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INTER-RELATIONS OF CORE LANGUAGE, PRAGMATIC LANGUAGE, AND SOCIAL COMPETENCE IN PRESCHOOLERS

CLARISSA LAU
University of Toronto
clarissa.lau@mail.utoronto.ca

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 language and social competence. The main finding of this study showed that early literacy skills and word knowledge and retrieval were significantly correlated with Social Independence and Social Interaction respectively. 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.

Key words: Word knowledge and retrieval, semantics, social competence, preschool children

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.

1.1 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.

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.

1.2 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.

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.

1.3 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. 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 in order 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 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. Along with emotional knowledge, display of cooperative behaviours such as turn taking, compliance with instructions, and compromise during conflicts is critical for preschoolers to sustain interaction with peers. As a result, they are more likely to adjust smoothly to kindergarten, to form friendships, and to be accepted by their peers.

1.4 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, Sell, & Hadley, 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.

1.5 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" (p. 167). 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 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.

2. The study

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. Many 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). 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.

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. 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 *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. This study will examine the relationship between core language skills and pragmatic language skills in preschool children and social competence.

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?

2.1 Method

2.1.1 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 two preschools in western Ontario. 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 a speech and hearing clinic in western Ontario. 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 preschool or clinic.

2.1.2 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 speech and hearing clinic or in the private room. 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.

2.2.3 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. All items on the Vocabulary and Numbers, Letters and Words subtests are combined to form an Early Academic and Language Skills Composite score. 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). 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 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 s core derived from Timler (2013).

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). 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. Social Interaction 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.

2.1.4 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.

3. Results

3.1 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.

Scale		Range
	Standard Score[a] *M* (*SD*)	
***K-SEALS* Vocabulary**	112.75 (17.46)	86-145
***K-SEALS* NLW**	118.00 (24.41)	63-145
	Scaled Score[b] *M* (*SD*)	
***CCC-2* Speech**	7.38 (3.96)	2-15
***CCC-2* Syntax**	7.88 (4.21)	0-14
***CCC-2* Semantics**	9.88 (2.99)	6-17
***CCC-2* Coherence**	9.75 (2.54)	5-15

[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

Table 1. Standard and scaled scores of core language skills on the *K-SEALS* and *CCC-2*

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.

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 47th percentile (Timler, 2013).

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

[a] 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 2. Scaled scores of pragmatic language skills on the *CCC-2*

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.

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

PKBS-2 mean is 100 with a SD of 15. Total Composite score is 352

Table 3. Mean standard scores (SD) and ranges by age for *PKBS-2* subscales

3.2 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).

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

*p ≤ .05, **p ≤ .01. NLW = Numbers, Letters and Words

Table 4. Correlations between core language and social competence skills

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).

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

*p ≤ .05, **p ≤ .01. NLW = Numbers, Letters and Words

Table 5. Correlations between core language and pragmatic language skills

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

*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*

Table 6. Correlations between pragmatic language and social competence skills

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).

4. Discussion

This study was a preliminary investigation into the inter-relations among specific core language skills, pragmatic language skills, and 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 inter-relationship 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.

4.1 Educational 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 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. 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, 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). 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.

4.2 Limitations and future directions

This was an exploratory study with a small sample size and therefore the findings can be limited in their generalizability. However, the children included this study did 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.

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 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.

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