An Investigation of the Predictors of Emergent Literacy Skills in Junior Kindergarten

by

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A thesis submitted in conformity with the requirements for the degree of PhD (Doctor of Philosophy)
Speech-Language Pathology
University of Toronto

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Abstract
Purpose: The primary aim of this thesis was to examine two aspects of early child development, namely emergent literacy skills and social-behavioural development. An examination of these two aspects of development occurs at the within child-level factor and the within-family level factor. Specifically, we seek to examine the effects of the family literacy environment in predicting 4-year-old children’s emergent literacy skills at entry to Junior Kindergarten. Additionally we seek to examine the interrelationships between children’s social behaviours and phonological awareness skills across the academic year. The final aim was to examine the relationship between teacher report and direct observations of children’s social behaviours.

Method: One hundred and two children (52 boys, 50 girls) were recruited from 11 schools serving low-income neighbourhoods in a large metropolitan city and were assessed at the beginning and end of the Junior Kindergarten year. Family literacy questionnaires were collected at the beginning of the year. All children completed standardized assessments of their expressive vocabulary, non-verbal IQ, and phonological awareness skills. In addition, teachers completed behavioral ratings for all children.

Results: The results of hierarchical multiple regression analyses revealed that direct teaching of letters/sounds in the home contributed 8% of the variance in children’s alphabet knowledge. The
results also revealed that being excluded by peers at entry to Junior Kindergarten contributed up to 3% of the variance in negatively predicting phonological awareness outcomes at the end of the year. Further, the results revealed that poorer phonological awareness skills at the beginning of the year contributed up to 5% of the variance in predicting children’s preference for solitary behaviours at the end of the year. Finally, significant relationships were found between teacher report and direct observations for certain classroom behaviours.

Conclusions: The results of this study suggest that the family literacy environment can play a positive role in children’s acquisition of emergent literacy skills prior to entry into formal schooling. The results also suggest that exclusion by peers may play a negative role in children’s ease of academic skill attainment. Conversely, the results suggest that the academic skill level that children enter into formal schooling with may play a role in their social behavioural competency in a classroom setting.
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1 Introduction

This thesis examines two important areas of early child development and their interrelationships. Specifically, this thesis considers the interrelationships between children’s social behavioural competence and emergent literacy skills in a sample of typically developing 4-year-old Junior Kindergarteners from low-income neighbourhoods. The introduction is divided into four sections. The first section provides a developmental model of emergent literacy skills (e.g., alphabet knowledge, phonological awareness, oral language and print concepts) with an emphasis on children’s phonological awareness skills because of their critical role in predicting future reading. Phonological awareness skills are defined as the child’s ability to analyze and synthesize the sound structure of words in oral and written language. Also, within this section, the contribution of the family literacy environment in facilitating the development of children’s emergent literacy skills is discussed.

The second section provides a brief overview of children’s social-behavioural development with a specific focus on prosocial behaviours, externalizing behaviours (e.g., aggression and hyperactivity), and internalizing behaviours (e.g., anxiety/fearfulness, asociality). Critical factors that contribute to children’s social-behavioural development such as, genetics, environmental factors (e.g., SES), vocabulary, and cognition, are discussed.

The third section describes the influence of children’s social-behavioural skills on their acquisition of phonological awareness skills. A current theoretical perspective that accounts for the relationship between children’s social behaviours and emergent literacy skills is provided. Additionally, this section describes the inverse relationship, that is, whether variation in children’s phonological awareness skills at the beginning of the academic year contribute to their
social-behavioural competencies at the end of the academic year. The rationale for examining the influence of phonological awareness skills on social-behavioural competencies is presented. The fourth and final section addresses the relationships between teacher report and direct observations to collect information on children’s social behaviours in a classroom setting.

1.1 A Developmental Model of Emergent Literacy

This section provides a holistic model of emergent literacy and describes the important role of critical skills necessary for children to move from emergent literacy to formal reading.

Whitehurst and Lonigan (1998) developed a conceptual model of emergent literacy, which posits that the transition from emergent literacy to conventional literacy in childhood is, contingent upon two processes, namely “inside-out” and “outside-in” skills. Inside-out skills consist of abilities that children acquire that are not context dependent. These skills include phonological awareness, alphabet knowledge, and phoneme-grapheme correspondence. These skills require children to have knowledge of the “rules” to be able to translate print to auditory and oral production effectively and decode text (Whitehurst & Lonigan, 1998). In contrast, the ability to extract meaning from text requires what Whitehurst and Lonigan (1998) define as outside-in skills. Outside-in skills are context dependent and require children to use knowledge outside the printed letters in text in order to understand the message or meaning of print. Such knowledge includes children’s vocabulary, oral language, narrative comprehension, conceptual world knowledge, and conventions of print. Both inside-out and outside-in skills are necessary for children’s success with reading as difficulties with inside-out skills would cause challenges with decoding of print and difficulties with outside-in skills would cause problems in being able to interpret the meaning or knowledge being conveyed in print.
Figure 1

Whitehurst & Lonigan Model of Emergent Literacy (1998)
1.1.1 The Role of the Family Literacy Environment

An important focus in children’s early years and upon entry into formal schooling is the acquisition of emergent literacy skills. The development of emergent literacy is of critical importance during this time as these skills lay the foundation for future success in many academic areas that are contingent upon good reading skills. Emergent literacy, as just described, encompasses inside-out skills such as alphabet knowledge and phonological awareness (Phillips, Clancy-Menchetti, & Lonigan, 2008; Whitehurst & Lonigan, 1998). Prior to the development of conventional literacy, children learn the names of alphabet letters and their corresponding sounds (i.e., alphabet knowledge) (Lonigan, Burgess, & Anthony, 2000). In addition, children may acquire basic information of the sound structure of the English language, learning how to identify, name, and manipulate sounds in written and oral language (i.e., phonological awareness) (Lonigan et al., 1999). Emergent literacy skills also include outside-in skills such as print knowledge and oral language. Prior to school entry, joint storybook reading provides a context in which parents (as well as educators in child care centres) help children learn print concepts (i.e., letters and words in text, understanding that print carries meaning) and book conventions (e.g., understanding that print is read from left to right and top to bottom) (Zucker, Justice, & Piasta, 2009). The development of children’s oral language (i.e., outside-in skills), is the vehicle through which children negotiate meaning, discuss concepts, and talk about the components of emergent literacy (Whitehurst & Lonigan, 1998). Oral language also provides children practice with the sound structure of words.

The development of emergent literacy skills in early childhood is best conceptualized as a continuum that occurs throughout the preschool years and, thus, the family literacy environment and activities in which parents engage their children can play a critical role in the acquisition of
these skills prior to school entry (Burgess, Hecht, & Lonigan, 2002; Evans, Shaw, & Bell, 2000a; Sénéchal & LeFevre, 2002). For example, parents often expose their preschool children to emergent literacy activities through shared storybook reading, books that highlight print (e.g., alphabet books), and conversations about signs and print in the environment. There are two routes to emergent literacy acquisition in the family literacy environment, direct teaching and indirect facilitation (Sénéchal & LeFevre, 2002). Direct teaching involves actively engaging children in activities focused on specific skills, such as when parents teach children the specific letter names and sounds in their names or in alphabet books or when parents teach children to print the letters in their names. Indirect facilitation occurs through activities, such as shared storybook reading, when children are passively exposed to print concepts (e.g., through watching parents handle books and seeing text on the page) and new vocabulary words embedded in the text (e.g., through listening to parents reading the story).

Studies have shown that the literacy learning context in the home can have a differential influence on which emergent literacy skills children acquire (i.e., inside-out versus outside-in). For example, Senechal and colleagues (1998; 2002) and Hindman and Morrison (2012) found that engagement in shared storybook reading in middle-to upper-income families significantly predicted children’s vocabulary and receptive language skills, which are outside-in skills. Shared storybook reading in these studies contributed between 2-9% of the variance. Of interest, shared storybook reading was only found to contribute 2% of the variance towards children’s receptive language skills in the Senechal, LeFevre, Thomas, and Daley (1998) study. The small predictive relationship was likely the result of the inclusion of children’s phonological awareness skills in the composite measure of receptive language, consequently combining both inside-out and outside-in skills into one outcome. Previous studies have reported that shared storybook reading is not a significant predictor of phonological awareness skills (i.e., inside-out skill) in early
Thus, the predictive relationship between shared storybook reading and receptive language skills may have been stronger if phonological awareness skills had not been included in the composite measure of receptive language. Further, based on the Whitehurst & Lonigan (1998) model, it may be theoretically important to look at the development of both outside-in and inside-out skills separately in early childhood.

This limitation was recognized in a follow-up longitudinal study conducted by Senechal and LeFevre (2002) using the same data with additional child participants to increase the sample size. The same measures were utilized as in Senechal et al., (1998) however the outcome variables were redefined such that receptive language included only receptive vocabulary and listening comprehension. The results revealed similar findings to the earlier published study (Senechal et al., 1998), that is, shared storybook reading significantly predicted 9% of the variance of Kindergarten children’s Grade 1 receptive language. The predictive contribution of shared storybook reading towards children’s receptive language increased from 2% (i.e., in the first study) to 9% once phonological awareness skills were removed from the composite score. This suggests that, in line with previous research, storybook reading is not likely a contributing factor towards children’s acquisition of phonological awareness skills. Further, this supports the Whitehurst & Lonigan (1998) model by suggesting that inside-out and outside-in skills are distinct skills that may be acquired through different forms of learning in early childhood.

In comparison, several studies have reported that direct teaching of letter names and sounds and writing letters significantly predicted children’s performance in measures of letter identification, letter/sound knowledge, and phonological awareness skills (i.e., inside-out skills) but did not impact on children’s vocabulary or language development (Aram & Levin, 2002; Aram, 2010;
Evans, Shaw, & Bell, 2000; Hindman & Morrison, 2012; Kirby & Hogan, 2008; Sénéchal et al., 1998; Sénéchal & LeFevre, 2002). For example, direct parental teaching of letter activities has been found to contribute between 7-24% of the variance in predicting children’s letter and sound knowledge in middle-to upper-income families (Evans, Shaw, & Bell, 2000; Hindman & Morrison, 2012; Kirby & Hogan, 2008; Sénéchal et al., 1998; Sénéchal & LeFevre, 2002) and 5% of the variance in children’s phonological awareness skills (Evans, Shaw, & Bell, 2000). Additionally, Aram and colleagues (2002; 2010) found that parent mediated writing activities (i.e., direct teaching) accounted for 26% of the variance in children’s phonological awareness skills and 41% of the variance in children’s word writing/recognition in a sample of 41 kindergarten children and their mothers sampled from low-income Israeli families.

Of interest, the significant relationship found between parent reported letter activities and children’s phonological awareness in the Evans et al. (2000) study was not found in the Sénéchal and colleagues (1998; 2002) studies. Thus, an important issue for future investigation is to examine whether parent reported letter activities impact on children’s phonological awareness skills as strong phonological awareness skills, in turn, predict success with future decoding skills.

The family literacy environment has also been examined in predicting reading status in early childhood. For example, Kirby and Hogan (2008) examined the family literacy environments of Grade 1 children in an attempt to uncover whether specific family environmental characteristics predicted children’s membership in groups of good and poor readers. The sample consisted of 49 children (i.e., 30 good readers and 19 poor readers), and their parents. Parents completed a questionnaire addressing family literacy practices (e.g., shared storybook reading, and teaching rhyming, letters, sounds, and words), in addition to a question about parental education.
The results revealed that there were significant differences between good and poor readers on several family literacy characteristics such as the frequency of parent rated shared storybook reading, rhyming, teaching letters, teaching letter sounds, teaching word reading, total reported number of books in the home, and maternal education. Results of the discriminant analysis further revealed that teaching children printed letters and reading new words were the strongest predictors of group membership (i.e., 84%) followed by maternal education (i.e., 77%). Both findings have a large effect size. These results suggest that direct teaching of literacy related skills in the home environment can foster children’s ability to be good readers in Grade 1. However, an important limitation of this study relates to the small sample size and the fact that group membership between the good and poor readers was unevenly distributed. Fewer parents of the poor readers accepted the invitation to participate in the study and thus, it may be possible that this sample is not representative. Additionally, the poor readers may have shown less interest in literacy activities in the home, influencing their parents’ success in engaging them in home literacy activities.

Taken together, results of these studies suggest that direct teaching of letters, sounds, and writing help to foster the development of inside-out skills such as letter knowledge, phonological awareness and decoding whereas in contrast, shared storybook reading helps to facilitate the development of outside-in skills such as children’s oral language and vocabulary development. Overall, a positive relationship between the family literacy environment and the development of children’s emergent literacy skills has been supported. The positive relationship may be explained by the socioeconomic status of families, with higher SES parents engaging more consistently in practices related to literacy. Alternatively, the positive influence of the family literacy environment on children’s emergent literacy skills may be motivated by children who are interested in literacy activities and have parents who actively engage their children in these
types of activities as a result of this interest. Most of the studies highlighted recruited children from middle- to upper-class families, with the exception of the Aram and Levin (2002) study which sampled from a low SES neighbourhood and the Kirby and Hogan (2008) study which sampled children in the range of low-to upper-socioeconomic class. Kirby and Hogan (2008) found that maternal education (related to SES) accounted for 77% of the variance in predicting good and poor readers. Thus, a question for future research is whether families and children from low SES neighbourhoods would produce similar patterns of results.

1.1.2 The Role of Phonological Awareness

The Whitehurst & Lonigan (1998) model previously outlined describes phonological awareness as an inside-out skill, which is not context dependent and requires that children understand letter-sound correspondence to be able to translate print effectively. While children’s ability to move from emergent literacy into conventional reading requires the successful development of both inside-out and outside-in skills, inside-out skills such as phonological awareness, are of great importance when children are first learning to decode. These skills allow children to decipher letter-strings into meaningful units of sounds and finally into words. Paths of a structural equation model using a sample of 230 children supported the importance of inside-out skills and revealed a stronger relationship between early inside-out skills and future reading as compared to outside-in skills and reading in children 4- to 7-years of age (Whitehurst & Lonigan, 1998). Thus, in the current study the major focus was on children’s acquisition of one specific inside-out skill (i.e., phonological awareness) due to its relationship with decoding.

1.1.1 Developmental Trajectory of Phonological Awareness

Phonological awareness has been found to be a precursory skill in the development of children’s ability to decode text, which is necessary for future success with reading (Ehri et al., 2001;
Lonigan et al., 1999; Savage et al., 2005; Whitehurst & Lonigan, 1998). As a result, the developmental trajectory of phonological awareness skills in early childhood has been an area of interest in recent research and is presented in the following paragraphs. Phonological awareness skills are considered to develop in a hierarchy whereby the earlier developed phonological awareness skills, such as the analysis of larger units of sounds (e.g., syllables), are thought to develop first followed by the more sophisticated analysis of smaller units of sounds (e.g., phonemes) (Anthony, Lonigan, Driscoll, Phillips, & Burgess, 2003; Lonigan, Burgess, Anthony, & Barker, 1998). To test this model, Lonigan, Burgess, Anthony and Baker (1998) assessed the development and stability of four phonological awareness tasks (i.e., rhyme oddity detection, alliteration oddity detection, blending and elision) in a sample of 238 children from middle- to upper-income families and 118 children from lower-income families ranging in age from 2-to 5-years old.

Preliminary analyses were conducted to test whether significant group differences would emerge based on gender, SES and age. No gender differences were found. Significant differences were found for SES with children in the middle- to upper-income families performing slightly better on all tasks of phonological awareness. Significant age differences were also found where 2-year-olds had the lowest performance on all measures. Trend analysis revealed that 2-and 3-year-olds performed below chance levels on phonological tasks that required analysis of smaller units of sounds. In comparison, a large increase in phonological awareness skills was found for 4- and 5-year-olds.

These results would support a hierarchical model in the acquisition of phonological awareness skills in early childhood. Fewer 2-and 3-year-olds were able to perform tasks that required manipulation of the smallest units of sound (i.e., phonemes). In comparison, a larger number of
2-and 3-year-olds were able to perform tasks, which required manipulating larger units of sound (i.e., words and syllables). This study was the first to examine phonological awareness skills in 2-year-old children and the results demonstrated that while performance was relatively low, children begin to develop the ability to process and manipulate sounds from a very early age. Further, the biggest acceleration of growth in the rhyme oddity, blending, and elision tasks occurred between 3- and 5-years of age suggesting that this time period may be of critical importance in the development of phonological awareness skills. These results attest to the appropriateness of examining phonological awareness skills in a sample of 4-year-old children. Of interest, children from lower SES performed worse on all measures of phonological awareness suggesting that lower SES may be a potential risk factor in children’s acquisition of phonological awareness skills.

In a more recent study, Anthony, Lonigan, Driscoll, Phillips, and Burgess (2003) also investigated the sequential development of phonological awareness skills in 947 children ages 2-to 5. It was hypothesized that children would master phonological awareness skills that were least complex (i.e., words and syllables) at younger ages (e.g., 2- to 3-years of age) followed by mastery of more complex skills such as onset-rime and elision around the age of 4- to 5. Hierarchical loglinear analyses were used to enable examination of the order of acquisition of phonological awareness skills across levels of linguistic complexity. Two models were tested which included a discrete model (i.e., mastery of one skill must be completed before children can master the next skill) and a quasi-parallel model (i.e., multiple skills can be learnt simultaneously).

The results of the model suggested that children learn word-level phonological skills prior to syllable-level phonological skills and onset-rime phonological skills prior to phoneme level
phonological skills. However, closer examination of the model also revealed that mastery of lower level phonological skills was not necessary for achieving partial success with higher level phonological awareness skills. Thus, in this study, support for a quasi-parallel model of learning phonological awareness was found. Taken together, the results of both the Lonigan et al., (1998) and the Anthony et al., (2003) studies have shown that (a) simple level phonological awareness skills may begin to develop in children as early as 2-years of age and (b) that while phonological skills typically occur in sequential development from lower to higher levels of skill, mastery of lower level phonological skills does not need to be obtained prior to the development of higher, more sophisticated skills.

This would suggest that it is important to examine multiple phonological awareness skills (e.g., word level, syllable level, onset-rime) in 4-year-olds as these children may have varying degrees of knowledge across different tasks. In the current study, multiple phonological awareness skills were targeted as they are considered to be a foundational skill necessary for future success with decoding (Ehri et al., 2001; C. J. Lonigan et al., 2000; R. Savage, Carless, & Ferraro, 2007; Savage et al., 2005; Stanovich, 1988). Furthermore, previous studies have found phonological awareness to be positively correlated with and a unique predictor of later success with reading abilities (particularly decoding, word reading, and spelling) (e.g., Ehri et al., 2001; Lonigan et al., 1999; Savage et al., 2005) in addition to math and science outcomes (Savage et al., 2007).

While the Whitehurst & Lonigan (1998) emergent literacy model suggests that inside-out skills such as phonological awareness are precursory skills that affect children’s decoding and future reading, Castles and Coltheart (2004) conducted a meta-analysis to examine whether phonological awareness skills per se precede and directly impact upon the process of reading. Following a review of longitudinal studies, Castles and Coltheart concluded that if phonological
awareness does play a causal role in children’s future success with reading, as suggested in the model, the nature of the phonological awareness skills most likely implicated is the children’s ability to perceive and manipulate phonemes. This would include tasks such as segmentation of initial and final sounds in words, blending, and elision. In contrast, syllabic and rhyme tasks were not found to be consistently related to children’s future reading outcomes and the authors concluded that these skills do not necessarily proceed or impact upon future reading ability.

1.1.2 Phonological Awareness, Decoding, and Reading

Castles and Coltheart (2004) suggested that firm evidence has not yet been found for the causal role of phonological awareness skills in children’s development of reading. This is the result of the challenge in assessing children before they develop knowledge of letters, sounds, or the ability to read words. As an alternative, the authors suggested that future studies investigating this relationship should be conducted (a) longitudinally, and (b) should explicitly control for prior letter-sound correspondence knowledge. Two studies that met these criteria are reviewed below for evidence in support of Whitehurst & Lonigan’s (1998) model of emergent literacy and the predictive relationship between phonological awareness and children’s reading ability.

In the first study, Lonigan, Burgess, and Anthony (2000) tested a latent-variable model of emergent literacy to literacy skills longitudinally in 97 children from Kindergarten to Grade 1. At time 1, children were tested on a measure of oral language, four tests of phonological awareness, two tests of letter knowledge, and two tests of print concepts. Time 2 testing consisted of the same measures in addition to two text decoding tasks. Models using autoregressive paths were conducted to examine within factor predictive paths. The results of these models revealed that Time 2 phonological awareness was perfectly predicted by Time 1 phonological awareness (i.e., 100% of the variance) suggesting that while children experience growth in their phonological
awareness skills across the year, children’s early knowledge of phonological awareness skills are critical in their future success with phonological awareness.

Results of the structural equation model of longitudinal relations revealed that Time 1 phonological awareness and Time 1 letter knowledge were the only significant predictors of children’s reading (i.e., 54% of the variance of children’s reading was predicted by these factors). In contrast, children’s print knowledge and oral language (i.e., grammatical closure) were not significant predictors of reading once phonological awareness and letter knowledge were included in the model. These results suggest that the two most influential early predictors of children’s future reading skills relate to phonological awareness and letter knowledge (i.e., inside-out skills).

In another longitudinal study, Savage, Carless, & Ferraro (2007) examined the predictive relationship between phonological awareness and future reading ability in a sample of 382 children from 5-to 11-years of age. In addition, other academic outcomes were measured, including children’s English, math, and science skills. Children’s letter knowledge, phonological awareness, and word reading were assessed in their first year of school. At age 11, children were assessed using Key Stage 2 national (i.e., England and Wales) curriculum standardized testing and teacher assessments (i.e., reading comprehension, English, mathematics, and science outcomes).

Seven step hierarchical regression analyses were conducted for each of the Key Stage 2 outcomes controlling first for gender, special education, SES, school, letter knowledge, word reading and phonological awareness skills. The results revealed that phonological awareness skills at age 5 significantly predicted age 11 word reading skill (i.e., 6% of the variance), English scores (i.e., 2% of the variance), math scores (i.e., 1% of the variance), and science scores (1% of
the variance). While the results of the multiple regressions reveal modest to small relationships, this study provides theoretical support for the argument that phonological awareness skills precede and impact upon the process of reading from early to middle childhood.

However, a limitation of this study is noteworthy. No control of children’s cognitive ability was entered into the model, which may in part account for some of the variance in predicting children’s reading, English, math, and science outcomes. Further, the relationship found between early phonological awareness skills and later English, math, and science outcomes likely relates to children’s reading ability, which is required in order to perform well on these academic tests. Despite these limitations, the results suggest that variation in children’s phonological awareness skills may provide explanatory insights into children’s academic achievement in a number of subject domains that are dependent on good reading skills. Because children in Junior Kindergarten are starting to acquire phonological awareness skills and these are the foundational skills for formal reading acquisition, the current study focuses mainly on phonological awareness ability as an early indicator of children’s literacy achievement.

1.1.3 Phonological Awareness and Expressive Vocabulary

A focus in the current thesis was also to examine the potential role of outside-in skills (i.e., expressive vocabulary) that are likely to contribute to the development of phonological awareness skills (inside-out skills). Therefore the next few paragraphs outline the relationship between expressive vocabulary and phonological awareness skills in early childhood. It has been proposed that when children’s expressive vocabulary increases, their exposure to more complex phonological information will also increase (Lee, 2011; Stadler, Watson, & Skahan, 2007). That is, the acquisition of complex words that are comprised of more sound segments, syllables, and phonemes provides more opportunities to gain higher-level skills in lexical representation.
moving from a basic holistic representation of words to a more detailed representation of words. However, a majority of studies that examined the impact of vocabulary focused on the role of receptive vocabulary or a combined measure of expressive and receptive vocabulary to represent oral language.

Despite the limited studies to date that have focused exclusively on the relationship between expressive vocabulary and phonological awareness skills in early childhood, two recent studies have found support for this relationship. For example, Stadler, Watson, and Skahan (2007) found that children’s expressive vocabulary was significantly related to one phonological awareness skill (i.e., rhyming) with correlations ranging from $r = .410 - .537$. However, the small sample size (i.e., 33 children) limited the statistical power to conduct more sophisticated analyses such as regression analysis. As a result of the correlational design, no causal inferences can be drawn about the nature or direction of this relationship. Further, in this study only one phonological awareness skill was measured. Thus, it is unclear whether other phonological awareness skills such as blending, segmentation, or elision are related to children’s expressive vocabulary.

Despite the outlined limitations, these results provide preliminary support for the existence of a relationship between expressive vocabulary and phonological awareness skills in early childhood and would suggest that controlling for children’s expressive vocabulary in predicting phonological awareness outcomes may be warranted.

In a more well-designed study, Lee (2011) examined the longitudinal relationship between expressive vocabulary and outcomes in phonological awareness skills, decoding, reading, and language in a sample of 1,071 children 24-months to 11-years of age. Children in this study were placed into two groups based on vocabulary size (large > 460 words versus small < 230 words). MANCOVA analyses were conducted to test the hypothesis that the size of children’s expressive
vocabulary at age 2 would influence future language and literacy outcomes after controlling for SES, ethnicity, gender, and birth order. The results revealed a significant multivariate main effect for total vocabulary size $\eta^2 = .23$, which is a moderate effect size. Further, results of the univariate tests revealed that children with larger expressive vocabularies outperformed children with smaller expressive vocabularies on all language and literacy measures at 54 months, first, third, and fifth grades.

Taken together, results of these studies reveal that a significant relationship exists between children’s expressive vocabulary (outside-in skills), phonological awareness skills (inside-out skills), and future literacy outcomes. Thus, in the current study it was important to add to this literature by controlling for expressive vocabulary in examining the relationship between social behaviour and three specific phonological awareness skills (i.e., blending, sound matching, and elision).

### 1.2 The Development of Children’s Social-Behavioural Competencies

An objective of the current thesis was to examine the interrelationships between social-behaviours and phonological awareness outcomes in Junior Kindergarten. Social-behavioural development refers to children’s acquisition of behavioural competence, emotional competence, and social-cognitive skills. Social-behavioural skills are defined as children’s actions, intentions, and reactions in social situations with others (Bongers, Koot, van der Ende, & Verhulst, 2003; Cook, Greenberg, & Kusche, 1994; Ladd, Herald-Brown, & Andrews, 2009). For example, social behaviours comprise observable physical actions that children use to express themselves during social interactions. Social-behavioural competence is demonstrated when children use appropriate and positive behaviours during interactions with others such as with teachers and peers. Social-behavioural competence has been argued to be one of the best predictors of
children’s future psychosocial adjustment (Ladd, 2005), which is defined as one’s mental and emotional adjustment within social situations (Schoon, Parsons, Rush, & Law, 2010). Children who are unable to interact with others using appropriate behaviours in social situations are at risk for future difficulties with their psychosocial adjustment. Further, persistent externalizing and internalizing behaviours that continue past the normative developmental trajectory can also be indicative of future mental health problems (Liu, Chen, & Lewis, 2011; Nagin & Tremblay, 2001; Sterba, Prinstein, & Cox, 2007; Séguin, Parent, Tremblay, & Zelazo, 2009).

The second factor that is implicated in children’s social-behavioural development is emotional competency, which refers to children’s ability to express the appropriate emotions (e.g., happiness, excitement, sadness) in social situations. Children exhibiting emotional competence possess the ability to inhibit or regulate inappropriate emotions such as extreme anger, impulsivity, or hostility when interacting with others (Andreassen & West, 2007). The ability to regulate emotions is highly related to social-cognition (Andreassen & West, 2007), which is a third aspect of children’s social-behavioural development. Social cognition encompasses children’s ability to encode others’ behaviours and emotions, attribute emotional states and actions of others, problem solve in social situations, and judge the appropriateness of certain behaviours in social situations (Coy, Speltz, DeKlyen, & Jones, 2001). In the current study, the aim was to assess social-behavioural competence (i.e., prosocial behaviours), externalizing behaviours (i.e., aggression and hyperactivity), internalizing behaviours (i.e., asociality and anxious/fearfulness), and finally rejection by others (i.e., exclusion by peers). These six behaviours were used to represent children’s social-behavioural development in a classroom setting. The normative developmental trajectory of these behaviours is presented below.
Figure 2

Social Behaviours Examined

- Social Behaviours
  - Risks
    - Externalizing
      - Aggression
      - Hyperactivity
    - Internalizing
    - Peer Rejection
  - Competence
    - Prosocial
    - Asocial
    - Anxiety

1.2.1 Social-Behavioural Competence and Prosocial Behaviours

An early indicator of children’s social-behavioural competence relates to the ability to engage in prosocial behaviours during interaction with others. Prosocial behaviours are defined as behaviours that are empathetic, self-sacrificing, and that aim to help another person (Baillargeon et al., 2011; Knafo & Plomin, 2006; Ladd & Profilet, 1996). Examples of prosocial behaviours can include sharing, helping, kindness (e.g., statements of praise towards others), and cooperation with others. The normative developmental trajectory of prosocial behaviours in early childhood is not well understood and only a few studies to date have examined this trajectory longitudinally from infancy to early childhood (Baillargeon et al., 2011; Knafo & Plomin, 2006).

A developmental framework put forth by Hay (1994) has suggested that prosocial behaviours develop in the first few months of life, when infants begin to show interest in other’s feelings and actions, and become sensitive to the internal states of others. As children enter into toddlerhood, around the second and third years of life, their engagement in the use of prosocial behaviours becomes more sophisticated as they start to understand social norms and conventions (Hay, Payne, & Chadwick, 2004). At approximately 17 months, children begin to develop theory of mind (i.e., the ability to attribute the mental states of others and recognize that others have feelings and desires that may differ from one’s own) (Jenkins & Astington, 2000). As children start to develop theory of mind and build upon their social-cognitive understanding, their engagement in prosocial behaviours is likely to increase. However, Hay’s conceptual model (1994) suggests that a decrease in prosocial behaviours occurs around the fourth and fifth year when children enter into preschool. This is thought to occur due to an increase in self-interest, the inability to decipher whether the distress of others should be ignored, and the development of
an understanding that it may not always be considered appropriate to respond prosocially in every situation (Hay et al., 2004).

Some support for Hay’s conceptual framework of the developmental trajectory of prosocial behaviours in early childhood has recently been found. For example, Baillargeon, Morisset, Keenan, Normand, Jeyaganth, Boivin, and Tremblay (2011) examined the continuity and discontinuity of prosocial behaviours longitudinally in a population sample of 1,924 infants from Quebec, Canada. Infants were assessed at 17, 29, and 41 months using parent ratings of prosocial behaviours. The results of loglinear modeling revealed that a majority of children who did not exhibit prosocial behaviours at 41 months had been reported as engaging in prosocial behaviours one year prior. In contrast, only a minority of children who engaged in prosocial behaviours at 29 months continued to exhibit the same behaviours at 41 months lending support to Hay’s model of prosocial development.

1.2.2 Genetics, Environment, and Prosocial Behaviours

Both genetics and environmental factors have been found to play a contributing role in the development of children’s prosocial behaviours. However, the contributing roles of genetics and environment appear to have different roles at certain times in development. Genetic contributions refer to the heritability of specific genes that contribute towards the acquisition of certain behaviours. The shared environment refers to common factors such as SES, parent education, or marital quality, which are shared by both twins in a pair. Non-shared environment is comprised of two components, (a) the measurement error and (b) environmental factors that are unique to each twin in a pair (e.g., parental negativity, differing exposure to socialization agents such as teachers and peers, or differing exposure to media). Recent studies have found that the contributing role of genetics towards children’s prosocial behaviours increases over time (e.g.,
from 2- to 7-years of age) whereas in comparison the shared environment contribution is stronger in toddlers and decreases by early-middle childhood (Knafo & Plomin, 2006; Zahn-Waxler, Robinson, & Emde, 1992; Zahn-Waxler, Schiro, Robinson, Emde, & Schmitz, 2001). It has been suggested by Knafo and Plomin (2006) that the increasing effect of the genetic contribution towards prosocial behaviours over time may relate to the development of children’s increasing cognitive abilities which is highly hereditary (Oliver & Plomin, 2007; Plomin, Price, Eley, Dale, & Stevenson, 2002). Therefore in the current thesis, a measure of non-verbal IQ was used to partial out any variance that cognition may contribute towards children’s engagement in prosocial behaviours.

In addition to the influence of genetics and the environment, factors such as parent-child interactions may impact on children’s early social behavioural competencies (Maccoby, Snow, & Jacklin, 1984). For example, children who embrace parental rules and routines, and develop competent reactions and responsive strategies at an early age towards the primary caregiver as a result of positive parent-child interactions are likely to transfer these skills across other social situations and settings (Kochanska, Barry, Aksan, & Boldt, 2008; Maccoby, Snow, & Jacklin, 1984; Maccoby, 2007). This, in turn, may result in the subsequent development of children’s social-behavioural competency in the toddler years and may act as a protective factor against the suggested decrease in children’s prosocial behaviours upon entry into formal schooling. In contrast, early difficulty and negative responses during parent-child interaction, such as, difficulty following rules, disruptive behaviours, and inappropriate behavioral responses to authority may lead to the stabilization of these negative behaviours and future aggressive or conduct problems may arise (Belsky & Fearon, 2002; Brendgen, Vitaro, Boivin, Dionne, & Perusse, 2006; Provost, 1985).
1.2.3 Expressive Vocabulary and Prosocial Behaviours

Children’s expressive vocabulary may also be implicated in the development of prosocial behaviours and social-behavioural competence. Expressive vocabulary is broadly defined as the ability to label people, places, objects, emotions, and actions. It has been suggested that children with larger expressive vocabularies are more likely to use verbal responses in social situations especially in situations that require resolving conflict (Séguin et al., 2009). Successful interactions may reinforce the use of verbal responses and the future use of prosocial behaviours. Therefore, a larger expressive vocabulary may inhibit the use of socially undesirable behaviours during conflict situations and may promote the use of prosocial behaviours during interaction with others. However, the direct relationship between prosocial behaviours and expressive vocabulary has not been thoroughly examined in early childhood. As a result, future studies need to measure expressive vocabulary in order to examine the potential contribution of expressive vocabulary towards children’s engagement in prosocial behaviours.

1.2.4 Prosocial Behaviours in the Classroom

In a classroom setting, children’s engagement in prosocial behaviours is observed by actions such as helping peers with learning activities or in play, statements of praise towards peers or teachers, empathetic actions such as caring for or helping peers in distress, showing concern for others’ well-being, being cooperative with peers and teachers, comforting others, and showing concern for moral issues (Ladd & Profilet, 1996). These behaviours are often expressed using oral language and are indicative of the development of children’s social-behavioural competence. It has been shown that engagement in prosocial behaviours can decrease children’s odds by more than half of following a trajectory of increased externalizing behaviours, such as aggression (Nagin & Tremblay, 2001). Thus, children’s engagement in prosocial behaviours may help to
guard against poor social-behavioural competency in a classroom setting (Coie & Kupersmidt, 1983; Crick, Casas, & Mosher, 1997; Ladd, Price, & Hart, 1988; Nagin & Tremblay, 2001).

Additionally, children who are prosocial in the classroom are often more liked by peers, have higher social status in the peer group, and gain higher acceptance from peers (Abreau & Coplan, 2007; Coie & Kupersmidt, 1983; Crick et al., 1997; Dodge, 1983; Ladd et al., 1988). Prosocial children have also been found to have better relationships with teachers (Abreau & Coplan, 2007; Stipek & Miles, 2008), which may impact positively on their learning outcomes. That is, positive relationships within the classroom environment with both teachers and peers may create a more positive and enjoyable atmosphere for the child whereby increasing attention and motivation to participate during classroom learning and activities (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000). The potential positive relationship between prosocial behaviours and learning outcomes was measured in the current thesis.

1.2.5 Social-Behavioural Competence, Externalizing Behaviours, and Subsequent Peer Rejection

Engagement in externalizing behaviours such as aggression and hyperactivity can result in poor status among the peer group (Buhs & Ladd, 2001). Aggressive and hyperactive behaviours and exclusion by peers all suggest negative social-behavioural development and can result in challenges with academic outcomes (Buhs & Ladd, 2001; Doctoroff, Greer, & Arnold, 2006; Ladd & Burgess, 2001; Lonigan et al., 1999). Physical aggression is defined as the intent to hurt or harm another child or damage another child’s property using physical acts such as pushing, punching, hitting, kicking, and grabbing (Crick et al., 1997; Ladd & Proiflet, 1996; Tremblay, Gervais, & Petitclerc, 2008). Physically aggressive behaviours have been found to be present as early as 12 months of age when children develop the motor skills to engage in aggressive acts.
such as hitting, grabbing, and kicking (Alink et al., 2006). Aggression then peaks around the age of two to three and starts to decline by the age of four to five (Alink et al., 2006; Tremblay et al., 2008) around the time children enter formal schooling. However, genetic, environmental, and child-level factors may place children at risk for continued engagement in aggressive behaviours during the formal schooling years.

### 1.2.6 Genetics and Aggression

Evidence from recent studies suggests a strong genetic influence for the variance in children’s aggressive behaviours (i.e., 40-80%) (Brendgen et al., 2006; Brendgen et al., 2005; Dionne, Tremblay, Boivin, Laplante, & Perusse, 2003; Polderman, Posthuma, De Sonneville, Verhulst, & Boomsma, 2006). For example, a strong genetic contribution (i.e., 58% of the variance) towards children’s aggression has been found in samples of monozygotic and dizygotic twins as early as 19-months (Dionne et al., 2003). Similar results have been found in samples of Kindergarten-age children suggesting that genetics may contribute towards the development of children’s aggressive behaviours longitudinally (Brendgen et al, 2005). This may suggest that children with predisposed genetic risk factors are at increased risk for engagement in aggressive behaviours beyond entrance into formal schooling when normative aggression is argued to decline (Alink et al., 2006; Tremblay et al., 2008).

### 1.2.7 Environmental Factors and Aggression

In addition to studies that have examined genetic influences, studies have also confirmed the role of environmental factors such as low socio-economic status (SES), lack of maternal warmth, harsh discipline, and maternal education in contributing towards children’s continued engagement in aggressive behaviours into the formal schooling years (Derauf et al., 2011; Dodge, Pettit, & Bates, 1994; Sarsour et al., 2011). For example, Dodge, Pettit, and Bates (1994)
found that SES was negatively related to externalizing and aggressive behaviours (i.e., $r_s = -14.34$) in a sample of 585 children longitudinally from Kindergarten to Grade 3. Further, socialization processes such as harsh discipline and lack of maternal warmth mediated this relationship and accounted for a large amount of the variance in predicting both externalizing problems and aggressive behaviours (57% and 50% of the variance, respectively). These results suggest that environmental variables (e.g., SES and socialization processes) can also act as risk factors in the development of continued poor social-behavioural competence (e.g., engagement in the use of aggressive behaviours).

Additionally, environmental risks such as maternal education and teenage motherhood have been implicated in developmental trajectories of aggression from Kindergarten to early adolescence (Nagin & Tremblay, 2001). More specifically, Nagin and Tremblay (2001) found that low maternal education and teenaged motherhood increased the odds of children’s membership in a high aggression trajectory group by 77% and 57%, respectively in a sample of 1,037 boys, which is a large effect. Additionally, children from families with low maternal education and teenage mothers were at increased risk of following the chronic trajectory of aggression by odds of 3.2 (95% CI, 1.4-7.4) and 2.9 (95% CI, 1.3-6.4) respectively, which is a medium to large effect. It is important to note, however, that the results were limited by only looking at boys and may not be generalizable to samples of children that include girls. The results of the above-mentioned studies, suggest that sampling children from low SES neighbourhoods may result in elevated levels of observable aggressive behaviours in early childhood (Dodge et al., 1994).

### 1.2.8 Expressive Vocabulary, Non-Verbal IQ, and Aggression

In addition to genetics and environment, child-level factors such as children’s expressive vocabulary and non-verbal IQ have also been implicated as potential risk factors in the
development and use of aggressive behaviours. When children’s vocabulary is slow to develop or delayed, children’s development of age-appropriate social-behavioural skills may be compromised as they become frustrated by their inability to engage others verbally during interactions (Séguin et al., 2009). It is argued that children with smaller expressive vocabularies are limited in their negotiation skills, potentially increasing the use of aggressive behaviours. For example, an inability to express needs during verbal exchanges may result in the use of maladaptive, externalizing behaviours, such as the use of aggressive acts to protest or obtain materials.

Several studies have examined the relationship between poor expressive vocabulary and engagement in aggressive behaviours in early childhood (Dionne et al., 2003; Estrem, 2005; Oliver & Plomin, 2007; Plomin et al., 2002). The results across studies have found modest negative relationships between aggression and expressive vocabulary (i.e., \( r_s = -.09 \) - -.32) for children 19-months to 4-years of age (Dionne et al., 2003; Estrem, 2005; Oliver & Plomin, 2007; Plomin et al., 2002). Of interest, longitudinal studies such as Plomin et al (2002) and Oliver & Plomin (2007) have found this relationship to increase in size annually. This increase in the strength of the relationship may reflect the additional opportunities for social interactions with peers when 4-year-olds enter formal schooling. During this transition, expressive vocabulary skills become important for expressing and negotiating wants and needs. Thus, a stronger negative correlation between aggression and expressive vocabulary at 4-years might be expected for children with poorer expressive vocabularies. Taken together, these results suggest that children who are limited in their expressive vocabulary may use more maladaptive behaviours such as aggression during social interactions in a classroom setting.
Non-verbal IQ (a form of cognitive reasoning) has also been implicated in children’s engagement in aggressive behaviours (Oliver & Plomin, 2007; Plomin et al., 2002). A few recent studies have found negative relationships between children’s non-verbal IQ and their use of aggressive behaviours \( r = -0.35 \) at 4-years of age (Oliver & Plomin, 2007; Plomin et al., 2002). One explanation for this finding is that children with poor reasoning skills may be unable to problem solve in social interactions and transfer learned social skills to other social interactions. However studies looking at the relationship between aggressive behaviours and non-verbal IQ are limited, suggesting a need to further examine this relationship in future research.

1.2.9 Hyperactivity

Another negative behaviour often observed in the classroom and that can affect children’s peer status and learning outcomes is hyperactivity/inattention. Hyperactivity can be defined as physical over-activity, which can inhibit one’s ability to refrain from continual movement (Ladd & Profilet, 1996). Hyperactivity can also result in an inability to focus and a propensity to become easily distracted which relates to inattention (Ladd & Profilet, 1996). Examples of hyperactive behaviours can include fidgeting, restlessness, impulsivity, inability to wait for turns and being squirmy (Galéra et al., 2011; Ladd & Profilet, 1996). Hyperactivity has been found in children as early as 17 months and can persist into early childhood and adolescence (Galéra et al., 2011; Shaw, Lacourse, & Nagin, 2005). While the persistence of hyperactivity is found in some children who meet a clinical diagnosis of Attention-Deficit Hyperactivity Disorder (ADHD), studies have suggested that, similar to aggression, hyperactive behaviours may decrease throughout middle childhood whereas in contrast, inattention tends to remain stable (Galéra et al., 2011; Shaw et al., 2005). The differences in developmental trajectories of hyperactivity and inattention are less well understood however, genetics have been largely
implicated in children’s early and continued engagement in hyperactive behaviours during the formal schooling years.

1.2.10 Genetics and Hyperactivity

Recent studies have reported a genetic link for both hyperactivity and attention problems in early childhood (Ilott et al., 2010; Kuntsi, Rijsdijk, Ronald, Asherson, & Plomin, 2005; Polderman et al., 2006). For example, studies sampling from monozygotic and dizygotic twins ranging from 2- to 7-years of age have found strong genetic influences that contribute between 63-86% of the variance in predicting children’s hyperactivity (Ilott et al., 2010; Kuntsi, et al., 2005; Polderman et al., 2006). The remaining variance in these studies has largely been accounted for by child-specific non-shared environmental factors. The strength of these studies relies on the use of both monozygotic and dizygotic twins in enabling a more comprehensive understanding of the specific role of genetics and the shared and non-shared environments. The results of these studies, in combination with the studies looking at aggression discussed previously, suggest that a genetic predisposition can result in an increased risk of engagement in aggressive and/or hyperactive behaviours from toddlerhood through to early childhood.

1.2.11 Aggression and Hyperactivity in the Classroom

In the classroom setting, children’s engagement in aggressive behaviours may be observed by actions such as fighting with peers/teachers, bullying peers, threatening physical violence, hitting, pushing, taunting/teasing peers, or arguing with peers/teachers. In contrast, hyperactivity in the classroom environment is characterized by being restless, unable to sit still, squirmy or fidgety, inattentive, or having poor concentration during learning activities (Ladd & Proiflet, 1996). Engagement in either of these behaviours may create challenges to children’s acquisition
of the skills being taught in the Kindergarten curriculum as learning moments may be interrupted to correct for the behaviour (Arnold, 1997).

When children are distracted by engagement in negative behaviours and not focused on the academic skills being taught, their retention of information and consolidation of learning may not be as strong, leading to poorer academic outcomes. Frequent engagement in aggressive and hyperactive behaviours have previously been found to result in inattention during learning moments (Arnold, 1997), poor academic attainment (Doctoroff et al., 2006; Lonigan et al., 1999), overall reduced motivation in the classroom environment (Bulotsky-Shearer & Fantuzzo; Fantuzzo, Bulotsky-Shearer, Fusco, & McWayne, 2005), poor teacher-child relationships (Abreau & Coplan, 2007; Stipek & Miles, 2008), and exclusion from the peer group (Ladd et al., 1988; Ladd, 2006).

1.2.12 Exclusion by Peers

Exclusion by peers is defined as rejection, avoidance, or isolation of children based on dislike from the peer group (Ladd & Profilet, 1996). Examples of exclusion by peers can include peers refusing to play, not being chosen as a playmate by peers, being ridiculed by peers, not being liked by peers, or being ignored by peers. While exclusion by peers is not an internal action of the child, it does reflect social-behavioural competencies as these children typically also engage in negative behaviours that lead to subsequent rejection from the peer group. For example, an immature child may interact in an inappropriate manner with peers, such as using aggressive or forceful behaviours to achieve personal needs, and consequently be rejected by the peer group. Previous studies have shown that children who engage in negative behaviours (e.g., aggression, arguing) are often excluded by peers in a classroom setting (Ladd et al., 1988; Olson, 1992) and exclusion by peers often remains stable across time even after the negative behaviours have
decreased. The relationship between negative behaviours and peer rejection has been found to be modest (e.g., $r = .30$) (Olson, 1992), however would suggest the importance of including peer rejection when examining children’s social-behavioural competence.

Further, exclusion by peers in the classroom setting can result in increased risk of social isolation, which may impact on the overall social development of a child. Exclusion by the peer group may also impact negatively on children’s academic learning if they experience distress as a result of not being included in the classroom environment (Buhs & Ladd, 2001). Given the potential co-morbidity among aggression, hyperactivity, and exclusion by peers, the current study aimed to examine the impact these negative indices of children’s social behavioural competence on learning outcomes (i.e., phonological awareness skills) in the Junior Kindergarten year.

### 1.2.13 Social-Behavioural Competence and Internalizing Behaviours

In contrast to externalizing behaviours, internalizing behaviours, such as anxious/fearfulness and asociality, are directed inwardly towards the self and reflect children’s emotional states. Anxious/fearfulness can be defined as the manifestation of arousal and/or distress during social situations (Ladd & Profilet, 1996). Examples of anxious/fearfulness can include crying, worrying, wariness, reticence, and discomfort in peer-peer interactions or social situations. Asocial behaviours are described as self-imposed solitude, self-selected isolation from the peer group, and the preference to engage in solitary play/activities rather than engagement in social play/activities with peers (Ladd & Profilet, 1996). Examples of being asocial can include avoiding peers, playing alone, keeping peers at a distance, or withdrawing from group activities.
Asocial behaviours in early childhood are related to anxious/fearful behaviours, which may cause the child to withdraw from social situations with peers and can signal future relational dysfunctionality (Ladd & Profilet, 1996). For example, Lafreniere, Provost, & Debreau (1992) examined the relationships among solitary play, interactive play, anxious behaviours, and prosocial behaviours in the classroom context with a sample of 83 preschool children. The results revealed a strong positive relationship between children who display classroom anxiety and those who engaged in solitary play ($r = .54$), suggesting that anxious children may also withdraw from the peer group and from social interactions.

1.2.14 Trajectory of Anxiety

While there is currently a large body of work examining internalizing problems such as anxiety in middle-to-late childhood and beyond, there are relatively few studies that have examined anxiety in early childhood. However, the developmental trajectory of anxiety was examined in a study conducted by Sterba, Prinstein and Cox (2007) using a sample of 1,364 children from 2- to 11-years of age. A person-oriented (latent growth mixture) methods approach was used as compared to the typically used variable-oriented methods approach, to be able to examine the heterogeneity of internalizing problems, such as anxiety. Further, using a person-oriented method allows for the ability to make inferences and understand change in subgroups of children who display anxious behaviours. The results revealed a three-factor model as best fitting the data, in which 13% and 21% (i.e., boys and girls respectively) showed elevated-stable anxiety symptoms, 10% and 22% (i.e., girls and boys respectively) showed decreasing/increasing anxiety symptoms, and 65% and 69% (i.e., boys and girls respectively) showed low-to-no anxiety symptoms across childhood. In the decreasing/increasing group the symptoms declined from 2- to 6-years of age and then increased from 6- to 11-years of age. Overall, these results have important implications
for the current thesis by demonstrating that anxiety problems can manifest in some children as early as 2- to 6-years of age. This suggests that anxiety should be included in studies looking at social-behavioural competence in Junior Kindergarten as anxious behaviours may impact upon children’s attainment of academic skills.

1.2.15 Genetics, Environmental Factors, and Anxiety

The risk factors that have been identified for internalizing problems, such as anxiety, include genetics, child-level factors (e.g., negative emotionality and temperament) (Bolton et al., 2006; Eley et al., 2003; Goldsmith & Lemery, 2000), and environmental factors such as negative life events, exposure to parental conflict, exposure to child-rearing disagreements, low income, and, low parental education (Kohen, Oliver, & Pierre, 2009; Olson & Rosenblum, 1998; Shaw, Keenan, Vondra, Delliguardi, & Giovannelli, 1997). For example, in 4-year-old children, genetics has been found to contribute between 43-76% of the variance in predicting anxious/fearful behaviours such as distress, fears, and shyness/inhibition (Bolton et al., 2005; Goldsmith & Lemery, 2000; Thailia, Bolton, O’Connor, Perrin, Smith, & Plomin, 2003), revealing that the genetic contribution towards anxious/fearful and withdrawn behaviours is modestly strong at this age. With respect to the environmental and child-level factors, life experiences, infant difficulty, and conflict exposure in 15-month-olds have been found to predict between 6- 13% of the variance in children’s age 5 anxiety scores (Shaw et al., 1997).

Of particular interest to the current study, Kohen, Oliver, & Pierre (2009) conducted a multi-method study examining child, family, school, and neighborhood factors that contribute to children’s anxiety scores in Kindergarten. A total of 2,743 children participated across 181 Kindergarten classrooms from 272 neighbourhoods located in seven Canadian cities. Cross-nested hierarchical linear models were used to allow for the ability to look directly at school and
neighborhood factors. The results revealed that children from low income neighbourhoods and
neighbourhoods consisting of high numbers of immigrants were found to have higher parent
ratings of anxiety. This is one of the first studies of this kind to look at the effects of
neighborhood composition in predicting children’s anxiety, which extends our understanding of
contributing factors beyond the child and family level factors. In the current study, the sample
was drawn from low-SES neighbourhoods with a large percentage of immigrant families.

1.2.16 Internalizing Behaviours in the Classroom

Anxiety in the classroom environment is observed through behaviours such as being worried,
being unhappy, being fearful, and crying easily (Ladd & Profilet, 1996). Children may
experience higher levels of anxious and fearful behaviours upon entry into Junior Kindergarten,
as this may be their first exposure to being away from a parent. When children are not
comfortable in their environment and suffer from feelings of anxiety, the learning outcomes may
be reduced. For example, children who are worried or unhappy may focus on their internal states
rather than focusing on the lessons or learning activities. Further, these children may not seek out
help from teachers or peers if they are having difficulty with learning because they may be
worried or fear that they will not be accepted.

This anxious/fearful behaviour may also increase the likelihood of children withdrawing from
social interactions with peers (Provost, 1985). When children are asocial in the Junior
Kindergarten classroom, learning opportunities may be reduced as lessons occur in whole and
small group formats. Thus, it is important to investigate the potential impact of internalizing
behaviours such as anxiety and solitary behaviours on academic outcomes when children first
enter into formal schooling. Given the potential risk of more anxious behaviours in the current
sample as a result of sampling from low SES neighbourhoods, and the strong relationship
between anxious/fearful behaviours and solitary play, the current thesis aimed to examine if negative associations would be found between internalizing behaviours and children’s phonological awareness.

### 1.2.17 Summary of the Development of Social-Behavioural Competencies

Based on the above review of the current literature, children’s positive social-behavioural development is critical for young children’s successful entry into formal school settings such as Junior Kindergarten. Typically developing 4-year-old children with positive social-behavioural development are able to communicate effectively, regulate their emotions in social situations by inhibiting the use of aggressive behaviours (Raaijmakers et al., 2008), engage in positive behaviours during social interactions (Persson, 2005), use appropriate problem solving strategies (Hune & Nelson, 2002), follow rules and routines, be attentive (Arnold, 1997), and create positive relationships with adults and peers (Coolahan, Mendez, Fantuzzo, & McDermott, 2000; Hemmeter, Ostrosky, & Fox, 2006; Stipek & Miles, 2008). However, the development of these skills is contingent on multiple factors such as genetics, environmental variables (e.g., SES, maternal warmth, parenting style), vocabulary abilities, and cognitive development (Coolahan et al., 2000; Oliver & Plomin, 2007; Stansbury & Zimmermann, 1999; Stipek & Miles, 2008; Séguin et al., 2009; Tremblay et al., 2008; Whitman, Accardo, Boyert, & Kendagor, 1990).

While several studies have examined the trajectory and causal factors implicated in the development of social behaviours and emergent literacy separately, there is a paucity of work relating to the influence of social behaviours on academic outcomes (and vice versa) in Junior Kindergarten children. For example, a search of the literature using ProQuest (comprised of 85 databases) and the search terms “early childhood”, “preschool”, “academic outcomes”,
“emergent literacy”, “phonological awareness”, “internalizing problems”, “externalizing problems”, “aggression”, and “hyperactivity” between 1992 and 2012 resulted in a total of 16 peer reviewed studies examining the interrelationship between social behaviours and academic outcomes longitudinally.

Of these, nine studies looked at reading as an academic outcome and only two studies looked at emergent literacy specifically. Neither study examining emergent literacy outcomes controlled for children’s baseline emergent literacy skills limiting the ability to draw causal inferences. In conducting regression analyses, a more stringent test of a causal model would include entering a baseline measure of the outcome variable to account for any possible change in this measure across time. For example, in entering children’s phonological awareness skills at Time 1 first, this would allow for the ability to account for all the variance that Time 1 phonological awareness skills contribute to Time 2 phonological awareness outcomes. Partialling this variance out allows more confidence in drawing a causal inference by reducing the risk of overestimating any variance between the predictor and outcome variables as all the variance for the outcome variable has been accounted for across time. Therefore, these two studies looking at emergent literacy that did not account for children’s baseline emergent literacy skills provide support for a correlational association between social behaviours and emergent literacy rather than a predictive association.

Further, only one of these studies controlled for non-verbal IQ, which has been found to be implicated in children’s behaviour and emergent literacy outcomes (Dionne et al., 2003; Estrem, 2005; Lonigan et al., 1998; Oliver & Plomin, 2007; Oliver, Dale, & Plomin, 2004; Plomin et al., 2002). While the majority of studies did measure children’s overall cognition, the use of a measure of non-verbal IQ is important as it represents children’s reasoning rather than a
combination of reasoning and oral language ability. As has been reviewed, there is support for the relationship between oral language (e.g., expressive vocabulary) and both social behaviours and emergent literacy (Dionne et al., 2003; Estrem, 2005; Oliver & Plomin, 2007; Plomin et al., 2002). Therefore the current study has the potential to add to this literature by looking at the interrelationships between social-behavioural development and emergent literacy acquisition while accounting for potential child-level variables in a sample of Junior Kindergarten children from low SES neighbourhoods. In the next section, a review of key studies looking at the impact of social behaviours and emergent literacy outcomes is discussed in addition to the limitations of the current literature.

1.3 The Interrelationship between Social Behaviours and Phonological Awareness

An important objective of Junior Kindergarten is the development of social-emotional and behavioural skills (Ministry of Education, 2006). It has been suggested that children’s early social behaviour problems can impact negatively on learning outcomes at the end of Kindergarten and into grade school (Doctoroff et al., 2006). The purpose of this thesis was to examine both within family level and individual level factors that contribute to children’s development of emergent literacy skills. Thus an aim of the current work was to investigate the relationship between social behaviours and the acquisition of phonological awareness in 4-year-old children. Few studies have examined the relationship between social behaviours and emergent literacy skills in children as young as 4-years of age, and only one study has focused exclusively on phonological awareness as the specific outcome measure. Therefore, this study has the potential to contribute to explanations of how social behaviours may regulate children’s acquisition of emergent literacy skills.
A current theoretical perspective on the relationship between social behaviour and academic achievement posits that problem behaviours can lead directly to poor outcomes through a reduction in children’s attention and motivation (Miles & Stipek, 2006). Children who engage in disruptive behaviours in the classroom tend to exhibit less cooperation towards teachers and peers, are more inattentive to classroom learning, and may be less competent in their attitude and motivation towards learning in general (Fantuzzo et al., 2005). It has been suggested that when children are disruptive in the class environment, they are likely to be disciplined or removed from the current instructional activity, resulting in less time spent on acquiring the academic skill being taught (Arnold, 1997; Miles & Stipek, 2006). Thus, when children engage in negative behaviours, they may miss out on the foundational skills being taught.

Moreover, children who engage in negative behaviours often are less accepted by peers and poor peer acceptance, in turn, may impact on children’s engagement in classroom activities (Buhs & Ladd, 2001; Ladd, Herald-Brown, & Reiser, 2008). For example Buhs and Ladd (2001) measured the relationship between peer rejection and academic motivation in a sample of 399 Kindergarteners across the year and found that Kindergarten children who were rejected and mistreated by their peer group were more likely to show decreased classroom participation, perform worse on academic achievement, and have higher levels of desire to avoid school entirely. The impact of peer rejection appears to be long term. Ladd, Herald-Brown, and Reiser (2008) followed 398 children from 5- to 12-years of age. Their findings indicate that children who were continually rejected by the peer group were found to have decreased academic motivation and participation during lessons longitudinally up to 12-years of age.
1.3.1 Negative Social Behaviours and Emergent Literacy in the Classroom

A number of studies have examined the relationship between behaviour and academic outcomes in older children aged 5-14 (Adams, Snowling, Hennessy, & Kind, 1999; Bennett, Brown, Boyle, Racine, & Offord, 2003; Jorm, Share, Matthews, & Maclean, 1986; McGee, Williams, Share, Anderson, & Silva, 1986; McMichael, 1979; Miles & Stipek, 2006; Trzesniewski et al., 2006). The focus in these studies has been on the impact of aggression on learning outcomes. The results across studies have found consistent support for a negative relationship between children’s aggressive behaviours and academic outcomes. To date, there have been few studies that have looked at the relationship between social behaviours and emergent literacy difficulties in early childhood (Bulotsky-Shearer & Fantuzzo; Doctoroff et al., 2006; Lonigan et al., 1999).

In general, these studies indicate that a negative relationship between maladaptive social behaviours and emergent literacy outcomes may be present in children as early as 4-years of age. For example, Lonigan, Bloomfield, Anthony, Bacon, Phillips, & Samwel (1999) found that inattention explained between 4-6% of the variance in children’s emergent literacy skills. Doctoroff, Greer, & Arnold, (2006), found a negative association between boys’ aggressive misbehaviour and their emergent literacy difficulties, whereas aggressive misbehaviours were not associated with outcomes for girls. Additionally, Bulotsky-Shearer & Fantuzzo (2010) found that problem behaviours accounted for 1-2% of the variance in children’s literacy outcomes. Please see Table 1.

However, a limitation of these studies includes not collecting or entering a baseline measure of children’s emergent literacy skills into the models. As a result, the results of these studies show an association between behaviour and emergent literacy skills however causality and
directionality of this relationship remain unclear and cannot be determined. Additional measures of emergent literacy at baseline would have improved these studies ability to infer causality and directionality.

Table 1: Studies Examining Social Behaviours and Emergent Literacy

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Age/Grade</th>
<th>Time 1 Measures</th>
<th>Time 2 Measures</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lonigan, Bloomfield, Anthony, Bacon, Phillips &amp; Samwel, (1999)</td>
<td>41 preschoolers from low SES and 44 preschoolers from middle SES</td>
<td>28-73 months</td>
<td>Non-verbal IQ. Composite score was created using standardized measures of oral language, phonological awareness, and print knowledge to assess emergent literacy. Teacher ratings of hyperactivity, conduct problems, and inattention.</td>
<td>N/A</td>
<td>Inattention was significantly negatively associated with emergent literacy skills after controlling for non-verbal IQ (i.e., 4-6% of the variance). Hyperactivity and conduct problems did not contribute any unique variance (only shared) in predicting emergent literacy outcomes.</td>
</tr>
<tr>
<td>Doctoroff, Greer, &amp; Arnold, (2006)</td>
<td>123 preschoolers ranging from low- to middle SES</td>
<td>3.2-5.3 years of age</td>
<td>Composite score was created using standardized measures of oral language, letter recognition, sound matching, segmenting words, rhymes, and print knowledge. Classroom observations of children’s aggressive, prosocial, and solitary behaviours and negative affect were conducted.</td>
<td>N/A</td>
<td>Aggressive behaviours were significantly negatively related to emergent literacy for boys but not for girls. Prosocial behaviours were significantly positively related to emergent literacy for boys but not girls. Medium effects (rs between -.43 and .38). No other significant associations were found.</td>
</tr>
<tr>
<td>Bultosky-Shearer &amp; Fantuzzo (2010)</td>
<td>2,682 children from low SES</td>
<td>4.0- 5.8 years of age</td>
<td>Teacher rating of emotional and behavioural adjustment in the classroom.</td>
<td>Standardized measures of cognition, reading, and language.</td>
<td>Children’s cognition was significantly related to literacy and language skills and accounted for 17% of the variance. Behaviour problems significantly</td>
</tr>
</tbody>
</table>
39

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample</th>
<th>Age Range</th>
<th>Measures</th>
<th>Predicted Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles &amp; Stipek (2006)</td>
<td>237</td>
<td>4.0-6.0</td>
<td>Teacher ratings of aggressive and prosocial behaviours. Standardized measures of reading ability.</td>
<td>Prosocial behaviours in Kindergarten and Grade 1 modestly predicted Grade 3 literacy achievement. Conversely, Grade 1 literacy achievement significantly predicted Grade 3 and 5 aggressive behaviours. Grade 3 aggressive behaviours significantly predicted poorer literacy outcomes in Grade 5. No relationship was found in Kindergarten.</td>
</tr>
<tr>
<td>Bennett, Brown, Boyle, Racine &amp; Offord (2003)</td>
<td>549</td>
<td>Kindergarten and Grade 1</td>
<td>Teacher report of conduct problems. Standardized measure of reading ability.</td>
<td>Results revealed a negative predictive relationship between poor reading in Kindergarten and Grade 1 and conduct problems 30 months later (i.e., 23% of the variance) after controlling for initial conduct scores.</td>
</tr>
</tbody>
</table>

1.3.2 Positive Social Behaviours and Literacy in the Classroom

Results of the Doctoroff et al. (2006) study also found that boys’ prosocial behaviours were positively associated with their emergent literacy outcomes. Additionally, Miles and Stipek (2006) found that that prosocial behaviour in Kindergarten and Grade 1 modestly predicted positive Grade 3 literacy achievement (i.e., standardized beta coefficient of 0.19). Please refer to Table 1. One explanation for this positive relationship may reside in the positive feedback and reinforcement these children receive from teachers and peers during learning activities (Miles & Stipek, 2006). This feedback may, in turn, increase children’s motivation to excel in academic
tasks. However, there is a paucity of studies that have examined the relationship between positive prosocial behaviours and literacy outcomes in early childhood and the stability of this relationship has been inconsistent across studies. Therefore, there is currently a need for more studies that examine the positive relationship between children’s prosocial behaviours and emergent literacy outcomes.

1.3.3 Phonological Awareness Skills and Social Behavioural Competencies

While the previous review of the literature indicates that children who engage in negative behaviours (e.g., aggression) are at risk of poor academic outcomes, the inverse relationship may also be plausible as the studies just described did not examine baseline emergent literacy skills. The third objective of this thesis was to examine the potential relationship between early phonological awareness skills and children’s social behaviours at the end of the year. Children who struggle with academic skills at entry to Junior Kindergarten may begin to engage in an increasing frequency of maladaptive behaviours over time, both externalizing and internalizing. A current perspective offered on this inverse relationship suggests that children who struggle with academic skills may become frustrated by their difficulty and resort to negative behaviours to alleviate or mask their frustration (Hinshaw, 1992; McGee et al., 1986; Miles & Stipek, 2006). Further, children who struggle with literacy skills may become embarrassed by their challenges and may not know how to handle these emotions, thus resorting to negative behaviours or social withdrawal. When a child is acting out and engaging in negative behaviours, such as aggressive acts, the focus of the teacher may shift to behaviour management creating an opportunity for the child to take the attention away from their academic challenges. As children become older, they become more aware of their poor performance in comparison to their peers (Hinshaw, 1992),
resulting in the potential increase of maladaptive behaviours. Additionally, withdrawn or solitary behaviours may result when learning occurs in group activities.

Several studies have found longitudinal relationships between low literacy achievement in Kindergarten and engagement in antisocial behaviours and conduct disorders up to six years later (Bennett et al., 2003; Hinshaw, 1992; Jorm et al., 1986; McGee et al., 1986; Miles & Stipek, 2006; Romano, Babchishin, Pagani, & Kohen, 2010). The majority of these studies did not report a significant negative relationship between low literacy and antisocial behaviours as early as Kindergarten. However, one study did reveal a significant negative relationship for Kindergarten children with low reading skills and higher rates of conduct problems 30 months later (i.e., 23% of the variance) after controlling for gender, family income, and initial conduct scores (Bennett et al., 2003). Please refer to Table 1.

While the latter study offers initial support for the relationship between early reading and future negative social behaviour problems in Kindergarten children, other studies have not found this relationship (Hinshaw, 1992; Jorm et al., 1986; McGee et al., 1986; Miles & Stipek, 2006; Romano et al., 2010). For example, Jorm et al., (1986) found that children who exhibited reading difficulties in kindergarten engaged in higher rates of antisocial behaviours at the end of Grades 1 and 2. However, no relationship was found in the Kindergarten year. Miles and Stipek (2006) also found similar results where low literacy in Grade 1 and 3 predicted aggressive behaviours in Grades 3 and 5 after initial aggression was held constant. In contrast, no relationship was found for kindergarten children. A plausible explanation for the limited findings in Kindergarten children may relate to the fact that most children in Kindergarten are not yet reading resulting in minimal variability in the data. Therefore, this question warrants further investigation looking at
phonological awareness; a skill that precedes reading and that is focused upon in the Junior Kindergarten year.

1.3.4 The Use of Teacher Reports to Capture Social Behaviours

Children’s social behaviours in the classroom context and their behaviours with peers were focused upon in relation to emergent literacy skills. As such, teacher reports examining multiple behaviours specific to the classroom environment were utilized. The use of teacher report to examine children’s behaviours in the classroom context is quite common (Jorm et al., 1986; Ladd & Profilet, 1996; Ladd et al., 2009; McGee et al., 1986; Miles & Stipek, 2006; Stipek & Miles, 2008) because teachers offer a unique perspective into children’s behaviours as they are with children the majority of the day five days a week. Further, they are able to observe children across multiple settings such as during lesson time, activity time, snack time, free play, and during transitions which are often the most challenging times for Junior Kindergarten children. Teachers witness children’s behaviour in the context of the peer group everyday and are able to offer unique insight into the development of children’s peer-peer relationships (Ladd & Profilet, 1996). That is, teachers are able to provide insights into qualitative aspects of children’s behaviours towards peers such as perceived intentions, motivation, and affect, not just quantitative aspects such as frequency of behaviours (Coie & Dodge, 1988). Finally, teacher reports are both time and cost efficient.

While other types of measures have been used to collect information on children’s behaviour such as parent reports, peer nominations and direct observations, teacher reports offer specific advantages. In relation to parents and the use of parent reports, teachers offer the advantage of multiple daily opportunities to witness children’s behaviours in the peer context. For example, parents often have a limited scope of opportunities to observe their child in peer group
interactions. Additionally, with parent reports there is an increase in potential of social desirability responses. For example, a parent may be more willing to overlook or under report engagement in negative behaviours as they may feel that this would reflect negatively on their parenting ability.

Peer nominations have also been employed as a method to collect data on children’s behaviours within the peer context (Crick & Grotpeter, 1995; Werner & Crick, 2004). The procedure typically employed to gather peer nominations involves showing children pictures of peers in the classroom and asking the child to nominate up to three peers who fit the behavioural description (e.g., “who hits other children”) (Ladd & Proilege, 1996). A large limitation of using peer nominations in early childhood is the reliability of the nominations (Coie & Dodge, 1988; Ladd & Proilege, 1996). The nominations of very young children are often not stable over time (Ladd & Proilege, 1996). For example, a peer may nominate another peer as aggressive if the two children have recently engaged in a conflict. However, the child may nominate the same peer as friendly a few days later. Additionally, children in Junior Kindergarten are unable to infer the internal states of their peers making it challenging to assess internalizing behaviours, such as anxiety and fearfulness. Lastly, peer nominations take a lot of time and the materials and time spent collecting the nominations can be very costly.

Finally, direct observations are another common method used when examining children’s social behaviours (Fabes, Hanish, Martin, & Eisenberg, 2002; Maccoby, 1990; Ostrov & Keating, 2004; Ostrov, Woods, Jansen, Casas, & Crick, 2004). While the use of direct observations has been argued to provide an unbiased perspective of children’s behaviours there are some notable limitations. For example, the observer only witnesses a snap shot of children’s behaviour in a particular context. Obtaining a holistic view of children’s social behaviours across multiple
settings on different days is very time-consuming and costly (Ladd & Proﬁlet, 1996). If the observations of a particular child are conducted on day in which the child is sick or a negative event has occurred in the home, the observations may portray behaviours that are not representative of the child. As a result, teacher reports were utilized in the current study as the primary method of collecting data on children’s social behaviours.

1.4 The Relationship between Teacher Report and Direct Observations

The final objective in the current thesis was to examine the relationship between teacher report and direct observation of children’s classroom behaviours. Using a multi-method approach to collect data provides additional validity in supporting study results. Thus, the question of whether a positive relationship between teacher report and direct observations of children’s behaviour would be found is important to studies examining children’s behaviour. Some studies have found the agreement between teacher reports and direct observations of children’s behaviours in the classroom setting to be low or non-existent (Puig et al., 1999; Weisz, Chaiyasit, Weiss, & Eastman, 1995) whereas in comparison, other studies have found a modest relationship with respect to certain behaviours (i.e., externalizing behaviours) (Doctoroff & Arnold, 2004; Hinshaw, Han, Erhardt, & Huber, 1992).

Weisz et al. (1995) examined the agreement between direct observations of children’s social behaviours in the classroom setting with teacher reports in two samples of children cross-culturally (i.e., Asia and the U.S). The results revealed a significant difference between teacher reports and observation in both samples, with a large effect size (Cohen, 1988). Inspection of the data revealed that teacher reports were higher than observer reports for all behaviours. Weisz et al (1995) argue that this discrepancy is likely the result of teachers spending more time with children and being able to offer a more holistic view point of children’s behaviours across
settings. Similar findings were obtained by Puig et al. (1999) who found that teachers reported significantly higher amounts of behaviour problems in comparison to observers. Puig et al. (1999) also hypothesized that the differences between teacher report and direct observations is likely the result of teachers having spent more time with children. Higher teacher rating of behaviours was argued to result as teachers were able to get to know children over an 8-month period in contrast to observers who had no prior relationship with children and only observed children during four 10 minute sessions.

Conversely, Hinshaw et al. (1992) examined the relationship between teacher report and direct observations of externalizing and internalizing behaviours in a sample of 45 children ranging in age from 3- to 6-years-old. Internalizing and externalizing behaviours were examined separately as differences between informants may result as a function of type of behaviour examined (Hinshaw et al., 1992). The results of this study revealed that teacher report and direct observation of children’s internalizing behaviours were uncorrelated (i.e., \( r = -.12 \)). In contrast, teacher report and direct observation of externalizing behaviours revealed a strong correlation (i.e., \( r = .52 \)). It was suggested that in contrast to externalizing behaviours which are outward behaviours that may be easier to identify, agreement across raters with respect to internalizing behaviours may be more challenging as internalizing behaviours are more subjective and harder to rate (Hinshaw et al., 1992). Docotorff & Arnold (2004) also found similar results with a sample of 79 preschool children. Externalizing behaviours were assessed via teacher report and direct classroom observations. The results revealed a significant relationship between informants (i.e, \( r = .49 \)). Doctoroff & Arnold (2004) suggest that the significant relationship between teacher report and direct observation is likely the result of the similar setting (i.e., the classroom context).
However, important to note is that in the latter studies, the children sampled were high risk and demonstrated higher levels of behaviour problems as compared to typically developing children. This raises the likelihood of inflated negative behaviours being observed which may increase the possibility of a significant relationship being found across informants. In a typical population where negative behaviours occur less frequently, there may be a reduced likelihood of agreement between teacher reports and direct observations as a result of direct observations only occurring in limited contexts for short periods of time as was found in the former studies. In the current thesis, the relationship between teacher report and direct observations of children’s behaviours were examined using a sample of typically developing Junior Kindergarten children.

1.5 Current Gaps in the Literature

Although previous studies posit explanatory relationships between social behaviour and literacy attainment in Kindergarten through Grade 3 (e.g., Lonigan et al., 1999; McGee et al., 1986; Bulotsky-Shearer & Fantuzzo, 2010; Doctoroff et. al., 2006; McMichael, 1979; Miles & Stipek, 2006; Trzesniewski, Moffit, Caspi, Taylor, Maughan, 2006), the strength of the relationship varies across studies. This variation may be the result of methodological differences among studies. These methodological differences include (a) the scope of social behaviours assessed, (b) the measures used to assess literacy outcomes (i.e., composite scores of outside-in skills such as vocabulary and inside-out skills such as letter knowledge and phonological awareness), and (c) the lack of control of intrinsic developmental variables (i.e., children’s cognition, baseline skills).

First, some studies have focused specifically upon aggressive behaviours (Doctoroff et al., 2006; Jorm et al., 1986; McGee et al., 1986; Miles & Stipek, 2006; Trzesniewski et al., 2006). However, in non-clinical samples aggressive behaviours often peak around the age of three and start to decline by the age of four to five (Alink et al., 2006; Tremblay et al., 2008) around the
time children begin their formal entry into school. Thus, it is important to increase the scope of
social behaviours examined to include internalizing behaviours (anxiety and preference to
engage in solitary activities), social behavioural competence (prosocial behaviours), and
exclusion by the peer group as studies have shown that these behaviours may present as early as
Junior Kindergarten (Buhs & Ladd, 2001; Ladd, 2006; Miles & Stipek, 2006; Sterba et al., 2007)
and may impact upon children’s participation during classroom learning. Further, increasing the
targeted social behaviours would provide a more comprehensive understanding of social
behaviours that impact upon emergent literacy outcomes in young children.

The current study extends past research by examining multiple social behaviours using the Child
Behavior Scale (Ladd, 2010). This measure includes negative social behaviours: Aggressive with
Peers (e.g., hitting, kicking, biting) and Hyperactive/Distractible (e.g., squirmy and fidgety,
can’t sit still), Asocial with Peers (e.g., solitary child), and Anxious/Fearful (e.g., cries easily).
Positive social behavior was captured by Prosocial with Peers (e.g., helping a peer). Finally,
Excluded by Peers (e.g., not chosen as playmate) was measured by this rating scale. While
exclusion by peers is not an internal action of the child, it reflects the finding that children who
engage in negative social behaviours are often rejected by the peer group. These behaviours
were selected because the impact of these behaviours on emergent literacy outcomes requires
further study and previous studies have suggested that externalizing behaviours (Dodge et al.,
1994) and internalizing behaviours (Kohen et al., 2009) may be more prevalent in children from
low SES homes.

A second challenge to interpreting the existing literature investigating the relationship between
social behaviours and emergent literacy is how emergent literacy outcomes are defined and
assessed. Composite scores of emergent literacy and oral language skills (e.g., expressive and
receptive vocabulary) have been commonly employed as the emergent literacy outcome measure in several studies (Bulotsky-Shearer & Fantuzzo, 2010; Doctoroff et al., 2006; Richman, Stevenson, & Graham, 1982; Miles & Stipek, 2008). The results of these studies indicate that a negative relationship exists between composite scores of emergent literacy and aggression.

While the inclusion of particular oral language skills such as vocabulary is theoretically motivated by the formal model of emergent literacy skills put forth by Whitehurst and Lonigan (1998), this adds a level of complexity in interpreting this relationship. For example, Dionne et al., (2003) and Estrem, (2005) found a negative relationship between social behaviours (i.e., aggression) and expressive vocabulary, which raises the possibility that the relationship between social behaviour and the broad definition of emergent literacy skills may be partially dependent on children’s vocabulary skills. Thus, it remains unclear whether the relationship between social behaviour and emergent literacy outcomes would be robust if the emergent literacy measure focused on inside-out skills such as phonological awareness, which is a skill that is learned in Junior Kindergarten and most closely linked to decoding. Further, by not entering children’s vocabulary ability separately into regression models, past studies are not able to speak to the amount of variance that vocabulary accounts for in the relationship between social behaviour and literacy outcomes. The current study addresses this issue by entering children’s expressive vocabulary scores into the regression analyses separately and examining phonological awareness skills specifically.

A final limitation in the interpretation of previous studies is the lack of control for potentially confounding variables such as cognition and baseline skills, which may mediate the relationship between behaviour and emergent literacy. For example, some studies have not included initial measures of children’s non-verbal IQ (e.g., Doctroff et al., 2006, McGee et al., 1986; Miles
& Stipek, 2006). The absence of non-verbal IQ measures makes the findings challenging to interpret because the results may more accurately reflect a predictive relationship between low cognition and literacy outcomes. The relationship between cognition and literacy has previously been shown to contribute up to 17% of the child-level variance in predicting future literacy outcomes (e.g., Bulotsky-Shearer & Fantuzzo, 2010). Further, not having a measure of cognition limits the ability to describe accurately the characteristics of their sample.

Previous studies have also been limited in not collecting children’s baseline skills (i.e., emergent literacy skills). This limits the ability to draw inferences with respect to the direction of the relationship and may overestimate the variance between predictor and outcome. These limitations were addressed in the current study by including (a) a measure of children’s non-verbal IQ at Time 1 (i.e., fall of the academic year) and (b) children’s baseline skills, allowing for the ability to examine how much variance nonverbal cognition contributes to phonological awareness outcomes and to be able to draw inferences surrounding directionality.

1.6 Major Research Questions of the Current Study

The first question of this study examined whether family literacy activities contributed unique amounts of variance in predicting (a) alphabet knowledge, (b) phonological awareness, and (c) expressive vocabulary at entry to Junior Kindergarten. Based on the review of the current literature, it was first hypothesized that specific family literacy activities (i.e., *Interaction with Letter/Sound Activities* and *Interaction with Writing Activities*) would predict children’s alphabet knowledge and phonological awareness skills at entry to Junior Kindergarten (Boudreau, 2005; Evans, Shaw, & Bell, 2000a; Evans, Shaw, & Bell, 2000b; Sénéchal et al., 1998; Sénéchal & LeFevre, 2002). This hypothesis was based on previous studies that have found modest effect sizes for the contribution of the family literacy environment to children’s scores in alphabet
knowledge and phonological awareness (Aram & Levin, 2002; Evans, Shaw, & Bell, 2000a; Sénéchal et al., 1998; Sénéchal & LeFevre, 2002) in low-to-upper class families. In the current study, these relationships were examined in a sample of 4-year-old children from low socioeconomic neighbourhoods. It was also hypothesized that *Parent-Child Storybook Activities* would predict children’s expressive vocabulary at entry to Junior Kindergarten. This hypothesis was based on previous studies that have found modest effect sizes of shared storybook reading to children’s vocabulary (Hindman & Morrison, 2012; Sénéchal et al., 1998; Sénéchal & LeFevre, 2002).

The second question of the study asked whether children’s social behaviours at entry into Junior Kindergarten would be associated with their phonological awareness outcomes at the end of Junior Kindergarten, after controlling for children’s baseline phonological awareness skills, expressive vocabulary and non-verbal IQ. It was first hypothesized that children who were rated by teachers as higher on the negative externalizing behaviour subscales (i.e., *Aggressive with Peers*, and *Hyperactive/Distractible*) would have poorer phonological outcomes at the end of the year. This hypothesis was based on studies showing that children who received higher ratings for aggression and inattention had poorer emergent literacy outcomes at the end of the year (Doctoroff et al., 2006; Lonigan et al., 1999; Miles & Stipek, 2006). However, none of the previous studies controlled for the potential variance that baseline emergent literacy skills, expressive vocabulary or non-verbal IQ may have contributed. Additionally, it was hypothesized that children who were rated higher on the *Excluded by Peers* subscale would have poorer phonological awareness outcomes at the end of the year. This hypothesis was based on previous work showing that children who are excluded by the peer group may exhibit reduced attention and motivation during learning moments (Buhs & Ladd, 2001; Ladd et al., 2008).
Few studies have examined internalizing behaviours in 4-year-old children. However, it was hypothesized that children who were rated higher on both internalizing subscales (i.e., *Asocial with Peers* and *Anxious/Fearful*) may have poorer phonological awareness outcomes. This hypothesis was based on the assumption that since learning occurs in group settings in Junior Kindergarten, children who are withdrawn or anxious may participate in group learning activities less frequently which may increase the likelihood of missed learning opportunities. This hypothesis was exploratory. Finally, it was hypothesized that children who received higher ratings on the *Prosocial with Peers* subscale at entry to Junior Kindergarten would have stronger phonological awareness skills at the end of the Junior Kindergarten year. This hypothesis was based on the theoretical assumption that these children may experience more positive reinforcement from peers and teachers increasing motivation during classroom learning activities (Miles & Stipek, 2006).

The third question of the current study looked at the inverse relationship and asked whether phonological awareness skills at entry in Junior Kindergarten would be associated with children’s social behaviours at the end of the Junior Kindergarten year. It was predicted that children who had poorer phonological awareness skills at entry to Junior Kindergarten would be rated higher on the *Aggressive with Peers, Hyperactive/Distractible, Asocial with Peers, Anxious/Fearful, and Excluded by Peers* subscales by the end of the year. The rationale for this prediction is based on the assumption that children who struggle with phonological awareness skills may be at increased risk for developing both externalizing and internalizing problems (Bennett et al., 2003; Hinshaw, 1992; Jorm et al., 1986; McGee et al., 1986; Miles & Stipek, 2006). Alternatively, it may be the case that children who enter into Junior Kindergarten with good phonological awareness skills may receive positive reinforcement increasing their motivation to be helpful in the classroom and towards their peers. Thus, it was also predicted that
a positive relationship would be found between good phonological awareness skills at entry to Junior Kindergarten and higher ratings on the *Prosocial with Peers* subscale at the end of the Junior Kindergarten year. This question was exploratory because this relationship has not previously been studied relative to outcomes in emergent literacy.

The final question of the current study asked whether there would be a significant relationship between teacher reports and direct observations of children’s classroom behaviours. It was predicted that no significant relationships would be found between teacher report and direct observations of children’s behaviours as previous studies using samples of typically developing children, like the current study, have found insignificant relationships between teacher reports and direct observations (Puig et al., 1999; Weisz et al., 1995). However, based on the mixed findings in the literature, this question was exploratory.

## 2 Methods

### 2.1 Overview of Design

The current study is a within-participants, short-term longitudinal correlational design (pretest-posttest). The pretest was conducted during the fall of the Junior Kindergarten year, approximately four weeks after the academic year commenced. The posttest was conducted five months later, during the spring of the same academic year. The study took place in 11 elementary schools located in low-income neighbourhoods in the North, East, South and West quadrants of the metropolitan Toronto area. All participating schools belonged to the Toronto District School Board. A sample size estimation was calculated using the parameter of 10 participants for each predictor variable. In the current study a total of 8 predictors were included requiring a minimum
of 80 children. Thus, the goal in the current study was to recruit 10 schools with 10 children per school to ensure adequate sample size in the multiple regression models.

### 2.2 Recruitment

#### 2.2.1 School Recruitment

To qualify for inclusion in the current study all schools had half-day Junior Kindergarten programs that were part of the Model School for Inner Cities Initiative. Junior Kindergarten is a half or full-day preschool program offered to 4-year-olds by school boards in the province of Ontario, Canada. The aims are to build strong foundations for preschool children’s intellectual, physical, and social development (Ministry of Education, 1996). The Model School for Inner Cities Initiative provides schools in disadvantaged communities additional funding to create support services for children and their families (e.g., hearing and vision screening, nutrition programs, after school programs, and parent workshops). Only schools with half-day Junior Kindergarten programs qualified for inclusion in the current study because the full-day Kindergarten program is a new initiative that was still in the early phase of development and implementation at the time of this study. Any schools that made the switch from half-day Junior Kindergarten to the new full-day Junior Kindergarten or that were not part of the Inner City Model School Initiative during the 2010-2011 academic year were excluded. Inclusion in the Model School for Inner Cities Initiative changes annually depending on fluctuation of the neighbourhood income (e.g., increased neighbourhood income resulting from new housing projects), therefore the first step of recruitment was to identify which schools were part of this initiative in 2010-11. A review of the Toronto District School Board website revealed a list of 19 schools meeting all eligibility criteria. Each school was randomly assigned a number from 1-19.
2.2.2 Principal Recruitment

I contacted the principals of the schools assigned the lowest numbers (i.e., 1-10) by telephone. Eight of the 10 principals who were contacted agreed to allow their schools to participate. Reasons given for not participating included (a) a high proportion of families who did not speak English and (b) involvement in other research initiatives. Additionally, two of the schools that agreed to participate had just switched to the full day Junior Kindergarten program and no longer met the inclusion criteria. The principals of the next four schools on the randomly-ordered list were contacted and invited to participate. Three of these principals agreed to participate and one school declined because the principal and Junior Kindergarten teachers were new to the school. The principal of 15th school on the list was then contacted and agreed to participate completing recruitment of the necessary 10 schools. Additionally, one principal of the Model Schools for Inner Cities in the East quadrant learned about the research project from a neighbouring school and expressed interest in participating. Thus, a total of 11 Model Schools for Inner Cities participated. I then met with the principals in person to explain the study and answer any questions. All principals signed the consent form and introduced me to the Junior Kindergarten teachers. See Appendix A for the principal consent form.

2.2.3 Teacher Recruitment

The next step was to recruit the participation of the Junior Kindergarten teachers. I met with all the Junior Kindergarten teachers in each school to explain the aims of the study and answer any questions pertaining to involvement and procedures. Of the 11 participating schools, 24 Junior Kindergarten teachers were recruited. One school had one Junior Kindergarten teacher, eight schools had two Junior Kindergarten teachers, one school had three Junior Kindergarten teachers, and one school had four Junior Kindergarten teachers that were successfully recruited.
All 24 teachers were informed of the study, agreed to participate, and signed consent forms. The teacher consent form can be found in Appendix B. As part of the inclusion criteria, all teachers assisted with recruitment of children and completed two questionnaires, (a) a personal demographic form and (b) the Child Behavior Scale (Ladd, 2010) for each of the children recruited into the study. The demographic form asked for the teacher’s background information (e.g., years of experience, education, languages spoken) and can be found in Appendix C.

2.2.4 Child Recruitment

The teachers distributed information and consent forms as well as two questionnaires to all parents of children in their classrooms (see Appendix D, E, and F). One teacher did not receive any signed consent forms and was dropped from the study, leaving 23 participating teachers. Nine teachers contributed two classes to the current study (both their morning and afternoon classes), which resulted in a total of 32 junior kindergarten classes. A total of 347 consent forms were distributed and 106 parental consents were signed and returned, yielding a 31% return rate. Of these, 105 children met all the eligibility criteria, including, a score within 1.5 standard deviations of the mean on a measure of non-verbal IQ, which was administered during the first test session.

Of the 105 eligible children, three children were excluded from the study. One child left the country before the pretest could be conducted; one child completed the pretest but was absent from school for the subsequent three months; and one child was withdrawn prior to the posttest because the parent did not want to complete the child demographic form or the family literacy questionnaire. In addition, seven children moved after the pretest and could not be contacted for the posttest. In the latter case, their data remained in the sample and the means of the posttest
data for the remaining children were used for these seven children. This resulted in a final sample size of 102 children.

All families were asked to complete a child demographic form and a family literacy questionnaire. The demographic form asked about child and family background information (e.g., parental education, parental employment, languages spoken, health problems). The Family Literacy Questionnaire (Boudreau, 2005) asked parents to rate their family literacy practices and their child’s engagement in literacy related activities (e.g., number of books in the home, time spent reading, engagement in literacy activities).

2.3 Ethical Standards

Ethics approval for this study was obtained from both the University of Toronto Research Ethics Board and the Toronto District School Board External Research Review Committee. All participation in the current study was voluntary and all participants (i.e. school principals, teachers, parents, children) were free to withdraw their participation (including withdrawal of data previously collected) at any point during the course of the study without penalty. No monetary or other incentive was provided (with the exception of stickers to child participants during assessment). All names and confidential information were removed from demographic forms, family literacy questionnaires, and assessment forms and replaced with an identification number. All participant data were placed in a locked filing cabinet that was accessible only to my supervisor, and me. No information was disclosed to teachers, principals, or schools about how the children performed during the assessments at pretest or posttest. Demographic and family literacy practices were also kept confidential and were not shared with classroom teachers or the school. Strict adherence to the ethical research standards of the University of Toronto REB and
the Toronto District School Board External Research Review Committee was maintained through all stages of the current study.

2.4 Participants

2.4.1 Teachers

All demographic characteristics can be found in Table 2. Of the 23 participating teachers, 19 were female and four were male. Teachers ranged in age from 25-59 years with a mean age of 36.5 years. The primary language spoken for all teachers was English. Their years of experience teaching Junior Kindergarten ranged from one to 21 years with a mean of five years. Their years of post secondary education ranged from three to nine years and all teachers with the exception of two had completed a bachelor’s degree in education. In one case, the teacher started her teaching career 30 years ago when a Bachelor of Education was not a formal requirement for teaching in the Ontario education system. In the other case, the teacher had received her teaching certification in the United Kingdom and had 15 years experience prior to moving to Ontario.
Table 2

*Characteristics of the Junior Kindergarten Teachers*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Junior Kindergarten Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>((N = 24))</td>
</tr>
<tr>
<td>Age (in years)(^1)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>36.5 (8.9)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
</tr>
<tr>
<td></td>
<td>25-59</td>
</tr>
<tr>
<td>Years of Postsecondary Education(^1)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>5.9 (1.4)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
</tr>
<tr>
<td></td>
<td>3-9</td>
</tr>
<tr>
<td>Years of Experience(^1)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>5.0 (4.9)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
</tr>
<tr>
<td></td>
<td>1-21</td>
</tr>
<tr>
<td>Adults in the Classroom</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>2.1 (0.2)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
</tr>
<tr>
<td></td>
<td>2-3</td>
</tr>
</tbody>
</table>

\(^1\) There are missing data for these items because some forms were not completed in full. The \(n\) for these items ranges from 16-21.
2.4.2 Children

The demographic characteristics of the 102 children are summarized in Table 3. Of the participating children, 27 children (27%) were identified by parents as Caucasian, 21 children (21%) as African Heritage, 43 children (42%) as Asian Heritage, four children (4%) as Latino, 6 six children (6%) as Mixed Heritage, and in the case of one child ethnic background was not reported and could not be determined. Fifty-two children were male (51%) and 50 were female. At pretest, children ranged in age from 44-58 months with a mean age of 51.6 months. At posttest, children ranged in age from 52-64 months with a mean age of 57.8 months. Twenty four percent of children were enrolled in child care when not attending their half-day Junior Kindergarten program, whereas the remaining children were in home care for the remainder of the day. Fifty-one children (50%) reported having exposure to another language in the home, reflecting the multicultural mosaic typical of a large urban city. The languages spoken in the homes included Arabic, Bengali, Cantonese, Chinese, Creole, Filipino, French, Luo, Nigerian, Nyanja, Persian, Russian, Spanish, Swahili, Tamil, Turkish, Urdu, Polish and Vietnamese. All children were typically developing as determined by parent report on the demographic questionnaire. However, in the case of 12 children, the demographic forms sent home were not returned, resulting in missing data for these children. However, the nonverbal IQs of these 12 children were within the normal range. Several demographic forms were returned with incomplete information, resulting in missing data for specific variables for some children.

Reported maternal education (n = 82) ranged from elementary school to a graduate degree, with the majority of mothers having completed some college courses. A total of 20 parents did not report maternal education on the demographic form and 28 did not report paternal education.
Reported paternal education (n = 74) ranged from elementary school to a graduate degree, with the majority of fathers having completed some college courses. Median neighbourhood income ranged from $12,401-$28,953 as reported by Statistics Canada (Statistics Canada, 2011).
### Table 3

**Demographic Characteristics of the Children**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Children (N = 102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td>Caucasian</td>
</tr>
<tr>
<td></td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>African Heritage</td>
</tr>
<tr>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Asian Heritage</td>
</tr>
<tr>
<td></td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Latino</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Mixed</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Missing Data</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Age at Pretest&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>51.6 (3.4)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
</tr>
<tr>
<td></td>
<td>44-58</td>
</tr>
<tr>
<td>Age at Posttest&lt;sup&gt;1,2&lt;/sup&gt;</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>57.8 (3.2)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
</tr>
<tr>
<td></td>
<td>52-64</td>
</tr>
<tr>
<td>Exposure to Another Language</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Missing Data</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Child Care</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Missing Data</td>
</tr>
<tr>
<td></td>
<td>19</td>
</tr>
</tbody>
</table>

<sup>1</sup> Children’s age in months. <sup>2</sup>The N at posttest was 95.
2.5 Procedure

2.5.1 Pretest

Pretest assessments commenced in the fall semester taking a total of nine weeks to complete (October 4th-December 3rd). During this time period, 105 children were assessed individually in a quiet room outside of the classroom. The dimensions of the assessment room varied in each school. Typically, the guidance counsellor’s office was used. All rooms had a table with two chairs where the assessment took place. The child sat directly across the table from me during the assessment. There were no toys or materials in the assessment room that would distract the child during the assessment. Assessment materials (i.e., picture flip books, picture cards) were placed in the middle of the table in clear view of the child. Scoring sheets were placed behind the assessment materials to ensure that the child could not see what was being recorded. Assessment time ranged from 30-60 minutes depending on the skill level of the child. Children were given short breaks during the assessment and received stickers to ensure their motivation and engagement levels.

Prior to all assessments and before leaving the classroom, children were told what would be happening during the assessment and asked for their verbal assent. The child assent script can be found in Appendix J. Children were informed that if they wanted to leave to go back to the classroom that they could do so at any time. This occurred in one case during the pretest, when one child asked to discontinue the assessment because he was tired. The assessment for this child was completed the following day. All children were blind to the purpose and hypotheses of the study thus reducing any potential performance bias.
The pretest assessment consisted of four measures that included *The Expressive One-Word Picture Vocabulary Test* (Brownell, 2000), the *Wide Range Achievement Test-Early Reading Assessment* (Robertson, 2003), the *Comprehensive Test of Phonological Processing* (Wagner, Torgesen & Rashotte, 1999), and the *Columbia Mental Maturity Scale* (Burgemeister, Blum, & Lorge, 1972). Once all the assessments had been completed, direct classroom observations commenced. Observations took two weeks to complete and were completed in the first two weeks of December 2010. A total of 13 children were not observed during this time period due to sickness and absence from school. Observations for these children were rescheduled for the second week of January 2011.

### 2.5.1.1 Direct Observations

Each child was observed for a period of 10 minutes in varying play activities with small groups of peers (e.g. drama centre, crafts centre, blocks). The activities were naturally-occurring activities that were self-selected by the children after they had completed their daily academic tasks. This adds to the ecological validity of the observations as they were not pre-selected or manipulated to elicit any specific behaviour. Further, children were not made aware that they were being observed. Observations were conducted in a pencil and paper format. No audio or video recording devices were used. During the observations an iPod was used that had a pre-recorded beep occurring every 10 seconds. Target behaviours were recorded every 10 seconds immediately following the beep. A total of 60 behaviours were recorded for every child during the 10 minute observation. Observations were conducted focusing on one child at a time.

There were four target behaviours that were being recorded, including aggressive behaviour, prosocial behavior, solitary play, and contextually appropriate behavior. The coding scheme that was used for the current study was adapted from the Child Classroom Behavior Coding Scheme.
(Doctoroff et al., 2006). Doctoroff et al., (2006) included six additional target behaviours in their coding scheme that were not used in the current study. These behaviours included a) Not on Camera, b) Victim Misbehaviour Aggressive, c) Victim Misbehaviour Non-aggressive, d) Play Fighting, e) Child Affect: Positive, Negative, Neutral, and f) Inattentive/Attentive. These codes were dropped from the current study as they were not possible to code in the context of the current observations (i.e., inattention), did not apply to the questions of the current study (i.e., victims of behaviour), and are challenging to code with high reliability (i.e., child affect). An additional behaviour was included (i.e., contextually appropriate behaviour) to ensure that a behaviour was coded for every 10 second interval. The focal child was required to engage in the behaviours directly (not be a recipient) in order to receive a code. The adapted direct observation coding scheme can be found in Appendix K.

2.5.1.2 Reliability of Direct Observations

Inter-rater reliability of observations was conducted for 20% of the sample at Pretest and Posttest. An undergraduate student was trained on the coding scheme for approximately 20 hours. She watched videotapes of preschool children interacting in small groups and applied the coding system to these interactions. Prior to going into the classrooms and conducting live coding, inter-rater reliability of 85% or greater for all codes was achieved on five videotapes. Kappa calculations for live coding at Pretest and Posttest combined was 93% for aggressive behaviour (n = 15), 91% for prosocial behaviour (n = 45), 88% for solitary play (n = 144), and 60% for contextually appropriate behaviour (n = 1939).

2.5.1.3 Pretest Assessments

Additionally, teachers completed the Child Behavior Scale (Ladd, 2010) for all children in the study at pretest and these scales were collected during the nine-week pretest assessment period.
when I had completed all testing of each child in a given classroom. The order of assessments was fixed and occurred with *The Expressive One-Word Picture Vocabulary Test* (Brownell, 2000) first followed by the *Wide Range Achievement Test-Early Reading Assessment* (Robertson, 2003) and the *Comprehensive Test of Phonological Processing* (Wagner, Torgesen & Rashotte, 1999). The final assessment administered was the *Columbia Mental Maturity Scale* (Burgemeister, Blum, & Lorge, 1972). I conducted all the assessments, thus ensuring consistency across assessments. Blinding was not possible as I knew the time period, purpose, and hypotheses of the study. All *Family Literacy Questionnaires* (Boudreau, 2005) and demographic forms were collected during the nine-week pretest period.

### 2.5.2 Posttest

Posttest assessments were conducted in May 2011 and consisted of the *Wide Range Achievement Test- Early Reading Assessment* (Robertson, 2003) followed by the *Comprehensive Test of Phonological Processing* (Wagner, Torgesen & Rashotte, 1999). Posttest assessments were completed within a five-week period and assessments ranged from 20-30 minutes depending on the skill level of the child. Posttest assessments took place in the same room that was used during the pretest assessments. All children were read the same assent script and were asked for their verbal assent prior to leaving the classroom. Children were informed that if they wanted to leave to go back to the classroom that they could do so at any time. No child asked to leave during the posttest assessments. Children sat directly across the table from me with assessment materials (i.e., picture flip books) in the middle of the table in clear view of the child. Scoring sheets were placed behind the assessment materials to ensure that children could not see what was being recorded. Children were tested in the same order as the pretest assessments to ensure a five-month period between pre- and posttest assessments for each child. Direct observations for each
child followed completion of all assessments. Teachers also completed the *Child Behavior Scale* for each child at posttest and these scales were collected following testing of each child.

### 2.6 Outcome Measures

#### 2.6.1 The Wide Range Achievement Test-Early Reading Assessment (WRAT-ERA)

The *WRAT-ERA* is a standardized norm-referenced achievement test for children ages 4.6-7.11 (Robertson, 2003). The *WRAT-ERA* was developed in 2003 as a downward expansion to the *WRAT* to include subtests that assess pre-reading skills (Robertson, 2003). The *WRAT-ERA* consists of four subtests that are divided into two parts (i.e. pre-reading skills, beginning reading skills). Two subtests were administered to children: (a) *Letter/Word Discrimination* and (b) *Letter/Sound Discrimination*. A standard script is provided for administration of each subtest.

Only half of the *Letter/Word Discrimination* subtest was administered (i.e., the seven items pertaining to letter identification), which assesses a child’s knowledge and recognition of upper- and lower-case letters by having children name the letters presented. Children’s letter knowledge is a good predictor of future reading ability (Stevenson & Newman, 1986) and as such it was important to have some index of children’s letter knowledge. However, children’s visual discrimination of words was not a variable of interest and therefore was not assessed. In the administration of this subtest, a picture flip book was placed in front of the child and the child was asked to say the name of the letter on the page as the examiner pointed to it. Neutral comments such as “that’s fine” were given following the child’s response. No feedback that would suggest that the child’s response was correct or incorrect was given. Test administration was discontinued after the child answered five consecutive items incorrectly. Cronbach’s alpha for this subtest is reported as .82 for 4-year-olds (Robertson, 2003). Raw scores were used for
this subtest. Standard scores were not able to be computed because only half of the subtest was administered.

The *Letter/Sound Discrimination* subtest requires children to identify consonant sounds at the beginning and end of words (i.e., single, blended, and diagraphs) and vowel sounds (i.e., long and short). To administer this test, a picture flip book was placed in front of the child. Instructions were as follows: “Look at the letter in the box at the top of the page (examiner points to the letter). Listen while I name the pictures. Find the picture that begins with the same sound as the letter” (the examiner points to all four pictures while naming them) (Robertson, 2003). Neutral comments such as “that’s fine” were given following the child’s response. No feedback that would suggest that the child’s response was correct or incorrect was permitted. This was repeated for the second portion of the test that focused on sounds at the end of words, however the child was asked to “find the picture that ends with the same sound as the letter” (Robertson, 2003). Test administration was discontinued after the child answered five consecutive items incorrectly. Cronbach’s alpha for this subtest is reported as .83 for 4-year-olds (Robertson, 2003). Raw scores were also used for this subtest. To calculate the standard score on the *WRAT-ERA* for this subtest, the sum of two subtests are needed (i.e., the *Letter/Word Discrimination* subtest and the *Letter/Sound Discrimination* subtest). Since only half of the *Letter/Word Discrimination* subtest was administered it was not possible to calculate standard scores.

### 2.6.2 The Comprehensive Test of Phonological Processing (CTOPP)

The *CTOPP* is a standardized measure of phonological awareness that is normed for children ages 5:0-6:11 (Wagner, Torgesen & Rashotte, 1999). Because the *CTOPP* is normed for older children, children’s raw scores on three subtests were used to create a composite score of overall phonological awareness skills. The use of the *CTOPP* was chosen because of its psychometric
properties (i.e., Cronbach’s alpha ranging from .88-.93) for the subtests that were used (i.e., Elision, Blending Words, and Sound Matching).

The Elision subtest requires children to manipulate compound words, syllables within words, and onset and rimes. This subtest starts with compound words and moves to more challenging onset/rimes. The instructions for practice trials were as follows: “Let’s play a word game. Say Toothbrush. Now say Toothbrush without saying tooth” (Wagner, Torgesen, & Rashotte, 1999). The correct response would be for the child to respond with the word “Brush”. Corrective feedback was given during the three trial items and the first five test items to ensure children understand the task. No feedback was provided for the remaining test items. The test was discontinued after the child responded with three consecutive incorrect responses. The test manual reports Cronbach’s alpha for the Elision subtest as .90 for 5-year-olds (Wagner, Torgesen, & Rashotte, 1999).

The second subtest, Blending Words, was used to capture a child’s ability to combine different sounds to form words. The early items start with two sounds that form words such as s-ŭn gradually moving towards more challenging multi-sound words such as m-ā-th-ē-m-ā-t-ĭ-k-s. Children were instructed to listen to a CD recording where they heard “words in small parts, one at a time” (Wagner, Torgesen, & Rashotte, 1999). They were asked to listen carefully to the sounds they heard and combine the sounds to make a whole word. Corrective feedback was given during the trial items and the first three test items but was not provided for the remaining test items. The test was discontinued after the child responded with three consecutive incorrect responses. The test manual reports Cronbach’s alpha for the Elision subtest as .88 for 5-year-olds (Wagner, Torgesen, & Rashotte, 1999).
The third subtest, *Sound Matching*, assesses a child’s ability to recognize and match the sounds at the beginning and end of words. A picture book was placed in front of children. The instructions were as follows: “We’re going to play a game with words. I will show you pictures to help you remember the words. Look at the first picture (pointing to the picture). This is a *sock*. Now look at these two pictures (pointing to the other two pictures as they are being labeled). This is a *sun* and this is a *bear*. The word *sock* starts with the /s/ sound. Which of these picture words starts with the /s/ sound like *sock*: *sun* or *bear*?” (Wagner, Torgesen, & Rashotte, 1999). Corrective feedback was given during the practice items and the first three test items. No feedback was given after the third test item. Test administration stopped when the child received four of seven test items incorrect. The test manual reports Cronbach’s alpha for the *Elision* subtest as .93 for 5-year-olds (Wagner, Torgesen, & Rashotte, 1999).

### 2.6.3 The Child Behavior Scale (CBS)

The *CBS* was completed by teachers for all children enrolled in the study at both pretest and posttest. The *CBS* was used in the current study as both an outcome measure and an independent measure. This measure is a teacher report of children’s social/behavioural competence in the classroom (Ladd, 2010). It is comprised of 59 items in total. There are 6 subscales which include (a) *Aggressive with Peers*, (b) *Hyperactive/Distractible*, (c) *Asocial with Peers*, (d) *Anxious-Fearful*, (e) *Prosocial with Peers*, and (f) *Excluded by Peers*. *Aggressive with Peers* is defined as “verbal or physical behaviors that are likely to harm peers; includes both physical and verbal forms of aggression” (Ladd, 2010, p. 8). *Hyperactive/Distractible* is defined as “physical over-activity as signified by frequent and/or continuous body movements (i.e., restlessness, fidgeting), and/or attention problems, including trouble focusing or maintaining attention, difficulty concentrating, susceptibility to distractions” (Ladd, 2010, p. 8). *Asocial with peers* is defined as “the pursuit of solitary rather than social activities in peer contexts; self-imposed solitude as
indicated by child’s attempts to withdraw, play alone, or isolate themselves from peers” (Ladd, 2010, p. 8). Anxious/Fearful is defined as “manifest distress in social contexts, as exemplified by wariness, reticence, or emotional discomfort among peers; children’s propensity to cry, worry, or be fearful” (Ladd, 2010, p. 8). Prosocial with Peers is defined as “empathetic, cooperative, and self-sacrificing behaviors exhibited toward or with peers; includes behaviors such as helping, concern, kindness” (Ladd, 2010, p. 8). Finally, Excluded by Peers is defined as “peer-imposed rejection or isolation; peers actions toward a child are indicative of rejection (dislike), ignoring (non-response), or exclusion (not including; baring from activities); child is disliked, ignored, avoided, or excluded by peers” (Ladd, 2010, p. 8).

A list of items that comprise each subscale can be found in Appendix L. Behaviours are rated on a 3-point likert scale ranging from 1 (“doesn’t apply”) to 3 (“certainly applies”). Instructions for the CBS are as follows: “Please consider the descriptions contained in each of the following items below and rate the extent to which each of these descriptions applies to this child, particularly in the context of his or her behavior with peers” (Ladd, 2010). It is normed for children ages 4.0- 14.0. Cronbach’s alpha ranges in the test manual from .77-.96 (Ladd & Profilet, 1996). In the current sample Cronbach’s alpha is reported as .87 for Aggressive with Peers, .89 for Hyperactive/Distractible, .89 for Asocial with peers, .71 for Anxious/Fearful, .82 for Prosocial with Peers, and .89 for Excluded by Peers. Relatively high convergence with the Child Behavior Checklist, Teacher Report Form (Achenbach, 1991) was reported for two cohorts of Kindergarten children on the scales with conceptual overlap to the CBS (i.e., aggression, \( r = .71, p = .000 \) and \( r = .76, p = .000 \); hyperactivity, \( r = .79, p = .000 \) and \( r = .82, p = .000 \), anxiousness, \( r = .59, p = .000 \) and \( r = .65, p = .000 \), and asociality, \( r = .64, p = .000 \) and \( r = .50, p = .000 \).
2.7 Independent Measures

2.7.1 The Expressive One-Word Picture Vocabulary Test (EOWPVT)

The *EOWPVT* was administered at pretest to assess the child’s proficiency level in expressive vocabulary. The *EOWPVT* was used in the current study as both an outcome measure and an independent measure. The *EOWPVT* is a standardized measure that is normed for children ages 2-18 (Brownell, 2000). It consists of 170 pictures that depict concepts, objects and actions that the child must label. Instructions for the *EOWPVT* were as follows: “I am going to show you some pictures and I want you to tell me the word that names each picture or groups of pictures” (Brownell, 2000). Picture plates were shown to the child and they were asked “What’s this/What are these?” Administration of the test ended when children received six consecutive incorrect responses. Cronbach’s alpha is reported as .96 for 4-year-olds (Brownell, 2000). Both raw scores and standard scores were calculated. Raw scores were used for all analyses looking at within-participant data. However, for between-groups comparisons the standard scores were used. Criterion-related scores are reported as $r = .86$ with the *Expressive Definitions* subtest of the *Wesheler Intelligence Scale for Children- Third Edition* (Newcomer & Hammill, 1997) and $r = .83$ with the *Expressive Naming and Definitions* subtests of the *Stanford-Binet Intelligence Scale- Fourth Edition* (Thornedike, Hagen & Sattler, 1986).

2.7.2 The Columbia Mental Maturity Scale (CMMS)

The *Columbia Mental Maturity Scale* was administered as a measure of non-verbal IQ at pretest only. The *CMMS* is a standardized measure of general reasoning ability and is normed for children ages 3.6- 9.11 (Burgemeister, Blum, & Lorge, 1972). Children are shown a group of pictures on cards 6 x 19 inches and asked to point to the picture that does not belong with the
others. The test items of the CMMS are normed by age and all items are administered regardless of the number of consecutive incorrect responses. Cronbach’s alpha is reported as .86 for 4-year-olds (Burgemeister, Blum, & Lorge, 1972). Age Deviation scores were used for this measure. The criterion-related score with the Stanford-Binet Intelligence Scale (1964) was reported as $r = .67$.

### 2.7.3 The Family Early Literacy Questionnaire

The *Family Early Literacy Questionnaire* was completed by parents of children enrolled in the study. This questionnaire was adapted from the work of Boudreau (2005) and asks parents to rate early home literacy practices on a 5-point Likert scale where 1 represents “rarely” and 5 represents “several times per day”. It is comprised of 38 items that assess five different areas of early literacy (i.e., *Parent-Child Storybook Reading*, *Interaction with Rhyming Activities*, *Interaction with Writing Activities*, *Interaction with Letter/Sound Activities*, and *Parent Engagement in Literacy Activities*). To ensure that the 38 items were measuring five distinct constructs, the dimensionality of these items were submitted to a principal components factor analysis with oblique rotation (direct oblmin). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .75 (Field, 201X). Bartlett’s test of sphericity $X^2 (820) = 1960.51, p < .001$, indicated that the correlations among items were sufficiently large.

Five factors were extracted and rotated. Nine of the initial items did not load well on any of the five factors extracted and were subsequently dropped from the questionnaire and further analysis. The 29 remaining items accounted for 64.25% of the cumulative variance. Factor scores were computed for each of the five family literacy constructs using SPSS. Only three of the five constructs were used in the current study (i.e., *Parent-Child Storybook Reading*, *Interaction with Writing Activities*, and *Interaction with Letter/Sound Activities*).
2.8 Family Literacy Characteristics

Family literacy characteristics are summarized in Table 4. The mean number of books children owned was reported to be 41 and ranged between none and 278. On average, parents reported reading to their children 6.5 times a week (ranging between 2-17 times) for a total of five hours per week (ranging from 0.5- 24 hours). Parents were also asked to report on their child’s interest in books on a 5-point Likert scale with 1 representing “Activity Least Liked” to 5 representing “Favourite Activity”. The median rating was 4 indicating that the majority of the children in this sample had an interest in books. Group comparisons were conducted between monolingual children (EL1) and children exposed to a second language (EL2) with respect to their parent reported family literacy activities and can be found in Appendix G. A significant difference was found between groups for shared storybook reading where EL1 children’s parents reported engaging in storybook activities more frequently as compared to EL2 children (Mdn = 4.0, Mdn = 3.6, respectively). No other significant differences were found between groups. However, important to note, no information was collected on which language family literacy activities were being conducted in. This will be addressed further in the discussion section.
Table 4

*Family Literacy Characteristics of the Children*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Children</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Books Owned¹</td>
<td>Mean (SD)</td>
<td>41.4 (47.4)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>0-278.0</td>
</tr>
<tr>
<td>Number of Times per Week Child is Read to²</td>
<td>Mean (SD)</td>
<td>6.6 (3.5)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>2.0-17.0</td>
</tr>
<tr>
<td>Number of Hours per Week Child is Read to³</td>
<td>Mean (SD)</td>
<td>5.0 (4.0)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>0.5-24.0</td>
</tr>
<tr>
<td>Child Interest in Books⁴,⁵</td>
<td>Median</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>1.0-5.0</td>
</tr>
<tr>
<td>Parent-Child Storybook Reading</td>
<td>Median</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>1.8-5.0</td>
</tr>
<tr>
<td>Interaction with Writing Activities</td>
<td>Median</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>1.0-5.0</td>
</tr>
<tr>
<td>Interaction with Letter/Sound Activities</td>
<td>Median</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>1.0-5.0</td>
</tr>
</tbody>
</table>

Note: Family literacy activities were assessed using the *Family Literacy Questionnaire* (Boudreau, 2005). Activities are reported on scale ranging from 1 “rarely” to 5 “several times a day”. ¹ For this item, n = 82. ² For this item, n = 85. ³ For this item, n = 82. ⁴ For this item n = 76. ⁵ Child’s interest in books was rated on a 5-point Likert scale where 1 represents “Activity Least Liked”, and 5 represents “Favourite Activity”.
2.9 Children’s Summary Statistics

Table 5 summarizes children’s expressive vocabulary, non-verbal cognition, alphabet knowledge, and phonological awareness skills, at entry to and exit from Junior Kindergarten.

Summary statistics were also computed for EL1 and EL2 children separately and can be found in Appendix H. A significant difference between groups was found for children’s expressive vocabulary at entry to Junior Kindergarten where EL1 children scored higher on the *Expressive One Word Picture Vocabulary Test* (Brownell, 2000), as compared to EL2 children ($M = 102.9$, $M = 89.9$, respectively). A significant difference was also found for children’s alphabet knowledge at entry to Junior Kindergarten where EL2 children scored higher on the *Letter/Word Discrimination* subtest of the *Wide Range Achievement Test-Early Reading Assessment (WRAT-ERA)* (Robertson, 2003) as compared to EL1 children ($M = 2.9$, $M = 1.8$, respectively). No other significant differences were found between groups on non-verbal IQ or children’s phonological awareness skills.

Children’s alphabet knowledge was tested using half of the *Letter/Word Discrimination* subtest of the *Wide Range Achievement Test-Early Reading Assessment (WRAT-ERA)* (Robertson, 2003), in which children identified upper and lower case letters presented. Children’s phonological awareness skills were evaluated using (a) the *Letter/Sound Discrimination* subtest (*WRAT-ERA*), in which children identified consonant sounds at the beginning and end of words, (b) the *Elision* Subtest from the *Comprehensive Test of Phonological Processing (CTOPP)*, (Wagner, Torgesen & Rashotte, 1999), in which children are required to manipulate compound words, syllables within words and onset and rimes, (c) the *Blending Words* subtest (*CTOPP*), in which children combined different sounds to form words and (d) the *Sound Matching* subtest (*CTOPP*), in which children matched sounds at the beginning and end of words.
Children’s expressive vocabulary standard scores on the *Expressive One-Word Picture Vocabulary Test* (Brownell, 2000) ranged from 55-128 with a mean of 96.0 indicating that the majority of the current sample fell within the average range. Seven children scored below 1.5 standard deviations from the mean, falling into the low range for expressive vocabulary.

Inspection of demographic forms revealed that all seven children were exposed to another language in the home. Children’s age deviation scores on the *Columbia Mental Maturity Scale* (Burgemeister, Blum, & Lorge, 1972), a measure of non-verbal IQ, ranged from 80-137 (\(M = 106.4, SD = 12.6\)) indicating that all children in the current sample fell within the average range. However, one child had been previously excluded from the study as a result of scoring below 1.5 standard deviations from the mean.

The raw scores for children’s alphabet knowledge, measured using half of the *Letter/Word Discrimination* subtest (*WRAT-ERA*, Robertson, 2003) ranged from 0-7 out of a possible 7, with 25 children (24.5%) scoring 0. Because the complete subtest was not administered, no comparisons can be made to the test norms for 4-year-olds. Children’s raw scores on the *Letter/Sound knowledge* subtest ranged from 0-18 out of a possible 25, with 14 children (14%) scoring 0. The mean raw score reported for 4-year-olds in the *WRAT-ERA* test manual for the *Letter/Sound Discrimination* subtest is 6.2 (SD = 4.8) indicating that the majority of the sample fell below the expected mean for 4-year-olds.

Children’s raw scores on the *Elision* subtest of the *CTOPP* (Wagner, Torgesen & Rashotte, 1999), ranged from 0-6 out of a possible 20 with the majority of the sample (i.e., 74 children) scoring 0. The *CTOPP* is normed for children 5:0-6:11 and none of the children in the current sample were 5:0 at pretest. Thus, no comparisons to test norms can be made for any of the three *CTOPP* subtests used at pretest. Children’s raw scores on the *Blending Words* subtest (*CTOPP*)
ranged from 0-10 out of a possible 20 with 34 children, (33%) scoring 0. Finally, children’s raw scores on the Sound Matching subtest (CTOPP) ranged from 0-11 out of a possible 20 with nine children (9%) scoring 0.
Table 5

Children’s Expressive Vocabulary, Non-Verbal IQ, Alphabet Knowledge, and Phonological Awareness Skills at Entry to Junior Kindergarten

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pretest N= 102</th>
<th>Posttest N = 95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expressive Vocabulary¹</td>
<td>Mean (SD)</td>
<td>95.9 (13.7)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>55-128</td>
</tr>
<tr>
<td>Non-verbal IQ²</td>
<td>Mean (SD)</td>
<td>106.7 (12.6)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>80-137</td>
</tr>
<tr>
<td>WRAT-ERA Letter/Word Discrimination Subtest³</td>
<td>Mean (SD)</td>
<td>2.3 (2.1)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>0-7</td>
</tr>
<tr>
<td>WRAT-ERA Letter/Sound Discrimination Subtest⁴</td>
<td>Mean (SD)</td>
<td>3.9 (4.3)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>0-18</td>
</tr>
<tr>
<td>CTOPP Elision⁵</td>
<td>Mean (SD)</td>
<td>0.7 (1.2)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>0-6</td>
</tr>
<tr>
<td>CTOPP Blending Words⁵</td>
<td>Mean (SD)</td>
<td>2.3 (2.2)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>0-10</td>
</tr>
<tr>
<td>CTOPP Sound Matching⁵</td>
<td>Mean (SD)</td>
<td>3.2 (2.7)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>0-11</td>
</tr>
</tbody>
</table>

¹ Standard scores on the Expressive One Word Picture Vocabulary Test (Brownell, 2000). ² Age deviation scores on the Columbia Mental Maturity Scale (Burgemeister, Blum, & Lorge, 1972). ³ There are a total of 7 items on this subtest of the Wide Range Achievement Test-Early Reading Assessment (Robertson, 2003) as only the letter recognition items were administered. Raw scores were used for all WRAT-ERA subtests. ⁴ There are a total of 25 items on these subtests of the WRAT-ERA. ⁵ There are a total of 20 items on these subtests of the Comprehensive Test of Phonological Processing (Wagner, Torgesen & Rashotte, 1999). Raw scores were used for all CTOPP subtests.
Table 6 summarizes children’s social behavioural competence at entry and exit of Junior Kindergarten as rated by their teachers using the Child Behavior Scale (Ladd, 2010). Summary statistics are presented in Appendix I for EL1 and EL2 children separately. A significant difference between groups was found where EL2 children were rated higher on the Asocial with Peers subscale as compared to EL1 children (Mdn = 1.3, Mdn = 1.0, respectively). No other group differences were found. Children’s behaviours were rated on a 3-point scale where a score of 1 represented ‘doesn’t apply’, a score of 2 represented ‘applies sometimes’ and a score of 3 represented ‘certainly applies’. As can be seen in Table 6, Hyperactive/Distractible behaviour was the most commonly reported negative behaviour. Inspection of the data reveals that ratings for four of five negative behaviours were very low. For example, at pretest only 5.6% of the sample scored two or above on the Aggressive with Peers subscale, 14.5% scored two or above on the Asocial with Peers subscale, 5.6% scored two or above on the Anxious/Fearful subscale, and 3.3% scored two or above on the Excluded by Peers subscale. However, while ratings on these negative behaviour scales were low, 28.1% scored two or above on the Hyperactive/Distractible subscale. In contrast 60.3% of the current sample scored two or above on the Prosocial with Peers subscale. While reported ratings of negative behaviours were low, the means of the current sample were reflective of the means for two cohorts of Kindergarteners (N = 206, N = 206) reported by Ladd (2010) in the CBS manual. Thus, the children in the current sample displayed behaviours typical of a population of Kindergarteners.
Table 6

*Teacher Ratings of Children’s Behaviour at Entry to Junior Kindergarten*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 102</td>
<td>N = 95</td>
</tr>
<tr>
<td>Aggressive with Peers</td>
<td>Median 1.2</td>
<td>Median 1.0</td>
</tr>
<tr>
<td></td>
<td>Min-Max 1.2-2.8</td>
<td>Min-Max 1.0-2.7</td>
</tr>
<tr>
<td>Hyperactive/Distractible</td>
<td>Median 1.5</td>
<td>Median 1.5</td>
</tr>
<tr>
<td></td>
<td>Min-Max 1.0-3.0</td>
<td>Min-Max 1.0-3.0</td>
</tr>
<tr>
<td>Asocial with Peers</td>
<td>Median 1.7</td>
<td>Median 1.2</td>
</tr>
<tr>
<td></td>
<td>Min-Max 1.0-3.0</td>
<td>Min-Max 1.0-3.0</td>
</tr>
<tr>
<td>Anxious/Fearful</td>
<td>Median 1.0</td>
<td>Median 1.0</td>
</tr>
<tr>
<td></td>
<td>Min-Max 1.0-2.5</td>
<td>Min-Max 1.0-2.8</td>
</tr>
<tr>
<td>Prosocial with Peers</td>
<td>Median 2.0</td>
<td>Median 2.0</td>
</tr>
<tr>
<td></td>
<td>Min-Max 1.1-3.0</td>
<td>Min-Max 1.0-3.0</td>
</tr>
<tr>
<td>Excluded by Peers</td>
<td>Median 1.0</td>
<td>Median 1.0</td>
</tr>
<tr>
<td></td>
<td>Min-Max 1.0-2.1</td>
<td>Min-Max 1.0-3.0</td>
</tr>
</tbody>
</table>

*Note: All behaviours were assessed using the Child Behavior Scale (Ladd, 2010). Behaviours are reported on scale ranging from 1 “doesn’t apply” to 3 “certainly applies”.*
3 Results

The results are presented in three sections: (a) classroom comparisons of phonological awareness outcomes, (b) correlations and multiple regressions between dependent and independent measures, and (c) correlations between behavioural measures. All analyses conducted were two-tailed with an alpha set at .05. The distributional properties of all variables were first examined to ensure that all variables were normally distributed. Inspection of the behavioural scales (i.e., Aggressive with Peers, Hyperactive/Distractible, Asocial with Peers, Anxious/Fearful, Prosocial with Peers, Excluded by Peers) revealed a positive skew for all six subscales at Pretest and Posttest. Thus, log transformations were conducted on all subscales correcting for the positive skew and to ensure the assumption of normality was not violated.

To ensure that the four letter/sound subtests (i.e., WRAT-ERA Letter/Sound Discrimination, CTOPP Elision, CTOPP Blending Words, and CTOPP Sound Matching), were measuring one distinct construct (i.e., phonological awareness), the dimensionality of these subtests was submitted to a principal components factor analysis. Only one factor was extracted from the principal components analysis confirming our hypothesis that all four subtests loaded on the same factor, accounting for 56.5% of the variance. A factor rotation was not conducted as only one factor was extracted. A composite score of phonological awareness was computed for each child by calculating z-scores for each of these four subtests and averaging them.

3.1 Classroom Comparisons of Phonological Awareness Outcomes

The study sample consisted of 102 children from 23 different classrooms across 11 schools located in all four quadrants of the metropolitan Toronto area. The first step was to conduct a one-way analysis of variance between subjects with phonological awareness outcomes as the dependent variable and classroom as the fixed factor to determine whether hierarchical linear
modeling or hierarchical regression analysis would be appropriate. The results of this analysis revealed no significant differences between classrooms $F(1,22) = 1.10, p = .39$, suggesting that there was no shared variance. Thus, hierarchical regression analyses were employed.

### 3.2 Correlations and Multiple Regressions

#### 3.2.1 Family Literacy and Emergent Literacy

The first question of the study asked if family literacy activities contributed unique amounts of variance in predicting children’s (a) alphabet knowledge, (b) phonological awareness, and (c) expressive vocabulary at entry to Junior Kindergarten after controlling for non-verbal IQ and second language exposure. Children’s second language exposure was controlled for in these analyses as a result of the significant differences found between EL1 and EL2 children with respect to alphabet knowledge and expressive vocabulary. Inspection of the family literacy questionnaires revealed incomplete data for 15 children. As a result of the missing data, hierarchical regressions were conducted with the children who had completed data ($n = 87$). Bivariate correlations were conducted to determine whether the three family literacy subscales were related to the three outcome variables of interest. It was predicted that significant positive relationships would be found among the family literacy activities and children’s alphabet knowledge, phonological awareness skills, and expressive vocabulary at entry to Junior Kindergarten.

A series of bivariate correlations among the three family literacy subscales, children’s IQ, and alphabet knowledge at pretest were conducted to verify whether a significant relationship existed between the predictor and outcome variables. An inspection of the data in Table 7 reveals only one significant relationship between *Interaction with Letter/Sound Activities* and children’s alphabet knowledge, $r = .318, p = .001$. This is a medium effect size (Green & Salkind, 2008).
This relationship remained significant following a Bonferroni-Holmes adjustment. No significant relationships were found between Parent-Child Storybook Activities and children’s alphabet knowledge, $r = -0.093, p = .355$, or Interaction with Writing Activities and children’s alphabet knowledge, $r = 0.188, p = .058$. In addition, non-verbal IQ was not significantly related to children’s alphabet knowledge ($r = -0.150, p = .133$), however the inclusion of non-verbal IQ as a control variable was theoretically motivated and included in the hierarchical multiple regression analysis (Lonigan et al., 1999).
### Table 7

*Zero-Order Correlations among Alphabet Knowledge, Family Literacy Practices, Expressive Vocabulary and Non-Verbal IQ at Pretest*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Alphabet Knowledge</th>
<th>Phonological Awareness</th>
<th>Expressive Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 87</td>
<td>N = 87</td>
<td>N = 87</td>
</tr>
<tr>
<td>Parent-Child Storybook</td>
<td>r = -.093</td>
<td>r = -.047</td>
<td>r = .262**</td>
</tr>
<tr>
<td>Reading</td>
<td>p = .355</td>
<td>p = .637</td>
<td>p = .007</td>
</tr>
<tr>
<td>Interaction withWriting</td>
<td>r = .188</td>
<td>r = .052</td>
<td>r = .051</td>
</tr>
<tr>
<td>Activities</td>
<td>p = .058</td>
<td>p = .604</td>
<td>p = .611</td>
</tr>
<tr>
<td>Interaction withLetter/Sound Activities</td>
<td>r = .338**</td>
<td>r = .168</td>
<td>r = .009</td>
</tr>
<tr>
<td></td>
<td>p = .001</td>
<td>p = .092</td>
<td>p = .932</td>
</tr>
<tr>
<td>Non-Verbal IQ</td>
<td>r = .120</td>
<td>r = .394**</td>
<td>r = .413**</td>
</tr>
<tr>
<td></td>
<td>p = .135</td>
<td>p = .000</td>
<td>p = .000</td>
</tr>
</tbody>
</table>

Note: Alphabet Knowledge assessed using raw scores from the *Letter/Word Discrimination* subtest (*WRAT-ERA*, Robertson, 2003). Bonferroni-Holmes adjustments were made per column for each outcome variable. Group means were used for children who had missing data on the Family Literacy Questionnaire.
In the next step, a multiple regression analysis was conducted to predict children’s alphabet knowledge using non-verbal IQ (Step 1) and second language exposure (Step 2) as control variables, and *Interaction with Letter/Sound Activities* in the home (Step 3) as the predictor variable. The result of the multiple regression analysis is presented in Table 8. The results of the multiple regression analysis indicated that *Interaction with Letter/Sound Activities* accounted for a significant amount of unique variance in predicting children’s alphabet knowledge at entry to Junior Kindergarten after controlling for children’s non-verbal IQ and second language exposure, $R^2 = .21, F(1, 84) = 8.83, p < .01$. This suggests that children whose parents engage in higher amounts of interactions with letter/sound activities at home have better alphabet knowledge at entry to Junior Kindergarten.
Table 8

Multiple Regression Analysis on Interaction with Letter/Sound Activities and Alphabet Knowledge

<table>
<thead>
<tr>
<th>Step and Predictor</th>
<th>Alphabet Knowledge (Pretest)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Model Summary</td>
</tr>
<tr>
<td></td>
<td>$R^2$</td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>.01</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Second Language Exposure</td>
<td>.12</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
</tr>
<tr>
<td>Interaction with Letter/Sound Activities</td>
<td>.21</td>
</tr>
</tbody>
</table>

Note: N = 87
** Significant at the 0.01 level (2-tailed).
Phonological awareness at entry to Junior Kindergarten was the next outcome variable of interest. As a first step, a series of bivariate correlations were conducted among the three family literacy activities, IQ, and children’s phonological awareness at pretest. An inspection of the data in Table 7 revealed only one significant relationship between non-verbal IQ and phonological awareness, $r = .394, p = .000$, with a medium effect size (Green & Salkind, 2008). Because no significant relationships were found between the family literacy subscales and phonological awareness, no further analyses were conducted. For the current sample, the three family literacy activities did not appear to contribute to children’s phonological awareness skills at entry to Junior Kindergarten.

The final outcome variable of interest was children’s expressive vocabulary at entry to Junior Kindergarten. A series of bivariate correlations among the three family literacy activities, IQ, and children’s expressive vocabulary at pretest revealed significant relationships between Parent-Child Storybook Activities and children’s expressive vocabulary, $r = .262, p = .007$, and children’s expressive vocabulary and non-verbal IQ, $r = .413, p = .000$ (see Table 7). No other correlations reached significance.

In the next step, a multiple regression analysis was conducted to predict children’s expressive vocabulary using non-verbal IQ (Step 1) and second language exposure (Step 2) as control variables and Parent-Child Storybook Activities in the home (Step 3) as the predictor variable. The results of the multiple regression analysis are presented in Table 9. The results of the multiple regression revealed no significant association between Parent-Child Storybook Activities and children’s expressive vocabulary at entry to Junior Kindergarten after controlling for non-verbal IQ and second language exposure, $R^2 = .35, F(1, 84) = 1.40, p = ns$. This suggests
that storybook activities did not significantly predict children’s expressive vocabulary at entry to Junior Kindergarten in the current sample.
Table 9

Multiple Regression Analysis on Parent-Child Storybook Activities and Expressive Vocabulary

<table>
<thead>
<tr>
<th>Step and Predictor</th>
<th>Expressive Vocabulary (Pretest)</th>
<th>General Model Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( R^2 )</td>
<td>( \Delta R^2 )</td>
</tr>
<tr>
<td>Step 1 Cognition</td>
<td>.17</td>
<td>.17</td>
</tr>
<tr>
<td>Step 2 Second Language Exposure</td>
<td>.33</td>
<td>.16</td>
</tr>
<tr>
<td>Step 2 Parent-Child Storybook Activities</td>
<td>.35</td>
<td>.01</td>
</tr>
</tbody>
</table>

Note: N = 87
**Significant at the 0.01 level (2-tailed).
*Significant at the 0.05 level (2-tailed).
3.2.2 Social Behaviours and Phonological Awareness Outcomes

The second question of this study asked whether social behaviours at entry into Junior Kindergarten are associated with phonological awareness outcomes at the end of Junior Kindergarten after controlling for children’s initial phonological awareness skills, expressive vocabulary and non-verbal IQ. Controlling first for children’s initial phonological awareness skills allows a more rigorous test of a casual model (e.g., Jenkins & Astington, 2000). Further, it reduces the risk of overestimating the variance that social behaviours account for in the relationship with phonological awareness outcomes. It was predicted that children who received higher ratings on negative behaviour scales (i.e., Aggressive with Peers, Hyperactivity/Distractibility, Anxious/Fearfulness and Excluded by Peers) at entry to Junior Kindergarten would have poorer phonological awareness outcomes at the end of Junior Kindergarten. It was also predicted that children who received higher ratings for prosocial behaviours at entry to Junior Kindergarten would have stronger phonological awareness skills at the end of Junior Kindergarten. The descriptive statistics for the six subtests of the Child Behavior Scale (Ladd, 2010) and all four measures of phonological awareness were presented in Tables 5 and 6 in the methods section.

As a first step, a series of bivariate correlations were conducted among the six subscales of the Child Behavior Scale (Ladd, 2010) at pretest and the composite measure of phonological awareness at posttest. Seven children did not complete the tests of phonological awareness at posttest as a result of relocating during the year to another school. The group mean of phonological awareness outcomes was computed and used in these seven cases. An inspection of the data in Table 10 reveals that four of the six correlations were statistically significant. These correlations remained significant after using the Bonferroni-Holms approach to control for Type 1 errors. Significant negative correlations were found between phonological awareness and the
Hyperactive/Distractible subscale, \( r = -0.398, p = 0.000 \), the Aggressive with Peers subscale, \( r = -0.262, p = 0.014 \), and the Excluded by Peers subscale, \( r = -0.312, p = 0.003 \). Further, a positive correlation was found between the Prosocial with Peers subscale and phonological awareness outcomes, \( r = -0.261, p = 0.013 \). All effect sizes were small to medium (Green & Salkind, 2008). No significant relationship was found between phonological awareness and Asocial with Peers subscale or the Anxious/Fearful subscale. These two subscales were excluded from all subsequent analyses. All significant correlations were in the expected direction, that is, negative behaviours were related to poorer phonological awareness outcomes and positive behaviours were related to higher scores in phonological awareness outcomes.
Table 10

Zero-Order Correlations among Social Behaviours and Phonological Awareness Outcomes

<table>
<thead>
<tr>
<th>Variables</th>
<th>Phonological Awareness Composite Scores (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological Awareness</td>
<td>—</td>
</tr>
<tr>
<td>(Posttest)</td>
<td></td>
</tr>
<tr>
<td>CBS Aggressive with Peers</td>
<td>$r = -0.262^*$</td>
</tr>
<tr>
<td>(Pretest)</td>
<td>$p = 0.014$</td>
</tr>
<tr>
<td>CBS Hyperactive/Distractible</td>
<td>$r = -0.398^{**}$</td>
</tr>
<tr>
<td>(Pretest)</td>
<td>$p = 0.000$</td>
</tr>
<tr>
<td>CBS Asocial with Peers</td>
<td>$r = -0.151$</td>
</tr>
<tr>
<td>(Pretest)</td>
<td>$p = 0.162$</td>
</tr>
<tr>
<td>CBS Anxious/Fearful</td>
<td>$r = -0.134$</td>
</tr>
<tr>
<td>(Pretest)</td>
<td>$p = 0.214$</td>
</tr>
<tr>
<td>CBS Prosocial with Peers</td>
<td>$r = 0.264^*$</td>
</tr>
<tr>
<td>(Pretest)</td>
<td>$p = 0.013$</td>
</tr>
<tr>
<td>CBS Excluded by Peers</td>
<td>$r = -0.312^*$</td>
</tr>
<tr>
<td>(Pretest)</td>
<td>$p = 0.003$</td>
</tr>
</tbody>
</table>

Note: CBS refers to the Child Behavior Scale (Ladd, 2010). Composite scores for phonological awareness outcomes were calculating the average of the Letter/Sound Discrimination subtest (WRAT-ERA, Robertson, 2003) and the Elision, Blending Words and Sound Matching subtests (CTOPP, Wagner, Torgesen & Rashotte, 1999). *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).
In the second step, a series of partial correlations were conducted on the four subtests of the *Child Behavior Scale* (Ladd, 2010) and phonological awareness, controlling for expressive vocabulary and non-verbal IQ. The results of these partial correlations are presented in Table 11. The results revealed that the correlations between phonological awareness outcomes and *Aggressive with Peers, Hyperactive/Distractible*, and *Excluded by Peers* were still significant, $r = -.284, p = .008$, $r = -.317, p = .003$, and $r = -.264, p = .014$, respectively. The effect sizes were small to medium (Green & Salkind, 2008). In contrast, the correlation between *Prosocial with Peers* and phonological awareness was no longer significant. Thus, *Prosocial with Peers* was dropped from the regression model as a predictor variable.
Table 11

*Partial Correlations among Social Behaviours and Phonological Awareness Outcomes Controlling for Expressive Vocabulary and Non-Verbal IQ*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Phonological Awareness (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological Awareness (Posttest)</td>
<td>—</td>
</tr>
<tr>
<td>CBS Aggressive with Peers (Pretest)</td>
<td>$r = -0.284^{**}$ $p = 0.008$</td>
</tr>
<tr>
<td>CBS Hyperactive/Distractible (Pretest)</td>
<td>$r = -0.317^{**}$ $p = 0.003$</td>
</tr>
<tr>
<td>CBS Prosocial with Peers (Pretest)</td>
<td>$r = 0.153$ $p = 0.159$</td>
</tr>
<tr>
<td>CBS Excluded by Peers (Pretest)</td>
<td>$r = -0.264$ $p = 0.014^*$</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**
*Correlation is significant at the 0.05 level (2-tailed).*
In the final step, a hierarchical multiple regression analysis was conducted to examine the variance social behaviours contributed to phonological awareness outcomes at posttest using phonological awareness at pretest (Step 1), expressive vocabulary (Step 2), and non-verbal IQ (Step 3) as control factors, *Hyperactive* behaviours (Step 4), *Aggressive* behaviours (Step 5), and *Excluded by Peers* (Step 6) as the predictor variables. Second language exposure was not entered into this multiple regression model as t-tests revealed no significant differences between EL1 and EL2 children with respect to the outcome variable (i.e., children’s phonological awareness outcomes) or the predictor variables (i.e., *Aggressive with Peers, Hyperactive/Distractible*, or *Excluded by Peers*). The results of the multiple regression analysis are displayed in Table 12. The results indicated that phonological awareness skills at pretest accounted for a significant amount of unique variance towards phonological awareness outcomes at the end of the year (i.e., 53%). This is a large effect size (Green & Salkind, 2008). Second, expressive vocabulary accounted for a significant amount of variance in phonological awareness outcomes (i.e., 2%) however the beta weight was not significant indicating shared variance with children’s initial phonological awareness skills. This is a small effect size (Green & Salkind, 2008). Third, non-verbal IQ did not significantly contribute variance in phonological awareness outcomes in the current model. Fourth, *Hyperactive/Distractible* accounted for a significant amount of variance in phonological awareness outcomes (i.e., 2%) however the beta weight was not significant indicating shared variance. This is a small effect size (Green & Salkind, 2008). Fifth, *Aggressive with Peers* did not significantly contribute to phonological awareness outcomes in the current model. Finally, *Excluded by Peers* accounted for a significant amount of unique variance in phonological awareness outcomes (i.e., 3%), which is a small effect size (Green & Salkind, 2008). These results suggest that children who are excluded by the peer group upon entry to
Junior Kindergarten perform more poorly on measures of phonological awareness at the end of the year.

Table 12

*Hierarchical Regression Analysis on Social Behaviour and Phonological Awareness*

<table>
<thead>
<tr>
<th>Step and Predictor</th>
<th>Phonological Awareness Outcomes (Posttest)</th>
<th>General Model Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R^2</td>
<td>ΔR^2</td>
</tr>
<tr>
<td>Step 1</td>
<td>.53</td>
<td>.53</td>
</tr>
<tr>
<td>Phonological Awareness (Pretest)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.55</td>
<td>.02</td>
</tr>
<tr>
<td>Expressive Vocabulary (Pretest)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>.56</td>
<td>.01</td>
</tr>
<tr>
<td>Cognition (Pretest)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td>.58</td>
<td>.02</td>
</tr>
<tr>
<td>Hyperactive/Distractible (Pretest)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5</td>
<td>.59</td>
<td>.01</td>
</tr>
<tr>
<td>Aggressive with Peers (Pretest)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 6</td>
<td>.62</td>
<td>.03</td>
</tr>
<tr>
<td>Excluded by Peers (Pretest)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Significant at the 0.01 level (2-tailed).  
* Significant at the 0.05 level (2-tailed).
3.2.3 Phonological Awareness Skills and Social Behaviours

The third question of this study asked whether phonological awareness skills at entry in Junior Kindergarten are associated with children’s social behaviours at the end of the Junior Kindergarten year. It was predicted that children who had poor phonological awareness skills at entry to Junior Kindergarten would be rated higher on subscales measuring Aggressive with Peers, Hyperactive/Distractible, Asocial with Peers and Anxious/Fearful and Excluded by Peers at the end of Junior Kindergarten. It was also predicted that children who had good phonological awareness skills at entry to Junior Kindergarten would be rated higher on the Prosocial with Peers subscale at the end of the Junior Kindergarten year. To answer this question, the main analysis used was two multiple regression analyses but bivariate correlations are presented first. The descriptive statistics for all four measures of phonological awareness at pretest and the six subtests of the Child Behavior Scale (Ladd, 2010) at posttest were presented in Tables 5 and 6 in the methods section.

A series of bivariate correlations were conducted among the composite measure of phonological awareness at pretest and the 6 subscales of the Child Behavior Scale (Ladd, 2010) at posttest. An inspection of the data in Table 13 reveals that two of the six correlations were statistically significant after applying the Bonferroni-Holmes adjustment. Significant negative correlations were found between phonological awareness skills and Hyperactive/Distractible, $r = -.283$, $p = .006$ and Asocial with Peers, $r = -.283$, $p = .006$. All effect sizes were small (Green & Salkind, 2008). No significant relationship was found between phonological awareness skills and any of the other subscales. Thus, these four subscales were excluded from all subsequent analyses. All significant correlations were in the expected direction, that is, poor phonological awareness skills were related to negative behaviours. In addition, the control variables were not related to
outcome variables (i.e., the Hyperactive/Distractible subscale at Posttest was not significantly related to expressive vocabulary, $r = -.120, p = .253$ or non-verbal IQ, $r = -.172, p = .100$, and the Asocial with Peers subscale at Posttest was not significantly related to expressive vocabulary, $r = -.120, p = .253$ or non-verbal IQ, $r = -.172, p = .100$). However, the inclusion of non-verbal IQ as a control variable was theoretically motivated and thus included in the regression models (Lonigan et al., 1999). In addition, group comparisons between EL1 and EL2 children using t-tests revealed significant differences between groups for the Asocial with Peers subscale. Thus, second language exposure was entered into the multiple regression analysis examining the association between phonological awareness skills and Asocial behaviours.
Table 13

Zero-Order Correlations among Phonological Awareness Skills and Social Behaviours

<table>
<thead>
<tr>
<th>Variables</th>
<th>Phonological Awareness Composite Scores (Pretest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological Awareness (Pretest)</td>
<td>—</td>
</tr>
<tr>
<td>CBS Aggressive with Peers (Posttest)</td>
<td>$r = -.048$  \hspace{2cm} $p = .647$</td>
</tr>
<tr>
<td>CBS Hyperactive/Distractible (Posttest)</td>
<td>$r = -.283^*$  \hspace{2cm} $p = .006$</td>
</tr>
<tr>
<td>CBS Asocial with Peers (Posttest)</td>
<td>$r = -.283^*$  \hspace{2cm} $p = .006$</td>
</tr>
<tr>
<td>CBS Anxious/Fearful (Posttest)</td>
<td>$r = -.134$  \hspace{2cm} $p = .214$</td>
</tr>
<tr>
<td>CBS Prosocial with Peers (Posttest)</td>
<td>$r = .228$  \hspace{2cm} $p = .028$</td>
</tr>
<tr>
<td>CBS Excluded by Peers (Posttest)</td>
<td>$r = -.043$  \hspace{2cm} $p = .682$</td>
</tr>
</tbody>
</table>

Note: Composite scores for phonological awareness outcomes were calculated by combining the Letter/Sound Discrimination subtest (WRAT-ERA, Robertson, 2003) and the Elision, Blending Words and Sound Matching subtests (CTOPP, Wagner, Torgesen & Rashotte, 1999) and averaging them.
In the final step, two hierarchical multiple regression analyses were conducted to assess how much variance initial phonological awareness skills contribute towards *Hyperactive/Distractible* behaviours and towards *Asocial* behaviours. Two regression analyses were conducted as a result of examining two different social behaviours as the outcome variable. The first hierarchical multiple regression analysis was conducted to examine the amount of variance phonological awareness skills would contribute to *Hyperactive/Distractible* behaviours at posttest using *Hyperactive/Distractible* behaviours at pretest (Step 1), and non-verbal IQ (Step 2) as control variables and children’s phonological awareness skills at pretest as the predictor variable (Step 3). The results of the multiple regression analysis are displayed in Table 14. The results indicated that *Hyperactive/Distractible* behaviours at pretest accounted for a significant amount of unique variance in *Hyperactive/Distractible* behaviours at the end of the year (i.e., 57% of the variance). This is a large effect size (Green & Salkind, 2008). Non-verbal IQ did not account for any variance in *Hyperactive/Distractible* behaviours in the current model. Finally, initial phonological awareness skills did not account for a significant amount of variance in *Hyperactive/Distractible* behaviours in the current model suggesting that in the current sample, phonological awareness skills at entry into Junior Kindergarten are not significantly associated with children’s *Hyperactive/Distractible* behaviours at the end of the year.
### Table 14

*Hierarchical Regression Analysis on Phonological Awareness and Hyperactive/Distractible Behaviours*

<table>
<thead>
<tr>
<th>Step and Predictor</th>
<th>Hyperactive/Distractible (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Model Summary</td>
</tr>
<tr>
<td></td>
<td>$R^2$</td>
</tr>
<tr>
<td>Step 1</td>
<td>Hyperactive/Distractible (Pretest)</td>
</tr>
<tr>
<td>Step 2</td>
<td>Cognition (Pretest)</td>
</tr>
<tr>
<td>Step 3</td>
<td>Phonological Awareness (Pretest)</td>
</tr>
</tbody>
</table>

**Significant at the 0.01 level (2-tailed).**
The second hierarchical multiple regression analysis was conducted to examine how much variance phonological awareness skills would contribute to *Asocial* behaviours at posttest using *Asocial* behaviours at Pretest (Step 1), non-verbal IQ (Step 2), and second language exposure (Step 3) as a control factors, and children’s phonological awareness skills at Pretest as the predictor variable (Step 4). The results of the multiple regression analysis are displayed in Table 15. The results indicated that *Asocial* behaviours at Pretest accounted for a significant amount of unique variance in *Asocial* behaviours at the end of the year (i.e., 4% of the variance). Second, non-verbal IQ did not account for a significant amount of variance in children’s *Asocial* behaviours at the end of the year. Third, second language exposure did not account for a significant amount of variance in children’s *Asocial* behaviours at the end of the year. However, initial phonological awareness skills did account for a significant amount of unique variance in *Asocial* behaviours at the end of the year (i.e., 5% of the variance) in the current model. This is a small effect (Green & Salkind, 2008). The results suggest that children who enter into Junior Kindergarten with poorer phonological awareness skills receive higher ratings for *Asocial with Peers* by the end of the year.
Table 15

Hierarchical Regression Analysis on Phonological Awareness and Asocial with Peers

<table>
<thead>
<tr>
<th>Step and Predictor</th>
<th>Asocial with Peers (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Model Summary</td>
</tr>
<tr>
<td></td>
<td>$R^2$</td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
</tr>
<tr>
<td>Asocial with Peers (Pretest)</td>
<td>.04</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Cognition (Pretest)</td>
<td>.07</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
</tr>
<tr>
<td>Second Language Exposure</td>
<td>.07</td>
</tr>
<tr>
<td>Step 4</td>
<td></td>
</tr>
<tr>
<td>Phonological Awareness (Pretest)</td>
<td>.12</td>
</tr>
</tbody>
</table>

*Significant at the 0.05 level (2-tailed).
3.3 Correlations between Behavioural Measures

The final question of the study asked whether there would be a significant relationship between teacher reports and direct observations of children’s classroom behaviours. To answer this question, a series of bivariate correlations were conducted between teacher reports and direct observations at both pretest and posttest. The Bonferroni-Holms adjustment was applied to control for Type 1 errors. The data are presented in Tables 16 and 17. An inspection of the data in Table 15 reveals a significant relationship between teacher reports on the Aggressive with Peers subscale and direct observations of aggression at pretest, $r = .249, p = .012$. No other significant relationships were found between teacher report and direct observations at pretest. An inspection of the data in Table 16 also reveals a significant positive relationship between teacher reports on the Aggressive with Peers subscale and direct observations of aggression at posttest, $r = .503, p = .000$, and teacher reports on the Asocial with Peers subscale and direct observations of solitary play, $r = .276, p = .009$. Further, a significant negative relationship was found between teacher reports on the Aggressive with Peers subscale and direct observations of prosocial behaviours, $r = -.290, p = .006$. Similar to the pretest, no other significant relationships were found between teacher report and direct observations. This suggests that for certain types of behaviours significant relationships between teacher report and direct observations may be found.
### Table 16

**Zero-Order Correlations between Teacher Reports and Direct Observations of Children’s Social Behaviours at Pretest**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Aggressive with Peers&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Asocial with Peers&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Prosocial with Peers&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggressive Behaviour&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$r = .249$</td>
<td>$r = .098$</td>
<td>$r = -.198$</td>
</tr>
<tr>
<td></td>
<td>$p = .012^*$</td>
<td>$p = .334$</td>
<td>$p = .049$</td>
</tr>
<tr>
<td>Solitary Play&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$r = -.141$</td>
<td>$r = .085$</td>
<td>$r = .038$</td>
</tr>
<tr>
<td></td>
<td>$p = .163$</td>
<td>$p = .400$</td>
<td>$p = .709$</td>
</tr>
<tr>
<td>Prosocial Behaviour&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$r = .007$</td>
<td>$r = -.143$</td>
<td>$r = .166$</td>
</tr>
<tr>
<td></td>
<td>$p = .949$</td>
<td>$p = .154$</td>
<td>$p = .101$</td>
</tr>
</tbody>
</table>

<sup>1</sup> Direct observations of children’s behaviours.  
<sup>2</sup> Teacher reports using the *Child Behavior Scale* (Ladd, 2010).  
*Correlation significant at the 0.05 level (2-tailed)*

### Table 17

**Zero-Order Correlations between Teacher Reports and Direct Observations of Children’s Social Behaviours at Posttest**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Aggressive with Peers&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Asocial with Peers&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Prosocial with Peers&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggressive Behaviour&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$r = .503^{**}$</td>
<td>$r = -.038$</td>
<td>$r = -.290$</td>
</tr>
<tr>
<td></td>
<td>$p = .000$</td>
<td>$p = .722$</td>
<td>$p = .006^{**}$</td>
</tr>
<tr>
<td>Solitary Play&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$r = -.001$</td>
<td>$r = .276$</td>
<td>$r = .031$</td>
</tr>
<tr>
<td></td>
<td>$p = .989$</td>
<td>$p = .009^{**}$</td>
<td>$p = .778$</td>
</tr>
<tr>
<td>Prosocial Behaviour&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$r = -.154$</td>
<td>$r = -.121$</td>
<td>$r = .135$</td>
</tr>
<tr>
<td></td>
<td>$p = .152$</td>
<td>$p = .261$</td>
<td>$p = .231$</td>
</tr>
</tbody>
</table>

<sup>1</sup> Direct observations of children’s behaviours.  
<sup>2</sup> Teacher reports using the *Child Behavior Scale* (Ladd, 2010).  
**Correlation significant at the 0.01 level (2-tailed)**
4 Discussion

The overall focus of this thesis was to examine both within family and child level factors, which contribute to the development of children’s emergent literacy skills. In particular, emergent literacy development was conceptualized from the theoretical model put forth by Whitehurst and Lonigan (1998) and includes the acquisition of both inside-out skills (e.g., alphabet knowledge and phonological awareness) and outside-in skills (e.g., expressive vocabulary). Thus, one objective of this thesis was to examine whether the family literacy environment contributed to the development of children’s inside-out and outside-in skills, including alphabet knowledge, phonological awareness skills, and expressive vocabulary. Another objective of this thesis was to investigate the interrelationships between children’s social-behavioural competencies and one inside-out skill (i.e., phonological awareness) at the beginning and end of the Junior Kindergarten academic year. The final objective was to examine the relationships between teacher reports of social behaviour and direct observation in the classroom.

The results showed that home-based interactions with letter and sound activities played a significant role in predicting a specific inside-out skill at entry to Junior Kindergarten (i.e., alphabet knowledge). With respect to the relationships between social behaviours and phonological awareness, support was found for a bi-directional relationship between specific social behaviours and phonological awareness skills longitudinally. Early exclusion by peers impacted negatively on the acquisition of phonological awareness outcomes and low acquisition of early phonological awareness skills impacted negatively on children’s preference for solitary activities. Finally, the results of the current study revealed few relationships between teacher report and direct observations of children’s social behaviours with the exception of aggressive and asocial/solitary behaviours.
Overall, the results suggest that both within family and child level factors contribute to children’s development of inside-out and outside-in skills in early childhood. More specifically, the results support the findings of previous research with respect to the positive contribution of the family literacy environment in supporting children’s emergent literacy skills prior to entry into formal schooling. Further, this thesis extends research looking at the interrelationships between social behaviour and emergent literacy skills by examining additional social behaviours that were found to be negatively related to children’s phonological awareness skills.

4.1 Family Literacy Environment

In the current study, the role of the family literacy environment was examined in relation to children’s alphabet knowledge, phonological awareness skills, and expressive vocabulary at entry to Junior Kindergarten in a sample of children from low SES neighbourhoods. Both direct teaching of emergent literacy skills (e.g., interactions with writing and letter/sound activities) and indirect facilitation (e.g., shared storybook reading) were examined. The results revealed that direct teaching of letter/sounds in the home contributed a modest 8% of unique variance in children’s alphabet knowledge after controlling for non-verbal IQ and second language exposure. These results are similar to those found in previous studies (Evans, Shaw, & Bell, 2000a; Hindman & Morrison, 2012; Sénéchal et al., 1998; Sénéchal & LeFevre, 2002) in which 4 - 24% of the variance of children’s alphabet knowledge was accounted for by the family literacy environment.

Engagement in letter/sound activities was one of the most frequent parent-reported family literacy activities in the current sample. Parents reported on average, that interactions with letter/sounds occurred daily. In the current study, the relationship between interactions with letter/sounds and children’s alphabet knowledge was the only significant finding with respect to
the effects of the family literacy environment on children’s emergent literacy skills. This suggests that higher frequencies of family literacy activities can have beneficial effects on children’s acquisition of emergent literacy skills, such as alphabet knowledge. Theoretically, this finding is important because children who enter into formal schooling with knowledge of letters have a foundation for learning letter-sound correspondence and phonological awareness skills, which have been found to be strong predictors of decoding ability (Ehri et al., 2001; Lonigan et al., 2000; Savage et al., 2007; Savage et al., 2005).

However, there are two notable differences between the demographic characteristics of previous studies and those of the current study. In the current study, children were sampled from low-income neighbourhoods and approximately half of the children (n = 51) were reported to be exposed to a second language in the home. This finding suggests that direct parental teaching in families from low-income neighbourhoods may have positive effects on children’s alphabet knowledge upon entry into formal schooling. Further, this finding suggests that the positive effect of direct teaching of letters/sounds on children’s alphabet knowledge can be found for both monolingual children as well as for children who are exposed to a second language in the home.

Inspection of the comparison data in Appendix H revealed that EL2 children in the current sample entered into Junior Kindergarten with slightly higher alphabet knowledge as compared to EL1 children (i.e., $M = 2.9$, $M = 1.8$, respectively). This suggests that EL2 children are not at a disadvantage compared to their EL1 peers with respect to their knowledge of letter names. Visual inspection of parent-reported family literacy activities in Appendix G also revealed that parents of EL2 children reported engaging in slightly higher frequencies of letter/sound activities in the home as compared to parents of EL1 children (Mdn = 3.8, Mdn = 3.5 respectively) although the difference was not statistically significant. This would suggest that parental teaching of letters/sounds in the current sample occurred almost as frequently in both EL1 and
EL2 families and helped to prepare children with basic alphabet knowledge at entry to Junior Kindergarten.

Moreover, this finding has important implications for children attending schools in the Toronto District School Board where the majority of Kindergarten classrooms are comprised of both Junior and Senior Kindergarten students. In these split classrooms, the lesson plans often follow the Senior Kindergarten curriculum as lessons are conducted in a whole class format or in small group activity centres. Junior Kindergarten students entering the classroom with basic alphabet knowledge may be at an advantage because they can more fully participate in emergent literacy activities designed for Senior Kindergarten children.

In contrast, no significant relationships were found between direct teaching of writing and children’s alphabet knowledge. Nor were there any significant associations between direct teaching of letter/sounds, writing, shared storybook reading and children’s phonological awareness skills. One potential explanation may be related to the frequency of parents’ engagement in these activities. For example, in the current sample, parents reported engaging in writing activities only a few times per week (Mdn = 3.0) in comparison to letter/sound activities, which occurred almost daily (Mdn = 3.7). Less frequent engagement in writing activities may account for the insignificant findings between writing and two outcome measures of alphabet knowledge and phonological awareness.

Aram and colleagues (2002; 2010) reported that parent-directed writing activities in the home are positively correlated with Israeli Kindergarten children’s (M = 5.8 years of age) letter knowledge (Aram, 2010) and can predict up to 26% of the variance in Kindergarten children’s phonological awareness skills (Aram & Levin, 2002). This would suggest that parent-directed writing activities in the home may help to facilitate children’s letter knowledge and phonological
awareness skills. A potential explanation for the insignificant finding in the current study as compared to the significant findings of Aram and colleagues (2002) may relate to differences in methodologies between studies. For example, in the current study we collected data asking parents to rate the frequency of writing activities they engaged in. In contrast, Aram et al., (2002) video-taped mother-child dyads during two writing activities (structured and unstructured) and coded the interactions qualitatively ensuring the occurrence of parent-child mediated writing interactions.

The low frequency of parent-reported engagement in direct teaching of sound activities in the current sample may have also contributed to the insignificant findings with respect to children’s phonological awareness skills. A post hoc analysis of the individual items that comprise the letter/sound scale revealed a significant difference between parent-reported teaching of letters versus sounds. Parents reported almost daily engagement (i.e., a rating of 4.0 or higher) in explicit teaching of alphabet letters ($M = 3.9$, $SD = 0.75$) whereas they reported engaging in explicit teaching of sounds only a few times per week (i.e., a rating of 3.0) ($M = 3.2$, $SD = 1.10$).

This question examining the impact of direct teaching on children’s phonological awareness skills is particularly important given that some studies have found a significant relationship between direct teaching and children’s phonological awareness skills (Aram & Levin, 2002; Evans, Shaw, & Bell, 2000) and other studies have not (Sénéchal et al., 1998; Sénéchal & LeFevre, 2002). As a result of the strong link between children’s phonological awareness and decoding skills, family literacy activities that can support the early development of children’s phonological awareness skills are highly desirable. Frequent exposure to interactions with sound activities at home may help to increase the likelihood of a significant positive relationship.
between family literacy activities and children’s phonological awareness skills prior to entry to Junior Kindergarten.

Finally, results of the current thesis revealed no significant relationship between indirect facilitation in the home (i.e., shared storybook reading) and children’s expressive vocabulary after controlling for children’s non-verbal IQ and second language exposure. These results are in direct contrast to previous studies that have found shared storybook reading to contribute between 2 – 9% of the variance of children’s vocabulary (Hindman & Morrison, 2012; Sénéchal et al., 1998; Sénéchal & LeFevre, 2002). However, there are notable differences between the sample characteristics in the current thesis and those of previous studies. For example, children were recruited from low SES neighbourhoods and there were a high percentage of children who were exposed to a second language in the home.

Children who are exposed to more than one language in the home have been found to have smaller expressive vocabularies in each respective language as compared to peers who are exposed to only one language when matched for age, SES, and non-verbal cognition (Bialystok, Luk, Peets, & Yang, 2010; Thordardottir, 2011). Group comparisons were conducted in the current thesis and results were consistent with previous studies revealing that EL2 children had smaller expressive vocabularies as compared to EL1 children. Further, the results of the multiple regression analysis revealed that second language exposure accounted for 16% of unique variance in predicting children’s expressive vocabulary. A connectionist perspective suggests that children who are exposed to only one language may have made ‘stronger links’ in their neural networks in vocabulary production, oral fluency, and word retrieval as compared to children who are exposed to more than one language. For this latter group, ‘weaker links’ may exist as linguistic demand is distributed across multiple languages (Bialystok, 2009; Michael &
This explanation implies that these children may have less practice and fewer opportunities to develop their expressive vocabulary in English specifically. Thus, a possible explanation for the insignificant finding between shared storybook reading and expressive vocabulary may relate to the high percentage of EL2 children included in the analysis.

In the current thesis, no information was collected about the language in which the shared storybook reading occurred. Therefore another explanation for the insignificant finding may relate to the possibility that shared storybook reading for EL2 children was being conducted in another language other than in English which would not likely contribute to children’s English expressive vocabulary development. Additionally, group comparisons between EL1 and EL2 children revealed a significant difference between frequency of shared storybook reading where EL1 children’s parents were engaging in shared storybook reading on a more frequent basis as compared to EL2 children’s parents (Mdn = 4.0, Mdn = 3.6, respectively). A higher frequency of engagement in shared storybook reading may increase the possibility of finding a predictive relationship with children’s vocabulary development as has been found in previous studies (Hindman & Morrison, 2012; Sénéchal et al., 1998; Sénéchal & LeFevre, 2002). An important question for future studies would be to investigate the association between parent-child shared storybook reading in English and English expressive vocabulary development in a sample of EL2 children.

While these results show promising implications of the family literacy environment with respect to children’s alphabet knowledge, the results also suggest that parents from low SES neighbourhoods are only engaging their children in a couple of literacy related activities at home on a daily basis. Further, results suggest that in the current sample, parents of EL2 children are only engaging their children in family literacy activities involving direct teaching of letters on a
daily basis. Family literacy interventions with parents from low SES neighbourhoods and parents of EL2 children that encourage frequent engagement in sound and writing activities and shared storybook reading may be warranted. A focus on providing parents with the strategies to engage in interactions that map sounds to letters such as using alphabet books to identify and recognize letters followed by post-craft writing activities or games that allow children to identify and sort initial or ending sounds in words with the letters reviewed, and print the letters, may help to facilitate phonological awareness and writing skills (Jordan, Snow, & Porche, 2000). For example, Project EASE, a 5 month family literacy intervention program with monthly foci (i.e., storybook reading, working with words, letter recognition and sound awareness, retelling family narratives, and talking about the world) found significant positive effects of parent training utilizing the above described strategies as compared to the control group on children’s vocabulary, comprehension, sound awareness, reading, and story sequence (Jordan et al., 2000). Thus, parent training in family literacy activities with a focus on sounds, writing, and more frequent shared storybook reading may help in better preparing Junior Kindergarten children for entry to the classroom with stronger emergent literacy skills which include both inside-out and outside-in skills.

4.2 Social Behaviours and Phonological Awareness Outcomes

The second question of this thesis asked whether social behaviours at entry into Junior Kindergarten would be associated with phonological awareness outcomes at the end of Junior Kindergarten after controlling for children’s initial phonological awareness skills, expressive vocabulary and non-verbal IQ. The results revealed that being excluded by peers contributed to poorer phonological awareness outcomes whereas the externalizing behaviours (i.e., Aggressive with Peers, Hyperactive/Distractable) were not found to contribute any unique variance in
predicting children’s phonological awareness outcomes. Further, no significant relationships were found for the internalizing behaviours (i.e. Asocial with Peers, Anxious/Fearful) or social behavioural competence (i.e. Prosocial with Peers) and children’s phonological awareness outcomes. This thesis adds to the growing body of research looking at the relationship between social behaviours and emergent literacy by (a) looking at phonological awareness outcomes while partialling out children’s baseline skills, and (b) by examining multiple social behaviours in addition to aggressive behaviours.

Previous studies that have looked at the relationship between social behaviours and emergent literacy outcomes have been limited as no baseline measure of emergent literacy was collected or entered into the regression model (Bulotsky-Shearer & Fantuzzo; Doctoroff et al., 2006; Lonigan et al., 1999). For example, failure to first control for baseline levels of the outcome of interest in a regression model limits the ability to draw inferences between the predictor and outcome variable. Theoretically, it is important to enter baseline data (i.e., phonological awareness) as studies have shown that early phonological awareness skills are a strong to perfect predictor of phonological awareness outcomes over time (Lonigan et al., 2000). Not entering children’s baseline phonological awareness skills into the regression model also creates the risk of overestimating the variance that social behaviours account for in the relationship with phonological awareness outcomes. The current study extends the research in this area by entering children’s baseline phonological awareness skills as the first step in the hierarchical multiple regression model.

The current thesis also extends previous research in this area by entering expressive vocabulary into the model as the second step and non-verbal IQ as the third step as studies have found both expressive vocabulary and non-verbal IQ to be related to children’s phonological awareness
skills (Bulotsky-Shearer & Fantuzzo; Lee, 2011; Lonigan et al., 1999; Stadler et al., 2007). While expressive vocabulary and non-verbal IQ have both been found to relate to phonological awareness outcomes, expressive vocabulary was entered into the model prior to non-verbal IQ as expressive vocabulary is included in the formal definition of emergent literacy skills. Previous studies examining the relationship between social behaviour and emergent literacy skills have used composite scores of children’s phonological awareness skills, vocabulary, and print concepts to capture emergent literacy skills (Doctoroff et al., 2006), limiting our understanding of the specific emergent literacy skills that are most implicated in this relationship.

The results of the current thesis showed a significant negative relationship between early exclusion by peers and phonological awareness outcomes after controlling for initial phonological awareness skills, expressive vocabulary, and non-verbal IQ. The results showed that exclusion by peers contributed 3% of unique variance in phonological awareness outcomes at the end of the year. While this is a modest effect, the results suggest that children who are excluded by the peer group may be at increased risk of poorer phonological awareness outcomes as early as Junior Kindergarten. The negative impact of exclusion by peers on children’s academic outcomes is not surprising given that learning occurs in whole group or small group activity centres in Kindergarten classes. When children experience marginalization from classmates, there is an increased risk of reduced motivation to participate in group activities such as learning centres (Buhs & Ladd, 2001). Reduced motivation to participate increases the likelihood that these children will miss out on the academic skills being taught, such as phonological awareness. It is also possible that children who are excluded may withdraw from active engagement during lessons for fear of further exclusion. It has been suggested that children who are continually rejected may have a harder time finding peers who are willing to be
their playmates (Ladd et al., 1988), which has been found to have longitudinal impacts on children’s academic achievement up to 12-years of age (Ladd et al., 2008).

Another possible explanation for the negative impact of peer exclusion on phonological awareness outcomes relates to children’s self-esteem and social helplessness. Children who are rejected by peers may experience reduced self-esteem as a result of being excluded. Poor self-esteem may impact negatively on children’s perceptions of their abilities and may cause a reduction in children’s motivation to participate during group activities. Additionally, poor self-esteem may result in higher levels of anxiety in the classroom environment which has been linked to social helplessness (Gazelle & Druhen, 2009). Social helplessness is defined as failing to take initiative during social interactions in addition to giving up easily (Gazelle & Druhen, 2009). It may be possible that children who experience social helplessness as a result of being excluded by peers carry this helplessness over to learning situations as learning occurs in group settings in Junior Kindergarten classrooms.

While the results are consistent with previous studies that have found a negative relationship between peer rejection and academic outcomes (Buhs & Ladd, 2001; Ladd et al., 2008), a significant negative relationship was not found between externalizing behaviours such as aggression or hyperactivity and emergent literacy skills which is contrast to other studies (Bulotsky-Shearer & Fantuzzo; Doctoroff et al., 2006; Lonigan et al., 1999; Miles & Stipek, 2006). However, visual inspection of the data revealed that all children who scored higher on the Excluded by Peers subscales were also rated by teachers as higher on the Aggressive with Peers or Hyperactive/Distractible subscales. This suggests that rejection by peers encompassed children displaying aggressive and/or hyperactive behaviours. Of interest, previous studies that found a significant negative relationship between problem behaviours and emergent literacy
outcomes did not measure exclusion by peers (Bulotsky-Shearer & Fantuzzo; Doctoroff et al., 2006; Lonigan et al., 1999; Miles & Stipek, 2006). It may then be possible that the relationship between problem behaviours and emergent literacy outcomes occurs when children are also excluded by the peer group.

Alternatively, it may be possible that there is a third underlying mechanism such as children’s social-cognition and in particular the ability to self-regulate that accounts for this negative relationship. For example, children who are aggressive and/or hyperactive often lack the ability to engage in self-regulating behaviours, which causes increased frequency of engagement in these behaviours (Raaijmakers et al., 2008). Frequent engagement in both aggressive and hyperactive behaviours subsequently places children at increased risk of being rejected by the peer group (Buhs & Ladd, 2001). In the current study, this finding was supported, as all children who were rated as higher on the Excluded by Peers subscale were also rated higher on the Aggressive with Peers or Hyperactive/Distractible subscales. Replication of this question measuring negative social behaviors in addition to exclusion by peers, and social-cognition (e.g., self-regulation) is warranted to better understand the cause of the relationship between early exclusion by the peer group and poorer phonological awareness skills across the year.

Possible explanations for the insignificant findings between externalizing and internalizing behaviours and phonological awareness may relate to the small sample size, the teacher report used and the teachers’ familiarity with the children at baseline. For example, previous studies that looked at the relationship between social behaviours and emergent literacy outcomes had samples that ranged from 123 children to over 2,000 children (Doctoroff et al., 2006; Fantuzzo et al., 2005; Miles & Stipek, 2006). In comparison, only 102 children participated in the current study. Further, the teacher reported rates of Aggressive with Peers, Hyperactive/Distractible,
Asocial with Peers scale, and Anxious/Fearful at Pretest were low to moderate where only 5.6%, 28.1%, 14.5%, and 5.6% respectively, of the sample scored 2 or above on these subscales which resulted in minimal variability in the data. This may have been the result of using a 3-point likert scale in contrast to a 5-point likert scale, which allows more variation in assessing behaviours. If a 5-point likert scale was used, it may be possible that more variability with respect to children’s behaviours would have been found. This may have increased the ability to detect stronger associations between behaviour and learning outcomes. Future studies using larger sample sizes and assessments that allow for more variation in the breadth of children’s social behaviours are needed looking at the relationship between social behaviours and emergent literacy outcomes, which control for baseline emergent literacy skills, vocabulary, and cognition to examine whether larger effect sizes would be found.

Finally, the use of teacher report to collect baseline information on children’s behaviours may have resulted in the small effect size for excluded by peers and insignificant relationships for externalizing and internalizing behaviours. For example, teachers may not have been as familiar with children in the fall of the Junior Kindergarten year as they are with children in the spring of the Junior Kindergarten year. With classroom sizes that exceed 20 children it is possible that teachers did not have as many opportunities to get to know the behavioural profiles of all children at the beginning of the year. Additionally, it may have been challenging for teachers to accurately rate children on the internalizing subscales (i.e., Asocial with Peers, Anxious/Fearful) as these subscales require teachers to infer children’s internal states rather than outward physical actions. For example, items such as “fearful or afraid”, “is worried”, or “prefers to play alone” may be harder to evaluate if teachers did not have multiple opportunities to observe children across multiple contexts.
Despite the modest effect size, these results demonstrate that even in non-clinical samples exclusion by peers can have effects on children’s learning outcomes (i.e. phonological awareness) as early as 4-years of age after accounting for children’s baseline skills. This finding is important as it suggests that in addition to the phonological awareness, verbal, and cognitive skills that children enter into formal schooling with, being excluded by the peer group can impact negatively on the development of phonological awareness outcomes across the year. Theoretically, children who struggle with phonological awareness skills in their first year of formal schooling may continue to struggle with phonological awareness and related skills such as decoding and word reading into grade school. Since there is a large focus on social behavioural development in the early years of school, it becomes important to understand how early behaviours, such as exclusion by peers, in a classroom setting may impact upon learning outcomes. This may help in creating additional professional development programs targeting strategies teachers can use to create inclusive classrooms.

For example, Girard, Girolametto, Weitzman, and Greenberg (2011) found that in-service training for educators to encourage peer interactions through the use of verbal strategies such as prompting children to talk with peers, inviting peers to play together, alerting peers to common interests or praising children for peer interactions helped to increase preschool children’s prosocial behaviours with their peers over time. Increases in children’s prosocial behaviours may replace negative behaviours such as aggression towards peers and may reduce the risk of being excluded by peers. This may have positive implications for children’s social-behavioural adjustment and academic outcomes in their formal years of schooling. Enabling children to be positive and contributing members of the classroom environment by providing them with successful strategies to engage in peer interactions may help in creating an overall enjoyable learning environment for children.
4.3 Phonological Awareness Skills and Social Behaviours

The third question of this study asked whether phonological awareness skills at entry into Junior Kindergarten would be associated with children’s social behaviours at the end of the Junior Kindergarten year after controlling for initial social behaviours, non-verbal IQ, and second language status. The result of the hierarchical multiple regression analysis revealed a significant negative relationship between phonological awareness skills and one negative social behaviour (i.e. Asocial with Peers). That is, children who entered into Junior Kindergarten with poorer phonological awareness skills were rated by teachers as higher on the Asocial with Peers subscale at the end of the year. Early phonological awareness skills contributed a modest 5% of unique variance in children’s preference to engage in solitary activities. This result adds to the current literature in two ways. First, no previous studies have looked at the specific role of phonological awareness skills in social behavioural outcomes, and second, no studies have found a significant negative relationship between phonological awareness skills and children’s social behaviours as early as 4-years of age. As this question was purely exploratory, the results should be interpreted with caution until replication of these findings is found with larger sample sizes.

The overarching goal in the Junior Kindergarten program is for teachers to help children gain competencies in two main areas. These include academic readiness and social behavioural development (Ministry of Education, 2006). For example, in the Ministry of Education (1996) curriculum document under “Overall Expectations” it states that “Children in Kindergarten programs are expected to demonstrate achievement of the overall expectations for each of the six areas of learning (e.g., language and literacy, numeracy, science and technology, arts, health and physical activity, and personal and social development). The expectations are not designed to address Junior and Senior Kindergarten separately” (Ministry of Education, 1996, pp. 5). The
document further goes on to address the role of the teacher in helping to ensure every child meets these expectations while acknowledging that children will enter into the program with differing levels of skills in each area. Progress reports are sent home in early February for Junior Kindergarten children assessing their development in each of the six areas. As such, a possible explanation for the current finding may relate to the fact that when children enter the Junior Kindergarten program with poorer emergent literacy skills such as phonological awareness, a stronger emphasis is placed on the facilitation of emergent literacy skill development to help students achieve curriculum expectations. In turn, these children may receive less modeling of strategies to promote competent peer interactions and may subsequently begin to lag behind peers in the developmental area of social behavioural competency. However, in the current thesis no measure was collected looking at teacher behaviour in the classroom and thus empirically, support for this hypothesis cannot be inferred.

Drawing from the literature with older samples of children looking at the relationship between initial problem behaviours to poor literacy achievement, another possible explanation is that children who struggle with literacy related skills may become frustrated and resort to engagement in negative or withdrawn behaviours to mask their challenges (Hinshaw, 1992; McGee et al., 1986; Miles & Stipek, 2006). Additionally, a poor understanding of lessons or being overwhelmed upon first entry into formal schooling may lead to higher levels of withdrawn behaviours in the classroom setting as a result of group structured learning and consequently a preference to engage in solitary activities. However, given that no previous studies have found a relationship between poor initial phonological awareness skills and asociality at the end of the year in samples of children as young as Junior Kindergarten, this theoretical perspective may not be applicable in early childhood and warrants further investigation.
An alternative explanation for the current finding may relate to the characteristics of children rated as asocial. In the current data set 28% of children scored 1.5 or above on the *Asocial with Peers* subscale at Posttest. Visual inspection of the data revealed that 59% of these children were EL2 children and 31% of these EL2 children also scored below the mean of the group on expressive vocabulary. Group comparisons revealed significant differences between EL1 and EL2 children for both *Asocial with Peers* and expressive vocabulary. It may be conceivable then that the relationship between poor phonological awareness skills and asociality is mediated by children’s oral language. For example, children who have poorer oral language skills may be shy or withdrawn with peers as a result of challenges with their abilities to express themselves orally or in understanding other children during interactions. This may cause a decrease in confidence within the peer group resulting in solitary play behaviours over time.

In the current thesis, children’s second language exposure did not account for any variance in the relationship between phonological awareness skills and asocial behaviours. However this may have been the result of the small amount of children rated as asocial (i.e., 27 children) and only 16 of these children who were EL2. This relationship warrants further attention and replication with larger sample sizes to better understand whether the relationship between poor phonological awareness skills and asociality with peers over time is dependent on children’s oral language abilities or second language status.

In contrast to the relationship found between baseline phonological awareness skills and asociality at the end of the year, no significant relationships were found between phonological awareness skills and *Aggressive with Peers, Hyperactive/Distractible, Anxious/Fearful, Prosocial with Peers*, or *Excluded by Peers*. While previous studies have found a relationship between poor literacy skills and negative social behaviours (Bennett et al., 2003; Hinshaw, 1992;
Jorm et al., 1986; McGee et al., 1986; Miles & Stipek, 2006; Romano et al., 2010), no previous studies have found this relationship in children as young as Junior Kindergarten. A possible explanation for the insignificant findings may relate to the low to moderate frequency of negative behaviours. For example, at posttest, only 10% of children scored two or above on the Aggressive with Peers subscale, 25.4% scored two or above on the Hyperactive/Distractible subscale, 7.9% scored two or above on the Anxious/Fearful subscale, and 9.5% scored two or above on the Excluded by Peers subscale resulting in minimal variability in the data. If more variability with respect to children’s behaviours would have been found, it may have been possible to detect a significant relationship between phonological awareness skills and social behaviours. Future studies are needed to investigate whether significant relationships would emerge between poor initial phonological awareness skills and behavioural outcomes as this would have important implications for program development in Junior Kindergarten (Bennett et al., 2003).

Taken together the results of this study support a modest association between poor phonological awareness skills at entry to Junior Kindergarten and asociality with peers at the end of the year. However, caution needs to be taken in interpreting these results until replication of findings is found. Theoretically, if replication is found, this may suggest that children who enter into Junior Kindergarten with poorer emergent literacy skills may need more support from teachers in the area of building social behavioural competencies to guard against withdrawn and internalizing behaviours over time. Practical implications of this finding may be that a stronger emphasis on modeling successful peer-to-peer interactions for children who are shy or asocial with peers by using strategies such as alerting children to common interests with peers, helping to facilitate conservation between children, or praising children during successful peer interactions is needed (Girard, Girolametto, Weitzman, & Greenberg, 2011). In addition, pairing children who are
struggling with academic skills with peers who are doing well academically may help to guard against withdrawn behaviours as peer interactions may provide additional learning opportunities. These strategies may help to build social competence with peers in the classroom environment, however further research is needed in this area before any firm conclusions can be drawn.

4.4 Teacher Report and Direct Observations of Children’s Social Behaviours

The final question of the current study asked whether there would be a significant relationship between teacher report and direct observations of children’s classroom behaviours. The results of the bivariate correlations with pretest data showed a small significant relationship between teacher report and direct observations for aggressive behaviours (i.e. $r = .249$). Additionally, a strong significant relationship between teacher report and direct observations for aggressive behaviours was found at posttest (i.e. $r = .503$). These findings are similar to previous studies that have found a relationship between teacher report and direct observations for children’s externalizing behaviours (Doctoroff & Arnold, 2004; Hinshaw et al., 1992). The significant relationship between teacher report and direct observations may relate to the context and type of behaviour examined. For example, Doctoroff & Arnold (2004) suggest that positive relationships between teacher report and direct observations may be found as a result of the similar setting of data collection (i.e., the classroom). When observations occur in the classroom rather than a laboratory setting, behaviours observed are likely to be similar to those that teachers report on (e.g., interactions with familiar peers, behaviours common to learning situations). Further, as discussed by Hinshaw et al (1992), externalizing behaviours such as aggression may be easier to observe during short observation periods as these behaviours are outward physical actions. Whereas in comparison, internalizing behaviours have been suggested to be more challenging to
capture for observers as they may be more subjective and reflect internal states such as children’s emotions (Hinshaw et al., 1992).

At pretest, no significant relationship was found between teacher report and direct observations for asocial/solitary behaviours which may be the result of the subjectivity of internalizing behaviours as has been previously suggested (e.g., Hinshaw et al., 1992). However, a small significant relationship was found at posttest between teacher report and direct observations of asocial/solitary behaviours (i.e., $r = .276$). This significant relationship was surprising given that past studies have not found significant relationships between teacher report and direct observations for internalizing behaviours (Hinshaw et al., 1992). A possible explanation for this significant finding may relate to the context in which behaviours were observed. For example, the direct observations that occurred in the current study took place during activity time where solitary behaviours may be more noticeable. Activity time allows children the option of playing with peers or engaging in their own activity independent of peers. The option of independent activities may have resulted in higher frequencies of observed solitary play behaviours during the short 10 minute observation period. However, this does not explain the insignificant relationship at pretest between teacher report and direct observations of asocial/solitary behaviours. Given the differences in relationships between teacher report and direct observations of asocial/solitary behaviours across time, the relationship between teacher report and direct observations of internalizing behaviours warrants further investigation in future studies.

In the current study, no significant relationships were found between teacher report and direct observations for prosocial behaviours at either pretest or posttest. These results are similar to studies that have found no significant relationships between teacher reported child behaviours and direct observation of child behaviours (Puig et al., 1999; Weisz et al., 1995). A potential
explanation for the insignificant relationship between teacher report and direct observation in the current study may relate to differences between items for prosocial behaviours. For example, the teacher report asked about items concerning overall prosocial behaviours in addition to inferring mental states (i.e. helps, recognizes feelings, concerned about distress, kind towards peers, cooperative with peers, concern for moral issues, offers help) (Ladd, 2010). In contrast, direct observations were focused on specific prosocial behaviours (i.e. playing well together, sharing, hugging, engaging in pleasant conversation, reading together, building together, working together to tidy up, helping a friend, giving a compliment, comforting another child). It may be possible that if there was a 1:1 correspondence between teacher report items and observation items of the target prosocial behaviours, a significant relationship may have been found. Additional studies are warranted to examine whether a significant relationship between teacher report and direct observations of children’s prosocial behaviours may be found. However, future studies should ensure a 1:1 correspondence between target behaviours examined.

The significant relationships found between teacher report and direct observations of aggressive and asocial/solitary behaviours contribute to the current literature looking at reliability between different types of methods to collect information on children’s behaviour by revealing that in certain contexts and for certain types of behaviours agreement between raters may be found. This has important implications for future research as utilizing a multi-method design helps to strengthen the reliability of study results. Further, in using multiple raters to collect information on behaviour, this can help to reduce or guard against the potential of bias when using only one type of informant.
4.5 Limitations and Future Research

A few limitations should be noted in interpreting the findings of the current study. First, the sample size of the current study was relatively small. Previous studies that have examined the relationships between the family literacy environment and emergent literacy skills and the interrelationships between social behaviours and emergent literacy have used larger sample sizes and have found modest effects. While the effect sizes of relationships found in the current study are similar to those of previous studies, insignificant relationships were also found which may have been the result of the limited power for conducting hierarchical multiple regression analyses. Further, in the current study there was a fairly even split between EL1 and EL2 children (i.e. 47 and 51 respectively). Given the nature of the study questions and the control variables, separate multiple regression analyses were not possible to compute for these subgroups. Second language exposure was controlled for in the analyses however, replication of the study questions in the current thesis is warranted using (a) larger samples of EL1 children with homogenous characteristics, and (b) samples comprised of EL2 children with homogenous characteristics to better understand if the insignificant findings found in the current study would be significant and whether differences in relationships would be found between these groups.

A second limitation was the high amount of EL2 children that were included in the sample. Examining differences between EL1 and EL2 children was not an objective of the current thesis. The fairly even split of EL1 and EL2 children was likely the result of recruitment in a large metropolitan city with a high population of immigrant families. The measure of expressive vocabulary used in the current study allowed for partial control of children’s vocabulary and children’s language status was used as a control variable in the analyses however potential differences between EL1 and EL2 children may still be present. As a result of limited power, and
not being able to run the regression models separately for EL1 and EL2 children, caution must be
taken in interpreting results of this thesis as the associations found may present differently across
groups.

A third limitation was the measure used to assess the family literacy environment. The family
literacy questionnaire used did not ask about the language in which parents were conducting
literacy activities such as direct teaching of letters/sounds and writing or shared storybook
reading. As such, it is unknown whether these activities were being conducted in English or in
the primary language spoken in the home. If EL2 children’s parents were engaging in literacy
activities in languages other than English, it may be likely that the significant relationship found
between home literacy activities and children’s emergent literacy skills was driven by the
monolingual children in the sample. This may also have resulted in the insignificant relationship
between shared storybook reading and children’s expressive vocabulary. Conversely, if the
family literacy activities were conducted in English, this may support the positive effects that the
family literacy environment can contribute in the development of EL2 children’s English
emergent literacy skills. Replication of this question is warranted using a measure that collects
information about the language that family literacy activities occur.

Finally, the differences between teacher report items and direct observation items for target
social behaviours was a limitation of the current study. For example, the items for prosocial
behaviours were not identical between teacher report and direct observations, which may have
accounted for the insignificant findings between teacher report and direct observations of
children’s prosocial behaviours. When looking at the potential relationship between multiple
methods of data collection, it is necessary to ensure that the behaviours being measured are
consistent across raters. Thus, replication of the fourth study question is needed to better
understand whether agreement would be found between teachers and observers. This is an important question for future research as agreement across raters would increase the confidence that can be placed in study results.

4.6 Overall Conclusions

Results of the current thesis support and add to the literature in important ways. First, the results of the current study support a negative relationship between early exclusion by peers and phonological awareness outcomes over time after accounting for early phonological awareness skills, expressive vocabulary, and non-verbal IQ. This adds to the current body of literature by (a) looking at this relationship in Junior Kindergarten children, (b) by controlling for initial phonological awareness skills, expressive vocabulary, and non-verbal IQ, and (c) by expanding target behaviours beyond aggression. The practical implication of this finding would suggest the importance of teachers modeling and emphasizing ways for children to engage in positive peer interactions to create a more inclusive classroom environment for all children. An inclusive classroom environment may reduce the likelihood of children being rejected by peers. In service training programs for teachers that focus on ways to promote and facilitate peer interactions can be beneficial in increasing the use of positive social behaviours while simultaneously reducing negative social behaviours in Junior Kindergarten settings (Girard et al., 2011). Since phonological awareness skills have been found to be a unique predictor of not only future literacy outcomes such as word reading, spelling, and reading comprehension but additionally math and science outcomes (Savage et al., 2007; Savage et al., 2005), early struggles with the acquisition of these skills may place children at greater risk of falling behind in many different academic areas in later grades.
Further, the results suggested that early phonological awareness skills and expressive vocabulary contribute both unique and shared variance in predicting later phonological awareness outcomes. As a result, an early focus in the classroom on these skills is important in helping to prepare children for future success with phonological awareness. A holistic focus on both academic skills in addition to social-behavioural competency, which is the primary goal of Kindergarten programs is important to the classroom environment.

Second, the results of the current thesis also support a negative relationship between poorer initial phonological awareness and asocial behaviours at the end of the year. This finding adds to the current literature as no previous studies have found a significant negative relationship between phonological awareness and internalizing behaviours in children as young as Junior Kindergarten. While interpretation of this finding warrants caution until replication of this finding is found with larger samples of children, practical implications would suggest the important role that teachers have in helping children to develop strong phonological awareness skills at the beginning of the year. Success with learning may result in more positive feelings of internal competency and higher self-esteem and this may increase the likelihood that children will engage in more peer interactions rather than withdrawing from the peer group.

Third, the results support previous research that has shown that the family literacy environment can play a role in children’s acquisition of alphabet knowledge prior to entry to Junior Kindergarten for both EL1 and EL2 children. This finding is important because alphabet knowledge (Ehri et al., 2001) is implicated in literacy development (Whitehurst & Lonigan, 1998). Practical implications suggest that overall EL2 parents and parents in lower SES neighbourhoods and are engaging in letter activities on a daily basis. Junior kindergarten classrooms are increasing in size and are often comprised of 20 or more children making teacher
work load larger and more challenging. Therefore, if parents can help children in the acquisition of alphabet knowledge at home, children will be better prepared upon entry to Junior Kindergarten for learning letter-sound correspondence and phonological awareness skills.

Taken together, these results suggest that both within family and individual child level factors are important in the development of emergent literacy skills prior to and during first entry into formal schooling. Looking at the conceptual model of emergent literacy development developed by Whitehurst and Lonigan (1998), our results may suggest expanding upon this model to include children’s social-behavioural development. For example, the current results support a bi-directional relationship between negative social behaviours and the more challenging inside-out skill, namely phonological awareness. Further, while the results revealed a significant positive relationship between family literacy and the more concrete inside-out skill of alphabet knowledge, no relationship between the family literacy environment and children’s phonological awareness skills was found. It may be conceivable then that early negative behaviours in the home and in the classroom environment impede on the ability to help children successfully acquire a more complex skill such as phonological awareness.

All children who were rated as exclude by peers were also rated as aggressive and or hyperactive/distractible. In the family environment, there may be more of a focus on correcting early negative behaviours rather than focusing on teaching phonological awareness skills. These early negative behaviours may also carry through to the classroom environment resulting in exclusion by peers and consequently a more challenging time for these children during group learning moments. Practical implications may suggest that in early development, a stronger emphasis on children’s social-behavioural development may be required at both the family and classroom level so that children are better prepared with more developed social competence to
focus on the learning environment. Future studies that examine family interventions with children who engage in higher levels of negative behaviours and a focus on reducing early negative behaviours are needed to test this hypothesis. Further, future studies are needed to examine teacher differences in dealing with children’s social-behavioural development to examine whether children who are in classroom environments with a stronger early focus on social-behavioural development do better academically longitudinally.

Finally, the results of this thesis suggest that positive relationships can be found between teacher report and direct observations for some types of children’s social behaviours (i.e., aggression, asocial/solitary). The significant finding between teacher report and direct observations of aggressive behaviours is consistent with previous studies that have found significant relationships between teacher report and direct observations of children’s externalizing behaviours (Doctoroff & Arnold, 2004; Hinshaw et al., 1992). The significant relationship between teacher report and direct observations of asocial/solitary behaviours has not previously been found. This finding adds to the literature by suggesting that while internalizing behaviours may be more challenging for observers to capture during brief observation periods, in particular contexts (i.e., the classroom), significant relationships may be found between teacher report and observations. Practical implications would suggest future studies utilizing multi-method designs when possible to examine children’s social behaviours. This may help in reducing bias and adds to the confidence that can be placed in overall results.
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Appendices

Appendix A

Information Letter and Consent Form for Principals

Investigating the Relationship between Social Behaviour and Early Literacy Skills

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Contact Person: Lisa-Christine Girard
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Email lisa.girard@utoronto.ca

Introduction

I am currently a University of Toronto PhD student in the Department of Speech-Language Pathology. My supervisor and I are interested in working with Junior Kindergarten teachers and their students in your school. The purpose of this study is to examine the relationship between social behaviours in the classroom and pre-reading skills. I would like to gain a better understanding of the role that social behaviour may have in predicting children’s ability to read. I hope that you will agree to be involved in this very important research study. I anticipate that the results of this study will help to reach a better understanding of how social behaviours contribute to reading acquisition. This information may provide important knowledge for the development of in-service training.

What will I be asked to do?

You will be asked to circulate information/consent letters to all junior kindergarten teachers in your school. I will be visiting you prior to this circulation to answer your questions about the research study and obtain your signed consent.

What will teachers be asked to do?

Teachers will be asked to complete one questionnaire about their background. This questionnaire asks for information as their years of experience, education, languages spoken and will only be completed once before the study begins. The questionnaire will take about 10 minutes to complete.
All questionnaires are confidential and will be coded with an identifying number so that the teacher’s name and the school’s name will not appear on the questionnaire.

Second, teachers will be asked to help recruit children from their classroom to participate in this study. I will provide them with information letters and consent forms, and two questionnaires for parents to read and complete. The two questionnaires consist of background information for each child and information about the family literacy environment. I would like teachers to send these forms home to the parents of children in their classroom in the child’s knapsack and collect consent forms prior to October 2010. To ensure confidentiality of children, the demographic form and family literacy questionnaire should be mailed directly to me at the University of Toronto, Department of Speech-Language Pathology. Parents will be provided with a stamped, self-addressed envelope for this purpose. These forms will take approximately 20 minutes for parents to complete.

I will randomly select five children from each classroom who have signed consent forms to participate in the testing sessions. I will also ask teachers complete one questionnaire related to the social behaviour of these five children. This questionnaire will be completed twice, once in October 2010, and once in May 2011. The questionnaire takes approximately 10 minutes to complete per child. It will be used to assess children’s social behaviour in the classroom context. These questionnaires will be coded with an identifying number so that no names appear on the questionnaires.

I will be conducting direct observations of each child with signed consent during regular classroom activities. These observations will not interfere with the classroom teacher’s routine and I will have no interaction with children. I will be making my observations of the children’s behaviour using a paper coding form and pencil. I will observe the activities either to the side or back of the classroom. The two activities that I will observe will be a shared storybook reading between the teacher and children and the second activity will be free play. This will let me observe the ways in which the children interact and behave with teachers and peers during storybook reading and free play. Each observation period will be 10 minutes long per child. Observations will be conducted in October 2010 and in May 2011. The coding forms will use identifying numbers and no names or identifying information will appear on them.

Finally, I will be testing each child individually in October-November 2010, and May 2011 in a quiet room outside the class. Tests will measure non-verbal IQ, pre-reading, and reading skills. This will require that all students participating will be removed from their class once in October-November and once in May for approximately one hour. Teachers will be consulted and permission will be obtained before removing a child. If it is not convenient to do so (e.g. because of a school event or trip), I will conduct the testing on another day.
What will Parents be asked to do?

Parents will be asked to complete two short questionnaires before the research begins. One questionnaire asks about background information on their child. The second questionnaire asks about their home literacy environment. These questionnaires will take approximately 20 minutes to complete. All information is confidential and will not be linked to children’s names.

What will Children be asked to do?

Children will first take a test of expressive vocabulary ability to ensure basic proficiency in English. This test will only be given once as a screening tool. If a child scores above the 16th percentile, that child will be asked to continue in the study. Because a basic understanding of English is a requirement of the current study, if a child scores below the 16th percentile the child’s participation will end and all questionnaires and consent forms will be destroyed. Parents will be sent a letter to thank them for their participation.

Eligible children will be tested on their non-verbal IQ. This test will only be given once. Following this, I will test children’s pre-reading and reading skills. Tests of pre-reading and reading skills will be used twice – once in October or November and once in May to measure the progress that children have made across the junior kindergarten year.

Where will the study be conducted and what is the time commitment involved?

This study will be conducted in classrooms in your school and testing will be conducted in a quiet room in your school. It will involve no additional travel time to any other location for any participant. The first round of testing will take approximately one hour for each child and will be conducted during October-November 2010. Observations will also be conducted during this time and will last a total of 10 minutes per child. The second round of testing will occur during the month of May and will last approximately 40 minutes per child. Observations will also be conducted during this time and will last a total of 10 minutes per child. The time commitment will vary for teachers based upon how many students in their class are involved but will take no more than 50 minutes. Teachers will be asked to complete the Child Behavior Scale which takes approximately 10 minutes per child. To reduce teacher burden, we will recruit no more than five children per classroom. This form will be completed twice by teachers in October and again in May. The time commitment for parents will be approximately 20 minutes to complete the consent, demographic, and family literacy form. These forms are only completed once in September.
**Who will have access to the questionnaires and videotapes and will this information be confidential?**

The coding forms, tests, and questionnaires are essential for this study because they will allow me to determine if there is a relationship between social behaviour and early reading outcomes. I will keep all information confidential. All names and identifying information will be removed from the test forms, questionnaires, and coding forms. Original copies of all test forms, coding forms, and questionnaires will be stored in locked filing cabinets in Dr. Girolametto’s research office. Dr. Girolametto is my research supervisor. All forms that include identification that cannot be removed (such as signed consents, contact information, master list of names and identification numbers) will be kept in a locked filing cabinet in Dr. Girolametto’s research office. The tests, questionnaires, and coding forms will only be used by research staff, Dr. Girolametto, and me. They will not be shown to anyone else without written permission of the participants. All files will be destroyed after 7 years from the date of observations or testing.

**Are there any benefits to me for participating?**

There are no direct benefits to you for participating in this study. Potential benefits to the school community include a better understanding of the relationship between social behaviours and pre-reading ability and may afford knowledge in the development of in-service training for teachers to help all children in their classrooms succeed.

**Are there any risks to me for participating?**

There are no risks or discomforts to you for participating in this research. The observations are not intrusive to the classroom setting and teachers will not be asked to engage children in any activity that is not a part of their regular classroom routine.

You are free not to participate in this research at all. You are free to withdraw from the study at any time during this research study.

**Can I have a copy of the results?**

The research team will present the results of this research study at conferences and in publications. Your identity will be completely confidential and we will not identify you or your school in any way. We will send you a summary of the research results by mail once the study is complete. Please keep us informed of any changes of address.
University of Toronto Contact Person

If you have questions about your rights as a research participant, you can contact the Office of Research Ethics at ethics.review@utoronto.ca or by phone at 416 946-3273.

External Research Review Committee

The External Research Review Committee of the TDSB Has granted approval for this study.

Informed Consent

I acknowledge that the research procedures described on the attached form, and of which I have a copy, have been explained to me and that any questions that I have asked have been answered to my satisfaction. I have been informed of my right to withdraw participation in this study at any time. I also understand the benefits of joining the research study. I know that I may ask now, or in the future, any question I have about the study or the research procedures. I have been assured that records relating to my school will be kept confidential and that no information will be released or printed that would disclose my personal identity or the identity of my school without my permission.

I acknowledge that I have been given a copy of the consent form for my own personal use.

I hereby consent to participate in this research.

___________________________________________________
Principal's Name (Please Print)              Date

___________________________________________________
Signature                                    Date

___________________________________________________
Signature of Witness                      Date
Appendix B

Information Letter and Consent Form for Educators

Investigating the Relationship between Social Behaviour and Early Literacy Skills

Investigator: Lisa-Christine Girard, PhD Student
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Telephone: 416 946-8636

Contact Person: Lisa-Christine Girard
Telephone 416 946-8636
Email lisa.girard@utoronto.ca

Introduction

I am inviting you to participate in a research study. The purpose of this study is to examine the relationship between social behaviours in the classroom and pre-reading skills. I would like to gain a better understanding of the role that social behaviour may have in predicting children's ability to read. I hope that you will agree to be involved in this very important research study. I anticipate that the results of this study will help to reach a better understanding of how social behaviours contribute to reading acquisition. This information may provide important knowledge for the development of in-service training.

What will I be asked to do?

First, I will be visiting your classroom to answer your questions about the research study and obtain signed consent. At that time, I will ask you to complete one questionnaire to give me information about yourself. This questionnaire asks for information on your background (i.e., years of experience, education, languages spoken) and will only be completed once, before the study begins. The questionnaire will take about 10 minutes to complete. All questionnaires are confidential and will be coded with an identifying number so that your name and your school's name will not appear on the questionnaire.
Second, I am asking you to help recruit children from your classroom to participate in this study. I will provide you with information letters and consent forms, and two questionnaires for parents to read and complete. The two questionnaires consist of background information for each child and information about the family literacy environment. I would like you to send the information/consent forms home to the parents of children in your classroom in children’s knapsack. If you know that a child’s parents do not read and write English well enough to understand the forms, please do not send them home with the child. When the children return signed consent forms, I will return to collect them. I will randomly select five children to participate if more than five consents are obtained. I will then ask that you send home demographic and family literacy questionnaires with stamped, self-addressed envelopes with these five children. Parents will return these forms directly to me at the University of Toronto, Department of Speech-Language Pathology. These forms will take approximately 20 minutes for parents to complete.

I will also ask you to complete one questionnaire related to the social behaviour for each of the five children recruited in your classroom. The questionnaire will be completed once in October 2010, and again in May 2011 and takes approximately 10 minutes to complete per child. The questionnaire will be used to capture children’s social behaviour with peers in the classroom context and will be kept confidential.

Third, I will be conducting direct observations of each child during regular classroom activities. These observations are not meant to interfere with your classroom routine in any fashion as I will have no interaction with children and will be making my observations off to the side of the activity. The two activities that I will observe will be a shared storybook reading between you and the children in your class and the second activity will be free play. This will let me observe the ways in which the children interact and behave during storybook reading and a free play activity. Each observation period is 10 minutes long per child. I will use the observations to capture children’s behaviour at the beginning of the year and the end of the year. The observations are confidential and will be coded with an identification number. They will not be linked to your name, the children’s names, or shared with anyone outside the research project. Coding forms and pencil will be used during observations.

Finally, I will be testing each child individually in October-November 2010, and May 2011 in a quiet room outside the class. Tests will include non-verbal IQ, pre-reading, and reading skills. This will require that all students participating will be removed from your class once in October-November and once in May for approximately one hour. You will be consulted and your permission will be obtained before removing a child. If it is not convenient to do so (because of a school event or trip), testing will be rescheduled for another day.
**Who will have access to the questionnaires and observations and will this information be confidential?**

The coding forms, tests, and questionnaires are essential for this study because they will allow us to determine if there is a relationship between social behaviour and early reading outcomes. We will keep all information confidential. Original copies of all test forms, coding forms, and questionnaires will be stored in locked filing cabinets in Dr. Girolametto’s research office. Dr. Girolametto is my research supervisor. All names and identifying information will be removed from the test forms, questionnaires, and coding forms and replaced with an identification number. All forms that include identification that cannot be removed (such as signed consents, contact information, master list of names and identification numbers) will be kept in a locked filing cabinet in Dr. Girolametto’s research office. The tests, questionnaires, and coding forms will only be used by research staff, Dr. Girolametto, and me. They will not be shown to anyone else without your written permission. All files will be destroyed after 7 years from the date of observations or testing.

**Are there any benefits to me for participating?**

There are no immediate or direct benefits to you. Potential benefits to the school community include a better understanding of the relationship between social behaviours and pre-reading ability and may afford knowledge in the development of in-service training for teachers to help all children in their classrooms succeed.

**Are there any risks to me for participating?**

There are no risks or discomforts to you for participating in this research. The observations are not intrusive to your classroom setting and you will not be asked to engage children in any activity that is not a part of your regular classroom routine. The *Child Behavior Scale* will take approximately 10 minutes of time per child to complete.

You may decline to answer any questions or participate in any part of the procedures/tasks. You are free not to participate in this research at all. You are free to withdraw from the study at any time during this research study without any consequence to your current employment status within the TDSB. While this research will be conducted at TDSB sites, this research is independent of the TDSB.
Can I have a copy of the results?

The research team will present the results of this research study at conferences and in publications. Your identity will be completely confidential and we will not identify you or your school in any way. We will send you a summary of the research results by mail once the study is complete. Please keep us informed of any changes of address.

University of Toronto Contact Person

If you have questions about your rights as a research participant, you can contact the Office of Research Ethics at ethics.review@utoronto.ca or by phone at 416 946-3273.

Informed Consent

I acknowledge that the research procedures described on the attached form, and of which I have a copy, have been explained to me and that any questions that I have asked have been answered to my satisfaction. I have been informed of my right to withdraw participation in this study at any time. I also understand the benefits of joining the research study. I know that I may ask now, or in the future, any question I have about the study or the research procedures. I have been assured that records relating to me will be kept confidential and that no information will be released or printed that would disclose personal identity without my permission.

I acknowledge that I have been given a copy of the consent form for my own personal use. I consent to participating in this research study that will involve sending information/consent forms and questionnaires home with children and the completion of the Child Behavior Scale for all five children that enroll in this study.

I hereby consent to participate in this research.

____________________________________________________
Educator’s Name (Please Print) Date

____________________________________________________
Signature Date

____________________________________________________
Signature of Witness Date
Appendix C (Teacher Demographic)

GENERAL INFORMATION FORM FOR TEACHERS

Teacher’s Name ___________________________ Date of Birth ___________________

Languages spoken __________________________________________________________

Primary language spoken outside of work _________________________________________

   Number of hours per day primary language is spoken __________________________

Highest high school grade completed (circle one)    12    13    OAC

Years of post secondary education _____________________________________________

Do you have a Bachelor’s DEGREE in Education? _____ Yes _____ No

If yes, name the institution and country where the Degree was obtained:
_________________________________________________________________________

Do you have any other Diploma/Degree? _____ Yes _____ No

If yes, name the institution and country where the Diploma/Degree was obtained:
_________________________________________________________________________

Total years of career experience in teaching _________________________________

Total years you have been in your current job _________________________________

Consecutive years of experience with the age group you are currently teaching ______

How many children are in your classroom currently? _____________________________

How many adults are in your classroom? ________________________________
Are you responsible for the curriculum planning for your classroom? _____ Yes _____ No

Have you had any continuing education focused on language or literacy? _____ Yes _____ No

Explain ____________________________________________________________
Appendix D

Information Letter and Consent Form for Parents

Investigating the Relationship between Social Behaviour and Early Literacy Skills

Investigator: Lisa-Christine Girard, PhD student
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Telephone: 416 946-8636

Contact Person: Lisa-Christine Girard
Telephone 416 946-8636
Email: lisa.girard@utoronto.ca

Introduction

I am currently a University of Toronto PhD student in the Department of Speech-Language Pathology. I am inviting you and your child to join a research study. This study will examine the relationship between social behaviours in the classroom and early reading skills. I would like to gain a better understanding of the role that social behaviour may have in predicting children’s ability to read. I anticipate that the results of this study will help to reach a better understanding of how social behaviours contribute to reading acquisition.

What will I be asked to do?

First, I will ask you to complete two questionnaires before the research begins. One questionnaire asks about background information on your child. The second questionnaire asks about your home literacy environment. These questionnaires will take approximately 20 minutes to complete. All information is confidential and will not be linked to your child’s name. These forms will be sent home with your child in their knapsack and I will provide you with a stamped, self-addressed envelope that should be returned directly to me at the University of Toronto, Department of Speech-Language Pathology. Your child’s teacher and school will not have access to the completed forms and all information will be confidential. These forms will be kept locked in a filing cabinet in Dr. Girolametto’s lab and will only be accessible to me and Dr. Girolametto. Additionally, once the forms are received, your name and your child’s name will be replaced with an identification number.
What will my child be asked to do?

First, I will give your child a test of expressive vocabulary ability to ensure basic proficiency in English. This test will only be given once as a screening tool. If your child scores in the range necessary for this study, your child will be asked to continue. Because a basic understanding of English is a requirement of the current study, if your child scores outside that range, your child’s participation will end and all questionnaires and consent forms will be destroyed.

If your child is eligible to participate, I will be testing your child’s non-verbal IQ. The Columbia Mental Maturity Scale will be used to test your child’s non-verbal IQ. This test is not being used for diagnostic or identification purposes. This assessment will only be used to provide background information about your child’s nonverbal knowledge. Your child’s Principal has approved the use of this assessment. This test will only be given once. Following this, I will give your child a test of pre-reading and reading skills. Tests of pre-reading and reading skills will be used twice – once in October or November and once in May to measure the progress that your child has made across the junior kindergarten year. The tests chosen are meant to be fun and engaging for your child. I will pause frequently during testing and provide your child with stickers for their participation.

I will also be directly observing your child during two regular classroom activities (i.e. a shared storybook reading and play time). Your child will not know that I will be observing him/her as I will be to the side or back of the classroom observing classroom activities. Observations will be collected using a coding form and pencil. These observations will last 10 minutes in total and will occur twice, once in October-November and once in May. Observations will be conducted to look at the social behaviours your child uses during these activities. All test results and coding forms are confidential and will be coded with an identifying number so that your child’s will not appear on the forms.

What will my child’s teacher be asked to do?

Your child’s teacher will complete one questionnaire about your child, once in October and once in May. The questionnaire rates your child’s behavior (e.g. prosocial behaviours, aggression, hyperactivity, social skills) in the classroom. Names will not be used and all information will be confidential.

Where will the study be conducted and what is the time commitment involved?

This study will be conducted in your child’s classroom and testing will be conducted in a quiet room in your child’s school. It will involve no additional travel time to any other location for you or your child. The first round of testing will take approximately one hour and will be conducted during October-November 2010. Observations will also be conducted during this time and will last a total of
10 minutes per child. The second round of testing will occur during the month of May and will last approximately 40 minutes. Observations will also be conducted during this time and will last a total of 10 minutes per child.

**Who will have access to the questionnaires, tests, and coding forms, and will this information be confidential?**

The coding forms, tests, and questionnaires are necessary because they will show me if there is a relationship between social behaviour and pre-reading skills. I will keep all information confidential. Original test forms, coding forms, and questionnaires will be stored in locked filing cabinets in Dr. Girolametto’s research office. Dr. Girolametto is my research supervisor. All names and identifying information will be removed from the questionnaires and an identification number will be assigned to your child to protect their confidentiality. This identification number will be what is used on test forms and coding forms. All forms that include identification that cannot be removed (such as signed consents, contact information, master list of names and identification numbers) will be kept in a locked filing cabinet in Dr. Girolametto’s research office. The tests, questionnaires, and coding forms will only be used by research staff, Dr. Girolametto, and me. They will not be shown to anyone else without your written permission. All coding forms and files will be destroyed after 7 years from the date of observations or testing.

**Are there any benefits to my child for participating?**

There are no direct benefits to your child in participating in this research. Potential benefits to the school community include a better understanding of the relationship between social behaviours and pre-reading ability and may provide knowledge in the development of in-service training for teachers to help all children in their classrooms succeed.

**Are there any risks to my child for participating?**

There are no risks or discomforts to you or to your child for taking part in this research. The tests are designed to be fun and motivating. I will pause frequently during testing and provide your child with stickers for their participation. The observations will be of activities that occur naturally in the kindergarten program and your child will not know they are being observed. You may refuse to answer any questions. You are free not to take part in this study at all. You may remove your child from the study at any time. Your decision to withdraw will not have any effect on your child or their classroom environment.
What if my child is not interested in participating?

I will carefully watch your child’s attention, interest, and comfort during all sessions. If your child is tired, cries, or refuses to participate, he/she will take part in the regular classroom activities and will not be required to complete participation in the study.

What are the alternatives to participating in this study?

You are free to remove your child from the study at any time during or after the study. Your decision to withdraw will not have any effect on your child. If you do not wish your child to participate, your child will continue with their regular classroom program.

Can I have a copy of the results?

The researchers will present the results of this study at conferences and in publications. Your child’s name will be confidential and I will not identify you or your child in any way. I will send you a summary of the research results by mail once the study is complete. Please include your current mailing address when you complete and return the demographic and family literacy questionnaire to the University of Toronto, Department of Speech-Language Pathology. Please let me know if you change your address.

University of Toronto Contact Person

If you have questions about your rights as a research participant, you can contact the Office of Research Ethics at ethics.review@utoronto.ca or by phone at 416 946-3273.

External Research Review Committee

The External Research Review Committee of the TDSB has granted approval for this study. The School Principal has also given permission for this study to be carried out in your child’s school.

Informed Consent

I acknowledge that the research procedures described on this form have been explained to me. All questions I asked were answered to my satisfaction. I have been informed of the alternatives to participation in this study. I also understand the benefits of joining the research study. I know that I may ask now, or in the future, any question I have about the study or the research procedures. I have been assured that records relating to me, my child and his/her care will be kept confidential and that no information will be released or printed that would disclose personal identity without my permission.
I understand that I am free to withdraw myself or my child from the study at any time. I also understand that if my child does not participate in the study, or if there is withdrawal from it at any time, the quality of care for my child and for other members of my family will not be affected. I acknowledge that I have been given a copy of the consent form for my own personal use.

I hereby consent for my child and me to participate in this research. My participation will consist of completing two questionnaires. My child will participate in tests of non-verbal IQ and expressive language in October-November and pre-reading skills in October-November and again in May. I also consent to my child being observed during regular classroom activities in October-November and again in May.

________________________________________________________________________

Child’s Name (Please Print)          Date

________________________________________________________________________

Signature of Parent or Guardian     Date

________________________________________________________________________

Signature of Witness              Date

I also hereby consent to my child’s nonverbal IQ being assessed for the purposes of this research. I understand that results of this assessment will be kept confidential and will not be used as an identification or diagnostic tool.

________________________________________________________________________

Signature of Parent or Guardian     Date

________________________________________________________________________

Signature of Principal              Date
Appendix E

GENERAL INFORMATION FORM FOR PARENTS/CAREGIVERS

Child’s name ________________________________ Date of Birth______________________

Male_____ Female _______ Birth Order: 1st _____ 2nd _______ Other ___________

Number of children in family ____________

Number of Adults in the Household _____________________________________________

Adult 1: Age _______ Occupation _______________ Relationship to Child ______________

Adult 2: Age _______ Occupation _______________ Relationship to Child ______________

Adult 3: Age _______ Occupation _______________ Relationship to Child ______________

Adult 4: Age _______ Occupation _______________ Relationship to Child ______________

Mother’s Highest Level of Education Completed (check one):

Elementary school (Gr 1-8): ________
Some high school (Gr 9 - 12): _________
Completed high school (Gr 9 - 12): _______
College courses: ______________
College diploma (2-year): __________
University courses: ___________
University undergraduate degree: _______
University graduate degree: __________

Father’s Highest Level of Education Completed (check one):

Elementary school (Gr 1-8): ________
Some high school (Gr 9 - 12): _________
Completed high school (Gr 9 - 12): _______
College courses: ______________
College diploma (2-year): __________
University courses: ___________
University undergraduate degree: _______
University graduate degree: __________
What is your child’s ethnic background? ___________________________________________

Does your child attend Junior Kindergarten? Full Time: ______ Part Time: ______

For how many hours per day? ____________________________________________________

Name of School: _______________________________________________________________

How long has your child attended this School? ______________________________________

Does your child attend childcare? Yes: ______ No: ______

If yes, for how many hours per day?_____________________________________________

Is your child regularly exposed to a language other than English? Yes: ______ No: ______

If yes:  What language(s)? _______________________________________________________

What percentage of the time does your child hear language other than English? _________

What percentage of the time does your child speak language other than English? _________

Has your child had any problems with speech or language? Yes________ No_________

If yes, please describe  _______________________________________________________________________

_____________________________________________________________________________________

Is your child currently receiving speech and language therapy services (or has your child been referred to speech and language therapy services)?

Yes ____ No _____ If yes, please describe  ________________________________________________

_____________________________________________________________________________________

Has your child had any hearing problems?  Yes_________ No ____________

If yes, please describe ________________________________________________________________
Has your child had any other significant health problems?    Yes __________ No __________

If yes, please describe
____________________________________________________________________________
____________________________________________________________________________

Person who completed this form: (name and relationship to the child e.g., mother, grandparent

____________________________________________________________________________

Name                                      Relationship
Appendix F

Family Early Literacy Questionnaire

This survey includes questions on your home literacy environment. Any information you provide will be treated confidentially. Thank you for participating.

SECTION A: BACKGROUND

A1.
Child’s name__________________________________________  Date __________________________________
Your Name _______________________________________________________________________________
Relationship to Child: Mother/Father/Other (circle one; if “other” please specify) ______________

SECTION B: Activities

B1. Approximately how many books does your child own? _________________________________________

B2. Please list all the things you do to help your child learn about reading and writing?
________________________________________________________________________________________
_______________________________________________________________________________________

B3. How many hours did your child spend watching television last week? __________________________
What are the shows watched most frequently? _________________________________________________
B4. If you have a computer at home, does your child use it?  YES  NO (circle one)

Average number of hours per week? ________________________________________________

What computer programs/websites does s/he enjoy? ___________________________________

B5. If you read books with your child,

B5.1 Do you have a specific time of day when you read to your child? ___________________

B5.2 How many books do you usually read at one time? __________________________________

B5.3 How many times per week do you read to your child? _______________________________

B5.4 On average, how many hours per week do you read with your child? _________________

B6. In comparison to other activities, how would you rate your child's interest in books?

1  2  3  4  5

Activity least liked  Favorite Activity

SECTION C. Reading to your child

<table>
<thead>
<tr>
<th>How often …</th>
<th>Rarely</th>
<th>Once a week</th>
<th>A few times/week</th>
<th>Daily</th>
<th>Several times/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1. …do you go to the library with your child?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2. …do you point out and “read” signs and words to your child (e.g., restaurant names like McDonald's, Pepsi)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Rarely</td>
<td>Once a week</td>
<td>A few times/wk</td>
<td>Daily</td>
<td>Several times/day</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Logo, or street names, etc.?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>C3. … does your child show interest in adult reading materials (e.g., newspaper, T.V. guide, magazine, etc.) by asking you to read it or asking what words say?</td>
<td></td>
<td></td>
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<tr>
<td>C4. … does your child make up stories to tell you?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C5. … does your child ask about the meanings of words that s/he hears in stories?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C6. … does your child ask you to read to him/her?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C7. … does your child independently point to or talk about pictures when you read stories?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>C8. … does your child ask questions about characters or events during story reading?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>C9. … does your child fill in words or lines from a story when reading with you (e.g., when reading a book he/she knows well, say the next line or word before you read it)?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>C10. … does your child pretend to read the story in a book (e.g., sitting with a book and retelling a story that he/she has heard before)?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>SECTION D. Rhyming</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>D1. … do you recite nursery rhymes with your child (e.g., Jack and Jill or Little Bo Peep)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Rarely</td>
<td>Once a week</td>
<td>A few times/wk</td>
<td>Daily</td>
<td>Several times/day</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>--------</td>
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</tr>
<tr>
<td>D2. …does your child recite nursery rhymes on his/her own?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D3. …do you play rhyming games with your child (e.g., pat rhymes with mat)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D4. …does your child try and play rhyming games with you?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D5. …does your child produce rhymes by him- or herself (e.g., shoe rhymes with moo)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D6. …does your child notice and say something when she/he hears words that rhyme (e.g., That rhymes!)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION E. Writing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often …</td>
<td>Rarely</td>
<td>Once a week</td>
<td>A few times/wk</td>
<td>Daily</td>
<td>Several times/day</td>
</tr>
<tr>
<td>E1. …does your child write letters (without being asked to)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2. …does your child ask you to write for him/her?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E3. …does your child ask you how to spell words?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E4. …does your child write words (without being asked to)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often …</td>
<td>Rarely</td>
<td>Once a week</td>
<td>A few times/wk</td>
<td>Daily</td>
<td>Several times/day</td>
</tr>
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<td>-------------</td>
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<td>----------------</td>
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</tr>
<tr>
<td><strong>F1.</strong> …do you attempt to teach the names of the letters in the alphabet?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F2.</strong> …does your child point to the correct letter when you ask him to (e.g., Show me B)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F3.</strong> …does your child name letters of the alphabet?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F4.</strong> …does your child ask about letter names (e.g., what letter is this?)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F5.</strong> …do you attempt to teach the sounds that letters make (e.g., The letter B makes the sound “buh”)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F6.</strong> …does your child point to the correct letter when you say the sound (e.g., What letter makes the sound “buh”)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F7.</strong> …does your child name sounds of the letters of the alphabet (e.g., B makes the sound /b/)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F8.</strong> …does your child ask about the sounds that letters make (e.g., What sound does this letter make?)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F9.</strong> …does your child ask for help in reading words (e.g., signs on the street or words on food packages?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F10.</strong> …does your child recognize words in the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**SECTION G: ABOUT YOURSELF**

<table>
<thead>
<tr>
<th>How much would you say the following statements describe yourself:</th>
<th>Not at all</th>
<th>A little</th>
<th>Somewhat</th>
<th>Quite a lot</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1. I enjoy reading books, newspapers, or magazines.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2. I am a good reader.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G3. I can help my child become a better reader.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4. I think I can make a difference in how well prepared my child is to learn to read and write at school.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G5. I enjoy reading with my child.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G6. I enjoy drawing or writing with my child.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. …does your child read common words he/she has memorized (e.g., stop, mom, cat)?
### Appendix G

**Comparisons of Family Literacy Practices for EL1 and EL2 Children at Pretest**

<table>
<thead>
<tr>
<th>Variable</th>
<th>EL1 Children</th>
<th>EL2 Children</th>
<th>p values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent-Child Storybook Activities</strong></td>
<td>Median 4.0</td>
<td>3.6</td>
<td>.005*</td>
</tr>
<tr>
<td></td>
<td>Min-Max 2.0-5.0</td>
<td>1.8-5.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n = 39</td>
<td>n = 44</td>
<td></td>
</tr>
<tr>
<td><strong>Interaction with Writing Activities</strong></td>
<td>Median 3.0</td>
<td>3.3</td>
<td>.862</td>
</tr>
<tr>
<td></td>
<td>Min-Max 1.0-5.0</td>
<td>1.0-5.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n = 38</td>
<td>n = 44</td>
<td></td>
</tr>
<tr>
<td><strong>Interaction with Letter/Sound Activities</strong></td>
<td>Median 3.5</td>
<td>3.8</td>
<td>.613</td>
</tr>
<tr>
<td></td>
<td>Min-Max 1.5-5.0</td>
<td>1.0-5.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n = 34</td>
<td>n = 42</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Family literacy activities were assessed using the *Family Literacy Questionnaire* (Boudreau, 2005). Activities are reported on scale ranging from 1 “rarely” to 5 “several times a day”.

*The n’s change in every cell as a result of incomplete family literacy questionnaires.

*t-test is significant using the Bonferroni-Holmes adjustment.*
Appendix H

Comparisons of Expressive Vocabulary, Non-Verbal IQ, Alphabet Knowledge and Phonological Awareness Scores of EL1 and EL2 Children at Pretest

<table>
<thead>
<tr>
<th>Variable</th>
<th>EL1 n = 47</th>
<th>EL2 n = 51</th>
<th>p Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expressive Vocabulary</td>
<td>M (SD)</td>
<td>Min-Max</td>
<td>102.9 (10.5)</td>
</tr>
<tr>
<td>Non-Verbal IQ</td>
<td>M (SD)</td>
<td>Min-Max</td>
<td>110.5 (11.1)</td>
</tr>
<tr>
<td>Letter Knowledge</td>
<td>M (SD)</td>
<td>Min-Max</td>
<td>1.8 (1.8)</td>
</tr>
<tr>
<td>Letter/Sound Knowledge</td>
<td>M (SD)</td>
<td>Min-Max</td>
<td>3.6 (4.3)</td>
</tr>
<tr>
<td>Elision</td>
<td>M (SD)</td>
<td>Min-Max</td>
<td>1.0 (1.3)</td>
</tr>
<tr>
<td>Blending Words</td>
<td>M (SD)</td>
<td>Min-Max</td>
<td>2.5 (2.1)</td>
</tr>
<tr>
<td>Sound Matching</td>
<td>M (SD)</td>
<td>Min-Max</td>
<td>3.8 (3.1)</td>
</tr>
</tbody>
</table>

*Note: Expressive Vocabulary assessed using Standard scores from the EOWPVT (Brownell, 2000). Non-Verbal IQ assessed using Age Deviation scores from the CMMS (Burgemeister, Blum, & Lorge, 1972). Letter Knowledge, and Letter/Sound Knowledge were assessed using raw scores from the WRAT-ERA (Robertson, 2003). Elision, Blending Words and Sound Matching subtests were assessed using the CTOPP (Wagner, Torgesen & Rashotte, 1999). *t-test is significant using the Bonferroni-Holmes adjustment.
Appendix I

Comparisons of the Social Behaviours of EL1 and EL2 Children at Pretest

<table>
<thead>
<tr>
<th>Variable</th>
<th>EL1 (Pretest)</th>
<th>EL2 (Pretest)</th>
<th>p values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggressive with Peers</td>
<td>Median: 1.2</td>
<td>Median: 1.2</td>
<td>.097</td>
</tr>
<tr>
<td></td>
<td>Min-Max: 1.2-2.8</td>
<td>Min-Max: 1.1-2.7</td>
<td></td>
</tr>
<tr>
<td>Hyperactive/Distractible</td>
<td>Median: 1.3</td>
<td>Median: 1.5</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Min-Max: 1.0-3.0</td>
<td>Min-Max: 1.0-3.0</td>
<td></td>
</tr>
<tr>
<td>Asocial with Peers</td>
<td>Median: 1.0</td>
<td>Median: 1.3</td>
<td>.010*</td>
</tr>
<tr>
<td></td>
<td>Min-Max: 1.0-2.5</td>
<td>Min-Max: 1.0-3.0</td>
<td></td>
</tr>
<tr>
<td>Anxious/Fearful</td>
<td>Median: 1.0</td>
<td>Median: 1.0</td>
<td>.408</td>
</tr>
<tr>
<td></td>
<td>Min-Max: 1.0-2.0</td>
<td>Min-Max: 1.0-2.5</td>
<td></td>
</tr>
<tr>
<td>Prosocial with Peers</td>
<td>Median: 2.1</td>
<td>Median: 2.0</td>
<td>.077</td>
</tr>
<tr>
<td></td>
<td>Min-Max: 1.1-3.0</td>
<td>Min-Max: 1.1-3.0</td>
<td></td>
</tr>
<tr>
<td>Excluded by Peers</td>
<td>Median: 1.0</td>
<td>Median: 1.0</td>
<td>.147</td>
</tr>
<tr>
<td></td>
<td>Min-Max: 1.0-2.1</td>
<td>Min-Max: 1.0-2.1</td>
<td></td>
</tr>
</tbody>
</table>

*Note: All behaviours were assessed using the Child Behavior Scale (Ladd, 2010). Behaviours are reported on a 3-point scale ranging from 1 “doesn’t apply” to 3 “certainly applies”.*
Script for Child Assent

Hello (child’s name), my name is Lisa and I’m from the University of Toronto. I would like to know if you would be interested in participating in some fun and interesting activities with me. The activities will be conducted in another room outside your classroom and will involve pointing to pictures, words, and letters, listening to words and sounds, repeating made up words, and matching sounds. You will be able to choose from some stickers when we take a break and when again when we are finished. If you get tired or want to stop the activities at any point you can let me know and we will come back to the classroom. If you don’t want to finish the activities that’s ok. The activities will take approximately one hour. Would you be interested in doing these activities with me today?
Appendix K

Code Descriptions for Child Classroom Behaviour Observations

You will be watching children in Kindergarten classrooms: focus on watching one child, the target child for 10 minute interval during activity time you must fill out all information at the top of each coding sheet and global sheet. Be sure to number the front of each page so that page 1 is your first sheet for coding, page 2 your second, etc. Code behavior during 10 second intervals by using a timer. Always record the hour, minute, and second at beginning of each new minute (e.g., 9:30:00). Take notes about interesting behavior in the margin area designated for notes (e.g. child looks sad; paying attention to story). Only one code will be assigned to a child per 10s interval. Codes are based on a hierarchy where aggressive behaviours are coded first, followed by prosocial behaviours and finally solitary.

INTERVAL (10 second intervals)

CHILD

**Aggressive (Agg):**

- *Code when target child is physically aggressive or physically hostile.
- *Also code when child makes physically aggressive verbal threats. (e.g., the aggressive threat could be a threat to hurt someone or a threat to wreck/break someone else’s project, etc.)
- Act may be towards a child, teacher or object.
- Examples: hitting, pushing, grabbing a toy away, pulling hair, destroying someone’s property, biting, raising fist to intimidate someone, hitting or kicking a wall or an object, throwing an object on the ground or against a wall, hitting a table in frustration, tripping etc.
- The child or teacher being aggressed against may or may not have a negative reaction, but you should code Agg anytime physically aggressive behaviors occur.
- Aggressive acts towards the self are NOT coded as Agg, but should be noted in the margin and should influence global ratings.
- A child may wriggle in response to being moved or held, and this is NOT considered Agg unless the child actually hits, kicks, etc.
- Circle Agg if you see any physically aggressive or hostile acts during the interval, and circle it again in each subsequent interval in which your child shows aggressive behavior.
- If Agg occurs in an interval, you CANNOT also code Pro or Sol during that interval.

**Solitary/ Solitary Play/ Solitary Uninvolved :**

- *Code Sol when the child is engaged in play alone during all or part of an interval (Example: playing with cars, looking at a story alone, drawing a picture, counting blocks, etc).
• The target child could be playing next to another child, and still be engaged in solitary play as long as the child is NOT interacting with peers verbally or nonverbally as part of play. Play is solitary if no other children or teachers are involved in the play with the child.
• When a child is participating, he/she cannot be considered solitary.
• The child is away from other kids playing alone OR the child is near other kids but involved with a separate/distinct project or activity (not related to what other kids are doing).
• Examples: playing at easel alone, playing at sandbox without kids around him/her playing with sand also, playing with plane while others around you are at table drawing and doing things unrelated to the child’s play/activity.
• Code Sol if the child is NOT involved with interacting with others, NOT playing, or NOT doing any other activity (play or other task, like tying shoe) for all or part of the interval. The child lacks intention and seems uninvolved or left out.
• This should not just be a brief pause in the middle of an activity or interaction.
• A child coded this way may be sitting sucking his thumb and staring into space, standing in the center of the room not doing anything, watching children play in the kitchen without showing any signs of preparing to join, wandering in the classroom, etc.
• If it is clear the child is waiting for something (e.g., the teacher told him to wait for her by the table, the child is not Sol because he/she is asked to lack activity. Code any other appropriate codes.

Prosocial (Pro):
• Prosocial is positive and APPROPRIATE social behavior. If the child is having a negative interaction, it is not coded Pro just because the child is interacting with others.
• The interaction may be short, but should be more than just incidental contact. The child should seem interested in engaging with another child. We want to know when your target child is getting along with any other children.
• ***Prosocial behavior does not require talking. It can be nonverbal. Children could be building a tower together (positive and appropriate interaction where children are involved together).
• This does not include incidental chatting (e.g., “Move over,” “Pass me a crayon”) or parallel play (e.g., children making their own pictures without interacting).
• The length of the interaction is not important. A child could have a short prosocial interaction.
• When a child comforts or helps another child in an appropriate manner the child’s actions should be coded Pro.
• The child being helped may not accept the target’s help, comfort, invitation for play, or other positive social behavior. The behavior of your target child should be coded as Pro if it is an appropriate positive social behavior, regardless of the reaction of the recipient child. If it was given in an inappropriate way, then do not code Pro.
• *Pro can occur, but it must still be appropriate given what the rules are at that time.
• Use this code if the target child participates in any positive and appropriate social behavior towards other children or their teacher, such as:
• playing well together
• sharing
• hugging
• engaging in pleasant conversation
• reading a book with a group of other children
• building a structure together
• working together to clean up
• smiling and laughing together
• helping a friend
• giving a compliment
• comforting another child
Appendix L

Subscale Items of the Child Behavior Scale ©

**Prosocial with Peers**
1. Helps
2. Recognizes feelings
3. Concerned about distress
4. Kind towards peers
5. Cooperative with peers
6. Concern for moral issues
7. Offers help

**Hyperactive/Distractible**
1. Restless, doesn’t keep still
2. Squirmy, fidgety
3. Poor concentration, attention
4. Inattentive

**Aggressive with Peers**
1. Fights
2. Bullies
3. Kicks, bites, hits
4. Aggressive
5. Taunts, teases
6. Threatens
7. Argues

**Excluded by Peers**
1. Not much liked
2. Peers refuse to let child play
3. Not chosen as playmate
4. Peers avoid this child
5. Excluded from peers’ activities
6. Ignored by peers
7. Ridiculed by peers

**Asocial with Peers**
1. Prefers to play alone
2. Likes to be alone
3. Keeps peers at a distance
4. Solitary child
5. Avoids peers
6. Withdraws from peer activities
Anxious/Fearful
1. Is worried
2. Appears miserable, distressed
3. Fearful or afraid
4. Cries easily
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