The Inter-relationship between Core Language Skills and Social Competence in Preschool Children

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A thesis submitted in partial fulfillment of the requirements for the degree in Master of Science
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AND SOCIAL COMPETENCE IN PRESCHOOL CHILDREN

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by

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ABSTRACT

Language skills provide preschoolers with the foundational skills needed to socially interact, but little is known about the relationship between specific language skills and broad constructs of social competence. Sixteen preschoolers between 3-5 years with varying language abilities were recruited. Descriptive and correlational analyses were conducted to examine the relationships between speech, syntax, semantics, coherence, and literacy skills and social cooperation, social independence and social interaction. The main finding of this study showed that literacy skills as measured by the Numbers, Letters and Words subtest (K-SEALS) and word knowledge and retrieval as measured by the Semantics subscale (CCC-2) were significantly correlated with Social Independence and Social Interaction (PKBS-2) respectively. Additional findings identified significant correlations between core and pragmatic language skills as well as significant associations between pragmatic language and social competence. These findings support the notion that the content of preschoolers’ conversations rather than the accuracy of their speech or syntax is associated with success in social interaction and social independence. The findings of this study suggest that assessments of preschoolers should include a broad range of language and social skills, including word knowledge and access.

Keywords
Word Knowledge and Retrieval, Semantics, Social Competence, Preschool Children
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Chapter 1

Introduction

Social competence is the ability to effectively use a range of social skills that are required for successful social interactions. These social skills may include understanding social norms, recognizing emotions in others, adjusting to different social situations, and problem solving and coping abilities (McCabe & Meller, 2004). Children often develop social competence through interacting with parents, siblings, peers, and teachers. They must also use their developing language and social skills in order to be successful in social interactions. It is therefore difficult to fully study and understand social competence without studying the inter-relationship between language and social competence. Until now, pragmatic skills (or how language is used in social situations) have been studied in relation to social competence in preschool and school-age children. However, the role of core language skills such as syntax, semantics, and articulation in relation to social competence has not been studied extensively in preschool children. Both pragmatic and core language skills are essential for preschoolers to be successful in social interactions. In turn, effective social interaction provides crucial support and opportunities for learning social-emotional, cognitive and language skills. In summary, social competence facilitates a preschooler’s ability to holistically experience their social environment, to form meaningful relationships, and to be successful and accepted at school.

Prior to starting school, the preschool years are a crucial period in which preschoolers learn important language and social skills within their social settings. Preschoolers use their language skills to engage socially with peers and familiar adults and to gain social competence. They learn how to approach peers to play, to initiate interactions, and to maintain turn taking and conversations. Any impairment in either social or language skills may influence their level of
social competence and place them at risk for future difficulties in school. The inter-relationship between language and social competence has long been recognized, but the detailed nature of this relationship has yet to be fully clarified. How do children utilize language in social situations and what language skills support their social competence? Which pragmatic language or core language skills are the most closely related to social competence in preschool children? Why do some, but not all, children with language difficulties have trouble interacting effectively with others? If we are to help children who are encountering social difficulties, the language skills that are related to social competence need to be identified. The purpose of this study is to examine the inter-relationship between core language skills and social competence in preschool children as they learn language within a social environment, which has been proposed by the social interactive theory.

**Social interactive theory and importance of the environment for children’s language learning.** The strong role that the early environment of the child plays in his/her language and social learning has been proposed by the social interactive theory. Vygotsky (1978) proposed that most concepts are first introduced within social interaction. This theory suggests that the social environment provides significant support for the development of a child’s linguistic and cognitive abilities (Gleason, 2005). Social interaction between the child and his/her parents and also between siblings and peers provides an important way for language acquisition. Each child’s ability to acquire language is dependent on the child’s problem solving skills in situations that are just above the child’s current abilities. When the child engages with different and more competent communication partners who challenge him/her in different settings, learning takes place (Vygotsky, 1978). In the case of children with language impairment, learning may be impeded, as they are less able to integrate into different social environments. The social
interactive theory therefore provides support for recognizing the importance of the environment in the co-development of language and social skills to ensure opportunities to practice these skills and to become socially competent.

Children who experience difficulties in language tend to engage less frequently in social interactions than their peers and in turn have fewer opportunities to practice language. Children with language difficulties also experience less than positive responses from peers (Murray et al., 2010; Rice, Sell, & Hadley, 1991). Rice (1993) described the reduced interactions and negative responses to social attempts by children with poor language skills as the social consequences of language impairment. Those children who are weaker in language are limited in opportunities to socialize and are more vulnerable to a negative social spiral (Rice, 1993). All social opportunities become platforms for children to practice language and enrich their social competence. However, if children are limited in their social environment, language learning can be restricted. Therefore, children who lack flexibility in the use of language will have ineffective and disruptive social strategies to enter ongoing interactions (Rice, 1993; Fujiki & Brinton, 2009). Consequently, their peers may view them as undesirable communication partners and socially incompetent. This results in a vicious cycle and will exacerbate the impact of the language impairment on a child’s social competence. As a result, children with poor language skills are at a disadvantage to become socially competent due to the lack of necessary language skills to employ within social interactions, leading to fewer opportunities to enter and practice these skills within interactions.

With sufficient support from the surrounding social environment to enrich language learning, most children can acquire the necessary language skills required for successful interaction, which include core language and pragmatic language skills. Core language skills are comprised of syntax (word order and combinations, sentence organization, and word types),
morphology (organization of words), phonology (rules dictating the arrangement of speech sounds), and semantics (meaning or content of words) (Owens, 1988). These aspects of core language are equally important to pragmatic language skills for children to communicate in different social settings. However, children also need to know how to use these core language skills in the appropriate context in order to match their communication partners, situations, and social norms, and this knowledge is known as pragmatics (Owens, 1988). Prior to starting school, preschoolers begin to develop the age-appropriate skills of core language, pragmatic language, and social competence in order to effectively communicate in changing social environments.

**Concurrent development of language and social competence.** Preschoolers’ language and social competence develop concurrently and must match the demands of different social environments at home and school. The different environmental expectations between home and school pose a challenge to a preschooler’s developing language skills and social competence. A preschooler first learns language in the familiar and concrete home environment where he/she can interact with familiar children and adults. Upon entering school, the child will have multiple, unfamiliar peers and will have to learn how to interact successfully in a variety of changing and less concrete routines.

In the home setting by contrast, the preschoolers learn language and social skills through interactions with their parents. At nine months, infants are capable of using their voice to attract attention of their parents (Rutherford, 2011). Parents reinforce their children’s communication attempts and in doing so create turn taking exchanges within familiar routines with their children. As preschoolers grow older, they contribute gestures and words to joint interactions
with familiar adults. They learn to use vocabulary and basic sentences as well as the basic rules of turn taking and social cooperation through early interactions with their parents.

From 2-5 years, preschoolers also learn language and social skills within social interactions with peers. At three years, most preschoolers can intentionally and successfully enter into group situations as well as sustain cooperative behaviours (Gerber, Wilks, & Erdie-Lalena, 2011; PBS Parents, 2013). To be successful within these group situations, preschoolers must develop effective strategies to first initiate contact with peers engaged in an ongoing interaction. They must then maintain conversations through providing appropriate responses and being cooperative in order to cultivate a strong relationship with their peers. During peer interaction, preschoolers learn to resolve conflicts through negotiation and compromise. Their expanding vocabulary and grammatical skills help preschoolers to share personal experiences and interests with peers. These peer-peer interactions become places where preschoolers practice and refine their social and language skills (Rice, 1993). As a result, preschoolers gain stronger language and social skills as well as confidence, which allow them to enter and actively participate in social interaction with peers at school, achieving success in transitioning from home to school.

The important transition from a less structured home environment to the structured routines of school offers preschoolers with opportunities to acquire new social skills, but it may also challenge their language and social competence. Now immersed in school routines, children encounter more interactions with multiple peers rather than one-on-one interaction. They also need to able to quickly adjust to new situations, take directions from teachers, show independence, recognize the feelings of others, and express emotions verbally (Sullivan, 2013). If children are weak in their language skills and social competence, they are less able to adapt to the new social environment and assimilate into peer interactions. With the increased social and
language demands at school, children with weaker language skills and social competence may face difficulties. For this reason, further studies of the specific language skills related to being successful in social interactions are needed.

**Important aspects of social competence in the school setting.** Social competence includes entering ongoing interactions, reading emotional cues and feelings, and being accepted and making friends. These skills play an important role in the preschooler’s transition to kindergarten and success at school. To engage with their peers at school, children frequently enter ongoing interactions with multiple peers. Children also need to be aware of the routines and games in which their peers engage in as well as use suitable phrases to enter the ongoing interactions. They might say, “Can I play too?” or “Can I have a turn?”. They need to have confidence when asking these questions so that their peers will acknowledge them and invite them to join in.

When children exhibit poor social competence, they may lack the confidence to initiate peer interactions and as a result, they are less likely to be accepted and liked by peers (Gertner, Rice, & Hadley, 1994). Children may be slow in transitioning to kindergarten and face isolation from peers, who are selective in their communication partners, often choosing children with similar levels of social competence to interact with (Stoneham, 2001). Therefore, to develop strong social competence, preschoolers must master effective strategies to initiate and enter into group situations. Once a child joins an interaction, the next step is to maintain socialization by sustaining conversation and responding appropriately.

Maintaining interaction requires preschoolers to understand the conversation in order to provide appropriate responses. In addition to understanding the linguistic content of interactions, preschoolers need to understand the social rules, cooperate with their peers, read the emotional
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cues of others, and be sensitive to their feelings (Timler, Olswang, & Coggins, 2005). Children may fail to sustain interactions if they do not provide suitable and sufficient responses and in turn will be rejected by their peers (Hadley & Rice, 1991). To provide appropriate responses, emotional knowledge is also required. Emotional knowledge involves expressing one’s own emotions, interpreting peers’ verbal and nonverbal emotions, and comprehending peers’ emotional perspectives (Brinton & Fujiki, 2005; Timler, 2003; Spackman, Fujiki, & Brinton, 2006). Children with good emotion regulation and comprehension are capable of vocalizing their feelings instead of internalizing them as well as provide affection and comfort for their peers (Brinton & Fujiki, 2005). It is predicted that peers prefer children with a strong grasp of emotional knowledge (Denham, McKinley, Couchoud, & Holt, 1990), indicating that emotional knowledge assists children in forming strong peer relationships. To maintain continual interaction, children are also required to display cooperative behaviours such as turn taking, compliance with instructions, and compromise during conflicts with peers. When preschoolers can sustain interaction with peers, they are more likely to adjust smoothly to kindergarten, to form friendships, and to be accepted by their peers.

However, if children are not skilled at entering and maintaining interactions with peers, they are at risk for not being accepted by peers and not making friends. If social competence is poor, it is difficult for children to transform social relationships into friendships or to be accepted by peers (Gertner, Rice, & Hadley, 1994). A distinction can be made between these two main social relationships of friendship and acceptance. Friendship involves closeness and intimacy while peer acceptance often relates to popularity (Schaffer, 1996; Fujiki, Brinton, Hart, & Fitzgerald, 1999). Friendships enhance social development as being close to a peer offers a sense of intimacy and dependability that refines a preschooler’s self-control and emotional
understanding. Peer acceptance supports the preschoolers’ ability to access group play and to adapt to different communication partners and environments (Fujiki et al., 1999; Farmer, 1997). Children with poorly developed friendships often display indecisiveness about entering group play. Being adept at entering and maintaining interactions in multiple peers, reading and regulating emotions, and being accepted by peers are all important aspects of social competence that are important for preschoolers to have opportunities to engage socially and to develop a sense of belonging at kindergarten. Children with less developed language and/or social skills may have difficulty with these aspects of social competence and may not be able to fully engage and transition to kindergarten.

**Consequences of language impairment in social situations.** Children with language impairment have been shown to initiate fewer interactions than their peers, to not always respond appropriately, and are less likely to be chosen as playmates by their peers. Children with language impairment also interact more with adults than they do with their peers (Rice et al., 1991). At school, teachers describe children with language impairment as being overly anxious or fearful to enter and maintain interactive situations (Fujiki et al., 1999). Success in initiating interaction requires preschoolers to be able to negotiate joint attention with and be attentive to their peers (Rice et al., 1991). Preschoolers also need to be able to select an appropriate moment to approach a peer and to have a suitable topic of discussion (Rice et al., 1991). Yet children with language impairment often have difficulty in manipulating topics and taking turns during interaction and may be perceived as unresponsive or disinterested (Fujiki & Brinton, 2009). Furthermore, preschoolers are required to be assertive in initiating interactions. However, McCabe and Meller (2004) indicated that children with speech and/or language impairments exhibit lower self-control and assertiveness than their peers. Children with language impairment
struggle with a variety of social skills that are critical for initiating interactions and in turn, they may be at a disadvantage for gaining peer acceptance.

Peer status plays a crucial role in facilitating peer acceptance into a social group; however, peers and teachers often view children with language impairments as less likeable or sociable (Hadley & Rice, 1991). Gertner et al. (1994) compared the likeability of children who are developing normally (ND), children with specific language impairment (SLI), and children with English as a second language (ESL). Children who were developing normally received more positive nominations than their peers with SLI and ESL, indicating a hierarchy in peer status and popularity preferences (Gertner et al., 1994). McCabe and Meller (2004) also showed that teachers rated children without language impairment as more “sociable” than their peers with speech/language impairment. Consequently, children with language impairments face difficulties in establishing good peer status and peer acceptance, which further hinder their ability to socialize and to adapt to kindergarten. Furthermore, it has been shown that long-term friends are more similar in expressive and receptive language ability than temporary friends or non-friends (Lederberg, 1991). Friendship and peer acceptance are necessary experiences for children to practice and enforce both language skills and social competence in social settings. The current literature has yet to clarify the effect of the limitations in specific aspects of language functioning upon social interaction, but a few studies have identified expressive and receptive language as being important for successful interaction (Gertner et al., 1994; Ford & Milosky, 2008; Park, Yelland, Taffe, & Gray, 2012).

**Three Constructs of Social Competence.** Social competence is a theoretical construct that includes a variety of social and cognitive behaviours as well as components of emotional adjustment (Merrell & Gimple, 1998). The effective use of social and language skills are several
skills needed to bring about social competence and successful social interactions (Hoff, 2006).

Timler, Vogler-Elias, and McGill (2007) suggested that social communicative competence “reflects children’s skills for influencing others and interpreting social situations” (pg. 167).

These researchers indicated that these skills are aided by the child’s bringing together language, social cognitive and executive functioning. Therefore, this study will attempt to study several important behavioral components of a complex theoretical construct. Social competence will be measured by using The Preschool and Kindergarten Behavioral Scale – Second Edition (PKBS-2; Merrell, 2003). This measure was selected to evaluate some aspects of social competence due to its common use with preschoolers, its strong psychometric properties, and due to the three constructs of social competence identified with the measure. This measure also identifies three useful constructs of social competence: Social Cooperation, Social Interaction, and Social Independence. The ability to cooperate socially, the ability to interact, and the ability to be socially independent, have been identified through a factor analysis of items on the PKBS-2 (Merrell, 2003). These constructs incorporate skills that facilitate entering interactions, sustaining conversation, and making friends. The three constructs of social competence identified by Merrell (2003) will also be used to describe potential inter-relationships between language skills and social competence in the current study.

Social Cooperation involves social skills that are required to sustain interaction with peers and adults. Most of the social skills classified under social cooperation are adult-directed interactions that include following instructions, accepting decision by adults, and demonstrating self-restraint (Merrell, 2003). Children with language impairment may struggle with skills of social cooperation because it requires strong language comprehension. However, children with language impairment can be weak in language comprehension, hence compromising their ability
to understand instructions and rules. They may be delayed in developing these social skills and might appear uncooperative when they have simply missed important cues to follow since they do not understand the ongoing social interaction or the social rules needed to cooperate. Consequently, they may often be seen as unresponsive or uncooperative (Brinton & Fujiki, 2005).

Social Interaction describes skills that involve understanding emotions, participating in groups, and inviting peers to play. For social interaction, children with language difficulties might lack the core language skills to initiate or interact appropriately with others (Brinton & Fujiki, 2005). Social interaction requires preschoolers to comprehend their peers’ feelings, emotions, and perspectives (Merrell, 2003). These skills require a child to be fluent in speech and to have a clear understanding of ongoing messages. However, for children with language impairments, their speech may not be clear enough for them to be understood by others and as a result, they might be excluded from peer interaction. Children with language impairment may recognize what is going on in an interaction, but might lack either the verbal or nonverbal skills to engage appropriately. When children with language impairment are required to contribute to conversations, they often do not reply appropriately or stay on topic (Brinton & Fujiki, 2005). In turn, children with language impairment are less likely to initiate and sustain interaction as a result of poor social interaction skills.

Social skills categorized by Social Independence include showing confidence and assertiveness, adapting to different social situations, and being accepted by other peers. These social skills are all necessary for initiating conversation and making friends. Social independence requires children to be confident and independent in social situations, but children with language difficulties often exhibit difficulties in displaying these social skills (Brinton & Fujiki, 2005;
Marton, Abramoff, & Rosenzweig, 2005). Hence, these children have fewer opportunities to
develop a comprehensive understanding of social norms, and may be presented with fewer
occasions to learn and master language. As such, they are not perceived as effective
communication partners and may have trouble making friends (Brinton & Fujiki, 2005).

**Rationale.** Several issues emerge from the existing literature about the potential
relationship between language functioning and social competence. First, previous studies have
shown conflicting results about whether there is a relationship between language skills and social
competence. A group of researchers have identified a positive relationship between language
functioning and social competence (Aro, Eklund, Nurmi, & Poikkeus, 2012; Durkin & Conti-
Ramsden, 2007; Ford & Milosky, 2008; Fujiki et al., 1999; Gertner et al., 1994; Laffey-Ardley &
Thorpe, 2006; McCabe & Meller, 2004). Gertner et al. (1994) found a strong correlative
relationship with both expressive and receptive language skills (measured by *Reynell
to 5-year-olds as measured by positive and negative nomination measures (modeled after Black
& Hazen, 1990; Hazen & Black, 1989). With further examination, they found that expressive and
receptive language skills of 5-year-olds significantly predicted positive nominations from peers
when the children were at 8 years of age. Laffey-Ardley and Thorpe (2006) conducted a study
with twins (ages 3 to 6) investigating the association of vocabulary, syntax, and language
complexity (measured by *MacArthur Communicative Development Inventories*; Fenson et al.,
1993) to social competence measured by the *PKBS-2* (Merrell, 2003). The findings indicated
significant correlations of language skills with Social Cooperation, Social Interaction, and Social
Independence. Aro et al. (2012) also found that receptive language skills in 5-year-olds
(measured by *Reynell Developmental Language Scales*; Reynell & Huntley, 1987) predicted later
social skills and adaptability in children at 8 years of age. Similarly, Ford and Milosky (2008) reported receptive language in children ages 4;6-5;7 (measured by the CELF-P; Wiig, Secord, & Semel, 1992) significantly predicted a specific social skill, emotion inferencing ability, as measured by an inferencing task developed by Ford and Milosky. Durkin and Conti-Ramsden (2007) found a borderline significant predictive relationship between the quality of friendships and expressive language and receptive language (measured by CELF-R; Semel, Wiig, & Secord, 1995) in children 7;5 to 8;9 years. Fujiki et al. (1999) found considerable variability in the performance of their children (ages 6;1-10;7) with specific language impairment (SLI) related to peer acceptance. Some children with SLI received lower peer acceptance ratings as measured by an overall peer sociometric rating while others established strong friendships, as measured by reciprocal friendship nomination procedures.

In contrast, other researchers did not find a significant relationship between core language skills and social competence (Leonard, Milich, & Lorch, 2011; Volden, Coolican, Garon, White, & Bryson, 2009). Volden et al. (2009) conducted regression analyses to identify the predictive relationship of expressive language, receptive language skills (CELF-Expressive and Receptive language; Semel, Wiig, & Secord, 1995), and pragmatic language skills (Test of Pragmatic Language; Phelps-Terasaki & Phelps-Gunn, 1992) with the Socialization domain on the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cichetti, 1984). Results indicated no predictive relationship in the overall model for expressive, receptive, pragmatic language skills with the Socialization domain. Likewise, Leonard et al. (2011) found no significant correlation of expressive and receptive language (measured by The Oral and Written Language Scales; Carrow-Woolfolk, 1995) with social skills ability (measured by the Social Skills Rating System; Gresham & Elliot, 1990). Instead, pragmatic language use as measured by the non-standardized
Pragmatic Composite of the *Children’s Communication Checklist – Second Edition* (average of subscales E to J; Bishop, 2006), was significantly correlated with Cooperation, Assertion, Responsibility, and Self-Control of the *Social Skills Rating System* (SSRS; Gresham & Elliot, 1990). It is not clear why there are mixed results in the previously discussed studies. The differences in age or language severity of the children studied as well as variability in both language and social skills may have contributed to the mixed results.

Second, the existing studies frequently investigated specific social skills such as reading of emotional cues or the ability to form friendships. While these studies provide us with some important cues about the role of language in social competence, the existing literature does not provide us with knowledge about which language skills are important for success in overall social interaction. More often, researchers were interested in investigating friendship and peer acceptance (Fujiki et al., 1999), emotion inferencing and dissembling (Ford & Milosky, 2008; Brinton, Spackman, Fujiki, & Ricks, 2007), or peer popularity (Gertner et al., 1994). The present study hopes to investigate the relationships of core as well as pragmatic language skills, with important constructs of social competence in order to provide a better understanding of how specific language skills interact with overall social competence abilities.

To do so, this study employed commonly used measures of language and social competence, the *Kaufman Survey of Early Academic and Language Skills* (*K-SEALS*; Kaufman & Kaufman, 1993), the *Children’s Communication Checklist – Second Edition* (*CCC-2*; Bishop, 2006) and the *PKBS-2* (Merrell, 2003), which have been individually used in several studies, but not directly compared. The *K-SEALS* was selected for this study, as it is a commonly used survey of basic language skills important for functioning at school, including knowledge of vocabulary as well as knowledge of letters, numbers, and words. The *CCC-2* was included in this study to
investigate both core language and pragmatic language as it has been shown to effectively
discriminate between core language and pragmatic language impairments in children with
specific language impairments (Norbury, Nash, Baird, & Bishop, 2004). However, earlier studies
that employed the CCC-2 did not separate the subject’s performance on core language from their
performance on the pragmatic language subscales (Murray et al., 2010; Staikova, Gomes,
Tartter, McCabe, & Halperin, 2013). For example, Murray et al. (2010) used the CCC-2 to
examine the association between communication and intelligibility with peer competence. That
study employed the General Communication Composite (GCC; average of subscales A to H),
which combines both core and pragmatic language. Though the study found a significant
association between the targeted variables, detailed results of the unique variance contributed by
individual core and pragmatic language subscales were not provided. Therefore, the respective
relationships of core language and pragmatic language with peer competence were not directly
examined. Another study by Staikova et al. (2013) also used the CCC-2 to study the correlation
between discourse management, an aspect of pragmatic language skills, and social skills
(measured by Social Skills Improvement System; Gresham & Elliot, 2008). However, discourse
management was defined as the sum of core language and pragmatic language subscales of
Coherence, Inappropriate Initiation, Stereotyped Language, and Use of Context. Even though
these studies utilized the CCC-2 to study language in relation to aspects of social competence,
direct correlations of core language or pragmatic language to social competence were not
conducted. In another study, Ford and Milosky (2008) found significant associations of receptive
language to the ability to make inference as well as significant associations of making inferences
to Social Cooperation of the PKBS-2. Unfortunately, no direct correlations were conducted to
identify the potential relationship between receptive language and the three constructs of social
competence of the PKBS-2. In the current investigation, core language as measured by the K-SEALS and the CCC-2, and social competence as measured by the PKBS-2, will be directly compared to identify the possible correlative relationships between core language and the three constructs of social competence.

Third, the previous research included children and adolescents across on wide age range and focused less on preschool than school-age children. Several studies have investigated language and social competence in school-age children or adolescents with ages ranging from 6 to 13 years (Brinton et al., 2007; Durkin & Conti-Ramsden, 2007; Leonard et al., 2011; Staikova et al., 2013; Volden et al., 2009). One study by Aro et al. (2012) recruited preschool and school-age children (ages 2;6 to 8;0) and only a few studies have included preschool-age children (Ford & Milosky, 2008; McCabe & Meller, 2004; Gertner et al., 1994). The studies that used preschoolers focused on individual social skills rather than the overall constructs of social competence.

As language and social competence skills begin to develop prior to entering school, this study aims to focus on preschool children to explore the underlying relationships between these skills. Therefore, the purpose of this study is to improve upon the methodology and fill in some of the gaps left by earlier work. This study will examine the relationship between core language skills in preschool children and social competence. Social competence will be measured with a broad based assessment that incorporates three important constructs of social competence.

Knowledge of the relationship of language skills to social competence in preschool children is important for aiding parents and teachers to learn about important skills children will need in social situations in kindergarten.
To better equip children for school and interaction, speech language pathologists have traditionally focused on speech and language goals to foster speech and language skills. Often, the language skills encouraged by speech language pathologists include clearer production of words and the use of complete sentences. Speech language pathologists have not frequently addressed language strategies to help children in group interactions or with ways for them to practice conflict resolution with peers. Yet, core language and pragmatic skills are both important for success in social interactions. As such, an understanding of which core and pragmatic language skills are closely related to social competence will help speech language pathologists to include relevant language goals when assisting preschoolers transition to school.

**Research questions.** The following questions will be addressed:

a) Is there an association between the preschoolers’ core language performance as measured by the CCC-2 and their social performance on the PKBS-2?

b) Is there an association between performance on the K-SEALS and PKBS-2?

The following secondary questions will be addressed:

a) Is there an association between core and pragmatic language abilities?

b) Is there an association between pragmatic language and social competence?

**Hypotheses.** This study poses four hypotheses:

a) Core language abilities (Speech, Syntax, Semantics, and Coherence) as measured by the CCC-2 will be correlated with performance with each of the three constructs of social competence. It is expected that children will need good speech, syntax, semantics, and coherence language skills in order to interact with adults and peers, so these skills will likely be associated with each of the three constructs of social competence.
b) Vocabulary and Numbers, Letters and Words as measured by the K-SEALS will be shown to be more closely associated with Social Cooperation and Social Interaction than Social Independence as measured by the PKBS-2. Social Interaction and Social Cooperation measure social skills requiring children to have basic vocabulary skills and an understanding of words and ongoing discourse in order to engage and cooperate with and be liked by adults and peers. Therefore, a correlation is hypothesized between these language skills and constructs of social competence.

c) Some core language abilities will be associated with pragmatic language abilities.

d) The pragmatic abilities of Use of Context and Social Relations as measured by the CCC-2 will be associated with social competence. Because the CCC-2 and the PKBS-2 contain some similar items, some scales on the respective measures will be correlated.
Chapter 2

Method

Participants. Sixteen preschoolers and their parents, who were all primary English speakers, participated in this study. Inclusionary criteria included children who were entering full day junior or senior kindergarten programs. A total of 16 children between the ages of 3;6 and 5;3 (years, months) along with their parents were included. Ten children exhibited typically developing language skills and six were receiving speech and/or language services. The sample included 13 boys and 3 girls.

Children who were typically developing were recruited via flyers distributed at the Dr. Mary J. Wright University Lab School and the Montessori Academy of London Preschool. The director at each site was contacted to gain permission to recruit at that location. Additional children who were typically developing were recruited through personal contacts. Children receiving speech and/or language services were recruited with the assistance of the professional staff at the H. A. Leeper Speech and Hearing Clinic at Western University. A package containing a letter of information, consent form, and several parent report measures was given to teachers and/or clinic coordinators at each location for distributing to interested participants. Two questionnaires, the CCC-2 (Bishop, 2006) and the PKBS-2 (Merrell, 2003) to be completed by each parent, were also included in each package. Parents and their children who wished to participate returned the signed consent form and completed package to the teacher and/or receptionist at the H.A. Leeper Speech and Hearing Clinic.

Procedures. Once parents agreed to have their children participate in the study and completed and returned the parent report measures, they were contacted to schedule a testing session for their child. Testing took place in one of the assessment rooms in the H. A. Leeper
THE INTER-RELATIONSHIP BETWEEN CORE LANGUAGE SKILLS AND SOCIAL COMPETENCE IN PRESCHOOL CHILDREN

Speech and Hearing Clinic or in the Child Language Development Lab at Western University. Two examiners administered the K-SEALS (Kaufman & Kaufman, 1993) to each child during a half hour testing session. Test sessions were video recorded for data collection purposes.

**Measures.** Three measures were used to assess the language and social competence of the participants. These measures were the K-SEALS (Kaufman & Kaufman, 1993), the CCC-2 (Bishop, 2006), and the PKBS-2 (Merrell, 2003).

The K-SEALS (Kaufman & Kaufman, 1993) is a survey of language and pre-academic skills used to test school readiness and early language and literacy development in children ages 3;0 to 6;11 (years, months) (Kaufman & Kaufman, 1993). The K-SEALS consists of three subtests: Vocabulary, Numbers, Letters and Words, and Articulation Survey (Kaufman & Kaufman, 1993). The 40-item Vocabulary subtest identifies a child’s ability to name or point to nouns and verbs based on visual or verbal descriptions. The 40-item Numbers, Letters and Words subtest evaluates a child’s ability to name, count, or point to numbers, letters or words. The subtests are then combined into several scales or composites. The items for which the child provides a verbal response on the Vocabulary and Numbers, Letters and Words subtests comprise the Expressive Language scale. The items on the Vocabulary and Numbers, Letters and Words subtests for which the child identifies by pointing comprise the Receptive Language scale. All items on the Vocabulary and Numbers, Letters and Words subtests are combined to form an Early Academic and Language Skills Composite score. Test-retest reliability (\(N = 81\)) for ages 3;0 to 6;10 (years, months) ranged from .87 for the Vocabulary subtest to .94 for the Early Academic and Language Skills Composite (Kaufman & Kaufman, 1993). Intercorrelations of the three subtests ranged from .47 to .67 with correlations between the Expressive and Receptive Language scales ranging from .81 to .91 in a validation sample (\(N = 995\)).
(Kaufman & Kaufman, 1993). For this study, children were administered the Vocabulary and the Numbers, Letters and Words subtests.

The CCC-2 (Bishop, 2006) was designed to provide a screening tool for children who may have speech and language impairments and to identify pragmatic impairments in children. The CCC-2 is intended for children above the age of four who speak in sentences (Bishop, 2006). This test has 10 subscales: (A) Speech (“mispronounces ‘th’ for ‘s’ or ‘w’ for ‘r’”), (B) Syntax (“leaves of past tense –ed endings on words”), (C) Semantics (“mixes up words of similar meaning”), (D) Coherence (“talks clearly about what s/he plans to do in future”), (E) Inappropriate Initiation (“tells people things they know already”), (F) Stereotyped Language (“repeats back what others have just said”), (G) Use of Context (“is over literal”), (H) Nonverbal Communication (“makes good use of gestures to get his/her meaning across”), (I) Social Relations (“is left out of joint activities by other children”), and (J) Interests (“moves conversation to favorite topic, even if others don’t seem interested”) (Bishop, 2006). The first four scales, (A) Speech, (B) Syntax, (C) Semantics, (D) Coherence, measure core language skills of articulation, sentence structure, vocabulary, and discourse skills. The next four scales, (E) Inappropriate Initiation, (F) Stereotyped Language, (G) Use of Context, (H) Nonverbal Communication, assess pragmatic language skills. The last two scales, (I) Social Relations and (J) Interests, evaluate behaviors typically impaired in children with autism. The parents completed all 10 subscales describing their children’s language abilities for this study.

The 10 subscales each had seven items with five negative and two positive skills. Negative items describe the difficulties that children experience, which may hinder communication, and positive items describe the strengths that children have, which may help communication. Parents rated their child’s performance on each skill on a scale of zero to three.
A score of zero refers to a child performing that skill less than once a week, and a score of three refers to a child performing that skill several times a day. For example, if a child has good language skills, he/she could score three (display skill frequently) on each of the positive items, and could also score zero (display skill infrequently) on each of the negative items. First, the sum of the two positive items in each subscale was calculated and subtracted from six. This step reverses the scoring of the positive items to match the scoring of the negative items. The sum of the five negative items in each subscale was also calculated. Next, the raw score was calculated by adding the sum of the positive items (after subtraction) to the sum of the negative items. A lower raw score would indicate better language performance while a higher raw score would indicate poorer language performance. Finally, the raw scores were then converted to scaled scores with age factored in. Thus, given the scoring procedure for the CCC-2, positive correlations will likely result when comparing language skills of stereotyped language (which may be viewed in a negative light) with the subtests on the PKBS-2.

The General Communication Composite (GCC) is generated from combinations of subscales of the CCC-2. The GCC is the sum of the scaled score values for scales A to H and may help to identify communication impairments (Bishop, 2006). This study also included two additional composites, the Bishop Pragmatics Composite and the Pragmatic Composite. The Bishop Pragmatics Composite is the average of scales E to H, which are the pragmatic scales of the CCC-2, and does not include subscales I and J (Timler, 2013). The Pragmatic Composite is the average of scales E to J, and is a composite score derived from Timler (2013). Test-retest reliability for all scales by age ranged from .47 to .85 and for all scales averaged across all ages ranged from .65 to .79 (Bishop, 2011). Test-retest reliability for the GCC ranged from .94 to .96 (Bishop, 2011).
The PKBS-2 (Merrell, 2003) is a parent or teacher-completed, behaviour-rating scale that aims to identify social and behavioural problems in preschool and kindergarten-age children (Merrell, 2003). The measure contains two scales, a social skills and a problem behaviour scale. The 34-item social subscale used in this study was developed for children between the ages of 3 to 6 years (Merrell, 2003).

The PKBS-2 measures aspects of social competence. Merrell (2003) identified three constructs of social competence through a factor analysis. Social Cooperation focuses on child-adult interactions involving appropriate compliance with structure and regulations imposed by parents and teachers. Social Interaction describes peer-related interactions as well as sensitivity to others’ emotions and feelings. The Social Interaction scale also reflects a child’s ability to gain and maintain friendship with others. Social Independence refers to displays of suitable confidence and independence in social environments. This scale also includes acceptance or being liked by peers. The average score of home-based raters ($M = 84.97, SD = 23.29$) of the PKBS-2 social skills scale was significantly higher than school-based raters ($M = 79.69, SD = 16.52, t(2484.23) = 10.49, p < .001$) (Merrell, 2003). The test-retest reliability coefficients ranged from .62 to .87 and the inter-rater reliability coefficients ranged from .36 to .63 (Merrell, 2003).

**Data analyses.** Data were analyzed using SPSS version 20.0 (SPSS Inc., Armonk NY). Descriptive statistics were completed for the performance of all children on the *K-SEALS, CCC-2*, and *PKBS-2*. Means, standard deviations, and ranges were calculated. The language and social competence performances of individual children were also analyzed. Tables of the performance for individual children were not included to preserve the anonymity of the small sample of children. Pearson’s two-tailed correlations were conducted for the performance of all children on
the subscales of the *K-SEALS*, *CCC-2*, and *PKBS-2* to identify possible inter-relationships among core, pragmatic language skills, and social competence in preschool children.
Chapter 3

Results

Analyses of Descriptive Data. The performance of children on the core language subscales of the K-SEALS and the CCC-2 is presented in Table 1. Vocabulary and Numbers, Letters and Words subtests of K-SEALS and the Speech, Syntax, Semantics, and Coherence subscales on the CCC-2 are considered core language skills.

The standard scores for the Vocabulary subtest on the K-SEALS ranged from 86 to 145. The standard scores for the Numbers, Letters and Words subtest on the K-SEALS ranged from 63 to 145. The mean standard scores for the 16 preschoolers for Vocabulary and Numbers, Letters and Words subtests as measured by the K-SEALS fell within the normal range ($M = 100, SD = 15$; mean standard score for Vocabulary is 113 and the mean standard score for Numbers, Letters and Words is 118).

The children performed slightly below the average for each of the core language subscales of Speech, Syntax, Semantics, and Coherence ($M = 10, SD = 3$). The widest range in performance occurred on the Speech and Syntax subscales of the CCC-2 with scaled scores ranging from 2-15 for Speech and 0-14 for Syntax. Six children in this study were receiving speech and/or language treatment for difficulties in articulation and syntax and this may have contributed to the variability in performance on these subscales. The scores on the CCC-2 ranged from 0-20.
Table 1

*Standard and Scaled Scores of Core Language Skills on the K-SEALS and CCC-2*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Standard Score(^a) M (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>K-SEALS</em> Vocabulary</td>
<td>112.75 (17.46)</td>
<td>86-145</td>
</tr>
<tr>
<td><em>K-SEALS</em> NLW</td>
<td>118.00 (24.41)</td>
<td>63-145</td>
</tr>
<tr>
<td></td>
<td>Scaled Score(^b) M (SD)</td>
<td></td>
</tr>
<tr>
<td><em>CCC-2</em> Speech</td>
<td>7.38 (3.96)</td>
<td>2-15</td>
</tr>
<tr>
<td><em>CCC-2</em> Syntax</td>
<td>7.88 (4.21)</td>
<td>0-14</td>
</tr>
<tr>
<td><em>CCC-2</em> Semantics</td>
<td>9.88 (2.99)</td>
<td>6-17</td>
</tr>
<tr>
<td><em>CCC-2</em> Coherence</td>
<td>9.75 (2.54)</td>
<td>5-15</td>
</tr>
</tbody>
</table>

*Note.* \(^a\)The range for *K-SEALS* subtest standard scores is 55 to 145 (\(M = 100, SD = 15\)). \(^b\)The range for *CCC-2* subscale scaled scores is 0 to 20 (\(M = 10, SD = 3\)). NLW = Numbers, Letters and Words

The pragmatic language abilities of the children are shown in Table 2. The sample performed at, or above the test’s mean of 10 except on the Social Relations subscale (\(M = 9.56\)). The widest range in performance occurred on subscales for Stereotyped Language, Nonverbal Communication, and Social Relations.

For this study, the Bishop Pragmatics Composite score for the sample was 44.19 (\(SD = 8.04\)), and the Pragmatic Composite score was 65.56 (\(SD = 11.92\)). In comparison, the Pragmatic Composite score for Timler’s study population was 60.83 (\(SD = 18.00\)). This study’s sample had a mean of 80.19 (\(SD = 16.90\)) for the General Communication Composite and scored in the 47\(^{th}\) percentile (Timler, 2013).
### Table 2

**Scaled Scores of Pragmatic Language Skills on the CCC-2**

<table>
<thead>
<tr>
<th>Scale</th>
<th>Scaled Score*</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td></td>
</tr>
<tr>
<td>E: Inappropriate Initiation</td>
<td>12.38 (2.53)</td>
<td>9-18</td>
</tr>
<tr>
<td>F: Stereotyped Language</td>
<td>10.44 (3.33)</td>
<td>4-16</td>
</tr>
<tr>
<td>G: Use of Context</td>
<td>11.13 (2.90)</td>
<td>7-17</td>
</tr>
<tr>
<td>H: Nonverbal Communication</td>
<td>10.25 (2.52)</td>
<td>6-14</td>
</tr>
<tr>
<td>I: Social Relations</td>
<td>9.56 (2.83)</td>
<td>5-14</td>
</tr>
<tr>
<td>J: Interests</td>
<td>11.81 (3.08)</td>
<td>8-18</td>
</tr>
<tr>
<td>Bishop Pragmatics Composite</td>
<td>44.19 (8.04)</td>
<td>33-61</td>
</tr>
<tr>
<td>Pragmatic Composite</td>
<td>65.56 (11.92)</td>
<td>47-89</td>
</tr>
<tr>
<td>GCC</td>
<td>80.19 (16.90)</td>
<td>55-120</td>
</tr>
</tbody>
</table>

*Note. The range for CCC-2 subscale scaled scores is 0 to 20 (M = 10, SD = 3). GCC = Sum of subtests A to H on the CCC-2; Pragmatic Composite = Average of subtests E to J, M = 60, SD = 18 (Timler, 2013); Bishop Pragmatics Composite = Average of subtests E to H; The range for CCC-2 GCC is 0 to 166.*
Table 3 presents the means, standard deviations, and ranges for the children at each age on the three constructs of social competence and the composite scores on the PKBS-2. Independent sample t-tests were used to compare the performance between boys and girls for each of the constructs of social competence on the PKBS-2. Gender differences were not found for Social Cooperation ($t(14) = -0.033, p = .364$) or Social Interaction ($t(14) = 0.699, p = .595$) on the PKBS-2, therefore, the scores for boys and girls are reported together. With a mean of 100 and SD of 15, the participants performed at, or above, an average social competence level. The PKBS-2 total composite score was 352. The composite scores of age 3, 4, and 5 ranged from 241 to 352.

Table 3

*Mean Standard Scores (SD) and Ranges by Age for PKBS-2 Subscales*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Age 3 ($n = 6$)</th>
<th>Age 4 ($n = 8$)</th>
<th>Age 5 ($n = 2$)</th>
<th>Total ($n = 16$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Cooperation</td>
<td>102.67 (9.14)</td>
<td>101.00 (13.97)</td>
<td>111.00 (9.90)</td>
<td>102.88 (11.67)</td>
</tr>
<tr>
<td></td>
<td>91-118</td>
<td>75-118</td>
<td>104-118</td>
<td>75-118</td>
</tr>
<tr>
<td>Social Interaction</td>
<td>111.33 (7.89)</td>
<td>102.75 (13.18)</td>
<td>117.00 (1.41)</td>
<td>107.75 (11.48)</td>
</tr>
<tr>
<td></td>
<td>100-118</td>
<td>84-118</td>
<td>116-118</td>
<td>84-118</td>
</tr>
<tr>
<td>Social Independence</td>
<td>103.5 (15.16)</td>
<td>101.25 (17.47)</td>
<td>106.00 (14.14)</td>
<td>102.69 (15.34)</td>
</tr>
<tr>
<td></td>
<td>78-116</td>
<td>68-116</td>
<td>96-116</td>
<td>68-116</td>
</tr>
<tr>
<td>Composite Score</td>
<td>319.50 (26.51)</td>
<td>305.00 (40.38)</td>
<td>334.00 (25.46)</td>
<td>314.06 (33.87)</td>
</tr>
<tr>
<td></td>
<td>283-349</td>
<td>241-352</td>
<td>316-352</td>
<td>241-352</td>
</tr>
</tbody>
</table>

*Note. PKBS-2 mean is 100 with a SD of 15. Total Composite score is 352.*
Correlational Analyses. Table 4 presents the Pearson’s two-tailed correlations for the children’s performance on the Vocabulary, and Numbers, Letters and Words subscales on the K-SEALS, and Speech, Syntax, Semantics, and Coherence subscales on the CCC-2 with their performance on the social competence subscales on the PKBS-2. The Numbers, Letters and Words subscale of K-SEALS was significantly correlated with performance on Social Independence on the PKBS-2 ($r = .553, p = .026$). As well, a significant correlation was found between performance on the Semantics subscale and performance on Social Interaction of the PKBS-2 ($r = .645, p = .007$).

Table 4

<table>
<thead>
<tr>
<th>Scale</th>
<th>Social Cooperation</th>
<th>Social Interaction</th>
<th>Social Independence</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-SEALS Vocab</td>
<td>.169</td>
<td>.286</td>
<td>.391</td>
</tr>
<tr>
<td>K-SEALS NLW</td>
<td>.105</td>
<td>.472</td>
<td>.553*</td>
</tr>
<tr>
<td>CCC-2 Speech</td>
<td>.118</td>
<td>.204</td>
<td>.228</td>
</tr>
<tr>
<td>CCC-2 Syntax</td>
<td>-.060</td>
<td>.125</td>
<td>.254</td>
</tr>
<tr>
<td>CCC-2 Semantics</td>
<td>.455</td>
<td>.645**</td>
<td>.433</td>
</tr>
<tr>
<td>CCC-2 Coherence</td>
<td>.284</td>
<td>.459</td>
<td>.451</td>
</tr>
</tbody>
</table>

*Note. *$p \leq .05$, **$p \leq .01$. NLW = Numbers, Letters and Words*
Pearson’s two-tailed correlations were conducted to determine potential relationships in performance between the core language subscales of *K-SEALS* and *CCC-2* and the pragmatic language subscales of *CCC-2* as shown in Table 5. The relationships between children’s functioning on the core and pragmatic language subscales were investigated as the test developer had not completed this previously. Vocabulary, and Numbers, Letters and Words subscales of the *K-SEALS* were significantly correlated with Stereotyped Language on the *CCC-2* \( (r = .575, p = .02; \ r = .518, p = .04) \). Semantics was significantly correlated with Nonverbal Communication, Social Relations, the Bishop Pragmatics Composite, and the Pragmatics Composite \( (r = .546, p = .03; \ r = .641, p < .01; \ r = .654, p < .01; \ r = .656, p < .01) \). Coherence was also significantly correlated with Inappropriate Initiation, Stereotyped Language, Nonverbal Communication, the Bishop Pragmatics Composite, and the Pragmatics Composite \( (r = .566, p = .02; \ r = .715, p < .01; \ r = .521, p = .04; \ r = .785, p < .01; \ r = .617, p = .01) \).
THE INTER-RELATIONSHIP BETWEEN CORE LANGUAGE SKILLS
AND SOCIAL COMPETENCE IN PRESCHOOL CHILDREN

Table 5

Correlations between Core Language and Pragmatic Language Skills

<table>
<thead>
<tr>
<th>Scale</th>
<th>Inappropriate Initiation</th>
<th>Stereotyped Language</th>
<th>Use of Context</th>
<th>Nonverbal Communication</th>
<th>Bishop Pragmatics Composite</th>
<th>Social Relations</th>
<th>Interests</th>
<th>Pragmatics Composite</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-SEALS Vocab</td>
<td>.297</td>
<td>.575*</td>
<td>-.076</td>
<td>.149</td>
<td>.351</td>
<td>.188</td>
<td>-.024</td>
<td>.275</td>
</tr>
<tr>
<td>K-SEALS NLW</td>
<td>.310</td>
<td>.518*</td>
<td>.174</td>
<td>.124</td>
<td>.413</td>
<td>.107</td>
<td>-.082</td>
<td>.283</td>
</tr>
<tr>
<td>CCC-2 Speech</td>
<td>.351</td>
<td>.331</td>
<td>-.051</td>
<td>.251</td>
<td>.307</td>
<td>.271</td>
<td>-.365</td>
<td>.177</td>
</tr>
<tr>
<td>CCC-2 Syntax</td>
<td>.399</td>
<td>.438</td>
<td>-.075</td>
<td>.374</td>
<td>.365</td>
<td>.062</td>
<td>-.228</td>
<td>.202</td>
</tr>
<tr>
<td>CCC-2 Semantics</td>
<td>.448</td>
<td>.415</td>
<td>.472</td>
<td>.546*</td>
<td>.654**</td>
<td>.641**</td>
<td>.244</td>
<td>.656**</td>
</tr>
<tr>
<td>CCC-2 Coherence</td>
<td>.566*</td>
<td>.715**</td>
<td>.412</td>
<td>.521*</td>
<td>.785**</td>
<td>.225</td>
<td>.130</td>
<td>.617*</td>
</tr>
</tbody>
</table>

*Note. *p ≤ .05, **p ≤ .01. NLW = Numbers, Letters and Words
Pearson’s two-tailed correlations were conducted to investigate the relationship between pragmatic language and social competence as shown in Table 6. Individual pragmatic subscales and the composite scores of CCC-2 were analyzed with the three social competence constructs of PKBS-2. Social Cooperation was significantly correlated with three of the six following pragmatic subscales: Inappropriate Initiation ($r = .651, p = .006$), Stereotyped Language ($r = .586, p = .017$), and Social Relations ($r = .524, p = .037$). Social Interaction was also significantly correlated with three of the following six pragmatic subscales: Use of Context ($r = .599, p = .014$), Social Relations ($r = .664, p = .005$), and Interests ($r = .519, p = .04$). Social Independence was significantly correlated with two of the six pragmatic subscales, which are Stereotyped Language ($r = .615, p = .011$) and Social Relations ($r = .590, p = .016$). The Bishop Pragmatics Composite was significantly correlated with performance on Social Cooperation ($r = .677, p = .005$), Social Interaction ($r = .656, p = .006$), and Social Independence ($r = .611, p = .012$) of the PKBS-2. The Pragmatics Composite was also significantly correlated with performance on the Social Cooperation ($r = .696, p = .003$), Social Interaction ($r = .734, p = .001$), and Social Independence ($r = .655, p = .006$) scales. Lastly, the GCC from the CCC-2 was significantly correlated with performance on the Social Interaction subscale ($r = .544, p = .03$).
### Table 6

**Correlations between Pragmatic Language and Social Competence Skills**

<table>
<thead>
<tr>
<th>Scale/Composite</th>
<th>Social Cooperation</th>
<th>Social Interaction</th>
<th>Social Independence</th>
</tr>
</thead>
<tbody>
<tr>
<td>E: Inappropriate Initiation</td>
<td>.651**</td>
<td>.394</td>
<td>.456</td>
</tr>
<tr>
<td>F: Stereotyped Language</td>
<td>.586*</td>
<td>.469</td>
<td>.615*</td>
</tr>
<tr>
<td>G: Use of Context</td>
<td>.022</td>
<td>.599*</td>
<td>.361</td>
</tr>
<tr>
<td>H: Nonverbal Communication</td>
<td>.448</td>
<td>.390</td>
<td>.266</td>
</tr>
<tr>
<td>I: Social Relations</td>
<td>.524*</td>
<td>.664*</td>
<td>.590*</td>
</tr>
<tr>
<td>J: Interests</td>
<td>.474</td>
<td>.519*</td>
<td>.398</td>
</tr>
<tr>
<td>Bishop Pragmatics Composite</td>
<td>.677**</td>
<td>.656**</td>
<td>.611*</td>
</tr>
<tr>
<td>Pragmatic Composite</td>
<td>.696**</td>
<td>.734**</td>
<td>.655**</td>
</tr>
<tr>
<td>GCC</td>
<td>.427</td>
<td>.544*</td>
<td>.411</td>
</tr>
</tbody>
</table>

*Note. *p ≤ .05, **p ≤ .01

Bishop Pragmatics Composite = Average of subtests E to H; Pragmatic Composite = Average of subtests E to J; GCC = Sum of subtests A to H on the CCC-2
Chapter 4

Discussion

This study was a preliminary investigation into the relationship of specific core language skills to social competence in preschoolers in the hope that a better understanding of the inter-relationships between these fundamental skills would aid us in planning for preschoolers’ transition to school. Results of this investigation found significant correlations of several core language skills with two important constructs of social competence, Social Interaction and Social Independence. Preschoolers’ performance on the Numbers, Letters and Words subscale of the K-SEALS and the Semantics subscale of the CCC-2 was significantly correlated with Social Independence and Social Interaction respectively.

The preschoolers’ performance on the Numbers, Letters and Words subscale significantly correlated with only one of the constructs of social competence, Social Independence. Remember that Social Independence includes the skills of displaying confidence and independence in different social situations. Therefore, it is possible that preschoolers with stronger knowledge of arithmetic values or alphabetical symbols are those who are ready for school and feel more confident to interact with their peers. Another potential explanation for the relationship between performance on Numbers, Letters and Words and Social Independence is that Numbers, Letters and Words, a confrontation naming task, may be indicative of general cognitive functioning. A child’s cognitive functioning would support his/her ability to be independent and to adapt well to new social situations. Because Social Independence involves being accepted by peers, it may be that peers perceive children with stronger academic skills as good potential
playmates. Lederberg (1991) showed that long-term friends tend to have similar language abilities, suggesting that children choose partners with language skills similar to their own. Finally, five children in this study had attended daycare and several more had received parental instruction on numbers or letters. A child’s strong performance on the Numbers, Letters and Words subtest might be related to the direct instruction he/she had received at home or daycare.

Within the existing literature, there is no investigation of Numbers, Letters and Words with social competence. The study that most closely matched the findings of the current study investigated the relationship of vocabulary skills with social competence (Laffey-Ardley & Thorpe, 2006). They found that vocabulary, as measured by the *MacArthur Communicative Development Inventories (MCDI)*; Dione, Dale, Boivin, & Plomin, 2003), was significantly correlated with all three constructs of social competence on the *PKBS-2*. The Numbers, Letters and Words subscale of the *K-SEALS* includes general vocabulary items along with number and letter naming. Examples of vocabulary items might include food items, labels for groups of people or common locations. Examples of numbers and letters might include having the child select specific letters or point to pictures that show a given number of common items. The *MCDI* includes vocabulary that children encounter in everyday situations, and this includes common nouns and verbs. So there would be some overlap of the vocabulary items between the two measures, but the items on the Numbers, Letters and Words subscale may be more abstract and relate more to school-based vocabulary as compared to items on the *MCDI*.

A key finding of this study was the significant correlation between the preschoolers’ performance on the core language skills of Semantics with performance in
Social Interaction. As mentioned earlier, Social Interaction involves peer-peer interactions and a child’s ability to comprehend the emotions of others. One likely explanation for this positive relationship between Semantics and Social Interaction is that preschoolers with good abilities to retrieve words would more likely be skilled at comprehending their partner’s emotions and taking another’s perspective. Good abilities in word retrieval may facilitate the understanding and showing of affect and ability to enter conversations at the appropriate time. Therefore, the importance of semantic skills may be more robust in comparison to other core language skills because children rely on these language skills to function effectively in social situations. Good word retrieval skills as evaluated by the Semantics subscale may also reflect good general intellectual functioning in these children.

Several previous investigations have studied semantics and social competence skills in children. Ford and Milosky (2008) found children aged 4;6 to 5;7 had word knowledge that significantly predicted social competence as measured by the PKBS-2. These authors suggested that word knowledge may be related to a child’s ability to attend to their peers’ emotions and to show empathy, a skill reflected in numerous items on the PKBS-2. Also, McCabe and Meller (2004) identified that preschoolers with speech/language impairments were weaker in semantics. These researchers also found these preschoolers performed poorly on social competence, as measured by the Social Skills Rating System (SSRS, Gresham & Elliot, 1990) and the Howes teacher ratings (Howes, 1987). However, the presence of a direct association between semantic language skills and social competence was not examined. Thus, this present study is the first to
identify the specific relationship between semantic skills and the broad construct of social competence, Social Interaction, in preschool children.

What appeared surprising was that the other core language skills of speech or syntax did not significantly correlate with one or more of the constructs of social competence. A possible explanation may be that not clearly articulating a message or not forming a correct sentence is not as harmful to peer interactions as not understanding or providing appropriate content. Clearly, being able to exchange content and emotions within conversations appear to be important based on the findings of this study and earlier work by McCabe and Meller (2004).

Previous work has shown that both core and pragmatic language skills could be related to performance on tasks of social competence (Ford & Milosky, 2008; Gertner et al., 1994; Leonard et al., 2011). In addition, some core and pragmatic language skills could be interrelated; therefore, there may also be shared contributions to social competence. The current study identified two specific core language skills, Numbers, Letters and Words and Semantics, to be related to Social Interaction and Social Independence respectively. Of secondary interest was whether these core language skills would correlate with pragmatic language skills and would the core or pragmatic language skills alone or jointly, through their inter-relationship, contribute to the performance in social competence.

The relationship between core and pragmatic language skills has been suggested, but not frequently analyzed in the literature. Vocabulary and Numbers, Letters and Words subscales on the K-SEALS were both significantly correlated with the pragmatic language skill of Stereotyped Language. Semantics was significantly correlated with the pragmatic
language skills of Nonverbal Communication, Social Relations, the Bishop Pragmatics Composite, and the Pragmatics Composite. Finally, Coherence was significantly correlated with the pragmatic language skills of Inappropriate Initiation, Stereotyped Language, Nonverbal Communication, the Bishop Pragmatics Composite, and the Pragmatics Composite. Good vocabulary, literacy, and numeracy abilities were all correlated with appropriate word choice in conversations (infrequent use of stereotypic language), and this may occur because children with a good command of vocabulary as well as word naming skills may be able to transfer these skills to effective word choices and appropriate sentence content in conversations. As Coherence involves discourse based language skills which are required during conversation (e.g. Talks clearly about what s/he plans to do in the future), it was not surprising to find an association between Coherence and the skills involved in using language in social situations.

Now of interest was whether pragmatic language skills would be significantly associated with performance in social competence in similar ways to the associations between core language skills and social competence. Performance on the pragmatic language skill of Social Relations correlated with all three of the constructs of social competence. Further inspection identified several items on the Social Relations subscale that are similar to the items the Social Interaction and Social Independence subscales on the *PKBS-2*. These subscales included related skills involving a child’s ability to understand other’s emotions, to be accepted into group play, and to be liked by peers. Therefore, these two subscales may be measuring similar constructs, and this resulted in the significant correlations. Earlier, significant associations were reported between Semantics and Social Interaction as well as between Semantics and Social Relations for
the current study. These findings collectively suggest that Semantics and Social Relations could be interrelated core and pragmatic language skills, and they may share contributions to the variability in the preschoolers’ performance in Social Interaction.

Another pragmatic language skill, Stereotyped Language, was significantly correlated with Social Cooperation and Social Independence. The Stereotyped Language subscale on the CCC-2 included items such as, “says things s/he does not seem to fully understand”, “repeats back what others have just said”, or “includes over-precise information in his/her talk”. One possible explanation for children’s use of stereotyped language (repeating words) may be their poor vocabulary or word knowledge. This speculation is supported by the earlier results that showed a significant correlation between the core language subscale of Numbers, Letters and Words and the pragmatic language subscale of Stereotyped Language. Poor word choice or overuse of set phrases may hinder children from having the language needed to enter interaction, to be accepted by other peers, or to understand and adhere to instructions by adults. As discussed earlier, the Numbers, Letters and Words subscale was significantly correlated with Social Independence. Therefore, it is suggested that Numbers, Letters and Words and Stereotyped Language could be interrelated core and pragmatic language skills, and may share contributions to the variability in the preschoolers’ performance on Social Independence.

In summary, this study offered additional insight into the complex interrelationship between core language skills and social competence. The use of the K-SEALS and the CCC-2 to measure language skills, and the PKBS-2 to measure the three constructs of social competence, identified some of the potential inter-relationships.
While pragmatic language has been frequently studied in relation to social competence, the findings of this study suggested that core language skills are associated with both pragmatic language skills and social competence.

**Clinical Implications.** This study highlights the important relationship between core language skills and social competence and supports several clinical implications. First, the findings support the importance of a child’s environment for learning language and social skills. It is important that speech language pathologists and teachers provide support for children who exhibit semantic difficulties. Children who exhibit word retrieval problems, may also be at risk for problems in social interaction. Speech language pathologists and teachers should be aware of the increased risk for social difficulties for some children. Greater focus should be placed on concurrently strengthening word retrieval and the social skills. Next, speech language pathologists and teachers should take advantage of group interactions as a naturalistic setting for training peer-peer interactions. As suggested by the social interactive theory, a rich environment supports a child’s opportunities to learn language and social skills. In group settings, children can learn appropriate word and phrases to use through observing and interacting with peers who are typically developing (Timler, Olswang, & Coggins, 2005). A specific example is the “buddy skills training”, which involves training children who are socially competent to interact with children facing social difficulties, and provide opportunities to practice language and social abilities (English, Goldstein, Shafer, & Kaczmarek, 1997). Another possible suggestion is to include children who are typically developing as “peer models” to interact with children who are experiencing social impairments. The peers follow a scripted interaction that provides numerous opportunities to use language and
interact (Schneider & Goldstein, 2008). Lastly, the PKBS-2 appears to be a useful tool to include in assessments for preschool or kindergarten-age children to measure their social interaction abilities within the naturalistic home environment.

Limitations and Future Directions. This was an exploratory study with a small sample size and therefore the findings are limited in their generalizability. Also, due to the sample size, there was a potential risk of committing a Type I error with the number of correlations performed. The children in this study exhibited a range of speech and language abilities. The majority of the children were shown to be typically developing ($n = 10$) and six were receiving speech/language services. Because of the small number of children in each group, group comparisons were not conducted. The findings of this study could have been influenced by the variability of language or social competence skills of the children or by a lack of power in the statistical analyses.

Several observations were made about the individual performance of the children in this sample. First, children who were receiving speech and/or language services showed difficulties (scored one SD below mean) in either Speech and/or Syntax compared to those who were typically developing. These deficits are to be expected in children receiving speech and/or language services and validates the need for such services. Neither core nor pragmatic language skills were most prominent in four children who showed the poorest overall performance (overall Composite Score of 300 or lower) on the PKBS-2. One child displayed poor performance on the pragmatic subscale of Social Relations on the CCC-2, but adequate performance in core language. Three children of the four children with poor social competence skills had poor performance on core language in either Speech and/or Syntax along with poor performance on the
pragmatic language subscale of Nonverbal Communication or Social Relations. For each of these three children, the weakest performance in social competence was on Social Independence on the CCC-2. There also appeared to be a potential moderating effect where two children performed above average on the Vocabulary and/or Numbers, Letters and Words subscales on the K-SEALS, yet showed weak performance on Speech and/or Syntax on the CCC-2, but still displayed good performance on the PKBS-2 in spite of their speech difficulties. These observations of individual performance show some trends, but there are no definitive relationships between the performance on core or pragmatic language skills and the performance on social competence. The presence of a language delay in one or more language skills does not necessitate poor performance in social competence.

Another limitation of this study was the lack of use of a direct measure for assessing social competence and measurements across multiple environments. The PKBS-2 is a parent/teacher-report measure, but for this study, only the parents’ perspective of their children’s habitual performance in a natural setting was examined. The use of another measure of social competence that evaluated a child’s performance at school would have helped to validate the parents’ perspective and would likely have provided a more comprehensive view of a child’s social competence.

In addition to core and pragmatic language skills, other factors likely contributed to preschoolers’ performance in social competence. It is possible that a child’s cognitive functioning is a common underlying factor that supports both language and social functioning. To gain a broader perspective, future research should include information about preschoolers’ second language exposure, the number and age of siblings, and a
child’s temperament and intellectual functioning, in order to provide a better account of the contribution of multiple factors to the complex construct of social competence. The language and social skills assessments included within this study were selected because they were measures that are commonly used in school and clinical practice. To complement these measures, teacher’s or clinician’s reports and/or direct measures of language and social skills from multiple environments could be incorporated into the battery of assessments of language and social competence skills. Based on the findings of this study, the assessment as well as stimulation of semantic skills should be completed.
Chapter 5

References


THE INTER-RELATIONSHIP BETWEEN CORE LANGUAGE SKILLS AND SOCIAL COMPETENCE IN PRESCHOOL CHILDREN


THE INTER-RELATIONSHIP BETWEEN CORE LANGUAGE SKILLS AND SOCIAL COMPETENCE IN PRESCHOOL CHILDREN


Sidak, Z. (1967). Rectangular confidence regions for the means of multivariate normal
THE INTER-RELATIONSHIP BETWEEN CORE LANGUAGE SKILLS AND SOCIAL COMPETENCE IN PRESCHOOL CHILDREN


The purpose of this study is to examine preschool children’s knowledge of socially appropriate communication and participation related to adjustment to kindergarten.

Who is eligible to participate?
- Children who are between 3 years 6 months and 4 years 11 months of age and
- are developing typically and
- have no uncorrected hearing or vision difficulties and
- have English as their first language

What will you and your child be asked to do?
- You will be asked to complete four questionnaires regarding your child’s language abilities and a short checklist about your child’s adjustment to school that will take approximately 60 minutes in total.

- Your child will be asked to participate in three tasks. These tasks are designed for young children and include activities such as watching a puppet show and looking at pictures. The study will be done over one 30 minute session at your child’s school or at home.

What next?
If you would like to know more about this study, please read the enclosed Letter of Information. Once you have made your decision, please check the appropriate response below.

Thank you for your consideration of our study.
[ ] Yes, I am interested in this study.
  • I have read the enclosed Letter of Information, completed all forms included in this package, and will return the package to my child’s teacher.

[ ] No, I am not interested in this study.
  • I will return this package to my child’s teacher so that any unused forms may be recycled or distributed to another family.
A child's social abilities and participation in activities are crucial to successful adjustment in kindergarten. Children who have good social abilities are able to effectively and appropriately use social behavior, including their language skills, in interactions with others. Participation is a major contributor to a child's social abilities, but its reciprocal relationship with social communication is not well understood. Examining what children know about appropriate social communication as well as identifying their participation in home and community activities will help clarify this developmental relationship so that we

The **purpose of this study** is to examine preschool children's knowledge of socially appropriate communication and participation related to adjustment to kindergarten.

**Who is eligible to participate?**
- Children who are between **3 years 6 months and 4 years 11 months** of age and
- are developing typically and
- have no uncorrected hearing or vision difficulties and
- have English as their first language

**What will you and your child be asked to do?**
- **You** will be asked to complete four questionnaires regarding your child's language abilities and a short checklist about your child's adjustment to school that will take approximately **60 minutes** in total.

- **Your child** will be asked to participate in three tasks. These tasks are designed for young children and include activities such as watching a puppet show and looking at pictures. The study will be done over **one 30 minute** session at the **H.A. Leeper Speech and Hearing Clinic or in your home**.

**What next?**
If you would like to know more about this study, please read the enclosed Letter of Information. Once you have made your decision, please check the appropriate response below.

*Thank you for your consideration of our study.*
[ ] Yes, I am interested in this study.
  - I have read the enclosed Letter of Information, completed all forms included in this package, and will return the package to the receptionist at the H.A. Leeper clinic.

[ ] No, I am not interested in this study.
  - I will return this package to the receptionist at the H.A. Leeper clinic so that any unused forms may be recycled or distributed to another family.
Appendix C: University Lab School recruitment flyer

**Social Communication, Participation, and Adjustment to School Study**

Elizabeth Skarakis-Doyle, Ph.D., Marilyn K. Kertoy, Ph.D.
Kristen Izaryk, B.A., Clarissa Lau, B.Sc.,
Researchers

A child's social abilities and participation in activities are crucial to successful adjustment in kindergarten. Children who have good social abilities are able to effectively and appropriately use social behavior, including their language skills, in interactions with others. Participation is a major contributor to a child's social abilities, but its reciprocal relationship with social communication is not well understood. Examining what children know about appropriate social communication as well as identifying their participation in home and community activities will help clarify this developmental relationship so that we

The **purpose of this study** is to examine preschool children's knowledge of socially appropriate communication and participation related to adjustment to kindergarten.

**Who is eligible to participate?**
- Children who are between **3 years 6 months and 4 years 11 months** of age and
- are developing typically and
- have no uncorrected hearing or vision difficulties and
- have English as their first language

**What will you and your child be asked to do?**
- **You** will be asked to complete four questionnaires regarding your child's language abilities and a short checklist about your child's adjustment to school that will take approximately **60 minutes** in total.

- **Your child** will be asked to participate in three tasks. These tasks are designed for young children and include activities such as watching a puppet show and looking at pictures. The study will be done over **one 30 minute** session at the **University Lab School**.

**What next?**
If you would like to know more about this study, please read the enclosed Letter of Information. Once you have made your decision, please check the appropriate response below.

*Thank you for your consideration of our study.*
[ ] Yes, I am interested in this study.
   • I have read the enclosed Letter of Information, completed all forms included in this package, and will return the package to the Research Response wall pocket in the Lab School’s entry.

[ ] No, I am not interested in this study.
   • I will return this package to Research Response wall pocket in the Lab School’s entry so that any unused forms may be recycled or distributed to another family.
Appendix D: Letter of information

Letter of Information
Social Communication, Participation and Adjustment to Kindergarten
Elizabeth Skarakis-Doyle, Ph.D., Marilyn K. Kertoy, Ph.D,
Kristen Izaryk, M.A., Clarissa Lau, B.Sc.
Researchers

Children’s ability to use their language skills in interactions with peers and adults, as well as their participation in home and community activities contribute to their social development and to making the transition to kindergarten. Language skills, social abilities and participation have not been studied together in preschool children. We invite you and your child to participate in a study that examines what children know about using language in social interactions, as well as identifying their participation in home and community activities. This will help us understand the relationships between these important developing skills for preschoolers and how they may impact adjustment to kindergarten.

What is the purpose of the study?
The purpose of this study is to investigate preschool children’s use of language in social interactions, their participation in daily life activities, and social development to determine the factors among them that contribute most to preschoolers’ adjustment to full day kindergarten.

Who is eligible to participate?
• Children who are between 3 years 6 months and 5 years of age and are not yet attending senior kindergarten and
• have no uncorrected hearing or vision difficulties and
• have English as their and their family’s first language and
• a Parent or guardian willing to complete questionnaires about their development, activities, and later adjustment to school

What will be required of You and Your Child?
If you and your child agree to participate in this study…

You will be asked to complete several questionnaires at two time periods:
At Time 1- you will complete all or part of several questionnaires. In the first, you identify the amount of your child’s involvement in home and community activities. Second, you will rank how often your child uses speech and language skills and concepts. Third, you will identify how your child uses the language they have in communicative situations. Fourth, you will judge your child’s communication and participation skills together. Finally, the last questionnaire asks you about the frequency with which your child engages in different social behaviors. These should take approximately 60 minutes to complete.
THE INTER-RELATIONSHIP BETWEEN CORE LANGUAGE SKILLS AND SOCIAL COMPETENCE IN PRESCHOOL CHILDREN

At Time 2 – 6 to 8 weeks after your child has begun school in the fall, we will contact you by phone and in an interview we will once again ask you once to complete the questionnaire about your child’s social development, as well as a short questionnaire about your child’s adjustment to kindergarten. This interview should take approximately 30 minutes in total.

Your child will be asked to participate in three tasks that should take about 45 minutes to complete. The first task is a puppet play in which your child will be asked to identify which puppet answers questions in a ‘silly’ way and then asked why the puppet was silly. The second tasks asks your child to talk about pictures from a picture book describing what people are doing and saying and make up a story. These two tasks will be video recorded so we can later transcribe exactly what they have said. The third task asks your child to identify letters, numbers and pictures by pointing and naming them. These three tasks will be done in one session either at the Western University’s Child Language Lab or at your home. It is your choice. Breaks will be provided throughout the session should your child becomes tired.

You or your child may ask questions about the activities you participate in at any time. Participation is completely voluntary. You and your child may refuse to participate or withdraw from the study at any time. Any information collected while participating in the study will be used even if you should choose to withdraw prior to the end of the study. In the event that you withdraw from the study any compensation that you have received you may keep. There are no known risks or discomforts associated with the activities in this study.

You and your child will not benefit personally from participating in the study. Your participation may help us learn more about the interrelationships of using language, participating in daily life activities, social development and adjusting to school.

Where will the study take place?
Children will complete their tasks at the Western University’s Child Language Lab or in your home. It is your choice. You may complete the questionnaires at home at your convenience and return them to Elborn College Room 2507 or 2515 when your child participates.

What will be done with the information obtained?
Only researchers here at Western University will have access to the information obtained in this study. We are unable to release individual children’s scores or information upon request. Should publications or presentations result from the study, only group data will be reported. Your name and your child’s name will not be used. Following completion of the study, videotapes and computer files will be kept in a locked cabinet for a period of seven years at which time they will be destroyed.

What if you have questions that haven’t been answered here?
Please call Elizabeth Skarakis-Doyle at [phone number]. If no one is available to take your call, please leave a message with a phone number or email and let us know a
good time to reach you. We will return the call promptly. If you have any questions about the conduct of this study or your rights as a participant you may contact the Office of Research Ethics, Western University at [redacted] You may keep this letter

Thank you for considering our study.

Elizabeth Skarakis-Doyle, Ph.D.
Professor
School of Communication Sciences and Disorders, Faculty of Health Sciences
Appendix E: Consent form

Social Communication, Participation, and Adjustment to Kindergarten

CONSENT FORM

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

Name of Child: _________________________________________ (please print)

Name of Parent: _________________________________________ (please print)

Signature of Parent(s) or Legal Guardian(s): ____________________________

Date: ______________________

Person Obtaining Consent: ____________________________ (please print)
Signature: _________________________________________
Date: ______________________
Appendix F: Ethics approval

Ethics approval was obtained for the study. The Principal Investigator, Dr. [Name], received approval from the Research Ethics Board for the study. The ethics approval document, Ethics Approval Number [Number], was approved on [Date]. The study was conducted in accordance with the ethical standards and guidelines set forth by the Research Ethics Board. All participants provided informed consent, and their data was handled confidentially to ensure the protection of their privacy. The study was designed to evaluate the inter-relationship between core language skills and social competence in preschool children, and the data collected was used to support the research hypotheses.
## Curriculum Vitae

**Name:** Clarissa Lau

**Post-secondary Education and Degrees:** Western University
London, Ontario, Canada
2012-2014 (Expected) M.Sc.

McMaster University
Hamilton, Ontario, Canada
2008-2012 B.Sc.

**Honours/Awards and Scholarships**

- Western Research Graduate Scholarships Western University
  2012-2014

- Dean’s Honour List
  McMaster University
  2012

- McMaster Honour Award
  McMaster University
  2008

**Related Research Experience**

- Graduate Research Assistant
  Developmental Pragmatics Lab, Western University
  2013

- Research Assistant
  The NeuroArts Lab, McMaster University
  2012

- Undergraduate Thesis Student
  Mood Disorders Program, St. Joseph’s Hospital
  2011-2012

- Research Assistant
  McMaster Spoken Language Research Lab, McMaster University
  2011-2012

**Related Work Experience**

- Teaching Assistant
  Counseling (CSD 9635L)
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Teaching Assistant
Speech Science for Audiology (CSD 9514a)
Western University
September to December 2013

Teaching Assistant
Biology, Statistics, and Research Methodologies
Indigenous Services, Western University
September 2012 to April 2013

Teaching Assistant
Research Methodologies (Life Science 2A03)
McMaster University
September to December 2011

Poster Presentations

