chore chart)
4. Forgets things that they just saw or heard (e.g., things in a book, on a TV show/movie)
5. Has difficulty performing multiple (more than 2) tasks at the same time (e.g., listening to you and eating dinner) (R)
6. Requires consistent prompts and reminders while doing a task (R)
7. Has difficulty completing multiple tasks in the correct order (e.g., remembering where to go before bedtime and what the first task is)
8. Only able to complete larger tasks when they are broken down into smaller components
9. Performance is substantially improved if there is visual information to reference throughout the task (e.g., task chart with pictures)

**PROCESSING SPEED**
1. Successfully completes tasks in an appropriate time frame for their age
2. Demonstrates ability to make age-appropriate decisions in a reasonable timeframe (e.g., what snack they’d like to have, shirt they’d like to wear)
3. Pays attention and can follow the conversation when you or other family members are speaking
4. Appears inattentive when you are talking to them (e.g., looks confused or lost, “spacy” or “zoned-out”) (R)
5. Consistently needs reminders to get started on a task (R)
6. Consistently needs to be encouraged to continue moving through/completing a task (e.g., doing their homework) (R)
7. Need repeated prompts to answer questions, but can eventually generate a response (R)
8. Takes more time than expected to complete simple tasks, despite understanding how to do the task (R)

**VISUAL SPATIAL**
1. Successfully understands how parts of objects make a whole
2. Can pick out or identify important visual details (e.g., patterns, shapes)
3. Effectively arranges materials in personal spaces (e.g., play area, desk/table workspace)
4. Able to take things apart (e.g., puzzles, objects) and put them back together
5. Can follow instructions using directional commands (e.g., up/down, left/right, behind/in front)
6. Gets lost easily navigating familiar surroundings (R)
7. Displays lack of body awareness (e.g., bumps into household items, walls) (R)
8. Struggles to understand visual space and navigate within it (e.g., on, below, in-front, beside, behind) (R)
9. Easily loses their place on a page when reading/writing (R)

**FLUID REASONING**
1. Applies previously learned information to new and unique contexts (e.g., mentions something they saw on a TV show/movie to a real-life different scenario)
2. Demonstrates an inquisitive nature (e.g., asks a lot of follow-up questions, interested in understanding how things work)
3. Engages in exploratory behaviour and/or experimentation to solve a problem or find something out
4. Ideas and comments are unique, surprising, or advanced for child’s age/maturity level (e.g., very abstract, high-level, applied to unique topic)
5. Challenges others (e.g., yourself, siblings, friends) with alternative logic or unique perspectives (that may seem advanced for age)
6. Can problem solve in flexible and creative ways
7. Has difficulty making guesses or predictions (R)
8. Struggles to apply a learned problem-solving technique to unfamiliar tasks (R)
9. Gives up quickly when faced with new problem or challenge (R)
Cognitive Ability Screener Item Review
Study Package

Letter of Information and Consent

Project Title: Transforming psychoeducational assessment by building a collaborative evaluation process between parents, classroom teachers, and psychologists
Principal Investigator: Dr. Donald Saklofske | Co-Investigator: Sarah Babcock (PhD Candidate)
Department: Psychology | Project Type: Scale development for clinical use and research

Invitation to Participate
You are invited to participate in a research study conducted as part of a doctoral dissertation project because you are a parent of a child (or children) between the ages of 6-16.

Purpose of Letter
The purpose of this letter is to provide you with information that you require in order to make an informed decision in terms of your participation in this research.

Purpose of this Study
An important part of helping children who are experiencing academic difficulties is to ensure that there is accurate diagnosis and/or identification of learning and behavioural challenges. This is usually done in the form of a standardized assessment by a school psychologist or clinical psychologist. However, another important part of making sure that the child is properly supported is to gather information from other important sources, like teachers and parents, who see, work with, and spend time the child every day. For this reason, researchers are developing a Classroom and Home Screening Tool that will link up with the standardized assessment psychologists use. These screening tools (completed by the child’s teacher and parent) will help provide important background information to the psychologist. It will also help to increase communication between the school, teachers, and parents to better support the child’s unique learning needs.

The researchers in this study have developed a home screening questionnaire that is intended to be completed by the parent(s) of the child, prior to standardized assessment. The Home Screener asks parents to think about their child’s behaviour in the home and to rate it in terms of how often it occurs (e.g., never, sometimes, always). As a parent of a school-aged child, you are being asked to review the items that will appear in this screener. The goal of this study is to evaluate the items listed on the draft questionnaire, to determine if they are appropriate for use on the final version. Your feedback will help researchers to create the best possible items to include on the tool.

Inclusion Criteria
You are eligible to participate in this study if you are 18 years of age (or older) and the parent of a child (or children) between the ages of 6-16.
Exclusion Criteria
You are not eligible to participate in this study if you are not 18 years of age (or older) and/or not the parent of a child (or children) between the ages of 6-16.

Study Procedures
Participation in this study involves a review of the items in the Home Screener. You will be asked to rate each item based on its relevance and clarity. You will also have the option to comment on any specific item(s) that you feel should be changed in some way, and/or suggest new items. There are 5 categories on the questionnaire, and each one has approximately 10 items for you to review.

All participation is electronic, and no in-person visit is required. Your participation will take place via a secure online survey link. We expect your participation to take approximately 30 minutes to complete.

Potential Risks and Harm
There are no known major risks associated with participation in this study.

Possible Benefits to Participation
Your participation in this study will assist researchers in ensuring that the Home Screener developed contains items that are appropriate, clear, and relevant to parents, and will help accurately identify behaviours that align with factors measured in their psychoeducational assessment.

Compensation
To thank you for your time and assistance, a Tim Horton’s Gift Card will be provided. Gift cards range in value from $5-15; the amount you receive will be determined by random draw. You have the option to have your gift card mailed directly to you, or to pick up your gift card at the Western University Campus (1151 Richmond St, London, ON). If you choose to have the gift card mailed, you will be asked to provide your mailing address in a survey link separate from your study data.

Voluntary Participation
Implied consent is being sought; therefore, you will indicate your consent directly in the survey link. If based on the Letter of Information you decide not to participate, you can simply close the link. Participation in this study is completely voluntary. You may refuse to participate, refuse to answer any of the questions, or withdraw from the study at any time. If you decide to withdraw from the study, you may do so at any time by exiting the survey window. Due to the anonymous nature of your data, once your survey responses have been submitted, the researchers will be unable to withdraw your data. You do not waive any legal right by consenting to this study.

Confidentiality
All data collected will remain confidential and accessible only to the researchers of this study. Personal (identifiable) information (e.g., name and/or mailing address) will only be accessible to the researchers of this study for the purposes of administering gift cards. Personal (identifiable) information is collected in a survey separate from the study responses and is not linked to individual responses. If you choose to withdraw from this study, no further study data will be collected, and any submitted responses are anonymous and therefore will not be linked to you.
Your survey responses will be collected anonymously through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western’s Qualtrics server is in Ireland, where privacy standards are maintained under the European Union safe harbour framework. The data will then be exported from Qualtrics and securely stored on Western University’s server. Representatives of The University of Western Ontario Non-Medical Research Ethics Board require access to your study-related records to monitor the conduct of the research. The researcher will keep all data in a secure and confidential location for 7 years.

Contacts for Further Information
If you have any questions or concerns about your rights as a research participant or the ethical conduct of this study, you may contact The Office of Human Research Ethics (519) 661-3036, email: ethics@uwo.ca.
You may also choose to direct any questions about this research or to address any concerns about your participation to [redacted] at The University of Western Ontario, in London Ontario by email at: [redacted] or by telephone [redacted].
Consent Form

Participants who agree to participate will select the box that states, "I have read the Letter of Information, understand the nature of the study, and I agree to participate" and will be directed to the study's questionnaires for completion.
INSTRUCTIONS

The Home Screener asks parents to think about their child’s behaviour in the home and to rate it in terms of how often it occurs (e.g., never, sometimes, always). As a parent of a school-aged child, you are being asked to review the items that will appear in this screener. Your feedback will help researchers to create the best possible items to include on the tool.

There are 5 categories (topics) and each one has 7-10 items for you to review. Each section will begin with a definition of the topic, and then a list of items for your review.

YOU ARE ASKED TO RATE EACH ITEM FROM ON A SCALE OF 1-5 [1 = very poor; 5 = very good]

- **RELEVANCE** = How relevant you feel the item is to the Verbal Comprehension category (e.g., does the item actually measure verbal comprehension)
- **CLARITY** = How clear you feel the item is (e.g., does the item make sense to you; do you understand what is being asked)

You will also have the option to comment on any specific item you feel should be changed in some way to make it more relevant and/or clear, as well as suggest new items that you feel would be a good addition to the tool.

One important consideration to keep in mind is the difference between what a child can and will do. As a parent, you know that sometimes your child’s specific mood, interest, and motivation in a task will impact how they behave and how well they complete that task. This is very typical behaviour for all children. The important part of this questionnaire is for parents to assess what the child can do (e.g., is able to do) on the average day and how often that is the case, even though they might not always do it.
CONSTRUCT DEFINTIONS: HOME SCREENER (PARENT VERSION)

**Verbal Comprehension** is *the ability to understand and express language*. Verbal comprehension skills include having age-appropriate vocabulary knowledge, expressing meaningful thoughts and ideas with words, and showing problem-solving skills using language (e.g., speaks (or signs, where appropriate) thoughts and ideas clearly, with enough detail that those thoughts are understandable, even to those outside immediate family members).

**Working Memory** is *short-term memory for immediate use*. It can hold only a very small amount of information at a time. Working memory is important for understanding what is happening around us and guiding decision-making and behaviour (e.g., remembering where a toy/object was placed a few moments ago, or remembering the character’s name in the show or book in order to follow the story).

**Processing Speed** is *the time it takes to successfully complete a mental task (e.g., thinking or answering a question)*. It refers to the ability to easily take in and generate information, as well as perform tasks quickly (within an appropriate time limit for the specific task).

**Visual Spatial** is *the ability to understand and organize visual material*. It refers to the ability to navigate physical space and use visual information appropriately. Skills include visualizing the world around you correctly, adjusting to surroundings based on visual clues, and copying visual information (e.g., identifying important visual details like patterns and shapes, or following directional commands like on top, beside).

**Fluid Reasoning** is *the ability to think logically and make sense of problems that arise in new situations*. Skills include creatively interpreting information, applying logic to solve new challenges, and identifying patterns and relationships between seemingly different concepts (e.g., identifies things they saw in a show or book to real-life scenarios, or shows interest in understanding how and why things work).
ITEMS FOR RATING

VERBAL COMPREHENSION

1. Speaks (including sign language, as appropriate) thoughts and ideas clearly, with enough detail that those thoughts are understandable outside immediate family (e.g., content is clear)
2. Asks questions that are understandable to others outside of immediate family (e.g., content is clear) and appropriate amount of detail (e.g., when asking how something works or why something is the way it is)
3. Verbalizes what is wanted or needed (e.g., what snack is desired, what activity to do)
4. Able to apply verbal information that is given (e.g., following instructions for getting ready in the morning/evening, take direction for tasks)
5. Struggles to express thoughts and ideas in conversations with others (R)
6. Is easily confused by verbal discussion (e.g., gets lost or seems unable to follow conversation) (R)
7. Seems lost when listening to verbal instructions (e.g., doesn’t appear to understand the verbal instructions given) (R)

WORKING MEMORY

1. Successfully collects & organizes different pieces of information to solve a problem (e.g., clues, pieces of a puzzle when playing a game)
2. Able to follow multi-step verbal directions without consistent reminders (e.g., order of getting ready in the morning for hygiene and dressing tasks)
3. Remembers items at the beginning and/or end of a list of things but struggles with items in the middle (e.g., spelling list, chore chart) (R)
4. Forgets things that they just saw or heard (e.g., character names or important objects in a book, or in a TV show/movie) (R)
5. Has difficulty performing two or more tasks at the same time (e.g., listening to you and eating dinner) (R)
6. Requires consistent prompts and reminders to do a task, even when that task is something enjoyable or interesting (e.g., putting on shoes even though going outside to play is desirable) (R)
7. Has difficulty completing multiple tasks in the correct order (e.g., remembering sequence of task in the morning routine) (R)
8. Only able to complete larger tasks when they are broken down into smaller components (e.g., instead of “get dressed” you need to say “put on shirt, put on pants, put on socks”) (R)
9. Performance is substantially improved if there is visual information to reference throughout the task (e.g., task chart with pictures) (R)
PROCESSING SPEED

1. Can successfully complete tasks in an appropriate time frame for age (when motivated to do so) (e.g., putting on socks/shoes to go play outside)
2. Demonstrates ability to make age-appropriate decisions in a reasonable timeframe (e.g., what kind of snack, shirt/outfit to wear)
3. Pays attention and can follow the conversation when you or other family members are speaking (e.g., seems engaged in the conversation, laughs where appropriate)
4. Appears inattentive when you are talking to them (e.g., looks confused or lost, “spacy” or “zoned-out”) (R)
5. Consistently needs reminders to get started on a task, even when the task is enjoyable (e.g., opening the toy box to find an object) (R)
6. Consistently needs to be encouraged to continue moving through/completing a task (e.g., playing a board game or completing a building project) (R)
7. Need repeated prompts to answer questions, but can eventually generate a response (R)
8. Takes more time than expected to complete simple tasks, despite understanding how to do the task (e.g., getting a bowl out for a snack) (R)

VISUAL SPATIAL

1. Successfully understands how parts of objects make a whole (e.g., can place together all the different components of a toy set or puzzle)
2. Can pick out or identify important visual details (e.g., patterns, shapes)
3. Effectively arranges materials in personal spaces (e.g., play area, desk/table workspace)
4. Able to take things apart and put them back together (e.g., puzzles, toys, objects)
5. Can follow instructions using directional commands (e.g., up/down, left/right, behind/in front)
6. Gets lost easily navigating familiar surroundings (e.g., goes to the wrong drawer to get clothes in the morning) (R)
7. Displays lack of body awareness (e.g., bumps into household items, walls) (R)
8. Struggles to understand visual space and navigate within it (e.g., on, below, in-front, beside, behind) (R)
9. Easily loses their place on a page when reading/writing (e.g., needs to be directed back to where to look) (R)

FLUID REASONING

1. Applies previously learned information to new and unique contexts (e.g., mentions something they saw on a TV show/movie to a real-life different scenario)
2. Demonstrates an inquisitive nature (e.g., asks a lot of follow-up questions, interested in understanding how objects work)
3. Engages in exploratory behaviour and/or experimentation to solve a problem or find something out
4. Ideas and comments seem advanced for child’s age/maturity level (e.g., very abstract, high-level, applied to unique topic)
5. Challenges others (e.g., yourself, siblings, friends) with alternative logic or unique perspectives (that may seem advanced for age)
6. Can problem solve in flexible and creative ways (e.g., stabilizes a building block structure with an unrelated object such as a book or box)
7. Has difficulty making guesses or predictions (e.g., what might happen in the TV show or movie) (R)
8. Struggles to apply a learned problem-solving technique to unfamiliar tasks (R)
9. Gives up quickly when faced with new problem or challenge, even when encouraged to keep trying (R)
Debriefing Form

Project Title: Transforming psychoeducational assessment by building a collaborative evaluation process between parents, classroom teachers, and psychologists

Principal Investigator: Dr. Donald Saklofske | Co-Investigator: Sarah Babcock (PhD Candidate)

Department: Psychology | Project Type: Scale development for clinical use and research

Thank you for your participation in this study, we appreciate your time and the feedback that you provided!

Study Purpose and Rationale

In order to develop this home screening tool, researchers began by developing a classroom behaviour screening tool. We identified (with the help of school psychologists and classroom teachers) a list of specific behaviours that could be observed in the learning and social environment of the classroom. We then used these to create items for the Classroom Screener. Using the classroom tool as a starting point, researchers then developed a list of similar items that made sense for the home environment and that could be observed by the parent(s) of the child. The purpose of this study was to collect parent input and feedback on the items being used on the Home Screener. Feedback directly from parents allows for the behavioural characteristics (items) to be finalized, as well as revised if necessary, so that they are representative of actual observable behaviours that are seen in the home. This will help to create an accurate tool that aligns with both the classroom tool, and the psychoeducational assessments used by school psychologists.

The identification process for children with learning challenges and special education needs is multifaceted, involving several approaches, processes, and individuals’ input. Ability assessment (psychoeducational assessment) is an important piece of the special education puzzle; however, it is an area where there is considerable deficit in communication between key parties. In its current state, the Canadian psychoeducational assessment process lacks essential collaboration and communication between teachers, parents, and psychologists. Based on review of the literature, parents report feeling uninvolved, misinformed, and unsupported in the assessment process, while school psychologists reported feeling overwhelmed by case load, unable to participate in collaboration, and that it is often difficult for them to invest as much time as they feel is appropriate into the support of the child referred. Based on these findings, it seems clear that one of the ways that we can improve assessment process is by facilitating easier interaction and sharing of knowledge between psychologists, teachers, and parents. Currently, we do not have tools available that combine the best principles of psychoeducational measurement with teacher and parent observations, and this research addresses this gap. The creation of classroom and home screening tools align with the psychologist’s diagnostic tool would facilitate better communication and collaboration. These tools give teachers and parents the opportunity to both summarize their own observations of a child who may be in need of ongoing or further assessment to support
their learning and personal development, as well as facilitates communication and a working alliance with school psychologists, allied professionals, and parents.

Your Participation in this Study
As a reminder, your feedback is anonymous to researchers and sharing of study results will not include any information that could identify you. Any identifiable information (e.g., name, mailing address) is collected separately from your study data and is not linked to your responses in any way. This will be used only by researchers for the purposes of sending gift cards. If you have any questions or concerns about your rights as a research participant or the ethical conduct of this study, you may contact The Office of Human Research Ethics (519) 661-3036, email: ethics@uwo.ca.

Additional References
If you are interested in learning more, here are some references you can consult:


Please feel free to reach out to the research team if you need assistance in accessing these materials.

If you have any further questions or concerns about the research, please contact Dr. Donald Saklofske at The University of Western Ontario, in London Ontario by email at: don.saklofske@uwo.ca or by telephone at (519) 661-2111 ext. 82721.

Thank you,
Appendix H: Home Cognitive Ability Screener (Pilot Version)

HOME COGNITIVE ABILITY SCREENER
This screener is intended to be completed by the child’s primary parents and/or guardians.

BACKGROUND INFORMATION

Please complete the following information about the child:
Child’s Study ID#: ______
Child’s Age: _______
Child’s Grade: ______

Physical or Medical Conditions:
- Does that child have any hearing impairments? Yes ☐ No ☐
- Does that child have any visual impairments? Yes ☐ No ☐
- Does this child have any speech difficulties or impairments? Yes ☐ No ☐
- Does this child have any motor/mobility issues? Yes ☐ No ☐
- Does this child have any known medical conditions? Yes ☐ No ☐
If YES to any of the above, please describe:
__________________________________________________

Regarding your child’s academic situation:
- Is your child on an IEP or other modified education program (e.g., alternate grade level work)? Yes ☐ No ☐
  o If YES, please briefly describe any areas of academic modifications:
  ___________________________________________
- Does your child receive any formal extra-curricular academic support (e.g., private tutor, Mathnasium)?
  o If YES, please describe: ______________________
- What format is your child currently attending school?
  o In-class (in-person)
  o At home (virtually)
  o Blended (some in-person, some in-class)
  o Homeschooled

INSTRUCTIONS
The following screener lists a variety of behaviours that would typically be observed in the home. The behaviours are grouped into one of five categories, based on domains typically assessed in psychoeducational testing (e.g., Verbal Ability, Memory). Please respond to the items with regards to the frequency of the child’s behaviour. Items should be considered in comparison to the child’s same-age friends, peers, or cousins where appropriate.
One important consideration to keep in mind is the difference between what a child *can* and *will* do. As a parent, you know that sometimes your child’s specific mood, interest, and motivation in a task will impact how they behave and how well they complete that task. This is very typical behaviour for all children. The important part of this questionnaire is to assess what the child *can do* (e.g., is able to do) on the **average day and how often that is the case**, even though they might not always do it. Please keep this in mind when you are responding.

Another important consideration is to make sure you are considering your child’s behaviour *as a whole*, the good days and the harder ones. As a parent, sometimes it is easier to remember the “failures” or times when things have not gone well, whereas you might tend to forget the good days because you don’t need to worry about them. To get the most accurate picture of your child’s behaviour, try to reflect on as many instances as you can, including both successes and frustrations.

**Frequency Descriptions:**
- **Never** = On no occasion
- **Rarely** = Seldomly occurs
- **Sometimes** = happens occasionally, but not the most typical behaviour
- **Often** = frequently occurring
- **Always** = On every occasion

### VERBAL COMPREHENSION

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaks (including sign language, as appropriate) thoughts and ideas clearly, with</td>
<td>Never</td>
</tr>
<tr>
<td>enough detail that those thoughts are understandable outside immediate family (e.g.,</td>
<td></td>
</tr>
<tr>
<td><em>content is clear</em>)</td>
<td></td>
</tr>
<tr>
<td>Asks questions that are understandable to others outside of immediate family (e.g.,</td>
<td></td>
</tr>
<tr>
<td><em>content is clear</em>) and appropriate amount of detail (e.g., when asking how something</td>
<td></td>
</tr>
<tr>
<td>works or why something is the way it is)</td>
<td></td>
</tr>
<tr>
<td>Verbalizes what is wanted or needed (e.g., what snack is desired, what activity to</td>
<td></td>
</tr>
<tr>
<td>do)</td>
<td></td>
</tr>
<tr>
<td>Able to apply verbal information that is given (e.g., following instructions for</td>
<td></td>
</tr>
<tr>
<td>getting ready in the morning/evening, take direction for tasks)</td>
<td></td>
</tr>
<tr>
<td>Struggles to express thoughts and ideas in conversations with others (R)</td>
<td></td>
</tr>
<tr>
<td>Gets lost or seems unable to be a part of conversations and discussions with others</td>
<td></td>
</tr>
<tr>
<td>(R)</td>
<td></td>
</tr>
<tr>
<td>Seems lost when listening to verbal instructions (e.g., doesn’t appear to understand</td>
<td></td>
</tr>
<tr>
<td>the verbal instructions given) (R)</td>
<td></td>
</tr>
</tbody>
</table>
### WORKING MEMORY

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successfully collects &amp; organizes different pieces of information to solve a problem (e.g., clues, pieces of a puzzle when playing a game)</td>
<td></td>
</tr>
<tr>
<td>Able to follow multi-step verbal directions without consistent reminders (e.g., order of getting ready in the morning for hygiene and dressing tasks)</td>
<td></td>
</tr>
<tr>
<td>Remembers items at the beginning and/or end of a list of things but struggles with items in the middle (e.g., spelling list, chore chart) (R)</td>
<td></td>
</tr>
<tr>
<td>Forgets things that they just saw or heard (e.g., character names or important objects in a book, or in a TV show/movie) (R)</td>
<td></td>
</tr>
<tr>
<td>Has difficulty performing two or more tasks at the same time (e.g., listening to you and eating dinner) (R)</td>
<td></td>
</tr>
<tr>
<td>Requires consistent prompts and reminders to do a task, even when that task is something enjoyable or interesting (e.g., putting on shoes even though going outside to play is desirable) (R)</td>
<td></td>
</tr>
<tr>
<td>Has difficulty completing multiple tasks in the correct order (e.g., remembering sequence of task in the morning routine) (R)</td>
<td></td>
</tr>
<tr>
<td>Only able to complete larger tasks when they are broken down into smaller components (e.g., instead of “get dressed”, you need to say “put on shirt, put on pants, put on socks”) (R)</td>
<td></td>
</tr>
<tr>
<td>Performance is substantially improved if there is information to reference during the task (e.g., chart with pictures, step-by-step list/guidelines) (R)</td>
<td></td>
</tr>
</tbody>
</table>
# PROCESSING SPEED

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can successfully complete tasks in an appropriate timeframe for age (when motivated to do so) (e.g., putting on socks/shoes to go play outside)</td>
<td></td>
</tr>
<tr>
<td>Demonstrates ability to make age-appropriate decisions in a reasonable timeframe (e.g., what kind of snack, shirt/outfit to wear)</td>
<td></td>
</tr>
<tr>
<td>Pays attention and can follow the conversation when you or other family members are speaking (e.g., seems engaged in the conversation, laughs where appropriate)</td>
<td></td>
</tr>
<tr>
<td>Appears inattentive when you are talking to them (e.g., looks confused or lost, “spacy” or “zoned-out”) (R)</td>
<td></td>
</tr>
<tr>
<td>Consistently needs reminders to get started on a task, even when the task is enjoyable (e.g., opening the toy box to find an object) (R)</td>
<td></td>
</tr>
<tr>
<td>Consistently needs to be encouraged to continue moving through/completing a task (e.g., playing a board game or completing a building project) (R)</td>
<td></td>
</tr>
<tr>
<td>Need repeated prompts to answer questions, but can eventually generate a response (R)</td>
<td></td>
</tr>
</tbody>
</table>
## VISUAL SPATIAL

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successfully understands how parts of objects make a whole (e.g., can place together all the different components of a toy set or puzzle)</td>
<td></td>
</tr>
<tr>
<td>Can pick out or identify important visual details (e.g., patterns, shapes)</td>
<td></td>
</tr>
<tr>
<td>Effectively organizes and arranges materials they are working with (e.g., craft materials, building a birdhouse or model)</td>
<td></td>
</tr>
<tr>
<td>Able to take things apart and put them back together (e.g., puzzles, toys, objects)</td>
<td></td>
</tr>
<tr>
<td>Can follow instructions using directional commands (e.g., up/down, left/right, behind/in front)</td>
<td></td>
</tr>
<tr>
<td>Gets lost easily navigating familiar surroundings (e.g., goes to the wrong drawer to get clothes in the morning) (R)</td>
<td></td>
</tr>
<tr>
<td>Appears generally unaware of their physical environment or space (e.g., bumps into household items) (R)</td>
<td></td>
</tr>
<tr>
<td>Struggles to understand visual space and navigate within it (e.g., on, below, in-front, beside, behind) (R)</td>
<td></td>
</tr>
<tr>
<td>Easily loses their place on a page when reading/writing (e.g., needs to be directed back to where to look) (R)</td>
<td></td>
</tr>
</tbody>
</table>

## FLUID REASONING

<table>
<thead>
<tr>
<th>Classroom Behaviour</th>
<th>Frequency of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applies previously learned information to new and unique contexts (e.g., mentions something they saw on a TV show/movie to a real-life different scenario)</td>
<td></td>
</tr>
<tr>
<td>Demonstrates an inquisitive nature (e.g., asks a lot of follow-up questions, interested in understanding how objects work)</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Engages in exploratory behaviour and/or experimentation to solve a problem</td>
<td></td>
</tr>
<tr>
<td>or find something out</td>
<td></td>
</tr>
<tr>
<td>Ideas and comments seem advanced for child’s age/maturity level (e.g., very</td>
<td></td>
</tr>
<tr>
<td>abstract, high-level, applied to unique topic)</td>
<td></td>
</tr>
<tr>
<td>Challenges others (e.g., yourself, siblings, friends) with alternative</td>
<td></td>
</tr>
<tr>
<td>logic or unique perspectives (that may seem advanced for age)</td>
<td></td>
</tr>
<tr>
<td>Can problem solve in flexible and creative ways (e.g., stabilizes a</td>
<td></td>
</tr>
<tr>
<td>building block structure with an unrelated object such as a book or box)</td>
<td></td>
</tr>
<tr>
<td>Has difficulty making guesses or predictions (e.g., what might happen in</td>
<td></td>
</tr>
<tr>
<td>the TV show or movie) (R)</td>
<td></td>
</tr>
<tr>
<td>Struggles to apply a learned problem-solving technique to unfamiliar tasks</td>
<td></td>
</tr>
<tr>
<td>(R)</td>
<td></td>
</tr>
<tr>
<td>Gives up quickly when faced with new problem or challenge, even when</td>
<td></td>
</tr>
<tr>
<td>encouraged to keep trying (R)</td>
<td></td>
</tr>
</tbody>
</table>
Appendix I: CYDC Background Questionnaire

Background Questionnaire (06/13)

| Today’s Date: |                                   |
| Child’s Name: | ________________________________ | Self-Identified Gender: ________ |
| Address:      | ________________________________ | Postal Code: _________________ |
| Home Phone:   | ________________________________ | Primary Parent/Caregiver Email: |
| Parent/Caregiver Email: | ___________________________ |
| Date of Birth: | M / D / YR | School: _______________________ | Grade: ________ |
| Place of Birth: |                        |

Reason for Referral: Please state the questions or issues you would like us to address in your child’s assessment:

1. 
2. 
3. 
4. 

FAMILY INFORMATION

☐ Single    ☐ Married    ☐ Divorced    ☐ Separated    ☐ Other: ____________________________
Parent/Caregiver’s Name: ________________________________
Place of Work: ________________________________ Cell Phone: ________________ Bus. Phone #: ________________
Parent/Caregiver’s Name: ________________________________
Place of Work: ________________________________ Cell Phone: ________________ Bus. Phone #: ________________

Who else lives in the household? Indicate age of children

Mother/Stepmother: ________________________________
Father/Stepfather: ________________________________
Brother(s) ________________________________
Sister(s) ________________________________
Grandparent(s) ________________________________
Other persons: ________________________________
Is the child adopted?  Yes ☐  No ☐  Child’s age at adoption: 

What Languages are spoken in the home?  __________________________________________

Among which family members?  _________________________________________________

What languages does the child understand?  _______________________________________

If English is not the first language, when did she learn to speak it?  

Have there been any significant stressors (e.g., trauma) in the past or any recent events, changes, or factors (e.g., relocation, separation, illness) that may have affected your child or your family?

DEVELOPMENTAL HISTORY
Please comment on each of the following as they relate to your child’s early development.

Typical Pregnancy:  Yes ☐  No ☐  If the answer is no, please explain why:  

Typical Delivery:  Yes ☐  No ☐  If the answer is no, please explain why:  

Birth History:

Birth Weight:  ______  Full term pregnancy?  Yes ☐  No ☐  If the answer is no, please explain why:  

Early Development:
Following is a checklist of developmental milestones for children. Please indicate if the milestone was met within a typical timeframe of it was skill delayed or advanced.

<table>
<thead>
<tr>
<th>Delayed</th>
<th>Typical</th>
<th>Advanced</th>
<th>Uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Set up without help</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Crawled</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. Walked alone (10-15 steps)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Spoke first words (Mama, Dada, etc)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Put words together (Daddy bye-bye, Mama home, etc)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. Spoke 2-3 word sentences</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. Spoke clearly to strangers understood</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8. Fully bowel trained</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9. Fully bladder trained</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10. Able to dress self</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>11. Able to tie shoe laces</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>12. Able to separate easily from parent (for school, play, etc)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
# Medical History

*Child's Physician: ____________________________  Date of child's last physical exam: ______ / ______ / ______

Date of child's last vision exam: ______ / ______ / ______  Result: __________________________

Date of child's last hearing exam: ______ / ______ / ______  Result: __________________________

**Has your child had any medical problems? Please elaborate, indicating age or dates, treatment and outcome.**

1. Accidents / Head Injuries / Concussion:

2. Allergies / Asthma:

3. Appetite Problems (over eating or under eating):

4. Bedwetting / Soiling:

5. Ear Infections / Tubs:

6. Gross Motor Difficulties:

7. Hospitalization / Operations:

8. Medications (Please specify medication and purpose/how often):

9. Sleeping Problems (Falling asleep, staying asleep, nightmares):

10. Other:

**Current Health?**  Excellent ☐  Variable ☐  Poor ☐  

**Comments:**

---

3
INFANT TEMPERAMENT
Please rate your child’s behaviour during their first two years on the following behaviours:
Circle 1 if the behaviour on the left was present the majority of the time.
Circle 5 if the behaviour on the right was present the majority of the time. Stages in-between are represented by 2, 3 and 4.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cautious and Careful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordinated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cuddly, Easy to Hold</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy to Feed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easily Calmed Down</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyed Eye Contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liked People</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quiet and Content</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slept Well</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underactive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usually Relaxed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other problems, challenges, or comments regarding infancy or early childhood development:

SOCIAL HISTORY
Please comment on the child’s:

Strengths / General interests / Hobbies / Extracurricular activities:

Friendships / Social skills: Do they make friends easily? Is your child fearful, clingy, shy or inhibited?

Relationships with siblings and family members:

Please describe your child’s responsibilities at home and at school (e.g., chores, homework):
Does your child present with any challenging behaviours or difficulties at home or at school? (e.g., requires frequent reminders, has difficulty getting along with others, has difficulty managing their emotions). Please describe below:

What methods have you found most effective in dealing with this issue?

**EDUCATIONAL HISTORY**

Please indicate the different schools that your child has attended (including preschool/nursery):

<table>
<thead>
<tr>
<th>Year</th>
<th>School</th>
<th>Grade</th>
<th>Comments (e.g., reason for move, adjustment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please list any specific observations or comments regarding your child’s school history that you feel are important to this assessment (e.g., conflicts with teachers, study skills, reading difficulties, etc.).

When were the school difficulties first noticed?

Does your child currently have an Individual Education Plan (IEP) at school? Yes □ No □

Has your child ever: Repeated a Grade □ Skipped a Grade □ Which Grade? ____________

Is your child currently receiving any remedial or tutorial support? Please state where (in school or privately), frequency, and the focus (e.g., subject areas).

**ASSESSMENT AND TREATMENT HISTORY**

If your child has had a previous assessment or received specialized treatment services (e.g., Physiotherapy, Occupational therapy, Speech/Language, Psychological, Neurological, etc) please list below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Professional / Agency</th>
<th>Report Available?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes □ No □</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes □ No □</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes □ No □</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes □ No □</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes □ No □</td>
</tr>
</tbody>
</table>
### PRESENT PERSONALITY AND BEHAVIOUR

Please circle all traits that apply to the child NOW.

<table>
<thead>
<tr>
<th>Affectionate</th>
<th>Dependent</th>
<th>Hard to Discipline</th>
<th>Moody</th>
<th>Sociable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggressive</td>
<td>Even-Tempered</td>
<td>Impulsive</td>
<td>Overactive</td>
<td>Steals</td>
</tr>
<tr>
<td>Argumentative</td>
<td>Fearful</td>
<td>Independent</td>
<td>Prefers to be Alone</td>
<td>Tantrums</td>
</tr>
<tr>
<td>Complains of Feeling Sick</td>
<td>Follower</td>
<td>Leader</td>
<td>Quiet</td>
<td>Tells lies</td>
</tr>
<tr>
<td>Cooperative</td>
<td>Friendly</td>
<td>Lethargic</td>
<td>Sad</td>
<td>Too Responsible</td>
</tr>
<tr>
<td>Daydreams</td>
<td>Happy</td>
<td>Low Self Esteem</td>
<td>Sensitive</td>
<td>Worried</td>
</tr>
</tbody>
</table>

### FAMILY HISTORY

Following is a series of challenges that sometimes run in families. We are interested in whether anyone in the family other than this child has had any of these challenges. Please put an X in the column of the family member(s) who have or have had each problem.

<table>
<thead>
<tr>
<th>Hyperactive as a Child</th>
<th>Child’s Mother</th>
<th>Child’s Father</th>
<th>Child’s Brother(s)</th>
<th>Child’s Sister(s)</th>
<th>Others (Specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trouble Learning to Read</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trouble With Arithmetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trouble with Writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kept Back in School</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech Problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviour Problems in Childhood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Trouble as a Teenager</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Emotional Problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addiction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Illness (longer than six months)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developmental Delay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is your child being seen by any other support or helping professionals? (e.g., therapist; Psychologist)?

Yes ☐ No ☐

If you have any additional information or comments, please feel free to include this information or let us know. Thank you for helping us better understand your child!
Appendix J: CYDC Recruitment Study Documents

Letter of Information and Consent

**Project Title:** Transforming psychoeducational assessment by building a collaborative evaluation process between parents, classroom teachers, and psychologists

**Principal Investigator:** Dr. Donald Saklofske (Psychology Dept)  
**Co-Investigator:** Sarah Babcock (PhD Candidate)  
**Co-Investigator:** Dr. Colin King (Director of the Child Youth & Development Clinic)

**Invitation to Participate**
You are invited to participate in a research study conducted as part of a doctoral dissertation project because you are a parent of a child (or children) between the ages of 6-16 who is a client of the Child Youth & Development Clinic.

**Purpose of Letter**
The purpose of this letter is to provide you with information that you require in order to make an informed decision in terms of your participation in this research.

**Purpose of this Study**
An important part of helping children who are experiencing academic difficulties is to ensure that there is accurate diagnosis and/or identification of learning and behavioural challenges. This is usually done in the form of a standardized assessment by a school or clinical psychologist. However, another important part of making sure that the child is supported is to gather information from other sources, like teachers and parents, who see and spend time the child every day. For this reason, researchers are developing **Classroom and Home Screening Tools** that will link up with the standardized assessment psychologists use, like the Wechsler Intelligence Scale for Children (WISC-V).

The researchers have developed a home screening questionnaire that is intended to be completed by the parent(s) of the child, as well as a classroom screening questionnaire that is intended to be completed by a teacher of the child, prior to standardized assessment. The Home Screener asks parents to think about their child’s behaviour in the home while the Classroom Screener asks teachers to reflect on the behaviours and skills they see in the classroom; both rate the observed behaviours in terms of how often they occur (e.g., never, sometimes, always). These screening tools will help provide important background information to the psychologist. It will also help to increase communication between the school, teachers, and parents to better support the child’s unique learning needs.

The goal of this study is to compare the feedback provided by both parents and teachers to the child’s standardized assessment scores (i.e., the WISC-V) to make sure the screeners are accurately collecting relevant screening information. Your completion of this questionnaire will help researchers to ensure the best possible items are included on the screener and that the tools are working correctly.
Inclusion Criteria
You are eligible to participate in this study if you are 18 years of age (or older) and the parent of a child (or children) between the ages of 6-16 who is a client at the Child Youth & Development Clinic.

Exclusion Criteria
You are not eligible to participate in this study if you are not 18 years of age (or older) and/or not the parent of a child (or children) between the ages of 6-16 who is a client at the Child Youth & Development Clinic.

Study Procedures
To participate you would complete the Home Screener questionnaire, as well as send the Classroom Screener questionnaire digital link to the child’s teacher for them to complete (an email template to send the teacher will be provided). All participation is electronic, therefore no in-person visits are required. Your participation will take place via a secure online survey links that you and the child’s teacher can access at a day & time that is most convenient for you.

To participate, you will need access to a computer, tablet, or phone device that can connect to the internet. The time it takes to complete the questionnaire will vary based on each participant, but we estimate that it will take you approximately 20 minutes to complete the screening tool.

Potential Risks and Harm
There are no known major risks associated with participation in this study.

Possible Benefits to Participation
Your participation in this study will assist researchers in ensuring that the Home and Classroom Screeners that have been developed are working as intended and will help accurately identify behaviours that align with components measured in their psychoeducational assessment.

Compensation
You will not be compensated for your participation in this research.

Voluntary Participation
Implied consent is being collected; therefore, you will indicate your consent directly in the survey link. If based on the Letter of Information you decide not to participate, you can simply close the survey window, and no information will be collected.

Participation in this study is completely voluntary, and your decision on whether or not to participate in the study will in no way affect your previous, current, or future interactions and/or support with the CYDC. This project is separate from the CYDC services provided and it is completely up to you if you would like to support this research by completing the questionnaire. You do not waive any legal right by consenting to this study.
While completing the questionnaire, you may refuse to participate, refuse to answer any of the questions, or withdraw from the study at any time. If you decide to withdraw from the study, you may do so at any time by exiting the survey window. Due to the anonymous nature of your data, once your survey responses have been submitted, the researchers will be unable to withdraw your data.

**Confidentiality**

All data collected will remain confidential and accessible only to members of the research team. No identifying details about you and/or your child (name, address, etc.) will be shared with researchers, and all your personal information is kept on a secure, private computer at the CYDC. Researchers will only see anonymous survey data, and they will not know who the identity of participants because only randomly-generated participant ID numbers will be used to link data. If you choose to withdraw from this study, no further study data will be collected, and any submitted responses are anonymous and therefore will not be linked to you.

The Home and Classroom Screener survey responses will be collected anonymously through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western’s Qualtrics server is in Ireland, where privacy standards are maintained under the European Union safe harbour framework. The data will then be exported from Qualtrics and securely stored on Western University’s server. Representatives of The University of Western Ontario Non-Medical Research Ethics Board require access to your study-related records to monitor the conduct of the research. The researcher will keep all data in a secure and confidential location for 7 years.

**Contacts for Further Information**

If you have any questions or concerns about your rights as a research participant or the ethical conduct of this study, you may contact The Office of Human Research Ethics (519) 661-3036, email: ethics@uwo.ca. You may also choose to direct any questions about this research or to address any concerns about your participation to Donald Saklofske at The University of Western Ontario, in London Ontario by email at: don.saklofske@uwo.ca or by telephone at.
Consent Form

Participants who agree to participate will select the box that states, "I have read the Letter of Information, understand the nature of the study, and I agree to participate” and will be directed to the study's questionnaires for completion.
Debriefing Form - Parents

Project Title: Transforming psychoeducational assessment by building a collaborative evaluation process between parents, classroom teachers, and psychologists
Principal Investigator: [Redacted]
Co-Investigator: [Redacted]
Co-Investigator: [Redacted]

Thank you for your participation in this study, we appreciate your time and the important information you provided!

Study Purpose and Rationale
In order to develop the screening tools, researchers began first by developing a classroom behaviour screener. We identified (with the help of school psychologists and classroom teachers) a list of specific behaviours that could be observed in the learning and social environment of the classroom. We then used these to create items for the Classroom Screener. Using the classroom tool as a starting point, researchers then developed a list of similar items that made sense for the home environment and that could be observed by the parent(s) of the child. We then asked parents of children 6-16 to review these items to ensure they were representative of behaviours that were seen in the home. Based on the feedback from parents and teachers, we finalized the pilot versions of both the Home and Classroom Screener tools. The purpose of this study was to compare the data provided by both parents and teachers to the child’s standardized test scores (WISC-V) to make sure the screeners are accurately collecting screening information. This evaluation allows researchers to ensure the best possible items are included on the screeners and that the tools are working correctly to align with the assessments used by school psychologists.

The identification process for children with learning challenges and special education needs is multifaceted, involving several approaches, processes, and individuals’ input. Ability assessment (psychoeducational assessment) is an important piece of the special education puzzle; however, it is an area where there are considerable deficits in communication between key parties. In its current state, the Canadian psychoeducational assessment process lacks essential collaboration and communication between teachers, parents, and psychologists. Based on review of the literature, parents report feeling uninvolved, misinformed, and unsupported in the assessment process, while school psychologists reported feeling overwhelmed by case load, unable to participate in collaboration, and that it is often difficult for them to invest as much time as they feel is appropriate into the support of the child referred. Based on these findings, it seems clear that one of the ways that we can improve assessment process is by facilitating easier interaction and sharing of knowledge between psychologists, teachers, and parents. Currently, we do not have tools available that combine the best principles of psychoeducational measurement with teacher and parent observations, and this research addresses this gap. The creation of classroom and home screening tools align with the psychologist’s diagnostic tool would facilitate better communication and collaboration. These tools give teachers and parents the opportunity to both summarize their own observations of a child who may be in need of ongoing or further assessment to support
their learning and personal development, as well as facilitates communication and a working alliance with school psychologists, allied professionals, and parents.

**Your Participation in this Study**
As a reminder, your study data is anonymous to researchers and sharing of study results will not include any information that could identify you. Any identifiable information (e.g., name, email) is documented and retained separately from your study data by the Child Youth and Development Clinic. If you have any questions or concerns about your rights as a research participant or the ethical conduct of this study, you may contact **The Office of Human Research Ethics** (519) 661-3036, email: ethics@uwo.ca.

**Additional References**
If you are interested in learning more, here are some references you can consult:


Please feel free to reach out to the research team if you need assistance in accessing these materials.

If you have any further questions or concerns about the research, please contact Dr. Donald Saklofske at The University of Western Ontario, in London Ontario by email at: don.saklofske@uwo.ca or by telephone at (519) 661-2111 ext. 82721.

Thank you,
Debriefing Form - Teachers

Project Title: Project Title: Transforming psychoeducational assessment by building a collaborative evaluation process between parents, classroom teachers, and psychologists

Principal Investigator: Dr. Donald Saklofske (Professor, Dept. of Psychology)

Co-Investigator: Sarah Babcock (PhD Candidate, Dept. of Psychology)

Co-Investigator: Dr. Colin King (Director of the Child Youth & Development Clinic)

Thank you for your participation in this study, we appreciate your time and the important information you provided!

Study Purpose and Rationale

In order to develop the screening tools, researchers began first by developing a classroom behaviour screener. We identified (with the help of school psychologists and classroom teachers) a list of specific behaviours that could be observed in the learning and social environment of the classroom. We then used these to create items for the Classroom Screener. Using the classroom tool as a starting point, researchers then developed a list of similar items that made sense for the home environment and that could be observed by the parent(s) of the child. We then asked parents of children 6-16 to review these items to ensure they were representative of behaviours that were seen in the home. Based on the feedback from parents and teachers, we finalized the pilot versions of both the Home and Classroom Screener tools. The purpose of this study was to compare the data provided by both parents and teachers to the child’s standardized test scores (WISC-V) to make sure the screeners are accurately collecting screening information. This evaluation allows researchers to ensure the best possible items are included on the screeners and that the tools are working correctly to align with the assessments used by school psychologists.

The identification process for children with learning challenges and special education needs is multifaceted, involving several approaches, processes, and individuals’ input. Ability assessment (psychoeducational assessment) is an important piece of the special education puzzle; however, it is an area where there are considerable deficits in communication between key parties. In its current state, the Canadian psychoeducational assessment process lacks essential collaboration and communication between teachers, parents, and psychologists. Based on review of the literature, parents report feeling uninvolved, misinformed, and unsupported in the assessment process, while school psychologists reported feeling overwhelmed by case load, unable to participate in collaboration, and that it is often difficult for them to invest as much time as they feel is appropriate into the support of the child referred. Based on these findings, it seems clear that one of the ways that we can improve assessment process is by facilitating easier interaction and sharing of knowledge between psychologists, teachers, and parents. Currently, we do not have tools available that combine the best principles of psychoeducational measurement with teacher and parent observations, and this research addresses this gap. The creation of classroom and home screening tools align with the psychologist’s diagnostic tool would facilitate better communication and collaboration. These tools give teachers and parents the opportunity to both summarize their own observations of a child who may be in need of ongoing or further assessment to support
their learning and personal development, as well as facilitates communication and a working alliance with school psychologists, allied professionals, and parents.

**Your Participation in this Study**
As a reminder, your study data is anonymous to researchers and sharing of study results will not include any information that could identify you. Any identifiable information (e.g., name, email) is documented and retained separately from your study data by the Child Youth and Development Clinic. If you have any questions or concerns about your rights as a research participant or the ethical conduct of this study, you may contact The Office of Human Research Ethics (519) 661-3036, email: ethics@uwo.ca.

**Additional References**
If you are interested in learning more, here are some references you can consult:


Please feel free to reach out to the research team if you need assistance in accessing these materials.

If you have any further questions or concerns about the research, please contact [Dr. Donald Saklofske](mailto:don.saklofske@uwo.ca) at The University of Western Ontario, in London Ontario by email at: [don.saklofske@uwo.ca](mailto:don.saklofske@uwo.ca) or by telephone at [519-661-2111 ext. 82721](tel:5196612111).
Appendix K: Qualitative Study Participant Documents

Letter of Information and Consent

Project Title: Transforming psychoeducational assessment by building a collaborative evaluation process between parents, classroom teachers, and psychologists

Principal Investigator: Dr. Donald Saklofske (Psychology Dept)
Co-Investigator: Sarah Babcock (PhD Candidate)
Co-Investigator: Dr. Colin King (Director of the Child Youth & Development Clinic)

Invitation to Participate
You are invited to participate in an additional component of a research study being conducted as part of a doctoral dissertation project because you previously completed or are enrolled to participate in the first part of this study.

Purpose of Letter
The purpose of this letter is to provide you with information that you require in order to make an informed decision in terms of your participation in this research.

Purpose of this Study
As explained in the initial letter of information, an important part of helping children who are experiencing academic difficulties is to ensure that there is accurate diagnosis and/or identification of learning and behavioural challenges. This is usually done in the form of a standardized assessment by a school or clinical psychologist. However, another important part of making sure that the child is supported is to gather information from other sources, like teachers and parents, who see and spend time the child every day. For this reason, researchers are developing Classroom and Home Screening Tools that will link up with the standardized assessment psychologists use.

In addition to collecting data on the home and classroom screener questionnaires, researchers would also like to better understand the impact that the COVID-19 pandemic has had on your child’s educational experience and learning over the past year & a half. We recognize this has been an especially unique (and often challenging) year academically for learners, and we are interested in exploring this in more detail by talking with parents of children unique, exceptional, and complex learning needs.

The goal of this study is to gain a better understanding of the impact that COVID-19 has had on unique and complex learners. By interviewing parents, valuable information can be collected by hearing about the experiences, challenges and successes, and insights. Your participation in this interview will help researchers to collect and summarize important information about family experiences, and ensure that parent (and children’s) voices are being heard and incorporated into the assessment and support processes.
**Inclusion Criteria**
You are eligible to participate in this study if you are 18 years of age (or older) AND the parent of an eligible child (aged 6-16) who is a client at the Child & Youth Development Clinic AND have participated in the first portion (online survey) of this study.

**Exclusion Criteria**
You are not eligible to participate in this study if you are not 18 years of age (or older) AND/OR you are not the parent of an eligible child (aged 6-16) who is a client at the Child & Youth Development Clinic AND/OR have not participated in the first portion (online survey) of this study.

**Study Procedures**
To participate, you would be invited to participate in an interview with the researcher. The interview will be conducted via video-conferencing platform (e.g., Zoom, Microsoft Teams). To participate via videoconferencing, you will need access to a computer, tablet, or phone device that can connect to the internet. A secure, individual link will be provided to you, and only you and the researcher will have access to this link. It is at your discretion if you choose to have your video on during the session; you may choose to do audio-only if you prefer. If you agree, the session will be recorded so that the details can be transcribed. Alternatively, the interview can be conducted via phone instead; if you choose to complete the interview by phone, you will be asked to share a phone number where you can be reached.

All participation is electronic or via phone, therefore no in-person visits are required. The date and time of the interview will be determined via email with the researcher and will be scheduled at a day/time that is most convenient for you. The time it takes to complete the interview will vary based on each participant, but we estimate that it will take approximately 20 minutes to go through the questions.

**Potential Risks and Harm**
There are no known major risks associated with participation in this study.

**Possible Benefits to Participation**
Your participation in this study will assist researchers in better understanding the familial experiences and dynamics of at-home learning, especially within the context of the COVID-19 pandemic.

**Compensation**
You will be entered into a draw for a $25 Tim Hortons Gift Card for your participation.

**Voluntary Participation**
Written consent is being collected; therefore, you will indicate your consent to the researcher via an online form (see Page 4 below for link). If based on the Letter of Information you decide not to participate, no information will be collected. Participation in this study is completely voluntary, and you do not waive any legal right by consenting to this study. While completing the interview, you may refuse to answer any of the
questions you do not wish to answer or withdraw from the study at any time. If you decide to withdraw from the study, you can do so by letting the researcher know you no longer wish to continue. If you choose to withdraw, your research data will not be used.

Confidentiality
All data collected will remain confidential and accessible only to members of the research team. Consent Form data (Name, Email, Consent to Participate, and Consent to be Recorded – Y/N) will be stored in a master list, separate from study data. Researchers will only report summary of findings and themes; no identifying information will be shared. If you consent to allow direct quotes from your interview to be shared, this will be done so anonymously, using a pseudonym (e.g., Participant #1). If you choose to withdraw, no further study data will be collected, and any interview data will not be included. Representatives of The University of Western Ontario Non-Medical Research Ethics Board require access to your study-related records to monitor conduct of the research. The researcher will keep all data in a secure & confidential location for 7 years.

Contacts for Further Information
If you have any questions or concerns about your rights as a research participant or the ethical conduct of this study, you may contact The Office of Human Research Ethics (519) 661-3036, email: ethics@uwo.ca. You may also choose to direct any questions about this research or to address any concerns about your participation to Dr. Donald Saklofske at The University of Western Ontario, in London Ontario by email at: don.saklofske@uwo.ca or by telephone at: 

Contact Information
**Consent Form**

Participants who agree to participate must provide Written Consent via **Microsoft Forms** (a part of the UWO secure OneDrive suite). Once you have completed this form, a member of the research team will contact you to schedule the virtual study session.

**Click here to complete your online Consent Form:**
https://forms.office.com/Pages/ResponsePage.aspx?id=TaaTrQ2tzU6y_eU84Vllvr73oSaBY2JHrgPF-2QxySFURUJHT1lQMFQ1SUQ2OUpTMU9YMEE2RjAySS4u
Debriefing Form

Project Title: Transforming psychoeducational assessment by building a collaborative evaluation process between parents, classroom teachers, and psychologists

Principal Investigator: [Redacted]
Co-Investigator: [Redacted]

Thank you for your participation in this study, we truly appreciate your time and the important information you provided!

Study Purpose and Rationale
The COVID-19 pandemic has brought a multitude of new challenges, stressors, and unknowns. One of the most affected areas in our society has been education. Most of the province in virtual (online) learning for most of the past 1.5 academic years, and children and families had to quickly adjust to a whole new way of learning and supporting learners. Researchers expect that there are additional and differing challenges for parents of children with complex, exceptional, and unique learning needs, especially where traditional supports may have been (and/or continue to be) unavailable. Therefore, in addition to collecting data on the home and classroom screener questionnaires, researchers would also like to better understand the impact that the COVID-19 pandemic has had on your child’s educational experience.

By interviewing parents, valuable information can be collected by hearing about the experiences, challenges and successes, and insights. Your participation in this interview will help researchers to collect and summarize important information about family experiences and ensure that parent (and children’s) voices are being heard and incorporated into the assessment and support processes.

Your Participation in this Study
As a reminder, your study data will remain anonymous in the sharing of study results, and therefore it will not include any information that could identify you. Any identifiable information (e.g., name, email) is documented and retained separately from your study data. If you have any questions or concerns about your rights as a research participant or the ethical conduct of this study, you may contact The Office of Human Research Ethics (519) 661-3036, email: ethics@uwo.ca.

Additional References
If you are interested in learning more about how to support your child’s learner and yourself and your family, here are some references you can consult:
- [https://bouncebackontario.ca/](https://bouncebackontario.ca/)

Please feel free to reach out to the research team if you need assistance in accessing these materials.
If you have any further questions or concerns about the research, please contact Dr. Donald Saklofske at The University of Western Ontario, in London Ontario by email at: don.saklofske@uwo.ca or by telephone at (519) 661-2111 ext. 82721.

Thank you,
Appendix L: CYDC Parents Interview Script

QUALITATIVE INTERVIEW SCRIPT

CONFIRM SESSION AVAILABILITY:

Hi [insert the name of the participant (parent) here], thank you for taking the time to meet with me today. Is this still a good time for us to chat?

*If they say “Yes”, continue with the conversation*
*If the participant says “No”, offer to arrange another session.

INTRODUCTION:
My name is Sarah, and I am a PhD student in the psychology department. I work with my supervisor there, as well as the Child and Youth Development Clinic, to study psychoeducational assessment procedures for children. This part of my dissertation study is focused on understanding family experiences with virtual learning during the COVID-19 pandemic.

VERIFY CONSENT:
Before beginning our conversation, I want to start by reviewing your consent information:

1. **Do you have any questions about the study, or your participation, based on what you read in the Letter of Information?**
   - *If the participant says “Yes”, answer questions*
   - *If they say “No”, continue to Q#2*

2. **Do you consent to participate in this study?**
   - *If they say “Yes”, continue to Q#3*
   - *If the participant says “No”, thank them for their time and end the call.*

3. I would like to record our conversation today so that it can be transcribed later (by me), so that I can focus on listening and talking with you, rather than taking notes. As a reminder: after transcription the recording will be deleted, and you can choose whether to have your video on during this call. If you prefer audio-only, that is fine for the purposes of our conversation today.

   **Do you consent to our session being recorded today?**
   - *If they say “Yes”, continue to interview.*
   - *If the participant says “No”, let them know that you will take some notes while they speak and that you are listening but might not always be able to look at them (if on video).*

OK, great, thanks for doing that. Let’s get started! My questions will be fairly open-ended, so feel free to give as much detail as you like. If at any point you need me to repeat the question or clarify, please let me know.
1. Can you tell me about your child’s (or children’s) classroom setting since the pandemic began in March 2020?
   - Prompt/Clarify: For example: have they done any in-person learning? Or all virtual (at-home)? If mixed, how long for each?

2. Compared to before the pandemic, what changes (if any) have you noticed in terms of your child’s learning or academic development?
   - Prompt/Clarify: For example: have they improved/progressed, have skills declined? Are some things better while other harder?

3. Compared to before the pandemic, what changes (if any) have you noticed in terms of your child’s mental health and well-being?
   - Prompt/Clarify: For example: have they been diagnosed with a first time or additional mental health concern (e.g., panic, anxiety). Has their mood, behaviour, or attitude changed in any noticeable ways?

4. Compared to before the pandemic, what challenges (if any) have you faced in terms of getting support or providing support for your child’s learning or academic development?
   - Prompt/Clarify: For example: were there resources (e.g., EA support) that you had before the pandemic that you no longer have access to?

5. Compared to before the pandemic, in what ways (if any) did your role change in terms of academic support provided to your child?
   - Prompt/Clarify: For example: Did you need to assist with homework where you previously did not?

6. Is there anything else you’d like to share with me today about your or your child’s experiences in learning or overall well-being during the pandemic?

Before we end our session today, do you have any questions for me?
   *If yes, answer any questions they may have, then sign-off*
   *If no, thank them for their time and sign-off*
Appendix M: Interview Transcripts

Interview Transcript #1
Participant ID: WSB00XXX
Note: Names and some details have been redacted, to protect participant anonymity.

Interviewer: Good morning, how are you today?

Participant: Not too bad. I'm at school now on our first day but I'm not in the classroom so I'm fine to talk today, yep.

Interviewer: So today is still a good time to chat then?

Participant: Yeah yeah, for sure.

Interviewer: So I'm going to start by introducing myself. My name is Sarah, and I am a PhD student in the psychology department. I work with my supervisor there, as well as the Child and Youth Development Clinic, to study psychoeducational assessment procedures for children. This part of my dissertation study is focused on understanding family experiences with virtual learning during the COVID-19 pandemic. So, before we get started, do you have any questions about in terms of letter information in terms of your participation? Do you consent to participate?

Participant: No. I'm good to continue.

Interviewer: OK, great. As we discussed previously, I would like to record our conversation today so that it can be transcribed later (by me), so that I can focus on listening and talking with you, rather than taking notes. As a reminder: after transcription the recording will be deleted, and you can choose whether to have your video on during this call. If you prefer audio-only, that is fine for the purposes of our conversation today. Do you consent to our session being recorded today?

Participant: yes.

Interviewer: OK. Let’s get started! My questions will be fairly open-ended, so feel free to give as much detail as you like. If at any point you need me to repeat the question or clarify, please let me know - but otherwise it's going to just be fairly informal. To start off, can you tell me about your child’s (or children’s) classroom setting since the pandemic began in March 2020?

Participant: So, is my child's name and so he goes to school where I work. It's a Montessori school and so we group grades together by their classes. So he's now going into grade 6 but he's been in the same classroom since he went into grade 4, so for five and six he's been in the same classroom with the same teachers which it has been great for him because they really figured out how to support him and assist him well. So he was in grade four in the March of when the pandemic started right and so previous that he
was in a lower elementary class grade 123. He was actually assessed at the child development clinic it was in grade two I think spring of grade two that he had his psychoed evaluation done so quite young yes so he had that done and then he went into year three, made adjustments and he did go on some meds, he went on Vyvanse which helped him out a lot.

**Interviewer:** OK.

**Participant:** Yeah, he went into yeah went into grade four and you know by the Fall I guess at the end of the fall he kind of things are going really well, he was becoming more independent and feeling more confident, then he went online in March of that year and that was a huge struggle. He just didn't feel it, it wasn't for any lack of the teachers trying but he just didn't feel engaged, and he didn't like participating at all you know, and he... it was hard for him to sit in front of the screen you know. He has trouble kind of speaking aloud, I mean if you're just talking to him casually, he'll talk your ear off but speaking another group right and it really unnerved him to be sitting in front of the screen and then he could see all of his classmates. Then in terms of his work that he did because he didn't have his teachers there supporting him in the way that they were able to before, I helped him out as much as I could to get things done and submitted. But it was it was very challenging, and he was not enthusiastic about school whereas before he kind of liked it. So then you know all through last year were kind of on and off and on and off, and you know he'd get back and then regain that kind of independence again because he's got all his personal computer that he uses with like Google reader and write, and his in-class supports, and as I said the teachers just know how to support him very well. And yeah, then we go offline and during the time that we were offline I focused a lot more on helping him, as he just needed it right. So you know I was very engaged in doing that as well as doing the online lessons that I had to do with my students so I think in terms of what he was able to accomplish academically he did OK yes, but socially he was just, it was not great.

**Interviewer:** OK, so he was mostly in online learning then, but always back in-person when he was able to be?

**Participant:** Yes, whenever he could be in-person he was. Whenever he could go back, he went back because it's just so much better for him, being able to interact in person with his teachers and his classmates. He has a really great class and he's, got you know other kids in his class who know him. Because they know each other so well like been in class together for well in this case three years but sometimes some cases he's been in the same class as other kids for like 6 years right, and they just they know him really well and so there's some kids who really are able to, not do the work for him but really help him just in his reading. I mean, he's very intelligent but it's just he's dyslexic, that decoding piece is not there for him.

**Interviewer:** OK. So you kind of touched on this already, compared to before the pandemic, what changes (if any) have you noticed in terms of Hudson’s learning or academic development?
Participant: I think he's on track but that being said, like because I'm a training Montessori teacher and I worked in all the levels that he's done I was able to fully support him in a way that parents of other children with learning differences would not have been able to do. There were many times I thought “Oh my God, like how are parents of these children who have these other needs”.

Interviewer: That actually leads to one of my next questions, compared to before the pandemic, what challenges (if any) have you faced in terms of getting support or providing support for Hudson's learning or academic development?

Participant: So yeah, it was it wasn't just peripheral support like checking over things, it was very very involved, almost like co-teaching. You know, and I know there are kids who can, and were able to go online and were completely independent - my daughter she's a bit older, but I mean she did everything on her own, right? It is just very different learning profiles right.

Interviewer: So, you already mentioned this a bit, but in terms of his mental health & well-being, what changes have you noticed?

Participant: Socially this piece is tough for him. Like he does struggle with anxiety, he's been seen at the CYDC for this and had sessions you know, just to address his anxiety and whatnot so you know it was up and down throughout the pandemic. I really had to make sure he got outside and he you know on his bike or going around the park going in spite of whatever it is that physical activity would help him a lot 'cause I'm sure you've heard this from other parents though I mean the amount of time you know spent if I left him to his own devices that he’d spend on his iPad, he’d be there all day long. I mean he's an active kid, he likes being active but you know this whole. Also for him, because he is he's extremely visual like his is visual spatial skills are very high and I find other kids that are in the class that have a similar kind of learning profile to him they are also very visual and those kids really seem to be drawn to like video games because they're so visual, it seems to me that the kids who have learning issues I don't know if there's more as well but a lot of them seem to be really drawn into their devices or whatnot which is not good but it seems to be what attracts them and then with all this extra time, it gives them a lot of visual stimulation.

Interviewer: So, is that a change from before the pandemic?

Participant: I mean he when he would start thinking about you know missing his friends you know and then going back to school. He would kind of waiver between you know really wanting to go back to school because he wanted to see his friends but then he'd be like but I don't wanna get sick. He has expressed anxiety about because my husband and I are both double vaccinated my daughters in high school she's double vaccinated and so he's kind of said “I'm the only one that's not vaccinated”, like you know, that makes him feel nervous. He's 11 now so he's just under, they opened it up to kids who are turning 12
this year right, and he says how frustrated he is he can’t get it, and I try and reassure him like “buddy I'm sure you'll be the next”.

**Interviewer:** OK, my last formal question is compared to before the pandemic, what challenges (if any) have you faced in terms of getting support or providing support for [child's name]’s learning or academic development?

**Participant:** Well, the difference with being online is it's hard at like so his teachers you know they had they have their lesson stuff where they go through the lesson and then what not and it happened discussion and then update the work was posted on like their Google Docs or whatever and then they would have they would hold office hours where kids could go and get help if they need. And I would say “[child's name], you can go to your teacher and go and ask for help” and he would say “but I don't know what to how to ask”. So that didn’t work for him. Fortunately, I could help him, but he wasn't comfortable going and getting that extra help that he absolutely needed, whereas when he was in the classroom it was very easy for him to reach out or more so for his teachers to see he needed support. The role of taking initiative to initiate that support kind of fell on him, but that wasn't really something he was comfortable with.

**Interviewer:** Right, that makes sense.

**Participant:** You know there are some things in class that the teachers would notice and make adjustments for, but that’s not possible online. And fortunately his math skills are quite strong and he understands math so we could always get his math done independently that is no problem but anything to do with language or you know that kind of thing, honestly there were some assignments I don't think he would have even known that he needed help or how to ask for help without my intervention. And because he has in his classroom there, he had three teachers it's quite a large class there's like, there was 36 of them you know so you've got like twelve grade fours, grade five, and grade sixes, but there are three teachers and it's quite a large space between the three teachers. So you know there is a quite a lot of support and they're always doing small group lessons. And even if learning as a large group, there are still two teachers teaching small group on either side of classroom or there’s another one who's there able to monitor right. So when they did the online classes it was all of the students at once, they still did small groups like they used to, like they would do like a morning meeting with everybody and then then it would break off throughout the day. But it’s hard to modify things individually when you're online.

**Interviewer:** OK, is there anything else you think would be helpful for me to know about [child’s name]’s experience overall, in learning or well-being during the pandemic just from the perspective of a parent who has a child with unique learning challenges. It is okay if the answer is no I just want to give you that opportunity.

**Participant:** I just I think it's so, I find it difficult 'cause it I mean it was just a difficult scenario and I do believe his teachers did the best they could, but yeah I mean he’s not the only one with learning issue in his class
Interviewer: Right.

Participant: And [ name redacted ] was being seen by one of the students at the CYDC for quite a while, her name was [ name redacted ], and they were able to meet in person, and he just adored her, and she was really great with him. He made really great progress with her and then we had to go online, and he started doing online sessions with her but because you know he had a really good rapport with her and it went well. Then when her time CYDC finished, and she thought it would be good for [ name redacted ] to continue working, but that she recognized it was going to be more difficult because he's going to have to meet this person virtually. So, we ended up waiting a bit and then he was able to meet [ name redacted ], the new person he worked with, and it was possible because they had some level of in-person connection.

Interviewer: OK, right.

Participant: The other piece I would say too, and this is more as like a teaching perspective because I do all the screening for kids when they come into grade one just to make sure their phonemic proficiency is on track. And then I work with kids who have some language learning differences and so that's who I was working with online and I had very small groups I had a couple kids I just I just met with one on one but then even in small groups or alone they get frustrated and angry, and I mean if you're a child who has some kind of learning difference probably got ADHD, it would be very difficult for you to sit and attend in front of the screen. There were kids who were able to make some good progress and be somewhat successful, but those were the kids who clearly had that parental support you know. And I know some parents just weren't able to provide that 'cause they were working from home as well, and they really couldn't but it was it was those kids whose parents were there to help them attend you know 'cause teacher you can't reach through the screen.

Interviewer: Yes, I think it sets up a situation where it's not the fault of a parent, it's just by nature of availability and experience, right? Like you are in a very different position to support [ name redacted ].

Participant: Yes, and it’s something that I think really needs to be considered when we’re going forward. I mean for example that I had one little girl she was in grade 2 both her parents are very busy lawyers and so but I worked with her one on one I think it was three or four times a week we would meet that it was she didn't make very much progress because really she was on her own you know and it's challenging.

Interviewer: Definitely.

Participant: There is just a different dynamic between a teacher or someone else that's external, versus you are their mom, so there's going to be a dynamic that they wouldn't engage in with say, their teacher. It's very challenging, that's the thing I found it quite
stressful. I thought like “Oh my God like, I don't wanna be his teacher”. It was really tough. But yeah, we made it through.

**Interviewer**: Well, I don't really have any other questions, but if you have any other questions for me before we wrap up today, let me know.

**Participant**: No, I don't think so. I appreciate that this kind of study is going on it's important.

**Interviewer**: Well, thank you. I do too. I appreciate you taking the time to talk with me today I will be sure to enter your name into the draw for a gift card.

**Participant**: Thank you.

**Interviewer**: That's it that's all for today, good luck with the first day of school!

END OF SESSION
Interview Transcript #2
Participant ID: WSB00XX

Note: Names and some details have been redacted, to protect participant anonymity.

Interviewer: Good morning, how are you doing?

Participant: Good thanks.

Interviewer: Is now still a good time to chat?

Participant: Uh huh, yep.

Interviewer: So I'm going to start by introducing myself. My name is Sarah, and I am a PhD student in the psychology department. I work with my supervisor there, as well as the Child and Youth Development Clinic, to study psychoeducational assessment procedures for children. This part of my dissertation study is focused on understanding family experiences with virtual learning during the COVID-19 pandemic. So, before we get started, do you have any questions about in terms of letter information in terms of your participation?

Participant: no I don't think so

Interviewer: OK and you still consent to participate in the study?

Participant: yes

Interviewer: I would like to record our conversation today so I could describe, nope, I mean transcribe it later so I can focus on listening and sort of chatting with you rather than taking notes are you OK with this call being recorded?

Participant: yes that's fine

Interviewer: Perfect alright, all the formal questions are done. So basically today my questions are going to be fairly open-ended so just feel free to give as much detail as you like if at any point you need to be to repeat a question or clarify what I mean, for sure just let me know. So starting off I guess I just kind of wanted to get a sense of your child's classroom setting since the pandemic began in March 2020 so have they - sorry I don't know your child's name because we keep it confidential but you can tell me if its easier to use it -

Participant: oh yeah, its Jack.

Interviewer: Ok, great. So has done in-person learning, or all virtual or mixed?

Participant: In-person as long as the schools were open, and then every time there was a closure whether it was a shorter or longer one he usually would come to work with me
and work on a Chromebook. So the initial lockdown he was in grade three so that the first year actually his teacher at the time was phenomenal and she allowed me to have his babysitter who was on EA and going through teachers college to have access to his Google Classroom that's great and she would log into his classroom and work with him he would talk through my cell phone and they would do his work together 'cause he couldn't work independently so that way she was able to help him get some assignments and things done. I also had to help outside of my work hours and a lot of time on weekends but generally just sat in a quiet room on his own at I work in a clinic so I couldn't really be helping him during the day.

**Participant:** Ok, that makes sense.

**Participant:** So that's kind of how grade three ended up. Grade 4 was in the classroom his teacher, he's a very nice man but really encourages a lot of independent learning from the kids and tends to work, well they have a gifted program at the school my son attends so he typically would be the teacher for that program so I think he'd be used to dealing with kids with different learning styles but I just felt the focus that needed like one on one work didn't happen as much in the classroom. They did a lot of work through Google Classroom regardless with that teacher even when they was in-school learning, so the kids already knew that Google Classroom platform really well and then basically when the schools closed he just shut down school and continued teaching kind of as he already did which right I guess was OK. It was a lot of “OK here's the lesson I'm going to introduce it go ahead and do it on your own” and then he just added in a lot of YouTube videos and links to videos for the kids to sort of do their own thing so he certainly would help if was struggling with math concepts or things like that he would make himself available to the kids by a Google meet but it just wasn't optimal for Jack’s learning profile because he just needs the one on one support, he needs someone scribe for him to kind of get the ideas out of his head so it wasn't great. We got through the year but you know I think he's like a lot of kids he's kind of a year behind.

**Interviewer:** So, compared to before the pandemic what changes have you noticed in terms Jack's learning and academic development I know you just said you kind of feel like he's behind have anything improved progressed have skills or declined, what is your perception of that?

**Participant:** I think the biggest impact for him is the social aspect; he already struggles a lot even to just have friends that he can maintain so he's an only child so the isolation had a big factor on him. Can you repeat that the whole question I kind of was focusing on only part of it?

**Interviewer:** alright that's OK totally fine so I guess this there's kind of a two part and you're sorta talking little bit about the mental health and well being part which is great and you can expand on that but sort of before compared to before the pandemic for your child like learning or for 's learning or academic development have there been noticeable changes like have you seen skills decline I've seen still improve like what your impression there
Participant: I think his technology skills have increased, 'cause he actually has designated technology for his IEP but I would say it's kind of status quo there hasn't been really a decline but there hasn't been increase really in this academic progress.

Interviewer: OK.

Participant: I had gotten a tutor for him and he did the Lexia program and did the empower program so I think those helps maintain his knowledge. He’s like a C level student, and that’s kind of where he stayed through the year. So yeah I don't think there was a decline but I made sure he had a lot of extra support outside of school so that that wouldn't happen right

Interviewer: like that was something that you had to focus on

Participant: yeah yeah then in terms of his mental health and well-being, he is an only child too he was on his own a lot, so that became more challenging for him because of this scenario. He spends a lot of time on technology where there were other people playing and he said you know it mom it makes me not feel so lonely when I’m playing a game on the computer or whatever so yeah I mean his mental health is not the best at times and it just seemed to keep it at a low point more than would normally be normal for him

Interviewer: OK so you'd say like overall his sort attitude was noticeably different?

Participant: Yes for sure yeah really grumpy and irritable and just moments of being very very lonely and that type thing so.

Interviewer: It's a challenging environment, even for adults.

Participant: Yeah the only upside I guess is because he came to work with me every day he did get to see adults that I work with and kind of became you know comfortable with them but yeah he didn't get to play with his peers and interact with people his age

Interviewer: so you mentioned a little bit about this about the support that you were that you sought out or able to get for but did you face any challenges in terms of getting that extra support for ’s learning compared to when he was in the classroom.

Participant: Well I work with the the LDA and I just arranged tutoring through them and I’ve been working with them sort of through ’s assessments and everything so no I just reached out and signed him up for their tutoring program so that worked well and then the empower program had been set up for their tutoring program so that worked well and then the empower program had been set up for him at the beginning of the year so that went right through until may so we had the extra reading support that he needed
Interviewer: And would you say without those additional supports he wouldn't have been able to maneuver as successfully through the year

Participant: oh for sure yeah

Interviewer: I think you've already touched on this a little bit already but how did your role change in terms of academic support for Jack and I know you brought him to work with you but can you tell me a little bit about how you had to change your role with him

Participant: to be honest I couldn't really change my role a lot because he does not do well with me helping him with school. There is, well there's a lot of conflict if I try to help him with homework and you know, he says “I'm stupid” and “I don't know what I'm talking about” and “you don't know my teacher knows” I would try to just encourage him but I wasn’t really able to academically. I would try to just encourage him to do his homework I would help him with assignments and formatting and finding resource is to complete some of his work online but I often would just encourage him to get the work done I would review it often once he’d gone to bed. And then sometimes I'd say “OK well here are some suggestions” but really I didn't play a big part other than just monitoring his assignments and making sure they were getting done and handed in on time. And if I was struggling i would just reach out to the teacher and say hey you need to give jack a little push because i can't convince him. And then as far as tutoring sessions and things it was just getting him signed up online and making sure he was staying focused during the sessions 'cause they all happened from the home usually in the evening

Interviewer: Ok, that makes sense.

Participant: I mean I'm lucky ’cause I've had access to I had access to the resources right from the time he started school in London I've just always kind of sought those out so I know there's a big waiting list for things now but I kind of already had a contact so it made things a little easier in terms of actually connecting with the right people

Interviewer: Those are really the only formal questions that I had I wanted to just ask you is there anything else you want to share with me today about yours or Jack’s experiences in his learning or just overall well-being in the pandemic?

Participant: Not really, no. Like he did his assessment at the CYDC for his educational assessment this happened luckily before the full lockdown, he finished it before Christmas last year but it was I don't know if you know her but she was the one who did his assessments and they were just super accommodating and he ended up having I think about seven sessions just to get through the assessment so I know that's not typical but yeah it was really, I was just very impressed and I was glad to get it done before closures. And it was a good experience for him and I think he was sort of dreading he didn't really understand the whole concept of what it was going to be but it was not a negative experience for him so that was a good outcome. And like everybody who works at that clinic is phenomenal so I just wanted to say like I think it's such a great program
that Dr. King has started there. I've sort of sought out a lot of the workshops and things that he's done and some of them have been sort of sponsored through the LDA but like we need more, we need to like clone Dr. King. All of you guys who work there like we just we need more awareness and it shocks me how few parents even know about the resources that are out there like you have to dig and try to find them. But I just want to say thank you for doing what you guys are doing because yeah it's it's so needed.

**Interviewer:** Right, well I am glad that you had a positive experience with the clinic.

**Participant:** And the other thing too is like I don't know with the learning resource teachers kind of working from home and stuff I don't know how many of them are really aware of the programs that are out there like I think a lot of them if they are experienced and they've been doing it for a long time no but I just don't know at the school level how many teachers and administrative people know that there are resources that they could be directing parents to. I'm not sure 'cause I certainly didn't find out through the school I had I knew from when I lived in [Redacted] we went to the equivalent of the LDA but the [Redacted] county version I can't remember what it was called but yeah and so they referred me on to the LDA when we moved to London but otherwise I wouldn't have known about it. So I think schools knowing would be good, but then you guys will be so overrun massive waitlist - but perhaps you know better communication and collaboration with schools to just connect people with resources

**Interviewer:** Well thank you, that’s everything I wanted to chat with about with you today. I appreciate your time today and for being so open in sharing your experiences.

**Participant:** OK, great, thanks!

**Interviewer:** Have a wonderful rest of your day.

**END OF SESSION**
Interview Transcript #3  
Participant ID: WSB00XXX  
*Note*: Names and some details have been redacted, to protect participant anonymity.

**Interviewer**: Good morning, how are you doing?  

**Participant**: Good thanks.  

**Interviewer**: Is now still a good time to chat?  

**Participant**: Yep.  

**Interviewer**: My name is Sarah, and I am a PhD student in the psychology department. I work with my supervisor there, as well as the Child and Youth Development Clinic, to study psychoeducational assessment procedures for children. This part of my dissertation study is focused on understanding family experiences with virtual learning during the COVID-19 pandemic.  

**Participant**: OK.  

**Interviewer**: Before beginning our conversation, I want to start by reviewing your consent information:  
**Do you have any questions about the study, or your participation, based on what you read in the Letter of Information?**  

**Participant**: No, no. I’m ready.  

**Interviewer**: Do you consent to participate in this study?  

**Participant**: Yep, I consented. Oh, yes, I consent.  

**Interviewer**: Ok, and as a reminder, I want to record our conversation today so that I can focus on listening and talking with you, rather than taking notes. **Do you consent to our session being recorded today?**  

**Participant**: Yes, that’s fine.  

**Interviewer**: OK, great, thanks for doing that. Let’s get started! My questions will be fairly open-ended, so feel free to give as much detail as you like. If at any point you need me to repeat the question or clarify, please let me know. **Can you tell me about your child’s (I don’t know their name but you can share it if you’d like – but their classroom setting since the pandemic began in March 2020?**  

**Participant**: So, I sent her to school as much as she could be at school. So when the pandemic first happened, we were in Cuba, and then we came home….yeah, I think she
went to school. I'm trying to think if they took them out of school that year, in 2019, or 2020.

Interviewer: Yes, it was March 2020 that schools originally closed

Participant: OK yeah, so she was at home and she did school one hour a day but basically anytime she could go back she would

Interviewer: OK. So mostly online but in-person when possible?

Participant: Uh huh, yeah.

Interviewer: Compared to before the pandemic, what changes (if any) have you noticed in terms of her learning or academic development?

Participant: I don't know last year was pretty much like, I mean at the beginning of the year they were in class right so right I think she was doing better she had a great teacher like the same teacher she had in grade one who really worked well with her, so I mean I think she did well for the beginning of grade 6. But then as soon as it as soon as the lockdown happened, I stayed home...my boss let me stay home as much as I could with her for the first one [lockdown] in January. So I was able to do all of her homework with her like we could do all the projects and assignments together and we had a lot like a lot of fun doing that. But then in the second lockdown, I had a different boss and then I wasn't able to stay home so she literally didn't go to school at all. She would log on online, but she would be watching TV or on her iPad or not participating anyway so yeah. And because she was at home with my mom who’s 80, I just was like well if you're not go, you're not gonna go, I just can't fight about it right like it is what it is at this point you can only do so much. I thought, we'll just figure it out later.

Interviewer: Right, so that was a struggle to get her to go. Okay, and related to that, compared to before the pandemic, what changes (if any) have you noticed in terms of your child’s mental health and well-being?

Participant: Oh for sure. So through her psychoeducational assessment with your clinic, you know, they determined that she was ADHD. And then during the pandemic I guess she developed anxiety, I guess that’s what I would call it. And has been diagnosed with OCD as well since the pandemic. Like, she did not display the behaviours of OCD that she has now before. It's been a real challenge for her, you know we've taken up some ABA therapy I think it's called but it's very difficult right so it definitely has taken a negative toll on her overall well-being.

Interviewer: OK, and then what about support for her. Compared to before the pandemic, what challenges (if any) have you faced in terms of getting support or providing support for your child’s learning or academic development?

Participant: In the school she has amazing resources. Like she has her computer, and EA, and they have a system in the classroom that the teacher wears microphone and it
like, it makes the sound louder so that she focus on it rather than the background noise. And she has all the resources, like there's a school social worker / psychologist I guess or whatever she is called, you know takes her out to talk and stuff. She has resources all the time when she’s in school, and all the help and like I try but I have a different learning style in her obviously that's fine yeah so, I mean I had to get pretty creative with my singing and dancing routine. She learns musically, so I'm creating raps about stuff. Like I look at know, teacherspayteachers or whatever it's called and I would be buying this stuff and trying to teach her as much as I can.

**Interviewer:** So, then compared to before the pandemic, would you say your role changed in terms of academic support provided her?

**Participant:** I had to I don't remember how many weeks the first the first lockdown was, but I didn't go to work. I was the manager of a store that was really, really slow in the pandemic because I'm a manager at Starbucks and it was like dead, so I mean I was pretty lucky that I was able to step away for the first month in January so I was able to be away. Yeah you know, help her with the work and answer questions, and figure out how send the document like into teams or whatever.

**Interviewer:** OK so you helped her with the administrative stuff?

**Participant:** Oh yes, all the time.

**Interviewer:** Ok – that’s all the formal, specific questions I had. But, before we wrap up, is there anything else you’d like to share with me today about your or your daughter’s experiences in learning or overall well-being during the pandemic?

**Participant:** You know, even for children who are, I don't know what the word is…who don't suffer from some of the challenges that my child might suffer from as far as learning goes… I think the pandemic was difficult. But for children like mine, and I know a lot of parents who are the same position, it was almost impossible. It is almost impossible to help properly, and I don't blame anyone for that. I just think, you know I asked for a lot of things I asked to keep her back because I just feel like emotionally and you know even intellectually or developmentally so like yeah, why do we not just keep them back even if they if their age group is not with them like if they’ve learnt nothing you can't continue learning. Like they’ve missed a year and a half of learning, like when I was young people got held back, but that’s not something they do anymore you know because they say that emotionally they need to be with your own age group. But we don’t know how this pandemic is going to affect them as they grow older. And then for the parents like I mean it was so frustrating not being able to help to do anything to help your children. So, the elementary school my daughter goes to only goes to grade 6, so my daughter is now in high school, but she’s only 11, well almost 12. But she's young and you know the anxiety level for the last three weeks before school started was like unbelievable. So you know I mean we handled it, and she's there and she's you know so far things seem to be OK yeah but like you know what would happen if she would have just went back where she was? Right? Like it would not have been worse you
know if she would have stayed at at her old school, instead of having to go to high school with kids who are 17.

**Interviewer**: Yes, I hear you. That makes sense why you’d think that and be unsure.

**Participant**: Yes, exactly. Just want to do what’s best but it’s hard to know.

**Interviewer**: Of course. Well, thank you, I appreciate so much you for taking the time to speak with me today and being so open to share your experiences.

**Participant**: Of course, yes, I am happy to be a part of it. Let me know if you need anything else, you can reach out.

**Interviewer**: Have a wonderful evening.

END OF SESSION
## Curriculum Vitae

<table>
<thead>
<tr>
<th>Name:</th>
<th>Sarah Elizabeth Babcock</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Post-secondary Education and Degrees:</strong></td>
<td></td>
</tr>
<tr>
<td>McMaster University</td>
<td>Hamilton, Ontario, Canada</td>
</tr>
<tr>
<td>2006-2010 Bachelor of Arts (Honours)</td>
<td></td>
</tr>
<tr>
<td>The University of Western Ontario</td>
<td>London, Ontario, Canada</td>
</tr>
<tr>
<td>2010-2012 Clinical Research Associate Certification</td>
<td></td>
</tr>
<tr>
<td>The University of Western Ontario</td>
<td>London, Ontario, Canada</td>
</tr>
<tr>
<td>2015-2017 MSc.</td>
<td></td>
</tr>
<tr>
<td>The University of Western Ontario</td>
<td>London, Ontario, Canada</td>
</tr>
<tr>
<td>2016 – 2019 University Teaching and Learning Certification</td>
<td></td>
</tr>
<tr>
<td>The University of Western Ontario</td>
<td>London, Ontario, Canada</td>
</tr>
<tr>
<td>2017 – 2021 Ph.D.</td>
<td></td>
</tr>
<tr>
<td><strong>Honours and Awards:</strong></td>
<td></td>
</tr>
<tr>
<td>Ontario Graduate Scholarship</td>
<td>2017-2018</td>
</tr>
<tr>
<td>Ontario Graduate Scholarship</td>
<td>2018-2019*Declined</td>
</tr>
<tr>
<td>Dr. Sampo Paunonen Award in Psychology (UWO)</td>
<td>2018</td>
</tr>
<tr>
<td>Social Science and Humanities Research Council (SSHRC) Doctoral Fellowship</td>
<td>2018-2021</td>
</tr>
<tr>
<td>Marilyn Pack McClelland in Psychology (UWO)</td>
<td>2019</td>
</tr>
<tr>
<td><strong>Related Work Experience:</strong></td>
<td></td>
</tr>
<tr>
<td>Teaching Assistant</td>
<td>The University of Western Ontario; Kings College at UWO</td>
</tr>
<tr>
<td>2015-2019; 2020-2021</td>
<td></td>
</tr>
</tbody>
</table>
Research Assistant
The University of Western Ontario
2016; 2017-2019

Mitacs Graduate Student Fellow
The University of Western Ontario
2018-2019

Sessional Instructor
The University of Western Ontario
2018-2021

Curriculum Development Assistant
The University of Western Ontario
2019-2020

E-learning Course Consultant
The University of Western Ontario
2019-2021

Research Analyst
The University of Western Ontario
2020-2021

Publications:


https://doi.org/10.1007/s10578-020-01003-7


